



Research paper

A model comparison approach to trauma-related guilt as a mediator of the relationship between PTSD symptoms and suicidal ideation among veterans



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ABSTRACT

Background: Suicidal ideation (SI) is a serious issue affecting U.S. veterans, and those with posttraumatic stress disorder (PTSD) are at an especially high risk of SI. Guilt has been associated with both PTSD and SI and may therefore be an important link between these constructs.

Methods: The present study compared models of trauma-related guilt and used path analysis to examine the direct and indirect effects of PTSD and trauma-related guilt on SI among a sample of 988 veterans receiving outpatient PTSD treatment at a Veterans Affairs (VA) specialty clinic.

Results: Results showed that a model of trauma-related guilt including guilt-cognitions and global guilt (but not distress) provided the best model fit for the data. PTSD and trauma-related guilt had direct effects on SI, and PTSD exhibited indirect effects on SI via trauma-related guilt.

Limitations: The use of cross-sectional data limits the ability to make causal inferences. A treatment-seeking sample composed primarily of Vietnam veterans limits generalizability to other populations.

Conclusions: Trauma-related guilt, particularly guilt cognitions, may be an effective point of intervention to help reduce SI among veterans with PTSD. This is an important area of inquiry, and suggestions for future research are discussed.

1. Introduction

Suicidal ideation (SI) is a serious concern among veterans. According to the National Health and Resilience Veterans Study, 13.7% of a nationally-representative sample of U.S. veterans reported current SI during at least one of two time points in 2011 and 2013 (Smith et al., 2016). Veterans also experience high rates of posttraumatic stress disorder (PTSD). Across population-based samples of veterans from various military eras, prevalence estimates of current PTSD have ranged from 12% to 15% (Kang et al., 2003; Kulka et al., 1990; Tanielian et al., 2008). Veterans with PTSD are at especially high risk of suicidal behavior, including higher rates of suicidal ideation, suicide attempts, and deaths by suicide compared to veterans without PTSD (see Panagioti, Gooding, and Tarrier, 2009 and Pompili et al., 2013 for reviews). In one study, veterans with PTSD were four times more likely to have SI than veterans without PTSD (Jakupcak et al., 2009). Given the high rates and co-occurrence of SI and PTSD among veterans, it is essential to

identify relevant constructs that may underlie this relationship. Guilt is a potentially important construct that is associated with both PTSD and SI and may link these variables.

Guilt is a self-conscious negative emotion composed of cognitive and affective experiences (Kubany et al., 1995; Kubany and Watson, 2003). Guilt has been associated with PTSD (see Pugh et al., 2015 for a review) and is now explicitly included in the diagnostic criteria for PTSD (i.e., distorted cognitions about the cause of the event and/or persistent negative mood that can include guilt; American Psychiatric Association, 2013). Although results have been mixed, multiple cross-sectional studies have shown positive associations between guilt and PTSD.

Guilt has also been associated with increased risk for suicidal behavior. In a study of Vietnam veterans, combat-related guilt was the strongest predictor of suicidal thoughts and attempts (Hendin and Haas, 1991). Bryan et al. (2013) found that guilt-proneness was higher among active duty military personnel with a history of SI. Guilt was also

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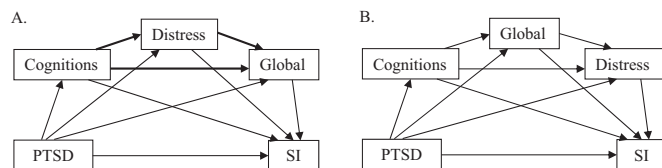


Fig. 1. Conceptual models of trauma-related guilt. A. Model 1: TRGI model of trauma-related guilt, bold lines indicate pathways specified by Kubany and Watson (2003); B. Model 2: Alternate model prioritizing guilt-specific TRGI subscales over distress.

associated with more severe current SI, even after controlling for PTSD and depression symptoms (Bryan et al., 2013).

Given that guilt is associated with both PTSD and SI, it may be a potential mediator of the relationship between PTSD and SI. Initial evidence supports this hypothesis. Results from Bryan et al. (2013) suggested that guilt and shame together mediated the relationship between PTSD and SI, and further research showed that guilt partially mediated the relationship between PTSD and SI (Bryan et al., 2015). A recent study of Iraq and Afghanistan veterans also showed that trauma-related guilt mediated the relationship between PTSD symptoms and SI (Tripp and McDevitt-Murphy, 2016).

Currently, the Trauma-Related Guilt Inventory (TRGI; Kubany et al., 1996) is the only validated measure of trauma-related guilt, which is guilt resulting from a specific event. Kubany and colleagues (Kubany et al., 1995, 1996; Kubany and Watson, 2003) designed the TRGI with two subscales to capture the combined presence of negative affect (distress) and guilt-specific beliefs (guilt cognitions), as well as a third subscale to measure the overall intensity of trauma-related guilt (global guilt). Fig. 1A depicts Kubany's model of trauma-related guilt. Brown and colleagues (2015) recently evaluated Kubany and Watson's (2003) model of trauma-related guilt as a predictor of PTSD and depression symptoms. They found that guilt cognitions and distress had direct effects on PTSD and depressive symptoms, whereas global guilt did not. Tripp and McDevitt-Murphy (2016) tested the TRGI subscales as serial mediators of the relationship between PTSD and SI (refer to Fig. 1A) and reported indirect effects of PTSD on SI via pathways through 1) guilt cognitions and global guilt, 2) distress and global guilt, and 3) the full model with all three subscales. These findings provided support for the existing model (i.e., Kubany and Watson, 2003) and evidence that trauma-related guilt may partially explain the relationship between PTSD symptoms and SI. However, studies examining model fit and comparing alternative models of the TRGI subscales are still needed to identify the relative importance of guilt dimensions to trauma-related outcomes, including SI.

Although the TRGI has proven useful, the content of the distress subscale has raised concern (e.g., Browne et al., 2015). The distress subscale measures undifferentiated emotional distress related to trauma, e.g., "What happened causes me emotional pain" (Kubany et al., 1995, 1996). This subscale was intended to capture diffuse negative affect (Kubany et al., 1996), which is a higher order dimension associated with multiple discrete emotions (Watson and Tellegen, 1985). As such, the distress subscale is not guilt-specific and captures distress related to any negative emotion (e.g., fear, anger, sadness). In contrast, the guilt cognitions subscale captures guilt-specific attributions made about the event, e.g., "I was responsible for causing what happened." Likewise, the global guilt subscale measures the self-reported magnitude and intensity of trauma-related guilt. Together, the guilt cognitions and global guilt subscales may sufficiently capture the cognitive and affective components specific to trauma-related guilt. Removing the distress subscale from the model may provide an equally adequate, or even superior, measure of trauma-related guilt. Model comparison examining the TRGI subscales in variant order would help us better understand trauma-related guilt and its potential role in posttraumatic outcomes. This is especially relevant in light of emerging evidence suggesting that trauma-related guilt may be an important

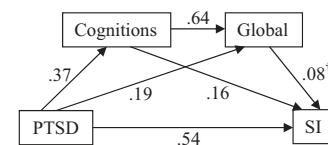


Fig. 2. Standardized direct effects among variables in Model 3. All values $p < .001$, except † $p < .05$.

mechanism by which PTSD confers risk for SI. Additional research is needed to better understand these intricate relationships.

1.1. Present study

The aim of the present study was to examine trauma-related guilt in relationship to PTSD and SI. We tested and compared three models of trauma-related guilt in order to determine which best fit the data: Kubany and Watson's (2003) model (Model 1; Fig. 1A), a model that deemphasized distress by placing it last in the serial mediation (Model 2; Fig. 1B), and a model without distress (Model 3; Fig. 2). We then used the best-fitting model to examine the direct and indirect effects of PTSD symptom severity and trauma-related guilt on SI. We hypothesized the following: 1) the model without the distress subscale (Model 3) would provide the best fit to the data; 2) PTSD symptoms and trauma-related guilt would be positively associated with SI; and 3) trauma-related guilt would partially mediate the relationship between PTSD and SI, such that the mediating effect of trauma-related guilt would explain a significant portion of the effect of PTSD on SI.

2. Methods

2.1. Participants and procedure

We analyzed archival data from 988 veterans receiving care at an outpatient Veterans Affairs (VA) specialty PTSD clinic between 1996 and 2000. Of the 1000 veterans who completed questionnaires on the variables of interest, twelve were dropped from the present analyses due to incomplete data. As part of a standard initial evaluation for the PTSD clinic, participants completed clinical interviews and a battery of self-report questionnaires. PTSD diagnosis was based on the Clinician Administered PTSD Scale (CAPS; Blake et al., 1995). A small portion of the present sample ($n = 112$, 11.34%) were administered an abbreviated CAPS by an experienced PTSD clinician using the original F1/I2 decision rule (frequency ≥ 1 and intensity ≥ 2 ; Weathers et al., 2001) to judge symptoms as present or absent for the purpose of determining diagnosis. Use of these data for research purposes was approved by the institutional review board.

2.2. Measures

2.2.1. Demographic information

Demographic information collected included age, gender, race, and marital status.

2.2.2. PTSD symptom severity

The Mississippi Scale for Combat-Related PTSD (M-PTSD; Keane et al., 1988) is a 35-item self-report measure that assesses DSM-III symptoms of PTSD in veteran populations. Participants respond to items using a 5-point Likert scale on which 1 = *Not at all true* and 5 = *Extremely true*. Responses are summed to provide an overall score of PTSD symptom severity. This measure has demonstrated strong internal consistency, test-retest reliability, and sensitivity distinguishing between veterans with and without PTSD. For the present analyses, the two items assessing suicidal ideation were not included in the M-PTSD total score, because these items were used as the outcome variable. Also, the single item reflecting guilt was removed due to overlap with

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