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A MODERATED MEDIATION MODEL OF GENDER, POSTTRAUMATIC  
COGNITIONS, AND POSTTRAUMATIC STRESS DISORDER  
SYMPTOMS AFTER MILITARY SEXUAL ASSAULT

by

Hallie S. Tannahill

A dissertation submitted in partial fulfillment  
of the requirements for the degree

of

DOCTOR OF PHILOSOPHY

in

Psychology

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2022

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## ABSTRACT

A Moderated Mediation Model of Gender, Posttraumatic Cognitions, and Posttraumatic  
Stress Disorder Symptoms after Military Sexual Assault

by

Hallie S. Tannahill, M.S.

Utah State University, 2022

Major Professor: Rebecca K. Blais, PhD  
Department: Psychology

Military sexual assault (MSA) is associated with the greatest risk for posttraumatic stress disorder (PTSD) and PTSD severity beyond other trauma types. Sexual revictimization further increases this risk and severity. Posttraumatic cognitions (PTC), which include an overall domain and subdomains of self, world, and self-blame, may be a mechanism between MSA and PTSD, although this link has not yet been examined in the context of MSA revictimization. Further, literature suggests men and women may have different risks associated with MSA, PTC, and PTSD, though the evidence is mixed, perhaps due to conflation of trauma types. The current study tested PTC (overall, subdomains) as a possible mediator between sexual revictimization and PTSD symptom severity, and gender as a possible moderator of these associations. Revictimization was defined across time periods, including MSA only and premilitary + MSA, and in military rape frequency. Participants were 400 ( $n=200$  male, 50%) service members/veterans with a history of MSA and completed online, anonymous, self-report questionnaires, including the Sexual Experiences Survey, Posttraumatic Cognitions Inventory, and PTSD Checklist

for DSM-5. A significant interaction of gender suggested that women with a revictimization history had a larger increase in PTC overall and about the self compared to men with revictimization history, and men with PTC about self-blame had a larger increase in PTSD symptoms compared to women. There were no unique gender interactions when assessing revictimization by rape frequency, although PTC (overall, all subdomains) significantly mediated the association between rape frequency and PTSD symptom severity. PTC may be a beneficial target when treating PTSD in men, and may be especially heightened in women who have experienced revictimization.

(75 pages)

## PUBLIC ABSTRACT

A Moderated Mediation Model of Gender, Posttraumatic Cognitions, and Posttraumatic  
Stress Disorder Symptoms after Military Sexual Assault

Hallie S. Tannahill

Military sexual assault (MSA) is associated with the greatest risk for posttraumatic stress disorder (PTSD) and PTSD severity beyond other trauma types. Sexual revictimization further increases this risk and severity. However, not all who experience MSA revictimization develop PTSD. This suggests there may be a key mechanism that explains the association between MSA and PTSD. Posttraumatic cognitions (PTC), which include an overall domain and subdomains of self, world, and self-blame, may be one such mechanism between MSA and PTSD, although this link has not yet been examined in the context of MSA revictimization. Further, literature suggests that men and women may have different risks associated with MSA, PTC, and PTSD, though the evidence is mixed, perhaps due to conflation of trauma types. The current study tested separate models to assess if posttraumatic cognitions explained the association between sexual revictimization and PTSD symptom severity, and if these associations looked different between genders. Revictimization was defined across time periods, including MSA only and premilitary + MSA, and in military rape frequency. Participants were 400 ( $n = 200$  male, 50%) service members and veterans who completed online, anonymous, self-report questionnaires and reported a history of MSA. A significant interaction of gender suggested that women with a revictimization history had a larger increase in PTC overall

and about the self compared to men with revictimization history, and men with PTC about self-blame had a larger increase in PTSD symptoms compared to women. There were no unique gender interactions when assessing revictimization by rape frequency, although PTC (overall, subdomains) significantly mediated the association between rape frequency and PTSD symptom severity. PTC may be a beneficial target when treating PTSD in men, and may be especially heightened in women who have experienced revictimization.

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Most importantly, I am grateful for God’s grace and the countless blessings He has provided me. I hope to glorify Him in all that I do and to show others His love.

Hallie S. Tannahill



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## **Chapter I**

### **Introduction**

Posttraumatic stress disorder (PTSD) is one of the most prevalent mental health disorders among Veterans Affairs (VA)-enrolled veterans (Cohen et al., 2010; Veterans Health Administration [VHA], 2013) and active duty service members (Meadows et al., 2018), with the disorder accounting for over 55% of those with a probable mental health diagnosis (Department of VA, 2017). A PTSD diagnosis and more severe PTSD symptoms are associated with a multitude of negative outcomes in service members/veterans, such as lower quality of life (Fang et al., 2015; Magruder et al., 2004; Vogt et al., 2017), sexual dysfunction (Bird et al., 2021; Blais et al., 2022), poorer interpersonal functioning (Blais, 2020, 2022; Blais & Zalta, 2021; Blais et al., 2021; Sippel et al., 2018), homelessness (Washington et al., 2010), substance misuse (Schumm & Chard, 2012), suicidal ideation (Arenson et al., 2018; Bryan & Corso, 2011; Jakupcak et al., 2009; Ramchand et al., 2015; Sher et al., 2012), and suicide attempts (Wisco et al., 2014). These negative outcomes highlight the importance of continuing to study risk factors of PTSD so that assessments and treatments can be continually fine-tuned and improved.

Though PTSD can develop from a range of traumas that meet DSM-5 criteria as an index event (American Psychiatric Association [APA], 2013), research shows that those which involve sexual violation are associated with the highest risk for PTSD compared to other trauma types (Blais et al., 2020; Frans et al., 2005; Moor & Farchi, 2011; Perrin et al., 2014; Raudales et al., 2019; Wisco et al., 2014). Furthermore, multiple instances of sexual victimization are associated with even greater distress compared to

single instances (see review, Classen et al., 2005; Frans et al., 2005; Tirone et al., 2020a). Notably, those with history of sexual assault that occurred during their military service, or military sexual assault (MSA), are 2-4.5 times more likely to have history of previous sexual assault compared to those without history of MSA (LeardMann et al., 2013; Mondragon et al., 2015; Schry et al., 2015, 2016), and history of MSA is significantly associated with greater risk for future sexual victimization (see review, Tirone et al., 2020a). Together, these demonstrate the importance of studying sexual revictimization within the MSA-exposed population.

Revictimization can be measured in a number of ways. One way is by stage of life in which the sexual assault(s) occurred. Among military service members, sexual assaults before and during military service demarcate possible critical stages for examination. Indeed, research shows that those who were revictimized across different time periods, including premilitary and during military service, experienced greater PTSD symptoms compared to those who experienced sexual assault during their military service only, or MSA (Creech & Orchowski, 2016). However, this study utilized a women-only sample, and it is unclear if results would generalize to men. Another way sexual revictimization can be measured is by frequency of instances of sexual assault. Though research is limited, one study conducted on veterans shows that compared to those who indicated a single exposure of sexual assault, those who were revictimized experienced higher PTSD symptoms (Tirone et al., 2020b).

In addition to examining how forms of revictimization relate to PTSD, it is critical to examine possible mechanisms of the association between MSA revictimization history and PTSD, as not all who experience MSA develop PTSD (Kimerling et al., 2010). One

possible mechanism of the association between MSA revictimization and PTSD is that of posttraumatic cognitions, or how an individual thinks about their traumatic event and what they believe about themselves and others as a consequence of that event (Tolin & Foa, 2002). Posttraumatic cognitions are typically grouped into three domains: negative beliefs about the self (e.g., “I am a weak person”), negative beliefs about the world (e.g., “People can’t be trusted”), and self-blame (e.g., “The event happened because of the way I acted”; Foa et al., 1999). Research shows that MSA exposure is positively associated with negative posttraumatic cognitions (e.g., Carroll et al., 2018; Holliday et al., 2018; Kline et al., 2018), although it is less clear if certain domains of posttraumatic cognitions are more or less related to PTSD symptoms (e.g., Daie-Gabai et al., 2011; Majeed et al., 2020; Peter-Hagene & Ullman, 2015). It is also theorized that revictimization strengthens one’s negative posttraumatic cognitions by confirming their negative beliefs about the world or themselves (Tolin & Foa, 2002). Evidence further shows that greater negative posttraumatic cognitions are predictors of worse PTSD severity (e.g., Ehring et al., 2008; Held et al., 2017; Kline et al., 2018; Moser et al., 2007; Zang et al., 2017), suggesting that more severe MSA revictimization history leads to more severe negative posttraumatic cognitions, and more severe negative posttraumatic cognitions leads to more severe PTSD symptoms.

Finally, it is possible that men and women may have different experiences with negative posttraumatic cognitions following MSA, suggesting that gender may act as a moderator of this mechanistic model. There are existing theories (e.g., *Cognitive Model of Gender Differences in PTSD*, Simmons & Granvold, 2005; *Gender Differences: A Cognitive Model of PTSD*, Tolin & Foa, 2002) that suggest women are at greater risk for

more severe negative posttraumatic cognitions relative to men following a traumatic event due to peri-traumatic fear (e.g., Rattel et al., 2019; Tolin & Foa, 2006) and gender-specific socialization that may make women more likely to internalize attributions of blame (Krause et al., 2002; Lebowitz & Roth, 1994). However, the empirical support for such theories appears mixed. For instance, some studies show women are at greater risk for negative posttraumatic cognitions relative to men, but they do not account for the trauma type experienced (e.g., Cox et al., 2014; Kucharska, 2017). In a study of veterans seeking treatment for PTSD, women endorsed significantly more severe negative posttraumatic cognitions than men (Sexton et al., 2018). However, once trauma type was controlled for (i.e., combat versus MSA), these differences seemed to reverse, showing men reporting significantly greater negative posttraumatic cognitions around the perceived ability to cope (Sexton et al., 2018). In another study of veterans seeking treatment for MSA-related PTSD, results showed that there were no differences between men and women in negative posttraumatic cognition severity (Christ et al., 2021). Additionally, there is some evidence to suggest that men and women have different risks for PTSD severity based on their posttraumatic cognitions, but that literature is circumscribed to civilians. Notwithstanding, such results showed that negative cognitions about oneself was more strongly related to PTSD symptoms in men than women, but they did not adjust for trauma type (Daie-Gabai et al., 2011). And, as mentioned previously, not all trauma types and severities are equal in their risk for posttraumatic cognitions and PTSD symptoms (e.g., Blais et al., 2020; Perrin et al., 2014; Wisco et al., 2014), limiting our ability to generalize these findings to a sample of military service members/veterans with a single trauma type. Therefore, the current study builds on the literature by



examining gender as a moderator of the association of MSA revictimization history and posttraumatic cognitions, and posttraumatic cognitions and PTSD severity in a sample of military men and women who all reported exposure to MSA.

### **The Current Study**

The primary aim of this study was to explore the possible mediation effect of posttraumatic cognitions on the association between sexual revictimization and PTSD symptom severity, and how these associations may differ by gender. A secondary aim of this study was to assess this model with the three subdomains of posttraumatic cognitions, including negative cognitions about the self, negative cognitions about the world, and self-blame. In both sets of models, revictimization was measured by (1) time period and (2) military rape frequency. It was hypothesized that all forms of posttraumatic cognitions would mediate the association between MSA revictimization history and PTSD symptom severity, such that more severe MSA revictimization history would be associated with worse negative posttraumatic cognitions, which would then be associated with more severe PTSD symptoms. It was further hypothesized that gender would moderate the association between MSA revictimization history and posttraumatic cognitions, such that men would have worse negative posttraumatic cognitions compared to women after sexual revictimization. Finally, it was hypothesized that posttraumatic cognitions would be more strongly associated with more severe PTSD symptoms in men compared to women.

As previous research shows that more severe PTSD symptoms are associated with service in the Army or Marine Corps military branches (e.g., Baker et al., 2009; Xue et al., 2015), combat history (Hoge et al., 2004), junior ranks (Xue et al., 2015), veteran

status (Fulton et al., 2015; Hoge et al., 2004), minority race (e.g., Dursa et al., 2014; Scott et al., 2014), minority sexual orientation (see Averill et al., 2015), older age (e.g., Armenta et al., 2018), and PTSD treatment history (e.g., Foa et al., 2018; Monson et al., 2006; Resick et al., 2015), the current study covaried for these characteristics.

## **Chapter II**

### **Method**

#### **Participants and Procedure**

Participants were 200 female and 200 male service members/veterans who indicated history of MSA. Participants were recruited via Qualtrics, a secure online survey platform. Participation in the current study required the following inclusion criteria: current or previous service in the U.S. military in the post-9/11 era, history of MSA, and aged 18 years or older. Prior to entering the study, prospective participants answered military validation questions to limit possible fraudulent responses (e.g., Pedersen et al., 2015, see Appendix A). An incorrect response to any of these validation items resulted in automatic discontinuation. Of the 1,895 respondents who met initial study inclusion criteria, 417 (22.01%) passed the validation questions. We are reasonably confident that these responses were valid, as the likelihood of answering all four questions accurately by chance is 0.16%. Furthermore, of the 410 who passed the validation questions and met all study inclusion criteria, 396 (96.59%) completed the survey. Refer to Appendix B for a flowchart of participant eligibility and termination. Participants were provided with an electronic Letter of Information and provided informed consent via electronic checkmark. Participants were compensated directly by Qualtrics panels. No identifying information was collected by the study researchers. This study was approved by the Institutional Review Board at Utah State University.

#### **Measures**

##### ***PTSD Severity***

PTSD symptoms were measured by the PTSD Checklist for DSM-5 (PCL-5; Weathers et al., 2013). The PCL-5 is a 20-item self-report Likert-type scale with item responses ranging from 0 (*not at all*) to 4 (*extremely*) in terms of how much the symptom has been bothering the participant in the past month. Participants were instructed to respond to each item as it related to their MSA. A sample item includes, “In the past month, how much were you bothered by: Avoiding memories, thoughts, or feelings related to the stressful experience?” The total score is calculated by adding all item response scores, with a possible range of 0-80. Symptom severity was assessed linearly, with higher scores indicating more severe symptoms. The PCL-5 has a suggested cut-off score of 31+ indicating probable PTSD (Bovin et al., 2015), although the current study also included participants who did not meet the diagnostic cut-off score. The PCL-5 has been validated in both veteran (Bovin et al., 2015; Pietrzak et al., 2015) and active duty (Wortmann et al., 2016) samples. The PCL-5 shows good internal consistency ( $\alpha = .95-.96$ ; Bovin et al., 2015; Pietrzak et al., 2015; Wortmann et al., 2016) and good test-retest reliability ( $r = .84$ ; Bovin et al., 2015). PTSD severity was specified in models using a latent variable that confirmed the presence of a single factor. Specifically, one latent variable was specified with direct paths from all 20 PTSD symptoms. Model fit was considered acceptable if the root mean square error of approximation (RMSEA) was  $\leq .08$  (Browne & Cudeck, 1992), and the Tucker-Lewis Index (TLI; Tucker & Lewis, 1973) and Comparative Fit Index (CFI; Bentler, 1990) were  $\geq .90$  (Hu & Bentler, 1999). In the current sample, the one factor model showed adequate fit,  $\chi^2 (170) = 416.32, p < .001, CFI = 0.915, TLI = 0.905, RMSEA = 0.061$ , with factor loadings ranging from 0.72

to 1.02. The PCL-5 showed excellent internal reliability in the current sample (Cronbach's  $\alpha = 0.963$ ).

### ***Sexual Assault History***

Sexual assault history was assessed by the Sexual Experiences Survey – Short Form Victimization (SES-SFV; Koss et al., 2006). The SES-SFV is a 10-item self-report questionnaire assessing one's history of unwanted sexual experiences. The language was slightly altered to be more inclusive of the possibility of female perpetrators. For instance, instead of, "A man put his penis into my butt, or someone inserted fingers or objects without my consent..." the language was changed to, "Someone inserted a body part (e.g., finger, penis) or object into my butt without my consent" (Item 4). The SES-SFV distinguishes between six severity levels of sexual victimization, ranging from lowest to highest severity: non-victim, sexual contact, attempted coercion, coercion, attempted rape, and rape. Participants were instructed to indicate the number of times (0, 1, 2, 3+) they experienced each level of sexual victimization for each time period (i.e., premilitary, during military service, post-military service [those in this latter exposure were not included in the current study, see below]). Any missing values on the SES-SFV were coded as zeros to take the most conservative approach so as to not assume victimization when not explicitly reported.

**Sexual Revictimization by Time Period.** Participants' sexual victimization severity was coded as no history (code = 0) versus reported history (code = 1) of sexual assault during each time period (i.e., premilitary, military). Those in the revictimization group indicated history of sexual victimization both premilitary and military, whereas those in the MSA only group indicated history of sexual victimization during their

military service with no exposure to pre-military sexual trauma. Because the current sample included both service members and veterans, only a portion of the sample ( $n = 184, 46.00\%$ ) could have experienced post-military sexual assault. Therefore, any veteran who was originally coded in the MSA only group, but also indicated experiencing post-military sexual assault, was removed from the analyses ( $n = 17, 4.25\%$ ) due to low power precluding analyses that aggregated the sample by veterans only.

**Military Rape Frequency.** Revictimization severity was also measured by military rape frequency. Military rape frequency was defined by the number of times the participant indicated exposure to rape during their military service. Responses were coded in the following levels: 0 times, 1 time, or 2 or more times.

### ***Posttraumatic Cognitions***

Posttraumatic cognitions were measured by the Posttraumatic Cognitions Inventory (PTCI; Foa et al., 1999). The PTCI is a 36-item self-report Likert scale with items responses ranging from 1 (*totally disagree*) to 7 (*totally agree*) in terms of one's level of agreement to various cognitions. Participants were asked to respond to each item "as it relates to your sexual assault during your military service." A sample item includes, "The world is a dangerous place." There are three subscales of this measure: Negative Cognitions About the Self (items 2-6, 9, 12, 14, 16-17, 20-21, 24-26, 28-30, 33, and 35-36), Negative Cognitions About the World (items 7-8, 10-11, 18, 23, and 27), and Self-Blame (items 1, 15, 19, 22, and 31). As three of the items on the original scale were experimental (items 13, 32, and 34), they were not included in the scoring. Total scores were computed by summing all the items within each subscale, with the following possible total score ranges: Self – 21-147; World – 7-49; Self-Blame – 5-35; Overall –

33-231. Higher scores indicate more severe negative posttraumatic cognitions. The PTCI has been validated in veteran samples (Sexton et al., 2018; Wells et al., 2019) and shows good internal consistency ( $\alpha = .86-.97$ ; Foa et al., 1999; Wells et al., 2019) and test-retest reliability (Spearman's Rho =  $.74-.85$ ; Foa et al., 1999).

As previous studies have not confirmed the 3-factor structure of the PTCI using an all-MSA sample, we conducted a confirmatory factor analysis (CFA) to confirm the presence of the three subdomains. In this analysis, latent variables of posttraumatic cognitions about the self, about the world, and self-blame were created with individual PTCI items as indicators to each factor. Model fit was assessed using the aforementioned fit statistics. CFA indicated that the three-factor model showed adequate fit to the data,  $\chi^2(492) = 943.49, p < .001, CFI = 0.987, TLI = 0.986, RMSEA = 0.048$ . Please refer to Table 1 for individual item unstandardized factor loadings. Additionally, the PTCI overall showed excellent internal consistency in the current sample (Cronbach's  $\alpha = 0.958$ ). The PTCI subscales showed good to excellent internal consistency for the self (Cronbach's  $\alpha = 0.958$ ), world (Cronbach's  $\alpha = 0.886$ ), and self-blame (Cronbach's  $\alpha = 0.816$ ) subscales in the current sample.

### *Other*

**Demographics.** A demographic inventory assessed participant gender (cisgender, gender nonconforming, transgender, two-spirit, other), sexual orientation (straight/heterosexual, sexual minority), age, race (Alaska Native/Native American, Black/African American, Latinx/Hispanic, White/Caucasian, other), military branch (Air Force, Army, Coast Guard, Marine Corps, Navy), rank (enlisted, officer), discharge status (veteran, active), and history PTSD treatment (yes, no).

**Combat History.** Combat history was assessed with the Combat Exposure Scale (CES; Keane et al., 1989a). The CES is a 7-item scale with responses ranging from 1-5 in terms of the amount or number of times the respondent was exposed to each combat situation. A sample item includes, “Did you ever go on combat patrols or have other dangerous duty?” Item scores are converted on an item-by-item basis (see Keane et al., 1989b for scoring conversions). Total scores were computed by summing the converted item scores, with a possible total score range of 0-41. Higher scores indicate greater combat exposure. The CES has the following suggested total score categories of combat exposure: 0-8 (light), 9-16 (light-moderate), 17-24 (moderate), 25-32 (moderate-heavy), 33-41 (heavy). The CES has excellent test-retest reliability ( $r = .97$ ; Keane et al., 1989a) and showed excellent internal consistency in the current sample (Cronbach’s  $\alpha = 0.906$ ).

### **Analytic Plan**

Sample characteristics were assessed using descriptive statistics. Bivariate associations between sexual revictimization (i.e., time period, military rape frequency), PTSD symptoms, posttraumatic cognitions, and gender, as well as covariates were assessed using correlations, analysis of variance (ANOVA),  $t$ -tests, and chi-square tests where appropriate. Due to non-normal distribution of the data, the Weighted Least Squares Mean and Variance Adjusted (WLSMV) estimator was utilized in structural equation modeling (SEM) models to provide more robust estimates (Finney et al., 2016). This approach is shown to work well for sample sizes greater than 200 (e.g., Bandalos, 2014; Rhemtulla et al., 2012), as is the case in the current study ( $N = 400$ ). Due to the utilization of the WLSMV estimator, full information maximum likelihood for missing data was unavailable. Therefore, these cases were removed using case wise deletion.



Nonetheless, missing data were rare and ranged from the removal of 5-6 (1.25-1.57%) participants depending on the model.

Moderated mediation models assessed the possible mediating role of posttraumatic cognitions overall, as well as the three subdomains, in the association between revictimization history and PTSD symptom severity, and the possible moderating role of gender on the association of revictimization history, posttraumatic cognitions, and PTSD symptom severity. As noted above, models were run in two sets to allow us to examine revictimization by time period and revictimization by military rape frequency. Due to the complexity of these moderated mediation models, the models were under-identified for SEM analyses and would not compute. Therefore, observed variables were utilized in place of latent variables in the moderated mediation models. When moderated mediation models did not show a significant moderation, gender and its interaction terms were removed to test a more parsimonious mediation model. Such models were appropriately identified so latent variables were used. Due to issues of multicollinearity in the posttraumatic cognition variables, separate models were utilized for posttraumatic cognitions overall and its three subdomains. Covariates of the study outcome, PTSD severity, included age, sexual orientation (heterosexual, not heterosexual), race (White, not White), military branch (Air Force, all else), rank (enlisted, officer), discharge status (actively serving, veteran), combat history, and history of PTSD treatment (no history, history of treatment). All statistical analyses were conducted in the R environment (R Core Team, 2020).

## Chapter III

### Results

#### Descriptive Characteristics

Participants were 200 female and 200 male service members/veterans who indicated history of MSA. Of the 200 (50.0%) females in the sample, 28 (14.0%) reported MSA only and 172 (86.0%) reported revictimization across time period (i.e., MSA + premilitary sexual assault [PSA]). Of the 200 (50.0%) males in the sample, 32 (16.0%) reported MSA only and 168 (84.0%) reported revictimization across time period. Further, of the females, 21 (10.5%) indicated no history of military rape, 47 (23.5%) reported history of one occurrence of military rape, and 132 (66.0%) reported history of at least two occurrences of military rape. Of the males, 13 (6.5%) indicated no history of military rape, 34 (17.0%) reported history of one occurrence of military rape, and 153 (76.5%) reported history of at least two occurrences of military rape. The average score on the PCL-5 was 48.46 ( $SD = 18.57$ ), which is beyond the suggested clinical cut-off score of 31 for probable PTSD. The average score on the PTCI was 138.51 ( $SD = 39.25$ ), which is higher than the median score of 133 in traumatized individuals who meet criteria for PTSD (Foa et al., 1999).

#### Bivariate Associations

Male participants were significantly more likely to be officers, actively serving, and of white race compared to female participants. There were no gender differences in age, military branch, sexual orientation, or PTSD treatment history (see Table 2). Further, men had significantly greater posttraumatic cognitions about self-blame and greater combat exposure compared to women, but there were no differences in severity of PTSD

symptoms, posttraumatic cognitions about the self, world, and overall cognitions between genders (see Table 2). Demographic characteristics and study variables stratified by revictimization across time periods and military rape frequency are shown in Table 3. Correlations between continuous variables are presented in Table 4.

#### ***Bivariate Associations of Revictimization by Time Period***

Omnibus chi-square tests showed significant differences between revictimization group and rank, discharge status, and PTSD treatment history (see Table 3). Post-hoc analyses revealed that after using Bonferroni correction, there were no longer significant statistical differences between revictimization group and rank or discharge status. However, there was a significant difference between revictimization group and PTSD treatment history, such that those in the revictimization group (MSA + PSA) were more likely to report history of PTSD treatment relative to those in the MSA only group ( $p = .018$ ). Additionally, those in the revictimization group had significantly higher PTSD symptoms, worse posttraumatic cognitions overall and about the self, the world, self-blame, and greater combat exposure ( $p$ 's  $< .05$ ; see Table 3). There were no statistically significant differences between revictimization group with gender, military branch, sexual orientation, or age (see Table 3).

#### ***Bivariate Associations of Frequency of Military Rape***

Omnibus tests showed significant differences between military rape frequency groups with PTSD symptoms, posttraumatic cognitions overall, posttraumatic cognitions about the self, the world, and self-blame, age, combat exposure, rank, discharge status, and PTSD treatment history (see Table 3). Post-hoc analyses using Tukey's adjustment are reported in the footnote section of Table 3. Compared to those with no military rape

history, those with history of one military rape had significantly worse PTSD symptoms ( $p = .003$ ) and worse posttraumatic cognitions about the world ( $p = .042$ ). Also compared to those with no military rape history, those with 2+ military rapes had significantly worse posttraumatic cognitions overall ( $p < .001$ ), posttraumatic cognitions about the self ( $p < .001$ ), posttraumatic cognitions about self-blame ( $p = .004$ ), greater combat exposure ( $p = .003$ ), and older age ( $p = .003$ ). Compared to those with history of one military rape, those with 2+ military rapes had significantly worse PTSD symptoms ( $p < .001$ ), worse posttraumatic cognitions about the self ( $p = .018$ ) and self-blame ( $p < .001$ ), less severe posttraumatic cognitions about the world ( $p = .012$ ), and greater combat exposure ( $p < .001$ ). Post-hoc analyses using Bonferroni correction showed no significant difference between rape frequency group and rank ( $p$ 's  $> .124$ ). However, analyses showed that those with history of one military rape were more likely to be veterans ( $p = .020$ ), whereas those with history of 2+ military rapes were more likely to be current service members ( $p < .001$ ). Finally, those with no military rape history were more likely to have no PTSD treatment history ( $p = .006$ ), whereas those with history of 2+ military rapes were more likely to have received PTSD treatment ( $p = .009$ ). There were no statistically significant differences between military rape frequency group with gender, branch, or sexual orientation (see Table 3).

## **Revictimization by Time Period Models**

### ***Posttraumatic Cognitions Overall***

Results showed a significant interaction of gender in the model of posttraumatic cognitions as a mediator between sexual revictimization and PTSD symptoms.

Specifically, results showed a significant indirect effect of posttraumatic cognitions

overall on the association between revictimization and PTSD symptoms ( $B = 0.55, p < .001$ ), and a significant interaction between gender and revictimization history on posttraumatic cognitions overall ( $B = -25.95, p = .043$ ), but not between posttraumatic cognitions overall and gender on PTSD symptoms. Therefore, the subsequent results are reported with this latter interaction term removed from analyses. Results showed that men had relatively high negative posttraumatic cognitions overall, regardless of revictimization status. However, in women, results showed that revictimization (i.e., MSA + PSA), relative to MSA only, was associated with significant increased risk for worse posttraumatic cognitions (see Figure 1). Posttraumatic cognitions overall had a significant positive direct effect on PTSD symptoms, such that a one unit increase in posttraumatic cognitions overall was associated with a 0.19 unit increase in PTSD symptoms ( $p < .001$ ). There were no significant effects of gender ( $B = -0.95, p = .848$ ) or revictimization ( $B = 5.57, p = .169$ ) on PTSD symptoms when accounting for posttraumatic cognitions overall.

### ***Posttraumatic Cognitions about the Self***

Posttraumatic cognitions about the self had a significant indirect effect on the association between revictimization and PTSD severity ( $B = 0.58, p < .001$ ). Moderated mediation analysis results showed that there was a significant interaction between gender and revictimization history on posttraumatic cognitions about the self ( $B = -19.77, p = .039$ ), but there was not a significant interaction between posttraumatic cognitions about the self and gender on PTSD symptoms ( $p = .485$ ). Therefore, the subsequent results are reported with this latter interaction term removed from analyses. Results showed that while men reported higher negative posttraumatic cognitions about the self in the MSA-

only group relative to women, the level of posttraumatic cognitions amongst men and women was similar in the revictimization group (see Figure 2). Posttraumatic cognitions about the self had a significant positive direct effect on PTSD symptoms, such that a one unit increase in posttraumatic cognitions about the self was associated with a 0.26 unit increase in PTSD symptoms ( $p < .001$ ). There were no significant effects of gender ( $B = -1.02, p = .837$ ) or revictimization ( $B = 5.37, p = .183$ ) on PTSD symptoms when accounting for posttraumatic cognitions about the self.

### ***Posttraumatic Cognitions about the World***

Moderated mediation analysis results showed that there were no significant interactions between gender and revictimization history on posttraumatic cognitions about the world, or between gender and posttraumatic cognitions about the world and PTSD symptoms ( $p$ 's  $> .05$ ). Further, posttraumatic cognitions about the world did not mediate the association of revictimization and PTSD symptoms ( $B = 0.12, p = .141$ ; see Figure 3). However, results showed that posttraumatic cognitions about the world did have a direct effect on PTSD symptoms, such that a one unit increase in posttraumatic cognitions about the world were associated with an estimated 0.35 unit increase in PTSD symptoms ( $p < .001$ ). Additionally, there was a significant direct effect of revictimization on PTSD symptoms in this model, such that those with history of revictimization, relative to those with MSA-only, are expected to show a 0.94 unit increase in PTSD symptoms, even when accounting for posttraumatic cognitions about the world ( $p < .001$ ).

### ***Posttraumatic Cognitions about Self-Blame***

Posttraumatic cognitions about self-blame had a significant indirect effect on the association between revictimization and PTSD symptoms ( $B = 0.43, p < .001$ ).

Moderated mediation analysis results showed that there was a significant interaction between posttraumatic cognitions about self-blame and gender on PTSD symptoms ( $B = 0.49, p = .037$ ), but there was not a significant interaction between revictimization and gender on posttraumatic cognitions about self-blame ( $p = .154$ ). Therefore, the subsequent results are reported with this latter interaction term removed from analyses. Results showed that men are more sensitive to higher levels of self-blame relative to women as it relates to PTSD symptoms ( $B = .46, p = .044$ ; see Figure 4). There was a direct effect of posttraumatic cognitions about self-blame on PTSD symptoms, such that one unit increase in posttraumatic cognitions was associated with a 0.46 unit increase in PTSD symptoms ( $p = .006$ ). Direct effects showed that those with revictimization history had an estimated 6.48 unit increase in posttraumatic cognitions about self-blame relative to those with MSA-only ( $p < .001$ ). Further, those with revictimization history also had an estimated 9.71 unit increase in PTSD symptoms, even after accounting for posttraumatic cognitions about self-blame ( $p = .025$ ).

### **Revictimization by Military Rape Frequency Models**

Results showed there were no unique significant interactions of gender in any of the moderated mediation models of military rape frequency, PTSD symptom severity, and the mediators of posttraumatic cognitions overall, posttraumatic cognitions about the self, about the world, and self-blame ( $p$ 's  $> .05$ ). Therefore, because gender was not a moderator of these models, it was removed from subsequent mediation analyses. Its removal resulted in a less complex model that was adequately identified, allowing for the replacement of observed scores with latent variable scores. The subsequent sections report the results of the mediation models.

### ***Posttraumatic Cognitions Overall***

Results showed that posttraumatic cognitions overall significantly mediated the association between military rape frequency and PTSD symptoms, both when assessing a frequency of 1 rape versus 0 ( $B = 0.35, p = 0.31$ ) and when assessing a frequency of 2+ versus 0 ( $B = 0.57, p < .001$ ; see Figure 5A). There were also significant direct effects of rape frequency on PTSD symptoms even when accounting for posttraumatic cognitions overall: those with history of one rape had estimates of 0.70 units higher on PTSD symptoms relative to those with no military rape history ( $p = .030$ ), and those with history of two or more rapes had estimates of 1.45 units higher on PTSD symptoms relative to those with no military rape history ( $p < .001$ ). Further, a one unit increase in posttraumatic cognitions overall was associated with a 0.75 unit increase in PTSD symptoms ( $p < .001$ ). Finally, a higher frequency of military rape was significantly associated with higher posttraumatic cognitions overall such that in those with history of 1 rape (vs. no history), there was an associated 0.47 unit increase in posttraumatic cognitions ( $p = .018$ ) and in those with history of 2 or more rapes (vs. no history), there was an associated 0.76 unit increase in posttraumatic cognitions overall ( $p < .001$ ).

### ***Posttraumatic Cognitions about the Self***

Results of the latent mediation model showed that posttraumatic cognitions about the self significantly mediated the association between military rape frequency and PTSD symptoms, but only when comparing history of 2 or more rapes to no history of military rape ( $B = 0.81, p = .012$ ; see Figure 5B). There was a significant direct effect of military rape frequency on posttraumatic cognitions about the self: those with history of 2 or more rapes were estimated to have a 1.18 unit increase in posttraumatic cognitions relative to



those with no history of rape ( $p = .009$ ). These individuals were also estimated to have a 1.85 unit increase in PTSD symptoms relative to those with no history of rape, even when accounting for posttraumatic cognitions about self ( $p = .018$ ). Finally, one unit increase in posttraumatic cognitions about the self was associated with a 0.69 unit increase in PTSD symptoms ( $p < .001$ ).

### ***Posttraumatic Cognitions about the World***

Latent mediation model results showed that posttraumatic cognitions about the world significantly mediated the association between military rape frequency and PTSD symptoms, but only when comparing history of 1 rape to no history of military rape ( $B = 0.58, p = .046$ ; see Figure 5C). There was a significant direct effect of posttraumatic cognitions about the world on PTSD symptoms, such that a one unit increase in posttraumatic cognitions was associated with a 0.38 unit increase in PTSD symptoms ( $p < .001$ ). No other direct effects were statistically significant.

### ***Posttraumatic Cognitions about Self-Blame***

Latent mediation model results showed that posttraumatic cognitions about self-blame significantly mediated the association between military rape frequency and PTSD symptoms, but only when comparing history of 2 or more rapes to no history of military rape ( $B = 0.83, p < .01$ ; see Figure 5D). There was a significant direct effect of rape frequency on posttraumatic cognitions about self-blame: those with history of 2 or more rapes were estimated to have a 1.83 unit increase in posttraumatic cognitions relative to those with no history of rape ( $p < .05$ ). Additionally, one unit increase in posttraumatic cognitions about self-blame was associated with a 0.45 unit increase in PTSD symptoms ( $p < .001$ ). No other direct effects were statistically significant.

## Chapter IV

### Discussion

The aim of the current study was to determine if posttraumatic cognitions were possible mechanisms of the association between sexual revictimization, both by time period and in frequency of military rape, and PTSD symptom severity, and if these associations varied by gender. There was a significant difference between genders in the mediation models of posttraumatic cognitions overall, about the self, and self-blame, but only in the revictimization by time period models (i.e., MSA only versus PSA + MSA). Revictimization history had little effect on men's level of posttraumatic cognitions above the impact of MSA alone. For women however, history of revictimization was associated with increased levels of posttraumatic cognitions overall and about the self, such that their severity was similar to that of men. This suggests that while a single occurrence of MSA may result in higher posttraumatic cognitions for men, the differences between genders are eliminated if the individuals have had multiple sexual assaults across time periods. One possible explanation for this is that MSA is often viewed as an "expected" occurrence amongst women service members (Brownstone et al., 2018), and women may be less likely to internalize their MSA experience. Whereas for men, MSA is not as expected and much less common (Wilson, 2018). Therefore, when MSA does occur in men, they may be more likely to question aspects of themselves, such as their masculinity and sexual identity (Monteith et al., 2019). However, when an individual is revictimized, it may lead them to make fundamental attributions about themselves (e.g., "I am inadequate") rather than situational attributions (e.g., "That person took advantage of

me”), leading to the similar levels of posttraumatic cognitions about the self that were observed in both men and women in the current study.

Results also showed that higher levels of self-blame appear more detrimental to men in terms of PTSD symptom severity. This supports our hypothesis that posttraumatic cognitions would be more strongly associated with more severe PTSD symptoms in men compared to women. This may be due to possible internalized beliefs about gender roles and rape myth acceptance that men may be particularly susceptible to. For instance, if men hold a prior belief that men cannot be raped (Burt, 1978), they may develop an assimilated belief that they are to blame for the assault. The more entrenched their assimilated beliefs, the greater the likelihood of more severe PTSD symptoms (Resick et al., 2016). While there were significant indirect effects of negative posttraumatic cognitions about the self and self-blame on the association between revictimization by time period and PTSD symptoms, posttraumatic cognitions about the world did not. Specifically, while posttraumatic cognitions about the world were significantly positively associated with PTSD, revictimization history was not significantly associated with posttraumatic cognitions about the world. It is possible that a single exposure to sexual assault is enough to impact one’s view of the world and others. This warrants further exploration; future research may benefit from utilizing a comparison sample of trauma-exposed individuals with no MSA history to see if these trends remain stable across trauma type.

There were no significant unique differences between genders on the models operationalizing revictimization by military rape frequency, suggesting that increased frequency of military rape is equally deleterious for both men and women. This was

unexpected, given that research shows that men are more likely to have an MSA experience involve multiple offenders and to have been physically injured during the assault compared to women (Morrall et al., 2015), suggesting that severity of assault could be related to PTSD outcomes among men. That said, severity was assessed by revictimization in the current study and not whether the assault was attempted by multiple offenders or if physical injury was incurred. As such, future studies would build on this literature by determining if measuring MSA in this manner would produce differences in results as a function of gender. Nonetheless, it seems as though the increased frequency of military rapes is associated with the same level of posttraumatic cognitions and PTSD symptoms in men and women. Subsequent results showed that posttraumatic cognitions overall, as well as posttraumatic cognitions about the self, the world, and self-blame, were possible mechanisms of the association between increased frequency of military rape and PTSD symptom severity, similar to the associations found in the revictimization by time period analyses. This again suggests that posttraumatic cognitions may become strengthened after multiple incidences of sexual victimization (Tolin & Foa, 2002) and are a suitable target for treatment.

The current study has important clinical implications. Results may inform more efficient screening by asking service members/veterans about sexual assault history prior to the military, as it places them at higher risk for worse PTSD symptoms compared to those who have experienced MSA only, and sexual victimization is a risk factor for future sexual victimization (Schry et al., 2016; Tirone et al., 2020a). While there were no gender differences observed when analyzing revictimization by military rape frequency, results did show that higher number of rapes was associated with worse posttraumatic

cognitions and PTSD symptoms. As such, it may be particularly important to engage in early screening for MSA to encourage prevention and early intervention, such as by helping the service member improve their threat perception (Messman-Moore & Brown, 2006) and physiological reactivity (Waldron et al., 2015), which are demonstrated as risk factors for revictimization.

Additionally, given that posttraumatic cognitions were shown to be an important possible mechanism of the link between revictimization history and PTSD symptom severity, it confirms the importance of targeting these thoughts in treatment, such as with Cognitive Processing Therapy (Resick et al., 2016) or Prolonged Exposure Therapy (Foa et al., 2007). There is some evidence to suggest that targeting posttraumatic cognitions may even reduce risk for future revictimization (Jaffe et al., 2019). However, this latter study was conducted in a sample of civilian women and may not generalize to military samples or to men more broadly; future research should examine the treatment of negative posttraumatic cognitions in service members and veterans with history of sexual victimization to assess if it reduces revictimization risk, and if this differs by gender. Further, results suggest that focusing specifically on posttraumatic cognitions related to oneself, rather than others, may be most effective, especially when therapy sessions are limited, such as in a deployed environment. Finally, particular attention may be placed on men's thoughts around self-blame, as these thoughts are especially related to increased PTSD severity and have been shown to be key mechanisms of improvement in PTSD symptoms in a military sample with MSA-related PTSD (Holliday et al., 2018).

The current study also has implications for future research. Specifically, results suggest the importance of carefully considering the way in which sexual revictimization

is operationalized. Although we found significant effects when revictimization was defined by time period, no such effects were found when defining revictimization by frequency of military rapes. This suggests studies that assess sexual revictimization should be cautious when extrapolating results beyond the specific way in which their revictimization construct was defined. Next, the field would benefit from studies using longitudinal study designs to better understand the cumulative risk of sexual revictimization over time. Such studies may also consider the impact of including post-military sexual assault in analyses to assess if study trends are replicated with that time period. Indeed, studies show that post-military sexual assault is significantly associated with MSA and premilitary sexual assault (Creech & Orchowski, 2016; Himmelfarb et al., 2006), and may have a compounding effect on psychological symptoms. Unfortunately, the examination of post-military sexual assault was precluded in the current study due to being under-powered for such analyses. Further, future research may consider including gender as a key variable when studying psychological outcomes following MSA or sexual revictimization in military samples to see if associations look different between men and women. Finally, more research is needed to understand why men are at higher risk for greater posttraumatic cognitions following MSA than women, and why this difference seemingly disappears when the individuals have also had prior military sexual victimization. Areas for future consideration include the possible impact of rape myth acceptance and gender role stereotypes on these associations. Such understandings may inform prevention strategies, policy development, and systemic change to make the military a safer environment for everyone.

Whereas the current study is informative in describing the complex associations between sexual revictimization, posttraumatic cognitions, PTSD symptoms, and gender, it is not without its limitations. First, the current study utilized anonymous, online self-report data. While the procedures required participants to pass the validation checks, there is no way of ensuring responses are accurate and truthful. Second, analyses were cross-sectional, which precludes causal inference. Although there was some temporality in the model given that past history of sexual victimization was compared to current psychological symptoms, it is possible that the direction of associations may actually be in the reverse direction, such that one's posttraumatic cognitions may influence one's risk for sexual revictimization. Third, the sample was limited to post-9/11 era service members and veterans and results may not generalize to military populations who served in previous eras. Next, the current study may not adequately capture full revictimization. Analyses were limited to premilitary and military sexual assault, as 54% ( $n = 216$ ) were still actively serving and therefore would not have post-military sexual assault. Fifth, while all participants reported a history of MSA and were asked to respond to questionnaires as it related to their MSA experience, MSA might not have been their index trauma. Said differently, it is possible that participants experienced a different traumatic event other than MSA that better explained their mental health symptoms, such as their premilitary sexual assault.

Additionally, the sample was relatively homogenous in terms of gender identity with only two participants reporting a gender identity other than cisgender (0.5%). Research shows that gender identities other than cisgender are at greater risk for sexual victimization and more severe mental health outcomes (e.g., Beckman et al., 2018; Kolp

et al., 2020; Parr, 2020; Schuyler et al., 2020). Therefore, the current study's results should not be extrapolated to these populations. It would be beneficial for future research to engage in purposeful recruitment of those with gender identities other than cisgender to see if the current study patterns remain stable.

In conclusion, posttraumatic cognitions were shown to be a significant possible mechanism of the association between sexual revictimization across time periods and in frequency, and PTSD symptom severity. Furthermore, men and women may have different psychological consequences of sexual assault, such that MSA alone is particularly impairing for men, but the combination of MSA + PSA results in similar negative posttraumatic cognitions for men and women. However, when looking at frequency of military rape, there were no gender differences in posttraumatic cognition severity. Results suggest that targeting posttraumatic cognitions about the self and self-blame after MSA sexual revictimization might be helpful in treating MSA-related PTSD.



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**Table 1**

Confirmatory Factor Analysis Loadings for PTCI

Item	Factors		
	Self	World	Self-blame
2. Can't trust I will do right thing	1.261		
3. I am weak	1.297		
4. Can't control anger	1.193		
5. Can't deal with upset	1.311		
6. Always miserable	1.348		
9. Feel dead inside	1.402		
12. I am inadequate	1.417		
14. Can't handle thinking about event	1.249		
16. Reactions mean I'm going crazy	1.370		
17. Won't feel normal emotions again	1.372		
20. Permanently changed for worse	1.386		
21. Feel like an object	1.421		
24. Feel isolated	1.179		
25. I have no future	1.476		
26. Can't stop bad things	1.262		
28. Life destroyed by trauma	1.431		
29. Something wrong with me	1.510		
30. Reactions show I'm a lousy copier	1.442		
33. Feel like don't know self	1.425		
35. Can't rely on myself	1.294		
36. Nothing good can happen to me	1.386		
7. People can't be trusted		1.152	
8. Must be on guard		0.931	
10. Never know who will harm you		1.201	
11. Careful because don't know what is next		0.975	
18. World is dangerous		1.316	
23. Can't rely on others		1.353	
27. People aren't what they seem		1.332	
1. Happened because of my actions			1.173
15. Event happened because of sort of person I am			1.463
19. Someone else would have stopped event			1.181
22. Someone else wouldn't have gotten into this			1.387
31. Something about me made event happen			1.515

*Note.* Factor loadings are unstandardized. PTCI = posttraumatic cognitions inventory.

**Table 2**  
*Study Variable Comparisons, Stratified by Gender (N = 400)*

Variable	Women	Men	$\chi^2$ test/ <i>t</i> -test
	<i>n</i> = 200 (50%)	<i>n</i> = 200 (50%)	
	<i>n</i> (%) / <i>M</i> (SD)		
Rank			$\chi^2(1) = 12.43^{***}$
Enlisted	106 (53.00%)	70 (35.00%)	
Officer	94 (47.00%)	130 (65.00%)	
Discharge Status			$\chi^2(1) = 26.18^{***}$
Service Member	82 (41.00%)	134 (67.00%)	
Veteran	118 (59.00%)	66 (33.00%)	
Branch			$\chi^2(4) = 4.59$
Air Force	29 (14.5%)	23 (11.50%)	
Army	137 (68.50%)	155 (77.50%)	
Coast Guard	2 (1.00%)	2 (1.00%)	
Marine Corps	17 (8.50%)	11 (5.50%)	
Navy	15 (7.5%)	9 (4.50%)	
Race			$\chi^2(9) = 16.51^{**}$
Asian	0 (0.00%)	0 (0.00%)	
Black	15 (7.69%)	11 (5.53%)	
Hawaiian/PI	0 (0.00%)	0 (0.00%)	
Hispanic/Latinx	9 (4.62%)	15 (7.54%)	
MENA	1 (0.51%)	0 (0.00%)	
Native American/ Alaskan	1 (0.51%)	5 (2.51%)	
White	134 (68.72%)	152 (76.38%)	
Other/Multiple	35 (17.95%)	16 (8.04%)	
Sexual Orientation			$\chi^2(1) = 0.00$
Straight	180 (90.00%)	181 (90.50%)	
Sexual Minority	20 (10.00%)	19 (9.50%)	
PTSD Treatment			$\chi^2(1) = 0.57$
No	66 (33.00%)	58 (29.00%)	
Yes	134 (67.00%)	142 (71.00%)	
Age	35.88 (5.92)	35.90 (5.38)	<i>t</i> (398) = -0.04
Combat Exposure	15.60 (10.05)	19.88 (8.53)	<i>t</i> (398) = -4.59 <sup>***</sup>
PTSD symptoms	46.99 (17.66)	49.91 (19.36)	<i>t</i> (394) = -1.56
PTC Overall	134.96 (36.69)	142.02 (41.43)	<i>t</i> (396) = -1.80
PTC – Self	80.29 (27.68)	84.66 (30.22)	<i>t</i> (397) = -1.51
PTC – World	36.04 (8.96)	35.91 (9.04)	<i>t</i> (397) = 0.13
PTC – Self-blame	18.73 (7.19)	21.45 (7.42)	<i>t</i> (397) = -3.71 <sup>***</sup>

*Note.* MENA = Middle Eastern/North African; PTC = posttraumatic cognitions; PTSD = posttraumatic stress disorder. PI = Pacific Islander. Percentages are calculated within gender for each variable.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

**Table 3**  
*Study Variable Comparisons, Stratified by Revictimization Group (N = 400)*

Variable	Revictimization by Time Period		$\chi^2$ test/ <i>t</i> -test	Military Rape Frequency			$\chi^2$ test/ <i>F</i> -value
	MSA Only <i>n</i> = 60 (15.00%)	MSA + PSA <i>n</i> = 340 (85.00%)		0 <i>n</i> = 34 (8.50%)	1 <i>n</i> = 81 (20.25%)	2+ <i>n</i> = 285 (71.25%)	
	<i>n</i> (%) / <i>M</i> (SD)						
Gender			$\chi^2(1) = 0.18$				$\chi^2(2) = 5.52$
Men	32 (53.33%)	168 (49.41%)		13 (38.24%)	34 (41.98%)	153 (53.68%)	
Women	28 (46.67%)	172 (50.59%)		21 (61.76%)	47 (58.02%)	132 (46.32%)	
Rank			$\chi^2(1) = 4.01^*$				$\chi^2(2) = 6.01^*$
Enlisted	34 (56.67%)	142 (41.76%)		20 (58.82%)	41 (50.62%)	115 (40.35%)	
Officer	26 (43.33%)	198 (58.24%)		14 (41.18%)	40 (49.38%)	170 (59.65%)	
Discharge Status			$\chi^2(1) = 4.93^*$				$\chi^2(2) = 16.27^{***}$
Service Member	24 (40.00%)	192 (56.47%)		12 (35.29%)	32 (39.51%)	172 (60.35%)	
Veteran	36 (60.00%)	148 (43.53%)		22 (64.71%)	49 (60.49%)	113 (39.65%)	
Branch			$\chi^2(4) = 6.37$				$\chi^2(8) = 10.37$
Air Force	6 (10.00%)	46 (13.53%)		4 (11.76%)	10 (12.35%)	38 (13.33%)	
Army	45 (75.00%)	247 (72.65%)		25 (73.53%)	56 (69.14%)	211 (74.04%)	
Coast Guard	0 (0.00%)	4 (1.18%)		0 (0.00%)	0 (0.00%)	4 (1.40%)	
Marine Corps	2 (3.33%)	26 (7.65%)		1 (2.94%)	6 (7.41%)	21 (7.37%)	
Navy	7 (11.67%)	17 (5.00%)		4 (11.76%)	9 (11.11%)	11 (3.86%)	
Sexual Orientation			$\chi^2(1) = 0.00$				$\chi^2(2) = 1.09$
Straight	54 (90.00%)	307 (90.29%)		29 (85.29%)	74 (91.36%)	258 (90.53%)	
Sexual Minority	6 (10.00%)	33 (9.71%)		5 (14.71%)	7 (8.64%)	27 (9.47%)	
PTSD Treatment			$\chi^2(1) = 7.26^{**}$				$\chi^2(2) = 14.14^{***}$
No	28 (46.67%)	96 (28.24%)		19 (55.88%)	30 (37.04%)	75 (26.32%)	
Yes	32 (53.33%)	244 (71.76%)		15 (44.12%)	51 (62.96%)	210 (73.68%)	
Age	35.20 (4.73)	36.01 (5.79)	<i>t</i> (398) = -1.02	33.00 (7.27)	35.57 (6.54)	36.32 (5.04) <sup>a</sup>	<i>F</i> (2,397) = 3.58*
Combat Exposure	12.62 (10.35)	18.64 (9.12)	<i>t</i> (398) = -4.62 <sup>***</sup>	9.68 (8.19)	12.69 (9.29)	20.13 (8.67) <sup>a, b</sup>	<i>F</i> (2,397) = 38.44 <sup>***</sup>
PTSD symptoms	36.05 (19.89)	50.68 (17.44)	<i>t</i> (394) = -5.85 <sup>***</sup>	30.03 (20.09)	41.71 (19.54) <sup>a</sup>	52.60 (16.08) <sup>a, b</sup>	<i>F</i> (2,393) = 27.30 <sup>***</sup>
PTC Overall	116.35 (35.16)	142.44 (38.68)	<i>t</i> (396) = -4.88 <sup>***</sup>	115.48 (36.79)	113.02 (37.81)	142.75 (38.93) <sup>a</sup>	<i>F</i> (2,395) = 8.43 <sup>***</sup>
PTC – Self	66.67 (23.96)	85.28 (28.98)	<i>t</i> (397) = -4.70 <sup>***</sup>	63.61 (25.91)	76.60 (28.54)	86.33 (28.45) <sup>a, b</sup>	<i>F</i> (2,396) = 11.75 <sup>***</sup>
PTC – World	33.77 (10.61)	36.37 (8.63)	<i>t</i> (397) = -2.07*	34.24 (9.56)	38.64 (9.06) <sup>a</sup>	35.42 (8.78) <sup>b</sup>	<i>F</i> (2,396) = 4.83 <sup>**</sup>
PTC – Self-blame	15.92 (6.56)	20.83 (7.32)	<i>t</i> (397) = -4.86 <sup>***</sup>	16.82 (7.46)	17.78 (7.78)	21.13 (7.07) <sup>a, b</sup>	<i>F</i> (2,396) = 10.41 <sup>***</sup>

*Note.* MSA = military sexual assault; PSA = premilitary sexual assault; PTC = posttraumatic cognitions; PTSD = posttraumatic stress disorder. Percentages are calculated within revictimization group for each variable. \**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

<sup>a</sup>Statistically significant difference with “0” rape frequency category. <sup>b</sup>Statistically significant difference with “1” rape frequency category.

**Table 4***Correlations, Means, and Standard Deviations for Continuous Study Variables (N = 400)*

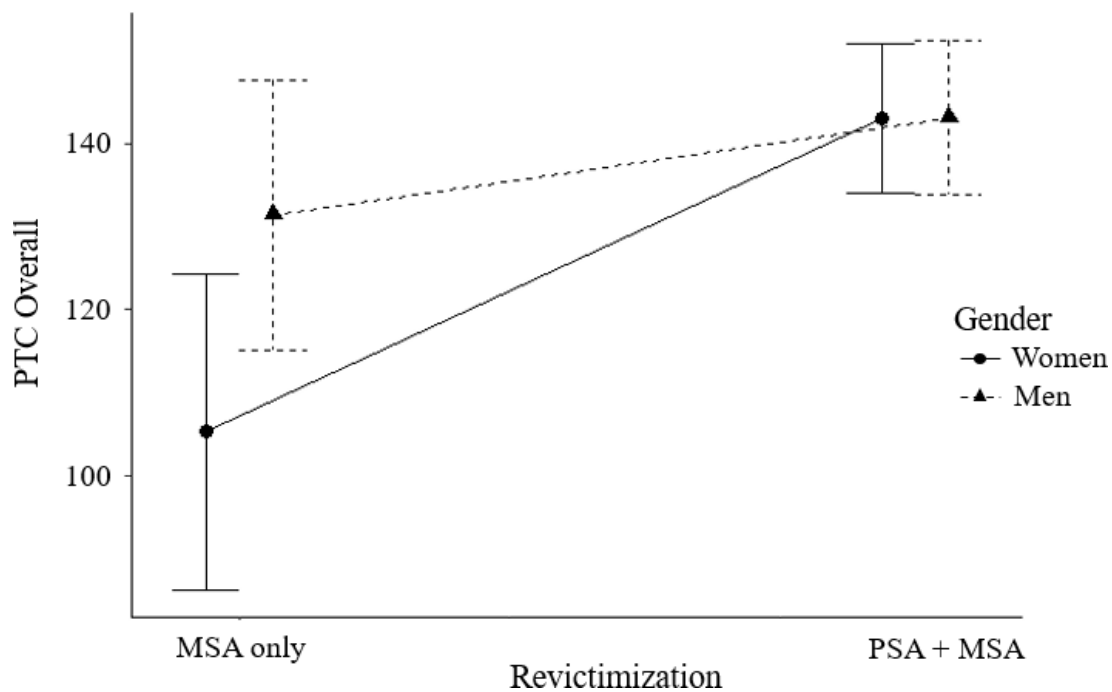
Variable	1	2	3	4	5	6	7
1. PTSD	–						
2. PTC – Self	0.51***	–					
3. PTC – World	0.27***	0.43***	–				
4. PTC – Self-blame	0.40***	0.72***	0.27***	–			
5. PTC Overall	0.51***	0.97***	0.60***	0.78***	–		
6. Age	0.07	0.04	0.04	-0.04	0.04	–	
7. Combat exposure	0.32***	0.20***	0.09	0.20***	0.21***	0.24***	–
<i>M</i>	48.46	82.48	35.97	20.09	138.51	35.9	
<i>SD</i>	18.57	29.03	8.99	7.42	39.25	5.6	

*Note.* *M* = mean; PTC = posttraumatic cognitions; PTSD = posttraumatic stress disorder; *SD* = standard deviation.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

**Figure 1**

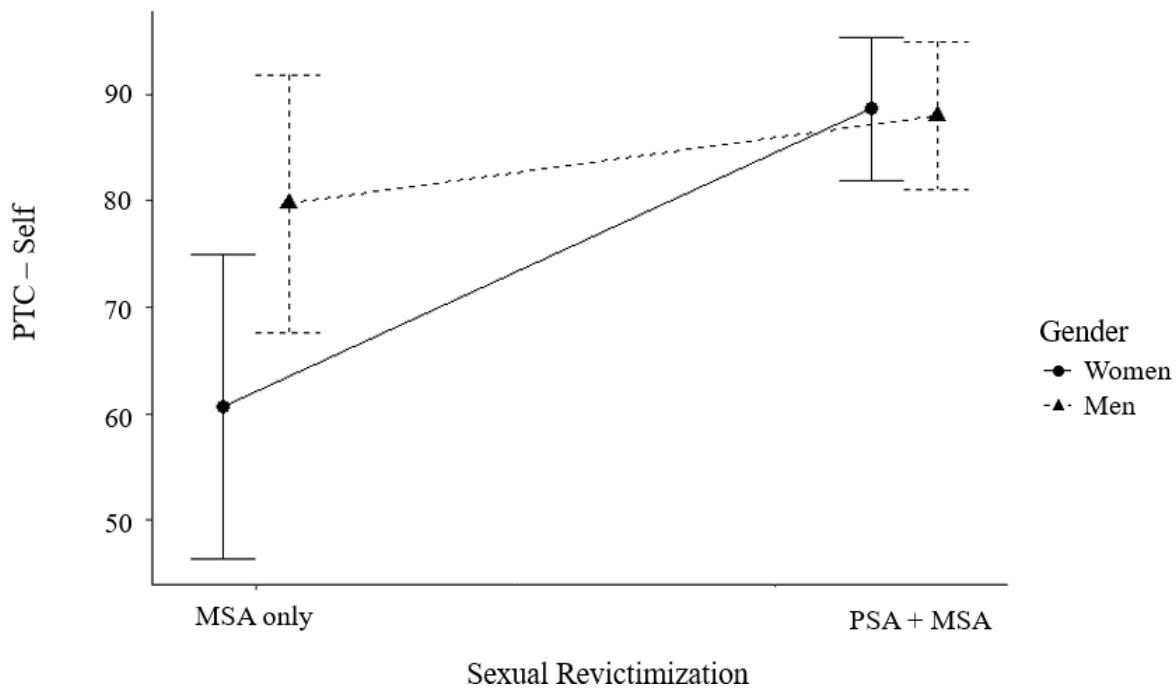
*Probe of Moderated Mediation Model of Revictimization, Posttraumatic Cognitions Overall, Gender, and PTSD Symptoms*



*Note.* Women are more sensitive to cumulative sexual trauma relative to men. MSA = military sexual assault; PSA = premilitary sexual assault; PTC = posttraumatic cognitions; PTSD = posttraumatic stress disorder

**Figure 2**

*Probe of Moderated Mediation Model of Revictimization, Posttraumatic Cognitions about the Self, Gender, and PTSD Symptoms*

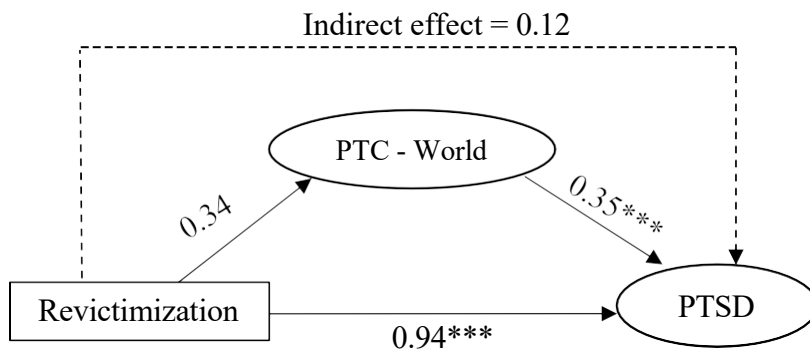


*Note.* Women are more sensitive to cumulative sexual trauma relative to men. MSA = military sexual assault; PSA = premilitary sexual assault; PTC = posttraumatic cognitions; PTSD = posttraumatic stress disorder



**Figure 3**

*Mediation Model of Sexual Revictimization, Posttraumatic Cognitions about the World, and PTSD Symptoms*



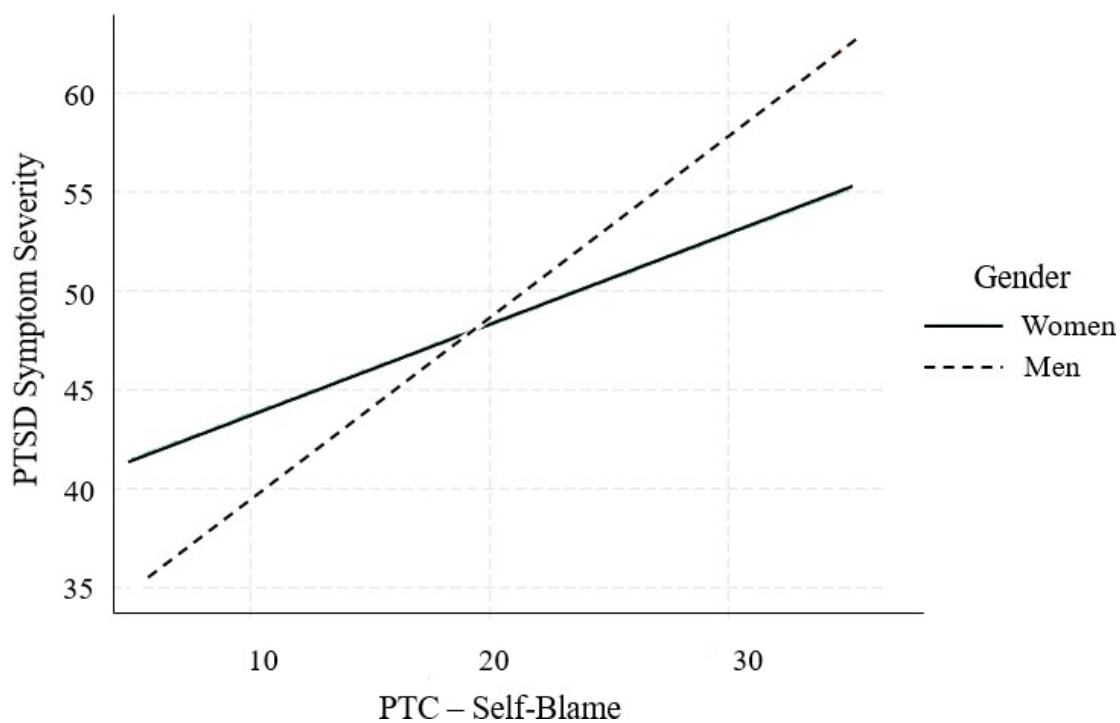
*Note.* Mediation model ( $N = 378$ ) with adjusted unstandardized regression coefficients and significance levels. PTC = posttraumatic cognitions; PTSD = posttraumatic stress disorder.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Fit statistics:  $\chi^2(592) 805.88, p < .001$ ; CFI = 0.991; TLI = 0.990; RMSEA = 0.031.

**Figure 4**

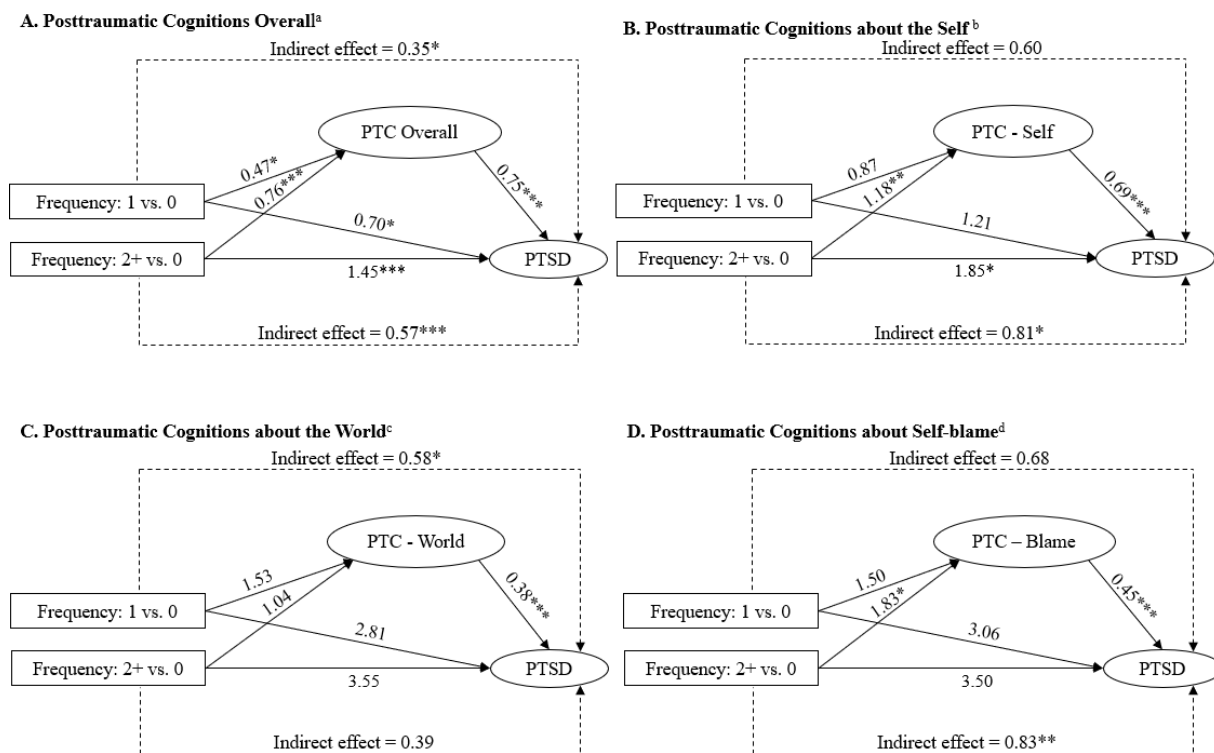
*Probe of Moderated Mediation Model of Revictimization, Posttraumatic Cognitions about Self-Blame, Gender, and PTSD Symptoms*



*Note.* Men are more sensitive to higher levels of self-blame posttraumatic cognitions relative to women. PTC = posttraumatic cognitions; PTSD = posttraumatic stress disorder

Figure 5

*Mediation Models of Military Rape Frequency, Posttraumatic Cognitions, and PTSD Symptoms*



*Note.* Mediation models with adjusted unstandardized regression coefficients and significance levels. MSA = military sexual assault; PTC = posttraumatic cognitions; PTSD = posttraumatic stress disorder.

<sup>a</sup> $n = 394$ ;  $\chi^2(1886) = 4325.48$ ,  $p < .001$ ; CFI = .967; TLI = 0.966; RMSEA = 0.057.

<sup>b</sup> $n = 395$ ;  $\chi^2(1218) = 1925.65$ ,  $p < .001$ ; CFI = .988; TLI = 0.987; RMSEA = 0.038.

<sup>c</sup> $n = 395$ ;  $\chi^2(623) = 949.19$ ,  $p < .001$ ; CFI = .987; TLI = 0.986; RMSEA = 0.036.

<sup>d</sup> $n = 395$ ;  $\chi^2(554) = 971.66$ ,  $p < .001$ ; CFI = .983; TLI = 0.982; RMSEA = 0.044.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

## Appendix A

### Military Validation Questions

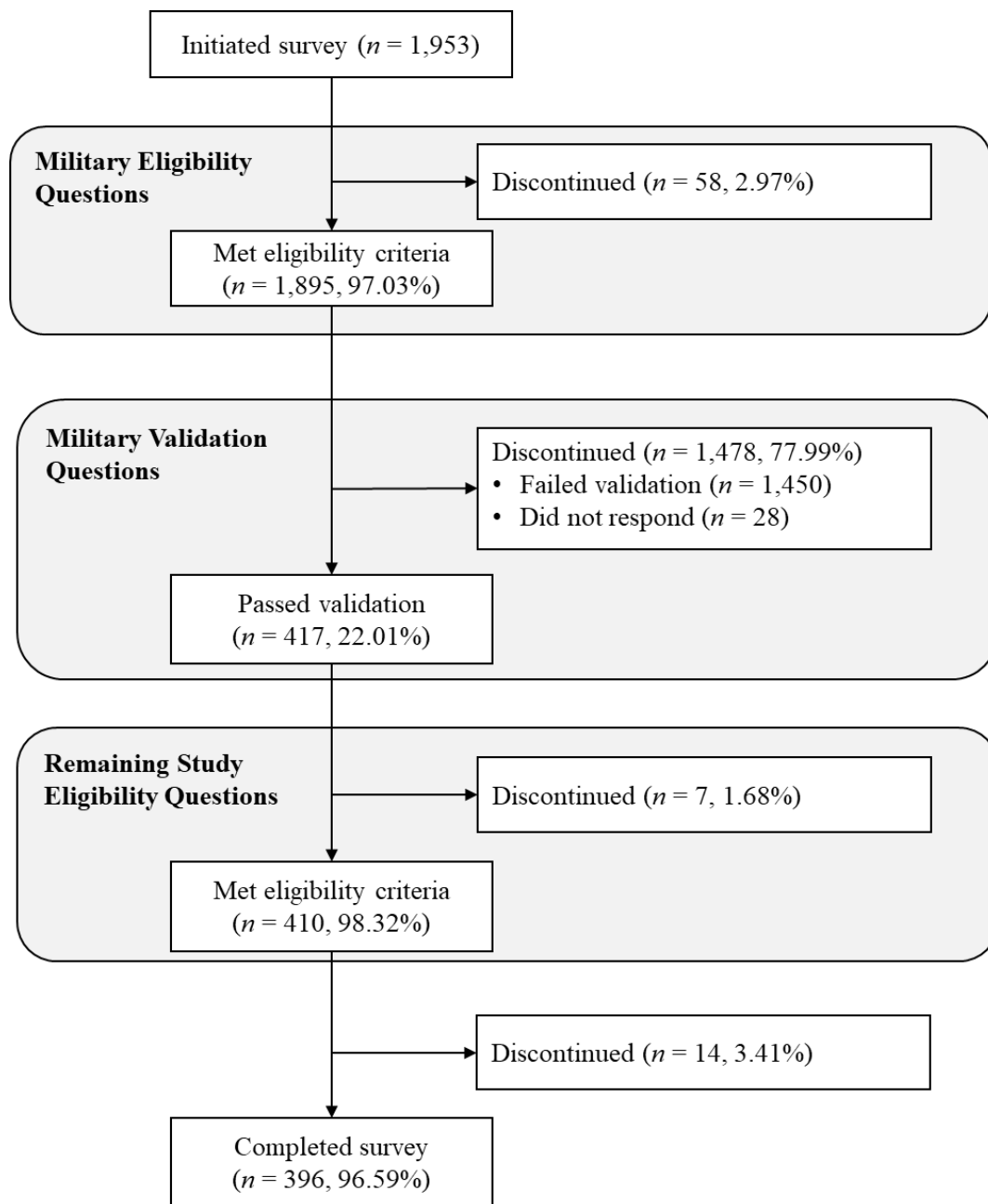
- 1) In the [selected branch participant served in], an O-1 holds the rank of \_\_\_\_\_.
- First Lieutenant
  - Second Lieutenant
  - Ensign
  - Private / Airman Basic / Petty Officer\*
  - Private First Class / Airman First Class\*

\*Response choices vary depending on selected branch

- 2) What is MEPS?
- Pre-packaged meal for when you are in the field
  - Processing center for medical clearance before joining the military**
  - Code of law for military service members
  - Special operations for the Air Force
  - Secondary training school
- 3) What is the code of law that service members must adhere to?
- JAG
  - MEPS
  - SHARP
  - UCMJ**
  - MRE
- 4) An O-3 is an example of a(n) \_\_\_\_\_.
- Petty Officer
  - Warrant Officer
  - Commissioned Officer**
  - Non-commissioned Officer
  - Enlisted Officer

## Appendix B

*Flowchart of Participant Eligibility*



*Note.* Does not include 4 participants who completed the survey prior to the implementation of military validation questions. Dataset does not include individuals who did not meet eligibility criteria.

**Hallie S. Tannahill**  
 (Maiden Name: Avizad)  
 hallie.tannahill@usu.edu  
 (443) 668-6115

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## EDUCATION

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**Utah State University**, Logan, UT January 2020 – Present  
 Anticipated Ph.D. in Combined Clinical/Counseling Psychology GPA: 4.0  
 Dissertation: “*A Moderated Mediation Model of Gender, Posttraumatic Cognitions, and Posttraumatic Stress Disorder Symptoms after Military Sexual Assault*”  
Advisor: Rebecca K. Blais, PhD

**Utah State University**, Logan, UT August 2017 – December 2020  
 M.S. in Combined Clinical/Counseling Psychology GPA: 4.0  
 Master’s Thesis: “*Biological Sex as a Moderator of the Association of Military Sexual Trauma and Posttraumatic Stress Disorder Total and Symptom Cluster Severity*”  
Advisor: Rebecca K. Blais, PhD

**Temple University**, Philadelphia, PA August 2011 – May 2015  
 B.A. in Psychology with Honors GPA: 3.98  
 Summa Cum Laude  
 Honors Thesis: “*Negative Life Events and Depressive Symptoms: The Moderating Role of Gender*”  
Advisors: Lauren B. Alloy, PhD; Jessica L. Hamilton, MA

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## HONORS & AWARDS

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**Utah State College of Education and Human Services Ferne Page West Scholarship** April 2021  
 Recognized for academic achievement and commitment to leadership

**Utah State Department of Psychology Anthony LaPray Scholarship** March 2021  
 Recognized for academic achievement and engagement in research

**Armed Forces Health Professions Scholarship Recipient** May 2019  
 Selected to direct-commission into the US Air Force as a Second Lieutenant

**Military Psychology Special Interest Group (ABCT) Student Poster Award** November 2018  
 Selected to give oral presentation during annual ABCT conference meeting

**Temple University Diamond Research Scholars Award** May – July 2014  
 Awarded \$4,000 stipend to complete a research project over the course of 10 weeks

**Temple University Psychology Honors Program** August 2013 – May 2015  
 Selected to participate in competitive honors program for psychology

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## CLINICAL EXPERIENCE

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**Student Health and Wellness Center, Utah State University** August 2021 – May 2022  
 Part-Time Graduate Student Therapist, Graduate Assistantship May 2019 – August 2020  
 Logan, UT  
Responsibilities:

- Conduct assessments in integrated behavioral health setting
- Provide brief, evidence-based treatment to clients with diverse presenting problems
- Conduct sessions via telehealth and in-person
- Consult with interdisciplinary team of psychiatrists, primary care physicians, and nurses

Supervisor: Scott DeBerard, PhD

**ACT Community Anxiety Clinic, Utah State University** August 2020 – May 2021  
 Part-Time Graduate Student Therapist, Practicum Student Logan, UT  
Responsibilities:

- Conduct and interpret integration of multidimensional assessments
- Implement Acceptance and Commitment Therapy (ACT) with clients

- Participate in weekly individual and group supervision

Supervisor: Mike Twohig, PhD

**PTSD Assessment Clinic, Salt Lake City Veterans Affairs**

May 2019 – March 2020

Part-Time Graduate Student Therapist, Practicum Student

Salt Lake City, UT

Responsibilities:

- Conduct psychodiagnostic PTSD assessments with veterans exposed to military-related trauma
- Write detailed assessment reports
- Manage the PTSD walk-in clinic twice per month
- Participate in weekly individual supervision and monthly group supervision

Supervisor: Jacek Brewczynski, PhD

**Behavioral Health Clinic, Utah State University**

August 2018 – August 2019

Part-Time Graduate Student Therapist, Practicum Student

Logan, UT

Responsibilities:

- Conduct intake assessments with clients seeking psychotherapy
- Provide evidence-based psychotherapy for adult and child clients
- Conduct integrative assessments evaluating intelligence and achievement abilities
- Attend monthly clinical colloquia and grand rounds

Supervisors: Sue Crowley, PhD; Sara Boghosian, PhD; Marietta Veeder, PhD

**Center for the Treatment and Study of Anxiety, University of Pennsylvania**

June 2015 – June 2017

Full-Time Post-Baccalaureate Research Assistant

Philadelphia, PA

*Open Clinic Intake Coordinator*

Responsibilities:

- Conduct clinical screening interviews with prospective clients seeking treatment for anxiety
- Assess for comorbid symptom presentations that may interfere with treatment
- Provide referrals based on client need
- Schedule initial evaluation appointments

Supervisors: Edna B. Foa, PhD; Steven Tsao, PhD

*“Efficacy of 60-minute versus 90-minute Sessions in Treating PTSD Using Prolonged Exposure”*

Independent Evaluator

Responsibilities:

- Assess for posttraumatic stress symptoms related to an identified index trauma using a semi-structured diagnostic interview (PTSD Symptom Scale – Interview for DSM-5 [PSSI-5])
- Participate in bi-weekly fidelity trainings for the PSSI-5

Supervisors: Edna B. Foa, PhD; Laurie Zandberg, PsyD

*Other Experience*

- Attend weekly group supervision for OCD and PTSD cases
- Serve as a confederate for in-session, *in vivo* exposures
- Coordinate open clinic medical record requests

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**LEADERSHIP & SERVICE EXPERIENCE**

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**APA Division 19, Utah State University Military Psychology Chapter**

September 2019 – May 2022

Co-Founder and President of USU Chapter; APA Div. 19 Campus Representative

Logan, UT

Responsibilities:

- Form a university student chapter for APA Division 19
- Organize seminars to build students' knowledge in military-related topics
- Advocate for military-related trainings and volunteer opportunities
- Recruit students to APA Division 19

**Cache Refugee and Immigrant Connection**

January 2020 – February 2022

Walk-in Hours Volunteer, Bi-monthly

Logan, UT

Responsibilities:

- Assist immigrants and refugees in navigating administrative tasks, such as paying bills and completing paperwork

**Alpine Church**

January 2018 – Present

Co-Leader of Young Professionals Bible Study Group, Weekly

Logan, UT

Responsibilities:

- Plan topics for weekly Bible studies
- Facilitate weekly group discussions
- Attend monthly meetings with church leadership
- Consult with church leadership in developing policies and planning events

Service Volunteer, Monthly

Responsibilities:

- Coffee team – prepare coffee and greet guests
- Sound team – manage sound board during worship and sermon
- Worship team – substitute vocalist for leading congregation in songs of worship

**Combined Clinical/Counseling Psychology Program, Utah State University**

May 2020 – May 2021

Elected Student Representative

Logan, UT

Responsibilities:

- Represent student body at monthly faculty meetings
- Communicate student concerns to the Director of Clinical Training at monthly meetings
- Communicate student concerns to the Psychology Department Head at monthly meetings
- Conduct monthly student meetings to disseminate department information and address student concerns
- Mediate student-faculty conflicts

**Sorenson Center for Clinical Excellence, Utah State University**

January – December 2019

Member of Student Board

Logan, UT

Responsibilities:

- Liaise between the student body and the faculty of the Sorenson Center for Clinical Excellence

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**TEACHING EXPERIENCE**

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**Abnormal Psychology (PSY 3210), Utah State University**

Spring 2021

Primary Teaching Instructor (online)

Responsibilities:

- Construct course design and develop course material
- Present all course material to a class of over 130 students
- Address student concerns

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**PUBLICATIONS**

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**In Preparation/Under Review**

Livingston, W. S., **Tannahill, H. S.**, Meter, D. J., Fargo, J. D., & Blais, R. K. (2022). The association of military sexual harassment/assault with suicide ideation, plans, attempts, and mortality among US service members/veterans: A meta-analysis. Manuscript submitted for publication.

Blais, R. K., Livingston, W. S., Barrett, T. S., & **Tannahill, H. S.** (2022). Individual and interpersonal outcomes associated with single and multiple exposures to civilian and military sexual violence. Manuscript accepted for publication.



**Published**

- Tannahill, H. S.**, Fargo, J. D., Barrett, T. S., & Blais, R. K. (2021). Gender as a moderator of the association of military sexual trauma and posttraumatic stress symptoms. *Journal of Clinical Psychology, 77*(10), 2262-2287. <https://doi.org/10.1002/jclp.23162>
- Tannahill, H. S.**, Livingston, W. S., Fargo, J. D., Brignone, E., Gundlapalli, A. V., & Blais, R. K. (2020). Gender moderates the association of military sexual trauma and risk for psychological distress among VA-enrolled veterans. *Journal of Affective Disorders, 268*, 215-220. <https://doi.org/10.1016/j.jad.2020.03.017>
- Brown, L. A., Yusko, D., **Tannahill, H. S.**, & Foa, E. B. (2018). Prolonged exposure therapy for posttraumatic stress disorder. In C. B. Nemeroff & C. Marmar (Eds.), *Post-traumatic stress disorder* (pp. 561-578). New York, NY: Oxford University Press. <https://doi.org/10.1093/med/9780190259440.003.0030>
- McLean, C. P., Rauch, S. A. M., Foa, E. B., Sripada, R. K., **Tannahill, H. S.**, Mintz, J., Yarvis, J., Young-McCaughan, S., Dondanville, K. A., Hall-Clark, B. N., Fina, B. A., Keane, T. M., & Peterson, A. L. for the STRONG STAR Consortium and the Consortium to Alleviate PTSD. (2017). Design of a randomized controlled trial examining the efficacy and biological mechanisms of web-prolonged exposure and present-centered therapy for PTSD among active-duty military personnel and veterans. *Contemporary Clinical Trials, 64*, 41-48. <https://doi.org/10.1016/j.cct.2017.11.008>
- Zang, Y., Gallagher, T., McLean, C. P., **Tannahill, H. S.**, Yarvis, J. S., Foa, E. B., and the STRONG STAR Consortium. (2017). The impact of social support, unit cohesion, and trait resilience on PTSD in treatment-seeking military personnel with PTSD: The role of posttraumatic cognitions. *Journal of Psychiatric Research, 86*, 18-25. <https://doi.org/10.1016/j.jpsychires.2016.11.005>
- Asnaani, A., Kaczurkin, A., **Tannahill, H.**, Fitzgerald, H. (2016). Moderators of change in social anxiety during CBT in a transdiagnostic, naturalistic treatment-seeking sample. *Journal of Experimental Psychopathology, 7*, 656-670. <https://doi.org/10.5127/jep.055416>

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**PRESENTATIONS**

- Tannahill, H. S.**, & Blais, R. K. (2020, August). *The role of gender on the association of military sexual trauma and posttraumatic stress, depressive, and suicidal ideation symptoms*. Poster presented virtually due to COVID-19 at the annual convention of the American Psychological Association (APA).
- Tannahill, H. S.**, Fargo, J. D., & Blais, R. K. (2019, November). *Gender moderates the association between military sexual trauma and posttraumatic stress disorder symptom cluster severity*. Poster presented at the Association for Behavioral and Cognitive Therapies (ABCT) Annual Convention, Atlanta, GA.
- Tannahill, H. S.**, Livingston, W. S., Fargo, J. D., Brignone, E., Suo, Y., Gundlapalli, A. V., & Blais, R. K. (2019, October). *Biological sex moderates the association of military sexual trauma and risk for depression and PTSD diagnoses among VA-enrolled veterans*. Poster presented at the Annual HSR&D/QUERI National Conference, Washington, D.C.
- Tannahill, H. S.**, Livingston, W. S., Fargo, J. D., Brignone, E., Suo, Y., Gundlapalli, A. V., & Blais, R. K. (2018, November). *Biological sex moderates the association of military sexual trauma and risk for depression and PTSD diagnoses among VA-enrolled veterans*. Oral presentation and poster presented at the Association for Behavioral and Cognitive Therapies (ABCT) Military Psychology Special Interest Group Annual Convention, Washington, D.C.

- Livingston, W. S., Fargo, J. D., Gundlapalli, A. V., **Tannahill, H. S.**, & Blais, R. K. (2018, November). *PTSD and depression diagnoses mediate the association of military sexual trauma and suicide risk in VA-enrolled Iraq/Afghanistan veterans*. Poster presented at the Annual Convention of the Association for Behavioral and Cognitive Therapies (ABCT), Washington, D.C.
- Yusko, D., **Tannahill, H.**, Brumfield, R., & Foa, E. B. (2017, April). Philadelphia trauma initiative: Experiences with disseminating prolonged exposure therapy to community mental health clinics in urban Philadelphia. In D. Yusko (Chair), *From the lab to the world: Is it possible to do prolonged exposure for PTSD in "real clinics"?* Symposium conducted at the Anxiety and Depression Association of America (ADAA) Annual Conference, San Francisco, CA.
- Tannahill, H. S.**, Zang, Y., Gallagher, T., McLean, C., Yarvis, J., Foa, E. B., & the Strong Star Consortium. (2016, November). *The impact of social support and resilience on PTSD and depression: The mediating role of posttraumatic cognitions*. Poster presented at International Society for Traumatic Stress Studies (ISTSS) 32nd Annual Meeting, Dallas, TX.
- Tannahill, H. S.**, Asnaani, A., Zang, Y., & Foa, E.B. (2016, November). *Screening PTSD with the CPSS-5 and addressing barriers to assessment and care*. Poster presented at International Society for Traumatic Stress Studies (ISTSS) 32nd Annual Meeting, Dallas, TX.
- Tannahill, H. S.**, Asnaani, A., Zhong, J., & Foa, E. B. (2016, October). *The impact of individualistic and collectivistic value orientations on anxiety-related psychopathology*. Poster presented at the Association for Behavioral and Cognitive Therapies (ABCT) 50th Annual Convention, New York, NY.
- Tannahill, H. S.**, Asnaani, A., Zang, Y., Capaldi, S., Yeh, R., & Foa, E.B. (2016, October). *Psychometric properties of the CPSS-5*. Poster presented at the Association for Behavioral and Cognitive Therapies (ABCT) 50th Annual Convention, New York, NY.
- Tannahill, H. S.**, Asnaani, A., Zhong, J., & Foa, E. B. (2016, April). *The impact of individualistic and collectivistic value orientations on anxiety-related psychopathology*. Poster presented at the Anxiety and Depression Association of America (ADAA) Annual Conference, Philadelphia, PA.
- Avizad, H. S.**, Hamilton, J., & Alloy, L. B. (2015, April). *Are women more reactive to negative life events than men?* Paper presented at the Temple Undergraduate Research Forum and Creative Works Symposium (TURF-CreWS), Philadelphia, PA.
- Avizad, H.**, Hamilton, J., & Alloy, L. (2014, July). *Negative life events and depressive symptoms: The moderating role of gender*. Poster presented at the Temple University Diamond Research Scholar Poster Session, Philadelphia, PA.

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## RESEARCH EXPERIENCE

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- |  |                       |
|--|-----------------------|
| <b>Military Social Science Laboratory, Utah State University</b>   | August 2017 – Present |
| Part-Time Graduate Research Assistant  | Logan, UT             |
| <u>Responsibilities:</u>   |                       |
| <ul style="list-style-type: none"> <li>• Research military sexual trauma and related mental health concerns</li> <li>• Conduct and interpret statistical analyses using R and SPSS statistical software</li> <li>• Peer-review scholarly articles</li> </ul> |                       |
| <u>Advisor:</u> Rebecca K. Blais, PhD  |                       |
| <b>Center for the Treatment and Study of Anxiety, University of Pennsylvania</b>   | June 2015 – June 2017 |
| Full-Time Post-Baccalaureate Research Assistant  | Philadelphia, PA      |

*A Comparison of Web-Prolonged Exposure (Web-PE) and Present-Centered Therapy (PCT) for PTSD among Active-Duty Military Personnel: Efficacy and Biological Mechanisms* (Grant Number: 12012005)

Responsibilities:

- Submit technical reports to the Department of Defense on a quarterly basis
- Track participant recruitment and protocol amendments
- Participate in weekly conference calls addressing recruitment, protocol deviations, and adverse events

Supervisors: Edna B. Foa, PhD; Carmen P. McLean, PhD

*City of Philadelphia Trauma Initiative and Dissemination Project*

Responsibilities:

- Collaborate with Philadelphia Community Behavioral Health in developing strategies to maintain and fortify the implementation of Prolonged Exposure (PE) Therapy within agencies
- Independently conduct site visits to community mental health agencies to assess and address barriers to PE implementation
- Analyze monthly PTSD screening and treatment data from each affiliated agency to determine the need for and efficacy of PE
- Assist in the preparation of bi-monthly workshops that educate community therapists on the assessment of PTSD

Supervisors: Edna B. Foa, PhD; David Yusko, PsyD

*Other Experience*

Responsibilities:

- Submit Continuing Reviews to the University of Pennsylvania IRB for ongoing research studies:
- Manage the Petty Cash account for participant payment and miscellaneous faculty expenses
- Assist faculty in peer-reviewing manuscripts submitted to scholarly journals
- Supervise volunteer research assistants in data entry
- Present and participate in monthly journal article review discussions on randomized clinical trials
- Organize and assist in the logistical preparation of training workshops in Prolonged Exposure Therapy
- Participate in bi-weekly research team meetings to discuss manuscripts in preparation

**Mood and Cognition Laboratory, Temple University**

August 2013 – May 2015

Part-Time Undergraduate Research Assistant

Philadelphia, PA

Responsibilities:

- Conduct research on depression, stressful life events, and gender differences
- Conduct statistical analyses in SPSS using archival data
- Present research findings at annual university research symposium

Supervisors: Lauren B. Alloy, PhD; Jessica L. Hamilton, MA

*Volunteer Research Assistant*

August 2013 - May 2015

Investigation of the cognitive, psychosocial, developmental, and neurobiological processes in the onset and course of depression and bipolar disorder in adolescents and adults.

Responsibilities:

- Code qualitative data from the Trier Social Stress Task (laboratory-induced stress task)
- Enter study data including: participant contact and medical information, self-report questionnaires assessing cognitive vulnerabilities (e.g., rumination, over-general autobiographical memory), emotion regulation and reactivity, executive functions (e.g., attention, working memory), life events questionnaires and interviews, and Kiddie Schedules for Affective Disorders and Schizophrenia (K-SADS)

Supervisor: Lauren B. Alloy, PhD

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**PROFESSIONAL WORKSHOPS PRESENTED**


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“Safe Passages for U Diversity Training” 29 March 2019  
Co-Presenters: Jill Ferrell, MS; Tish Hicks, MS

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**SELECTED PROFESSIONAL TRAININGS ATTENDED**


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“Cognitive Behavioral Therapy for Insomnia (CBT-I) Web” 20-23 April 2020  
Presenter: Medical University of South Carolina Online

“The Summer Institute: Preparing for a Career in the Armed Forces” 10-14 June 2019  
Presenter: Center for Deployment Psychology Bethesda, MD

“Focused Acceptance and Commitment Therapy: The Basics and Beyond” 20 April 2019  
Presenter: Kirk D. Strosahl, PhD Logan, UT

“Psychopharmacology: What’s New in 2019?” 19 April 2019  
Presenter: Morgan T. Sammons, PhD, ABPP Logan, UT

“Advanced ACT: Doing Experiential Work without Exercises” 31 August – 1 September 2018  
Presenters: Matthieu Villatte, PhD; Jennifer Villatte, PhD Logan, UT

“Allies on Campus: LGBTQA+ Training” 6 April 2018  
Presenter: USU Inclusion Center Logan, UT

“Intensive 4-day Workshop for Exposure and Response Prevention Therapy for OCD” 11-14 July 2016  
Presenters: Elna Yadin, PhD; Edna B Foa, PhD Philadelphia, PA

“Intensive 4-day Workshop for Prolonged Exposure Therapy for PTSD” 2-5 May 2016  
Presenters: Edna B. Foa, PhD; Sandy Capaldi, PsyD Philadelphia, PA

“Evidence-Based Assessment for Psychological Disorders in Adults: A Focus on Trauma and PTSD” 23 May 2016  
Presenters: Edna B. Foa, PhD; David Yusko, PsyD Philadelphia, PA

“Evidence-Based Assessment for Psychological Disorders in Children: A Focus on Trauma and PTSD” 27 July 2015  
Presenters: Edna B. Foa, PhD; Sandy Capaldi, PsyD Philadelphia, PA

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**MEMBERSHIPS & AFFILIATIONS**


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<b>United States Air Force</b> – Second Lieutenant	May 2019 – Present
<b>APA Division 19 USU Student Chapter</b> – Campus Representative	September 2019 – Present
<b>APA Division 19 Society for Military Psychology</b> - Student Affiliate	January 2018 – Present
<b>American Psychological Association</b> – Student Affiliate	March 2020 – Present
<b>Utah Psychological Association</b> – Student Affiliate	September 2021 – Present
<b>Association for Behavioral and Cognitive Therapies</b> – Student Affiliate	August 2015 – Present
<b>InterVarsity Christian Fellowship</b> – Chapter President	August 2014 – 2015