Negative Posttraumatic Cognitions about Self Mediate the Relation Between Sexual Revictimization and Suicide Risk in a Sample of Military Sexual Assault Survivors

by

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ABSTRACT

Military sexual trauma (MST) is a risk factor for suicide among service members/veterans. Research reported that 41.79% of male and 63.58% female MST survivors were exposed to pre-military sexual trauma, making MST a revictimization experience. Unfortunately, little is known about mechanisms of the association between revictimization and suicide risk among MST survivors. One possible mechanism is posttraumatic cognitions (PTCs), which include the survivor’s (1) negative thoughts and beliefs about themselves, (2) negative thoughts and beliefs about the world, and (3) self-blame. The current study examined each of the PTC subscales as mediators of the association between sexual revictimization and suicide risk. Participants were 383 service members/veterans reporting a history of MST that involved assault (50.65% female), recruited via Qualtrics, Inc. in 2021. Participants completed self-report questionnaires assessing demographics, suicide risk, history of sexual victimization (MST only, MST and pre-military sexual victimization), and PTCs. Of these, 340 (88.8%) reported a history of MST and pre-military victimization and comprised the revictimization group. Parallel mediation analysis with suicide risk regressed on each of the PTCs subscales and covariates accounted for 43.48% of the variance, and revealed that negative cognitions about the self had a significant indirect effect on the association between revictimization and higher suicide risk, above and beyond negative cognitions about world and self-blame. Targeting negative cognitions about the self among sexual revictimization survivors may be an effective therapeutic strategy to most effectively reduce suicide risk. Cognitive Processing Therapy may be particularly useful among revictimization survivors given the focus on altering posttraumatic cognitions.
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CHAPTER 1

INTRODUCTION

An average of 17.2 veterans died by suicide every day in 2019 (U.S. Department of Veteran Affairs [VA], 2021), and suicide has been consistently ranked among the top two causes of death among active duty service members for the past two decades (Armed Forces Health Surveillance Center, 2014). Notably, the suicide rate among veterans increased 35.9% from 2001 to 2019 (VA, 2021), and age-adjusted suicide rates were substantially higher in veterans compared to the general population in 2016 (VA, 2018). In addition, suicide rates have been increasing for service members. From 2014 to 2021, the suicide rate among active duty service members increased from 20.4 to 24.3 suicides per 100,000 service members (Department of Defense [DOD], 2022). These trends underscore the need for additional explorations of factors that may increase suicide risk in order to better inform prevention efforts. The current study examined correlates of suicide risk, which is defined as the risk of engaging in suicide-related behaviors. One risk factor that impacts men and women in the military is exposure to sexual violence.

Sexual violence that occurred during military service is frequently associated with poorer outcomes relative to sexual violence that occurred before military service (Blais et al., 2022). This latter experience is often referred to as military sexual trauma (MST), which is defined by the VA as psychological trauma that “resulted from a physical assault of a sexual nature, battery of a sexual nature, or sexual harassment which occurred while the Veteran was serving on active duty, active for training, or inactive duty training” (U.S. Government Publishing Office, 2011, para. 1). MST is a unique risk factor for suicide among service members and veterans (Blais & Monteith, 2019; Kimerling et al.,
According to a meta-analysis (Wilson, 2018), 3.9% of male and 38.4% of female service members/veterans report MST, and of those 1.9% of male and 23.6% female service members/veterans report that their MST involved assault. However, these estimates may not fully capture the magnitude of MST prevalence due to disclosure barriers, such as stigma and experiential avoidance discussing reminders of MST (Andresen & Blais, 2019; Blais et al., 2018; Monteith et al., 2019a). Indeed, convenience samples reported that 81.61% female and 13.19% male service members and veterans reported MST, and of those 41.70% female and 16.76% male service members/veterans experienced assault MST (Blais, 2020; Blais, 2021).

Notably, MST is associated with 178% increased risk for history of suicide attempt and 119% increased risk for current suicidal ideation according to results from a nationally representative sample of veterans (Klingensmith et al., 2014). Similar results from a population-based study of veterans indicated that MST is a unique risk factor associated with increased risk for suicide among both men (hazard ratio [HR]=1.19, 95% CI=1.02, 1.39) and women (HR=1.36, 95% CI=1.01, 1.83), above and beyond the effects of sociodemographic variables, medical morbidity, and mental health conditions (Kimerling et al., 2016). The association between MST and higher suicide risk for both men and women has also been demonstrated in other studies utilizing convenience samples (see meta-analysis, Livingston et al., 2022).

Despite the established relation between MST and higher suicide risk (Livingston et al., 2022), less is known about sexual revictimization and suicide risk in military samples. Sexual revictimization has been defined in a number of ways, and in this study,
sexual revictimization refers to exposure to sexual assault that occurred before military service combined with exposure to MST. Overall, service members and veterans are at higher risk for sexual victimization compared to the general population (Allard et al., 2011; Schultz et al., 2006), and one incidence of victimization puts individuals at risk for subsequent victimizations (Creech & Orchowski, 2016; Merrill et al., 1999; Schry et al., 2016). Specifically, individuals with history of childhood sexual abuse were significantly more likely to experience MST, with 30% to 54% of childhood sexual abuse survivors reporting MST, compared to 4%-21% of individuals without history of childhood sexual abuse (Stander et al., 2006; Wilson et al., 2015; Wolfe-Clark et al., 2017). In a sample of veterans who reported a history of lifetime sexual victimization, 52% of male veterans and 65% of female veterans reported revictimization (Zinzow et al., 2008). A more recent study reported similar results, such that more than half of service members/veterans with histories of MST (53.41%) also reported a history of premilitary sexual trauma (Blais et al., 2022). Not only is revictimization common in military populations, but research also suggests that both exposure to pre-military victimization and exposure to MST uniquely contribute to higher suicide risk (Bryan, Bryan, & Clemans, 2015), indicating potential cumulative effects on suicide risk.

Unfortunately, only three studies to our knowledge have examined the effects of MST as a revictimization experience on suicide risk. Blais and colleagues (2022) reported that there was no significant difference between MST and revictimization (i.e., a history of both MST and premilitary victimization) on suicidal ideation. Similarly, Baca and colleagues (2021) found that the association of suicide risk with MST and with revictimization do not statistically differ. However, Holliday et al. (2022) demonstrated
that among MST survivors, those who experienced childhood sexual abuse reported higher probabilities of lifetime suicide attempt and future suicide attempt. All three studies mentioned above included harassment-only exposures, which is associated with lower risk for psychological distress and suicide risk (Blais & Geiser, 2019; Millegan et al., 2015; Street et al., 2008). Thus, the inclusion of those reporting harassment-only MST may alter the strength of these associations, perhaps accounting for the null results observed in two of the three studies. The significant results documented by Holliday et al. (2022) might be attributed to their nationally representative sample, as both Baca et al. (2021) and Blais et al. (2022) used convenience samples with a smaller size. Moreover, Blais et al.’s study (2022) was limited to suicidal ideation, which may not fully account for risk for suicide attempt. The current study addresses these limitations by assessing (1) revictimization in only those who report MST that involved assault, and (2) suicide risk, which includes both ideation and likelihood of attempting suicide.

To better inform interventions for reducing suicide risk among revictimization survivors, identifying modifiable factors that can be addressed in therapy is critical. Posttraumatic cognitions (PTCs) can be one such factor that might play an important role in suicide risk following sexual revictimization. Individuals engage in meaning-making processes following trauma exposure to integrate their traumatic experiences with existing beliefs, and unsuccessful integration increases the development of self-blame, negative cognitions about oneself, others, and the world (Ehlers & Clark, 2000). Foa et al. (1999) suggested three types of PTCs: (1) Negative Cognitions about Self, including a sense of incompetency and negative interpretation of sequelae of the traumatic experience; (2) Self-blame, including internal attributions of the occurrence of trauma;
and (3) Negative Cognitions about World, including beliefs about an unsafe world and mistrust of other people. The key distinguishing factor between the first two cognitions is that Negative Cognitions about Self comprises general negative views about self, whereas self-blame refers to moral emotions, such as shame and guilt, related to the occurrence of the traumatic event.

Common negative PTCs, such as ‘I can’t rely on other people’ and ‘I feel isolated and set apart from others,’ may induce a sense of perceived burdensomeness and thwarted belonging, which exacerbate suicide risk (Joiner, 2005). Other PTCs related to negative self-perception, such as ‘I am inadequate,’ are also correlated with higher suicide risk (Kleiman & Riskind, 2013; Rabon et al., 2019). Furthermore, first-line trauma-focused treatments, such as Prolonged Exposure therapy (PE) and Cognitive Processing Therapy, target negative PTCs (Brown et al., 2019), and these treatments have been shown to reduce suicide risk among trauma survivors. Indeed, research demonstrated the reduction of negative PTCs to be the mechanism of reducing suicide risk in PE (McLean et al., 2017). A few studies have documented the positive association between PTCs and suicide risk among MST survivors (Monteith et al., 2019b; Wiblin et al., 2018); however, no study has examined relation between PTCs and suicide risk among sexual revictimization survivors. Interestingly, research showed that veterans who experienced multiple occurrences of sexual assault reported significantly higher negative PTCs relative to veterans who experienced a single occurrence of sexual assault (Tirone et al., 2021), suggesting the cumulative effect of sexual revictimization on negative PTCs. Unfortunately, this study was not specific to MST and did not examine suicide
risk. The current study will address this gap by examining whether heightened negative PTCs is a mechanism of increased suicide risk following sexual revictimization.

Given that there are three primary domains of PTCs, it would be of greatest utility to determine if all three contribute uniquely to the association of revictimization and suicide risk, as such findings could inform clinicians about which PTCs to focus on in treatment to maximize efficiency. Two studies utilizing treatment-seeking military samples showed that when suicidal ideation was regressed on all three subscales, only Negative Cognition about Self remained significantly associated with suicidal ideation (Horwitz et al., 2018; McLean et al., 2017). However, neither of these studies directly examined PTCs related to sexual trauma, despite research suggesting that PTCs may differ on trauma type (Christ et al., 2021; Sexton et al., 2018). Further, findings were circumscribed to clinical samples, which may not generalize to all samples. The current study addresses this gap by specifically examining PTCs related to sexual trauma.

Despite considerable advances in research related to the association between MST and suicide risk (see meta-analysis, Livingston et al., 2022), more information is needed to examine whether revictimization survivors present with even higher suicide risk relative to those reporting MST only through the effects of more negative PTCs. Using a sample of 383 service members/veterans who experienced assault MST, we examined each of the PTC subscales as potentially mediators of the association between sexual revictimization and higher suicide risk. Given findings from previous research showing the positive association between Negative Cognitions about Self and suicide risk (Horwitz et al., 2018; McLean et al., 2017), we hypothesized Negative Cognitions about
Self would uniquely mediate the revictimization to higher suicide risk relationship, above and beyond Negative Cognitions about World and Self-blame.
CHAPTER 2

METHODS

The current study utilized data from a parent study that examined individual and interpersonal outcomes among service members and veterans who have experienced MST that involved assault (Tannahill et al., 2022). Participants were recruited during 2021 via Qualtrics, Inc, a secure online survey platform (Qualtrics Panels, 2017). Advertisements were targeted toward post-9/11 era service members/veterans aged 18-65 who spoke English and were exposed to MST that involved assault. History of MST was screened by asking (1) ‘When you were in the military, did someone ever have sexual contact with you against your will or when you were unable to say no (for example, after being forced or threatened, or to avoid other consequences)?’ and (2) ‘When you were in the military, did someone try to have sexual contact with you against your will or when you were unable to say no?’ Answering ‘yes’ to either of the questions indicated a history of MST that involved assault. To limit fraudulent responses and validate current or previous service in the U.S. military in the post-9/11 era, prospective participants subsequently answered four military validation questions (Tannahill & Blais, 2023). An incorrect response to any of the validation questions resulted in automatic discontinuation, and the likelihood of answering all four questions accurately by chance is 0.16%.

Those passing the validation check were given a letter of information about study procedures. If participants indicated interest in participating in the study, they continued with the self-report questionnaires. Participants were compensated according to their agreement with their Qualtrics, Inc. panel provider, which occurred separate from this
research study. The specific reward from the panel provider varies and may include cash, airline miles, gift cards, redeemable points, charitable donations, sweepstakes entrance, and vouchers. Average monetary value of the compensation was approximately $8.50. Identifiable information collected for payment purposes was not linked to participant survey responses and was not made available to the study team. The parent study was approved by the Institutional Review Board at Utah State University. The current secondary analysis was approved by the Institutional Review Board at Arizona State University.

Participants

The parent study included 400 service members and veterans. For the current study, 17 veterans exposed to both MST and post-military sexual trauma were excluded, as we included active duty service members who were unable to report any post-military sexual trauma. That is, given the small cell size of the former, we would be unable to make meaningful comparisons about revictimization experiences that also included postmilitary sexual violence. Their exclusion resulted in 383 service members or veterans with a history of assault MST. The average age was 35.91 years ($SD=5.67$). The majority of participants were White (80.68%). Around half of participants (49.35%) reported male sex and 50.65% reported female sex. Of these, 340 (88.8%) reported a history of sexual assault trauma before they joined the military (see full demographic information in Table 1), categorizing them in the revictimization group (for additional information on how this was assessed, see Measures below). The remaining participants (11.23%, $n=43$) were categorized as the non-revictimization group.

 Measures
Demographics and covariates. A demographic inventory was used to collect information about participants’ biological sex (male coded as 1, female coded as 0), gender minority (cisgender coded as 0, gender nonconforming, transgender, two-spirit, and other coded as 1), age, race/ethnicity (American Indian/Alaska Native, Middle Eastern/North African, Asian American, Native Hawaiian/Other Pacific Islander, Black/African American, White American/European, Hispanic, Latinx/Spanish Origin, Other race; White coded as 1, all else coded as 0), sexual orientation (heterosexual/straight, gay/lesbian, bisexual, questioning, other; sexual minority coded as 1, heterosexual coded as 0), marital status (single/never married, married, in a committed relationship, separated/divorced, widowed partnered coded as 1, all else coded as 0), military branch (Air Force, Army, Coast Guard, Marines, Navy; Army coded as 1, all else coded as 0), discharge status (veteran coded as 1, active coded as 0), military rank (enlisted coded as 1, officer coded as 0), combat exposure (history of combat exposure coded as 1, else coded as 0), and PTSD symptom severity.

Suicide risk was assessed using the Suicide Behavior Questionnaire-Revised (SBQ-R; Osman et al., 2001). The SBQ-R consists of four questions assessing (1) lifetime suicide behavior (from ‘Never’ to ‘I have attempted to kill myself, and really hope to die’); (2) suicide ideation over the past 12 months (from ‘Never’ to ‘Very Often (5 or more times)’); (3) threat of suicide attempt (from ‘No’ to ‘Yes, more than once, and really wanted to do it’); and (4) likelihood of suicidal behavior in the future (from ‘Never’ to ‘Very likely’). Suicide risk was calculated by summing up the four items, with a score range of 3-18, with higher scores indicating greater risk. The SBQ-R has shown
excellent psychometric properties in military samples (Gutierrez et al., 2019), and good internal consistency in the current sample (Cronbach’s $\alpha =0.86$).

**History of sexual victimization** was evaluated using the *Sexual Experiences Survey-Short Form Victimization* (SES-SFV; Koss et al., 2007). The SES-SFV assesses five different categories of sexual victimization: no victimization, unwanted sexual contact, sexual coercion, attempted rape, and rape. Participants endorsed how often (0, 1, 2, 3+) and when (e.g., premilitary, during military service) each category occurred. This study defines revictimization as sexual assaults occurring in different life stages (e.g., premilitary, during military service), instead of number of exposures. An affirmative response to at least one experience in any of the categories qualifies participants for victimized status during that time period. Any missing values were coded as zero so that victimization was not assumed when not explicitly reported. For each time period (i.e., premilitary, military), sexual victimization was coded as “no history” versus “reported history” of sexual assault. Revictimization was coded as 1 for those who indicated history of sexual victimization both premilitary and military, whereas revictimization was coded as 0 for those who indicated history of sexual victimization only during their military service, with no prior exposure to sexual victimization.

**Posttraumatic cognitions** were assessed using the *Posttraumatic Cognitions Inventory* (PTCI; Foa et al., 1999). The PTCI is a 33-item self-report scale designed to measure changes in beliefs and thoughts following trauma exposure, or previously referred to as negative PTCs. Items are scored on a 7-point Likert scale from 1 (totally disagree) to 7 (totally agree), with higher scores indicating stronger negative PTCs. The PTCI total score is calculated by summing up individual items with scores ranging from
The PTCI has demonstrated strong psychometric properties in military samples, including MST survivors (Foa et al., 1999; Holliday et al., 2014; Sexton et al., 2018).

Posttraumatic cognition subscales are derived from the PTCI. The PTCs consist of three subscales: Self-blame, Negative Cognitions about Self, and Negative Cognitions about World. Given that different numbers of statements make up each subscale, the average score for each subscale is calculated by taking the total subscale score and dividing it by the number of items in that subscale. Subscale scores range from 1 to 7. A confirmatory factor analysis using the parent dataset confirmed the presence of the three subscales ($\chi^2 (492) = 943.49, p < .01$, CFI = 0.99, TLI = 0.99, RMSEA = 0.05; factor loadings Self-blame: 0.54-0.79, Negative Cognitions about Self: 0.64-0.79, Negative Cognitions about World: 0.61-0.82; Tannahill et al., 2022). In this sample, the PTCI subscales show good to excellent internal consistency for the self (Cronbach’s $\alpha = 0.95$), world (Cronbach’s $\alpha = 0.89$), and self-blame (Cronbach’s $\alpha = 0.81$) subscales.

**Analytic Plan**

Participant characteristics were assessed using descriptive statistics. A series of analyses of variance (ANOVA), correlations, and chi-square tests were conducted to assess bivariate associations between biological sex, sexual victimization, suicide risk, and negative PTCs, as well as covariates. A parallel mediation analysis was conducted to examine to what extent each PTC subscale mediated the relation between sexual revictimization and higher suicide risk, conditional on the presence of the other two subscales (see Figure 1). Covariates of the study outcome, suicide risk, included age, sex (male, female), marital status (partnered, all else), race (White, not White), military
branch (Army, all else), rank (enlisted, officer), discharge status (actively serving, veteran), combat history, and PTSD symptom severity. All statistical analyses were conducted using SPSS version 28 (IBM Corp, 2021), and parallel mediation analysis was conducted using PROCESS MACRO, Model 4 (Hayes, 2013).
CHAPTER 3

RESULTS

Descriptive Statistics

As noted above, 88.77% of participants reported revictimization. The average score on the SBQ-R, our measure of suicide risk, was 7.95 (SD=4.29), which when rounded is equal to the suggested clinical cut-off score of 8 for high suicide risk among adult psychiatric inpatients (Osman et al., 2001). The average global score on the PTCI of 139.15 (SD=39.33) was higher than the median score of 133 among individuals exposed to a trauma that met DSM-IV Criterion A and meet criteria for PTSD (Foa et al., 1999). The average scores of PTCI subscales of Negative Cognitions about Self, Negative Cognitions about World, and Self-blame of 3.95 (SD=1.39), 5.15 (SD=1.29), and 4.04 (SD=1.49), respectively, were similar to the average scores observed in another sample comprised of MST-exposed veterans of 3.6 (SD=1.4), 5.0 (SD=1.4), and 2.7 (SD=1.5) respectively (e.g., Sexton et al., 2018).

Bivariate Associations

Compared to participants who were exposed to MST but did not report a revictimization exposure, those exposed to revictimization reported significantly higher suicide risk, higher Negative Cognitions about Self, and higher Self-blame (see more in Table 1). There was no significant difference in Negative Cognitions about World between the MST-only and the revictimization group (p>0.05). All PTC subscales were intercorrelated with one another and suicide risk with medium-to-large effect sizes (see Table 2).

Parallel Mediation Analysis
When suicide risk was regressed on sexual revictimization status with Negative Cognitions about Self, Negative Cognitions about World, and Self-blame specified as parallel mediators (as shown in Figure 1), results showed that sexual revictimization had a significant positive direct effect on suicide risk, such that those with history of revictimization, compared to those exposure to MST only, demonstrated a 1.14 (SE=0.57) unit increase in suicide risk ($t(363)=2.00, p = 0.05$). Results further showed that the indirect effect of Negative Cognitions about Self on the association of sexual revictimization and suicide risk was significant (effect =0.55 (SE=0.26), 95% CI [0.07, 1.09]). One unit increase in Negative Cognitions about Self was associated with a 1.28 (SE=0.20) unit increase in suicide risk ($t(363)=6.50, p < 0.01$). We also observed that our covariates of interest had significant associations with higher suicide risk, including higher PTSD symptom severity, more combat exposure, being single, female gender, and non-White race (see full information in Figure 1). There were no significant indirect effects of Negative Cognitions about World or Self-blame in this association when accounting for Negative Cognitions about Self ($p$’s > 0.05).
CHAPTER 4
DISCUSSION

The aim of the current study was to determine whether suicide risk was higher among MST survivors who also experienced pre-military sexual trauma compared to individuals who experienced MST only. We also sought to determine if this association was accounted for by Negative Cognitions about Self, Negative Cognitions about World, and Self-blame. Overall, findings demonstrated that individuals who experienced revictimization reported significantly higher Negative Cognitions about Self, and these cognitions were associated with higher suicide risk. Although revictimization was associated with higher Self-blame, Self-blame was not associated with higher suicide risk in adjusted models. Negative Cognitions about World had no significant association with revictimization or suicide risk. Higher PTSD symptom severity, more combat exposure, single marital status, female gender, and non-White race were also significantly associated with higher suicide risk. These findings have important clinical and research implications.

Results need to be interpreted in the context of limitations of the current study. This study used data collected from an anonymous, self-report online survey. Although validation checks were conducted to ensure probable military service, there is no way of confirming participants’ military status. Data collection was cross-sectional, which prevents causality from being inferred. For example, it is possible there is a bidirectional relation between sexual victimization and posttraumatic cognitions, as one’s posttraumatic cognitions may influence their risk for sexual revictimization. The sample was circumscribed to post-9/11 era service members and veterans. Results may not
generalize to military populations from previous eras. In addition, the current study treated sexual revictimization as a binary variable. Assessing victimization or revictimization using count data or severity may enhance our understanding of these associations. The current study did not differentiate childhood sexual trauma from adult pre-military sexual trauma. The age limit for enlisting in any branch of the active military is 17 to 39, and age in our sample ranged from 19 to 59. Depending on the age they joined military, participants who endorsed pre-military sexual victimization could have been exposed to childhood sexual trauma, adulthood pre-military trauma, or both. Future research should specify the timing of pre-military sexual trauma and examine any differential outcomes associated with childhood sexual trauma versus adulthood pre-military sexual trauma.

In the current sample, 88.77% of MST survivors reported history of pre-military victimization, which is substantially higher than that was reported in previous studies (e.g., 53.41%; Blais et al., 2022). A higher rate of endorsing sexual revictimization might be attributed to the anonymous nature of the data collection process. The difference in rate might also be attributed to our study recruitment being circumscribed to survivors of MST who reported that their exposure involved assault. Since one incidence of sexual trauma puts individuals at risk for subsequent revictimization (Creech & Orchowski, 2016; Merrill et al., 1999; Schry et al., 2016), it is perhaps not surprising that prevalence of pre-military sexual trauma is higher in our sample of MST survivors compared to that in a general military sample. Nevertheless, results might suggest that prevalence of sexual revictimization is indeed higher than we previously understood. Given that history of sexual assault before military service places individuals at higher risk for suicide
compared to those who have only experienced MST, providers should screen for sexual assault history prior to the military and consider the need for more intensive suicide prevention and intervention.

Our findings suggest that when an individual experiences sexual victimization again, they are more likely to make fundamental attributions about self (e.g., ‘I am inadequate’ and ‘the event happened because of the way I acted’), which correspond to Self-blame and Negative Cognitions about the self, rather than situational or external attribution (e.g., ‘people can’t be trusted’). Though both Negative Cognitions about Self and Self-blame can be interpreted as fundamental internal attributions, they appear to function differently in the context of suicide risk. One reason that Negative Cognitions about Self may have a more pronounced impact on suicide risk could be that Self-blame (e.g., ‘somebody else would have stopped the event from happening’ and ‘the event happened because of the way I acted’) demonstrates survivors attributing the occurrence of the traumatic event to themselves, whereas Negative Cognitions about Self (e.g., ‘I am a weak person’) represents more generalized and fundamental negative view of one’s character and personality that is not circumscribed to the traumatic event. Thus, Negative Cognitions about Self might have a more pervasive impact on various aspects of one’s life including suicide risk. These findings suggest that clinicians should target Negative Cognitions about Self in treatment to yield better treatment outcomes in terms of reducing suicide risk. Specifically, individuals who are exposed to both pre-military sexual trauma and MST could benefit more from correcting negative views of one self’s character and personality, relative to correcting cognitions related to blaming oneself for the occurrence of traumatic events and negative views of other and world. Given that
posttraumatic cognitions differ by trauma type (Christ et al., 2021; Sexton et al., 2018), it is unclear whether this conclusion could be applied to survivors of other types of trauma.

The current study also has important implications for future research. We defined revictimization by time period, and future research could extend this literature by examining the effects of repeated victimizations during the same life stage. Future studies could also consider the impact of post-military sexual assault among those who have separated from the military to assess if the cumulative effects of revictimization are replicated with the post-military period, and how posttraumatic cognitions relate to suicide risk. Indeed, exposure to MST and pre-military sexual assault are significantly associated with heightened risk for post-military victimization (Creech & Orchowski, 2016; Himmelfarb et al., 2006). Though our study included data on post-military sexual trauma, such items were only applicable to veteran participants, and their small cell size prevented us from conducting analyses with adequate power. As noted above, the current study did not differentiate childhood sexual trauma from adulthood pre-military trauma, and future studies could examine any differential outcomes associated with childhood sexual trauma versus adulthood pre-military trauma. Finally, the field would further benefit from studies utilizing longitudinal data to document the fluid associations of suicide risk and posttraumatic cognitions. As proposed by recent suicide theories (Bryan, 2021; Rudd, 2006), suicide risk is multifaceted and constantly changing. Posttraumatic cognitions could also change as individuals process their traumas and evolve as individuals integrate new experiences with their world schema. Longitudinal data could inform the field on the dynamic association between the everchanging suicide risk and posttraumatic cognitions.
Our findings also suggested significant associations between suicide risk and several covariates, which is largely consistent with previous literature. Specifically, the link between higher PTSD symptom severity and higher combat exposure with heightened suicide risk has been established (Boscarino, 2006; Bryan et al., 2015; Butterfield et al., 2005; Freeman et al., 2000). Moreover, our findings are consistent with previous research demonstrating that being unmarried or not in a committed relationship is associated with higher suicide risk among military populations (Hayman et al., 2012; Kang et al., 2015). Female participants reported significantly higher suicide risk in adjust models, which is consistent with previous study showing that female veterans are at a higher risk for suicidal ideation and suicide attempts whereas male veterans are at a higher risk of dying by suicide (Aslan et al., 2020). Since our measure of suicide risk incorporated both ideation and risk of death, it may best account for these findings. Finally, our findings suggested that White race was associated with lower suicide risk. The association of race with suicide risk is somewhat mixed (Corson et al., 2013; Maguen et al., 2015; Schoenbaum et al., 2014) and we attribute some of these mixed findings to be due to sampling methods and differences in suicide risk measurement.

In conclusion, higher suicide risk is associated with MST as a revictimization experience, and posttraumatic cognitions are a possible mechanism of this association. Results suggest that targeting negative perceptions about self after sexual revictimization might be especially effective in reducing suicide risk. Future studies could examine whether current findings are appliable when post-military sexual trauma is counted in revictimization experiences and whether an addition exposure compounds these effects, differentiate between childhood sexual trauma and adulthood pre-military trauma when
categorizing pre-military sexual trauma, and assess the dynamic relationship between suicide risk and posttraumatic cognitions.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Total N=383</th>
<th>MST-only n = 43 (11.23%)</th>
<th>Revictimization n = 340 (88.77%)</th>
<th>χ² test/t-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suicide Risk</td>
<td>7.95 (4.29)</td>
<td>2.53 (0.39)</td>
<td>8.34 (4.30)</td>
<td>t(77.23) = -0.78***</td>
</tr>
<tr>
<td>NC Self</td>
<td>3.95 (1.39)</td>
<td>3.07 (1.13)</td>
<td>4.06 (1.38)</td>
<td>t(380) = -4.52***</td>
</tr>
<tr>
<td>NC World</td>
<td>5.15 (1.29)</td>
<td>4.78 (1.63)</td>
<td>5.20 (1.23)</td>
<td>t(48.26) = -0.62</td>
</tr>
<tr>
<td>Self-blame</td>
<td>4.04 (1.49)</td>
<td>3.07 (1.34)</td>
<td>4.17 (1.47)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>PTSD Symptom Severity</td>
<td>48.94 (18.46)</td>
<td>35.37 (20.65)</td>
<td>50.68 (17.45)</td>
<td>t(49.97) = -4.65***</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td>χ²(1) = 1.87</td>
</tr>
<tr>
<td>Male</td>
<td>194 (50.65%)</td>
<td>26 (60.47%)</td>
<td>168 (49.41%)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>Female</td>
<td>189 (49.35%)</td>
<td>17 (39.53%)</td>
<td>172 (50.59%)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>Rank</td>
<td></td>
<td></td>
<td></td>
<td>χ²(1) = 0.09</td>
</tr>
<tr>
<td>Enlisted</td>
<td>161 (42.04%)</td>
<td>19 (44.19%)</td>
<td>142 (41.76%)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>Officer</td>
<td>222 (57.96%)</td>
<td>24 (55.81%)</td>
<td>198 (58.24%)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>Discharge Status</td>
<td></td>
<td></td>
<td></td>
<td>χ²(1) = 0.01</td>
</tr>
<tr>
<td>Service Member</td>
<td>216 (56.40%)</td>
<td>24 (55.81%)</td>
<td>192 (56.47%)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>Veteran</td>
<td>167 (43.60%)</td>
<td>19 (44.19%)</td>
<td>148 (43.53%)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>Branch</td>
<td></td>
<td></td>
<td></td>
<td>χ²(4) = 2.27</td>
</tr>
<tr>
<td>Air Force</td>
<td>53 (13.84%)</td>
<td>5 (11.63%)</td>
<td>48 (14.12%)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>Army</td>
<td>283 (73.89%)</td>
<td>32 (74.42%)</td>
<td>251 (73.82%)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>Coast Guard</td>
<td>12 (3.13%)</td>
<td>0 (0.00%)</td>
<td>12 (3.53%)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>Marine Corps</td>
<td>27 (7.05%)</td>
<td>2 (4.65%)</td>
<td>25 (7.35%)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>Navy</td>
<td>23 (6.01%)</td>
<td>4 (9.30%)</td>
<td>19 (5.59%)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td>χ²(6) = 20.73**</td>
</tr>
<tr>
<td>Asian</td>
<td>0 (0.00%)</td>
<td>0 (0.00%)</td>
<td>0 (0.00%)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>Black</td>
<td>28 (7.31%)</td>
<td>5 (11.63%)</td>
<td>23 (6.76%)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>Hawaiian/PI</td>
<td>2 (0.52%)</td>
<td>0 (0.00%)</td>
<td>0 (0.00%)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>Hispanic/Latinx</td>
<td>23 (6.01%)</td>
<td>8 (18.60%)</td>
<td>15 (4.41%)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>MENA</td>
<td>1 (0.26%)</td>
<td>0 (0.00%)</td>
<td>1 (0.29%)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>Native American/Alaskan</td>
<td>6 (1.57%)</td>
<td>0 (0.00%)</td>
<td>6 (1.76%)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>White</td>
<td>273 (71.28%)</td>
<td>23 (53.49%)</td>
<td>250 (73.53%)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>Other/Multiple</td>
<td>52 (13.58%)</td>
<td>7 (16.28%)</td>
<td>45 (13.01%)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
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<td></td>
<td>χ²(3) = 3.92</td>
</tr>
<tr>
<td>Single</td>
<td>41 (10.70%)</td>
<td>8 (18.60%)</td>
<td>33 (9.71%)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>Married</td>
<td>317 (82.77%)</td>
<td>33 (76.42%)</td>
<td>284 (83.53%)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>In a committed relationship</td>
<td>18 (4.70%)</td>
<td>2 (4.65%)</td>
<td>16 (4.71%)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>Separated/Divorced</td>
<td>7 (1.83%)</td>
<td>0 (0.00%)</td>
<td>7 (2.06%)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>Age</td>
<td>35.91 (5.67)</td>
<td>35.12 (4.59)</td>
<td>36.01 (5.79)</td>
<td>t(380) = -4.67***</td>
</tr>
<tr>
<td>Combat Exposure</td>
<td>15.41 (7.83)</td>
<td>11.88 (7.78)</td>
<td>15.86 (7.73)</td>
<td>t(380) = -4.67***</td>
</tr>
</tbody>
</table>

Note. MENA = Middle Eastern/North African; NC Self = Negative Cognitions about Self; NC World = Negative Cognitions about World; PI = Pacific Islander.
*p < .05. **p < .01. ***p < .001.
### Table 2

*Correlations for Continuous Study Variables (N = 383)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. NC Self</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Self-blame</td>
<td>0.71***</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. NC World</td>
<td>0.42***</td>
<td>0.26***</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Suicide risk</td>
<td>0.57***</td>
<td>0.42***</td>
<td>0.21***</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Age</td>
<td>0.03</td>
<td>-0.06</td>
<td>0.03</td>
<td>0.04</td>
<td>–</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. PTSD Symptom Severity</td>
<td>0.50***</td>
<td>0.39***</td>
<td>0.28***</td>
<td>0.48***</td>
<td>0.05</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>7. Combat Exposure</td>
<td>0.20***</td>
<td>0.18***</td>
<td>0.13*</td>
<td>0.32***</td>
<td>0.24***</td>
<td>0.30***</td>
<td>–</td>
</tr>
</tbody>
</table>

*Note.* NC Self = Negative Cognitions about Self; NC World = Negative Cognitions about World. *p < .05. **p < .01. ***p < .001.
Figure 1

Mediation Model of Sexual Revictimization, Negative Cognitions about the Self, Negative Cognitions about World, Self-blame, on Suicide Risk.

Note: *p < 0.05, **p < 0.01; All presented effects are unstandardized; $a_0$ is effect of sexual revictimization on posttraumatic cognitions, history of MST only is coded as 0 and revictimization is coded as 1; $b_0$ is effect of posttraumatic cognitions on suicide risk; $c^*$ is direct effect of sexual revictimization on suicide risk. Revictimization was coded as 0 for individuals exposed to MST only, and 1 for individuals exposed to pre-military sexual assault and MST.

Fit statistics: $F(10, 366) = 14.272, p < 0.001$, adjusted $R^2 = 0.281$.

Higher PTSD symptom severity ($\beta = 0.05, SE = 0.01, t(363)=4.64, p < 0.01$), more combat exposure ($\beta = 0.12, SE = 0.03, t(363)=4.65, p < 0.01$), not being in a committed relationship ($\beta = -1.32, SE = 0.56, t(363) = -2.42, p = 0.02$), female gender ($\beta = -0.80, SE = 0.35, t(363) = -2.16, p = 0.03$), and non-White race ($\beta = -0.97, SE = 0.40, t(363) = -2.40, p = 0.02$) were significantly associated with higher suicide risk.
REFERENCES


Blais, R. K., & Geiser, C. (2019). Depression and PTSD-related anhedonia mediate the association of military sexual trauma and suicidal ideation in female service


Gutierrez, P. M., Joiner, T., Hanson, J., Stanley, I. H., Silva, C., & Rogers, M. L. (2019). Psychometric properties of four commonly used suicide risk assessment...


