

Research paper

Higher depression severity mediates the association of assault military sexual trauma and sexual function in partnered female service members/veterans



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ABSTRACT

Background: Military sexual trauma (MST), and assault as opposed to harassment-only MST in particular, is associated with lower sexual function among female service members/veterans (SM/Vs). Recent research revealed that higher posttraumatic stress disorder (PTSD) symptom clusters of anhedonia and dysphoric arousal mediated the association of assault MST and sexual function. Such clusters represent the depressive symptoms of PTSD, and theories of sexual function suggest that depression worsens sexual function. The impact of depression on the association of MST and sexual function has yet to be tested. **Method:** Using path analysis, the study examined whether depression severity mediated the association of MST and sexual function after accounting for demographics and mediators of PTSD-related anhedonia and dysphoric arousal. Female SM/Vs ($N = 697$) completed measures of MST (history, severity), depression, PTSD-related anhedonia and dysphoric arousal, sexual function, and a demographic inventory. **Results:** One hundred twenty-two (17.50%) indicated that they did not experience MST, 336 (48.21%) reported that they experienced harassment-only MST, and 239 (34.29%) reported assault MST. Fit indices evidenced strong model fit, $\chi^2(12, N = 697) = 18.85, p = .09, CFI = 1.00, TLI = 0.99, SRMR = 0.02, \text{ and } RMSEA = 0.03$. The indirect effect of depression severity was significant ($p < .001$). **Limitations:** Use of cross-sectional data in a convenience sample of female SM/Vs. **Conclusions:** Even after accounting for established covariates and mediators of assault MST and sexual function, depression accounted for a significant amount of variance in this association. Treatment of poor sexual function must address depressive symptoms. As medications for depression can exacerbate sexual issues, psychotherapy may be the most effective treatment strategy.

1. Introduction

Healthy human sexuality is related to greater well-being (Nunnick et al., 2012; Sadler et al., 2012), a lower likelihood of being diagnosed with a mental health disorder (e.g., Hosain et al., 2013), and less frequent suicidal ideation in military service members/veterans (SM/Vs; Blais et al., 2018d). Healthy human sexuality can include a lack of sexual dysfunction or sexual health diagnoses. Sexual dysfunction among women is defined as any disruption to the sexual response cycle (e.g., Kaplan, 1979; Masters and Johnson, 1966), and includes issues with arousal, desire, lubrication, ability to reach orgasm, pain, and low satisfaction (Rosen et al., 2000; Stephenson and Meston, 2015). Much of the research on sexual dysfunction among recently returned veterans focuses on males and erectile dysfunction (e.g., Badour et al.,

2015; Hosain et al., 2013; Wilcox et al., 2014), but emerging research shows that female service members/veterans, too, have several risk factors for sexual problems (see review, Rosebrock and Carroll, 2017; Blais et al., 2018c, d; Blais, 2019; Blais et al., 2019). As females are the fastest growing cohort of service members and roughly half are married (Patton and Parker, 2011), they report more sexual partners than female civilians (e.g., Lehavot et al., 2014), and experience more problems with sexual function relative to female civilians and their male veteran counterparts (Rosebrock and Carroll, 2017), better understanding of sexual function is a timely issue in this subsample of military service members.

One risk factor for poor sexual function among female SM/Vs includes a history of sexual trauma (Blais et al., 2018c, 2019). Extant research shows that service members and veterans may be at

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heightened risk for sexual trauma relative to their civilian counterparts (Stander and Thomsen, 2016). Indeed, a 2003 meta-analysis that examined workplace sexual trauma among the military, academic, government agencies, or private sector workplaces observed that sexual trauma was most frequently reported in the military setting (see review, Ilies et al., 2003). Sexual trauma that occurred during military service is defined by the Department of Veterans Affairs (VA) as military sexual trauma or “MST.” Specifically, the VA defines MST 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 duty for training, or inactive duty training” (U.S. Government, 2014, p. 285). The VA estimates that 28% of its female health care utilizers report MST during routine screening (VA, 2018); however, research conducted outside VA suggests that nearly 40% of female veterans experienced MST (Wilson, 2018). The discrepant rates in MST estimates may be due to data collection procedures (e.g., location, self-report versus interview; Wilson, 2018) or under-reporting during screening (e.g., Blais et al., 2018a).

A handful of studies have examined the association of MST and sexual function in military SM/Vs. Findings reveal that those who report a history of MST report lower sexual function (DiMauro et al., 2018; Schnurr et al., 2009; Turchik et al., 2012), particularly those who report that their MST included assault sexual trauma (Blais et al., 2018c; 2019; Blais, 2019). Barlow's (1986) theory of sexual function suggests that low mood or negative affective states can lead to sexual dysfunction due to an individual's tendency to focus on unhelpful cognitions during sexual activity. Depression is a well-established risk factor for sexual function in female veterans (Cohen et al., 2012), and a known outcome of MST in female veterans (Blais and Geiser, 2018b; DiMauro et al., 2018; Kimerling et al., 2007). To our knowledge, no study has examined the association of MST, depression severity, and sexual function in female SM/Vs. However, recent research in female SM/Vs revealed that the depressive symptom clusters of PTSD, which include anhedonia and dysphoric arousal, were two mechanisms of the association of MST and sexual function (Blais et al., 2018c). The anhedonia symptom cluster includes symptoms of loss of interest, detachment, and restricted range of affect and the dysphoric arousal symptom cluster includes irritability, reckless behavior, and difficulties with sleep and concentration (e.g., Armour et al., 2016; Blais et al., 2018c). Moreover, research conducted in civilians shows that depression severity mediated the association of sexual assault that occurred in adulthood and sexual pain (Kelley and Gidycz, 2017), and childhood sexual trauma and adult sexual dysfunction (Dunlop et al., 2015; Rellini and Meston, 2011). Interestingly, research examining the association of sexual trauma with both depression and PTSD among female sexual assault or rape survivors observed that while survivors reported high rates of both PTSD and depression symptoms, symptom overlap between these two diagnoses did not appear to account for this association (e.g., Taft et al., 2009).

The purpose of the present study was to build on existing literature examining the association of MST and sexual function in female SM/Vs. We specifically sought to determine whether the association of MST with sexual function could be accounted for by depression severity after accounting for PTSD-related anhedonia and dysphoric arousal as well as demographic covariates.

2. Method

2.1. Participants

Data from the current study were drawn from a “parent” study ($N = 833$) that was designed to assess the association of MST, sexual health, and relationship function among partnered service members/veterans (Blais, 2019). In order to be included in the current study, participants needed to have complete data on all study measures (see

below) and covariates. The final sample included 697 (83.67%) participants.

2.2. Procedure

Advertisements were placed on social media (i.e., Facebook) and distributed through electronic listservs serving female SM/V communities. Females who were interested in participating navigated to Qualtrics to complete screening items confirming female sex, service in the military, and appropriate consenting age (age 18 or greater). Those who passed screening criteria were presented with an Institutional Review Board (IRB) Letter of Information (LoI) and all study measures. We used a LoI in place of a consent form as the consent form would have necessitated identifying information, which was not required for the parent study. However, participants could receive \$15 in monetary compensation by navigating to a separate Qualtrics page where they provided names and mailing addresses to facilitate payment. Identifying information that was collected solely for payment purposes could not be linked to study response data. The Utah State University IRB approved the parent study from which these data are drawn.

2.3. Measures

2.3.1. Demographics

Age and relationship duration (in years) were included as covariates in the current study and were assessed using a demographic inventory. Other demographic information was collected in the inventory and is reported below for the sole purpose of further describing our study sample. Such information included marital status (married vs other), race/ethnicity (White vs other), branch of service (Army vs other), income, education, and discharge status (discharged vs currently serving). The majority of the sample reported service in the Army and self-identified as White. As such, these categories were selected as index terms for these characteristics. Additional demographic information with regard to race/ethnicity and military service is available upon request to the first author.

2.3.2. Sexual function

Sexual function was measured using the *Female Sexual Function Index* (FSFI; Rosen et al., 2000). The FSFI is a 19-item self-report questionnaire that assesses overall sexual function. A sample item includes “Over the past four weeks, how often did you feel sexually aroused (“turned on”) during sexual activity or intercourse?” Items are scored using a variable anchor Likert scale. Items are summed using an algorithm developed by the scale authors and total scores range from 2–36. Higher scores indicate greater sexual function. Psychometric properties have been established in other samples and reveal good internal consistency, test-retest reliability, and adequate construct and divergent validity (Rosen et al., 2000). The current sample showed excellent internal reliability (Cronbach's $\alpha = 0.98$).

2.3.3. MST

A modified version of the *VA MST Screening Questionnaire* determined history and type of MST. This measure was selected given its universal use in VA. Females indicated via electronic checkmark what forms of harassment MST were experienced during their military service. Options included touching, cornering, pressure for sexual favors, or verbal remarks. Indication of any harassment item reflected a positive screen for harassment MST. Incidence of assault MST was determined via an affirmative response to the question: “When you were in the military, did someone ever use force or threat of force to have sexual contact with you against your will?” Dummy codes were then used to typify history and MST type. If participants reported harassment MST but did not report any instance of assault, they were coded as

having experienced harassment-only MST. If participants reported any instance of assault MST, they were coded as having experienced assault MST. Those who did not endorse either harassment or assault MST were coded as having “no MST”.

2.3.4. Depression

Depression severity was measured using the *Patient Health Questionnaire-9* (PHQ-9; Kroenke et al., 2001). Participants indicated their agreement with nine statements using a four-point ordinal scale that ranged from 0 (*not at all*) to 3 (*nearly every day*). Items are summed for a total score that ranges from 0–27. Higher scores indicate more severe depression symptoms. Scores > 9 are indicative of a probable depression diagnosis provided participants endorse feeling down, depressed or hopeless or report feeling anhedonic for at least “more than half the days” during the preceding two weeks (Kroenke et al., 2001). The PHQ-9 has good reliability and validity to detect depression and quantify depression severity (Kroenke et al., 2001). In the current sample, the internal reliability was high (Cronbach's $\alpha = 0.92$).

2.3.5. PTSD

PTSD symptom clusters of anhedonia and dysphoric arousal were measured using *Posttraumatic Stress Disorders Checklist for DSM-5* (PCL-5; Weathers et al., 2013). The PCL-5 evaluates how bothered participants were by each PTSD symptom during the past month using a five-point Likert scale of 0 (*not at all*) to 4 (*extremely*). A sample item includes “In the past month, how much were you bothered by avoiding memories, thoughts, or feelings related to the stressful experience?” Items are summed for a total score, which ranges from 0 to 80. Higher scores indicate greater PTSD symptom severity. Symptom cluster severities are calculated by summing the number of items within a given symptom cluster. A confirmatory factor analysis completed for another study using participants in the current investigation revealed that the Anhedonia model of PTSD fit the data most optimally (Blais et al., 2018c), and extant research indicated that only symptom clusters of anhedonia (score range: 0–12) and dysphoric arousal (score range: 0–16) mediated the association of MST and sexual function (Blais et al., 2018c). As such, only these two symptom clusters were used in the current study. The entire PCL 5 shows good reliability and validity to detect PTSD and quantify PTSD symptoms (Weathers et al., 2013). The current sample showed adequate internal reliability for both anhedonia and dysphoric arousal (Cronbach's $\alpha = 0.92, 0.84$, respectively).

2.4. Analytic plan

Sample characteristics for demographic and study variables were calculated using descriptive statistics. Pearson's correlations were used to examine the associations of sexual function, depression, PTSD-related anhedonia, PTSD-related dysphoric arousal, age, and relationship duration. Independent-samples *t*-tests were used to compare differences between harassment-only MST, assault MST, and no MST groups on levels of sexual function, depression, PTSD-related anhedonia and dysphoric arousal, relationship duration, and age. To determine whether depression mediated the association of harassment-only and assault MST with sexual function after accounting for covariates of age and relationship duration and previously established mediators of PTSD-related anhedonia and dysphoric arousal, path analysis was utilized. The model tested is depicted in Fig. 1. Two correlated dummy-coded variables representing harassment-only MST and assault MST were included as exogenous variables. The reference category for both variables was “no MST.” Sexual function was included as the endogenous, dependent variable. Depression severity, PTSD-related anhedonia, and PTSD-related dysphoric arousal were included as mediators. Indirect effects were computed with the direct paths from both harassment-only MST and assault MST to depression severity, PTSD-related dysphoric arousal and anhedonia, and from depression severity, PTSD-related dysphoric arousal and anhedonia, to sexual function. As

mediation was assumed, there were no direct paths specified from harassment-only MST and assault MST to sexual function. Direct paths from covariates of age and relationship duration to sexual function were also specified. These covariates were also allowed to correlate. Depression, PTSD-related anhedonia, and PTSD-related dysphoric arousal were also allowed to correlate. The mediation model was compared to a baseline model that was identical to the model presented in Fig. 1 with one exception: the baseline model included direct paths from harassment-only and assault MST to sexual function. Model fit was examined through several fit indices, including chi-square, Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Standardized Root Mean Square Residual (SRMR), and Root Mean Square Error of Approximation (RMSEA). Model fit was evaluated using fit statistics suggested by Hu & Bentler (1999), including $\geq .95$ for CFI and TLI and $\leq .08$ for SRMR and RMSEA. Model superiority between the mediation model and baseline model was determined using the chi-square difference test (Werner and Schermelleh-Engel, 2010) and a visual inspection of differences among the fit indices (i.e., TLI, CFI, SRMR, and RMSEA). If model fit was equivalent as evidenced by a nonsignificant chi-square difference test, the most parsimonious model was selected and retained (Mulaik, 2004). All statistical analyses were run in the R environment for statistical computing (R Core Team, 2018), and path analysis was completed with the Lavaan package in R (Rosseel, 2012).

3. Results

The majority of the participants identified as married ($n = 518, 74.32\%$), White, ($n = 534, 76.61\%$), reported service in the Army ($n = 374, 53.66\%$), an income of \$50,000/year or over ($n = 427, 61.26\%$), an associate's degree or higher education ($n = 420, 60.26\%$), and reported that they were discharged from the military ($n = 518, 74.32\%$). Means and standard deviations for age and relationship duration can be found in Table 1. One hundred twenty-two (17.50%) participants indicated that they did not experience MST, 336 (48.21%) reported that they experienced harassment-only MST, and 239 (34.29%) reported assault MST. Means, standard deviations, and intercorrelations for all variables can be found in Tables 1 and 2. At the bivariate level, poorer sexual function was significantly associated with higher depression severity, PTSD-related anhedonia, and PTSD-related dysphoric arousal with medium-to-large effect sizes. Higher sexual function was significantly associated with younger age and shorter relationship duration with a small-to-medium effect size. Higher depression severity, PTSD-related anhedonia, and PTSD-related dysphoric arousal were all significantly correlated with large effect sizes. Longer relationship duration was significantly associated with older age with a large effect size (see Table 1). Those who reported harassment-only MST reported significantly higher PTSD-related anhedonia and dysphoric arousal relative to those who reported no MST (see Table 2). Those who reported assault MST reported significantly higher depression, PTSD-related anhedonia and dysphoric arousal as well as lower sexual function relative to those who reported no MST (see Table 2). Finally, those who reported assault MST were more likely to report poorer sexual function and higher depression, PTSD-related anhedonia and dysphoric arousal relative to those who reported harassment-only MST (see Table 2). No other significant differences based on MST type were observed.

The path model shown in Fig. 1, which assumed mediation, had an adequate fit to the data as evidenced by several fit indices, including $\chi^2(12, N = 697) = 18.85, p = .09, CFI = 1.00, TLI = 0.99, SRMR = 0.02, \text{ and } RMSEA = 0.03$. Estimates for this model are included in Table 3 and Fig. 1. The mediation model was compared to the baseline model that included direct paths from harassment-only and assault MST to sexual function. The baseline model also had an adequate fit to the data, $\chi^2(10, N = 697) = 15.67, p = .11, CFI = 1.00, TLI = 0.99, SRMR = 0.01, \text{ and } RMSEA = 0.03$. Estimates for the baseline model are included in Table 4. The chi-square difference test

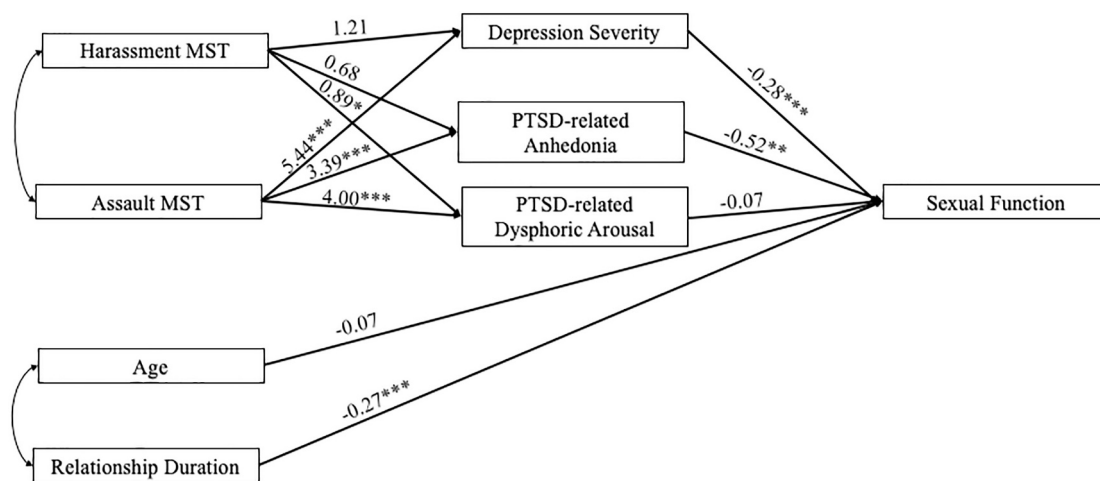


Fig. 1. Path Model of the Association of Sexual Function and MST History/Type as Mediated by Depression, PTSD-related Anhedonia and Dysphoric Arousal.

Table 1
Correlations, Means, and Standard Deviations for All Continuous Variables Used in the Path Model (N = 697).

Variable	1	2	3	4	5	6
1. Sexual Function	—					
2. Depression	-0.40***	—				
3. PTSD-Anhedonia	-0.40***	.72***	—			
4. PTSD-Dysphoric Arousal	-0.36***	.72***	.83*	—		
5. Relationship duration (years)	-0.19***	.04	-0.02	-0.03	—	
6. Age	-0.15***	.03	.02	-0.01	.60***	—
M	22.05	9.96	3.90	4.96	6.24	32.15
SD	9.96	7.63	4.11	4.62	5.55	7.26

***p ≤ .001; **p ≤ .01; *p ≤ .05.

was non-significant (difference between the two models: $\chi^2[2, 697] = 3.18, p = 0.20$), suggesting that these two models were equivalent in terms of model fit. As suggested by Mulaik (2004), we opted to retain the more parsimonious model, the mediation model, because it had fewer specified parameters. Moreover, a review of the estimates in Table 4 suggested the direct paths from harassment-only MST and assault MST to sexual function were nonsignificant.

Overall, the mediation model explained 22% of the variance. Direct paths from harassment-only MST to depression severity and PTSD-related anhedonia were nonsignificant, but the path from harassment-only MST to dysphoric arousal was significantly positive. Those who reported harassment-only MST reported higher PTSD-related dysphoric arousal relative to those who reported no MST. Direct paths from assault MST to depression severity, PTSD-related anhedonia, and PTSD-related dysphoric arousal were significant and positive. Those who reported assault MST reported higher depression, PTSD-related dysphoric

arousal, and PTSD-related anhedonia relative to those who reported no MST. Direct paths from depression severity and PTSD-related anhedonia to sexual function were significant and negative. Those who reported higher depression severity and PTSD-related anhedonia reported significantly poorer sexual function. The path from relationship duration to sexual function was also significant and negative. As relationship duration increased, sexual function significantly decreased. The paths from PTSD-related dysphoric arousal and age to sexual function were non-significant.

The indirect effects of depression severity ($-1.52, p < 0.001$) and PTSD-related anhedonia ($-1.77, p < 0.01$) on the association of assault MST and sexual function were significant. The indirect effects of depression severity ($-0.34, p > 0.05$), PTSD-related anhedonia ($-0.36, p > 0.05$) and PTSD-related dysphoric arousal ($-0.07, p > 0.05$) on harassment-only MST and sexual function were nonsignificant as was the indirect effect PTSD-related dysphoric arousal on assault MST and sexual function ($-0.30, p > 0.05$).

4. Discussion

The present study explored whether the association of MST type with sexual function among partnered SM/Vs was mediated by depression severity after accounting for previously established mediators of PTSD-related anhedonia and dysphoric arousal and demographic covariates. Findings revealed that one mechanism through which assault MST related to sexual function was indirect, through depression severity. That is, female SM/Vs with a history of assault MST reported poorer sexual function and this association may be best explained through co-occurring depression severity. Moreover, previous work in this area revealed that both PTSD-related anhedonia and dysphoric arousal accounted for the association of assault MST with sexual

Table 2
Associations of MST Type with Sexual Function, Depression, PTSD-related Anhedonia and Dysphoric Arousal as well as Covariates.

	No MST (n = 122) M(SD)	Harassment-only MST Positive (n = 336) M(SD)	t-test	Assault MST Positive (n = 239) M(SD) ^a	t-test	Assault vs Harassment- only MST
Sexual Function	23.41 (10.41)	23.46 (9.34)	t(456) = -0.05	19.39 (10.07)	t(359) = 3.55***	t(488) = 4.92***
Depression Severity	7.52 (6.80)	8.72 (7.23)	t(456) = -1.60	12.95 (7.67)	t(271) = -6.87***	t(573) = -6.74***
PTSD-Anhedonia	2.35 (3.45)	3.10 (3.69)	t(456) = -1.96*	5.80 (4.28)	t(294) = -8.25***	t(464) = -7.86***
PTSD-Dysphoric Arousal	3.09 (4.11)	4.07 (4.18)	t(456) = -2.24*	7.16 (4.62)	t(271) = -8.52***	t(480) = -8.19***
Relationship duration (years)	7.04 (6.41)	6.17 (5.58)	t(191) = 1.33	5.94 (5.00)	t(198) = -1.66	t(573) = 0.50
Age	32.25 (8.31)	32.02 (7.17)	t(456) = 0.29	32.28 (6.83)	t(206) = -0.03	t(573) = -0.43

Note. ^aCompared to No MST group.

***p ≤ .001; **p ≤ .01; *p ≤ .05.

Table 3
Estimated Path Coefficients for the Mediation Model Tested in Fig. 1 ($N = 697$).

Path	<i>B</i>	<i>SE(B)</i>	95% CI	<i>p</i>	<i>R</i> ²
Depression regressed on					0.08
Harassment MST	1.21	0.77	[−0.29, 2.71]	0.11	
Assault MST	5.44	0.81	[3.85, 7.02]	< 0.001	
PTSD-related Anhedonia regressed on					0.12
Harassment MST	0.68	0.41	[−0.12, 1.47]	0.09	
Assault MST	3.39	0.43	[2.55, 4.22]	< 0.001	
PTSD-related Dysphoric Arousal regressed on					0.12
Harassment MST	0.89	0.45	[0.01, 1.78]	.049	
Assault MST	4.00	0.48	[3.06, 4.93]	< 0.001	
Sexual Function regressed on					0.22
Depression	−0.28	0.07	[−0.41, −0.15]	< 0.001	
PTSD-related Anhedonia	−0.52	0.16	[−0.83, −0.22]	.001	
PTSD-related Dysphoric Arousal	−0.07	0.14	[−0.34, 0.19]	0.59	
Age	−0.07	0.06	[−0.18, 0.05]	0.25	
Relationship Duration	−0.27	0.08	[−0.42, −0.13]	< 0.001	

Note. *B* = unstandardized path coefficient; *SE* = standard error; CI = confidence interval; MST = military sexual trauma; PTSD = posttraumatic stress disorder. *R*² values are based on the overall set of predictor variables included for a given mediator or outcome variable.

Table 4
Estimated Path Coefficients for the Model Tested in Fig. 1 with the Addition of Direct Paths from Harassment-only MST and Assault MST to Sexual Function Included ($N = 697$).

Path	<i>B</i>	<i>SE(B)</i>	95% CI	<i>p</i>	<i>R</i> ²
Depression regressed on					0.08
Harassment MST	1.21	0.77	[−0.29, 2.71]	.11	
Assault MST	5.44	0.81	[3.85, 7.02]	< 0.001	
PTSD-related Anhedonia regressed on					0.12
Harassment MST	0.68	0.41	[−0.12, 1.47]	0.09	
Assault MST	3.39	0.43	[2.55, 4.22]	< 0.001	
PTSD-related Dysphoric Arousal regressed on					0.12
Harassment MST	0.89	0.45	[0.01, 1.78]	.049	
Assault MST	4.00	0.48	[3.06, 4.93]	< 0.001	
Sexual Function regressed on					0.22
Depression	−0.28	0.07	[−0.41, −0.15]	< 0.001	
PTSD-related Anhedonia	−0.50	0.16	[−0.81, −0.20]	.001	
PTSD-related Dysphoric Arousal	−0.05	0.14	[−0.32, 0.22]	.72	
Age	−0.06	0.06	[−0.18, 0.05]	.27	
Relationship Duration	−0.28	0.08	[−0.42, −0.13]	< 0.001	
Harassment MST	0.36	0.93	[−1.45, 2.17]	.70	
Assault MST	−1.03	1.02	[−3.04, 0.97]	.31	

Note. *B* = unstandardized path coefficient; *SE* = standard error; CI = confidence interval; MST = military sexual trauma; PTSD = posttraumatic stress disorder. *R*² values are based on the overall set of predictor variables included for a given mediator or outcome variable.

function (Blais et al., 2018c). However, after accounting for the indirect effect of depression severity in the current model, PTSD-related dysphoric arousal was no longer a significant mediator of this association. Given the high correlation between depression severity and dysphoric arousal observed in the current sample, it is likely that the variance assumed by depression in the current model accounted for the variance previously accounted for by dysphoric arousal in other models (e.g., Blais et al., 2018c).

Findings from the current study have important implications for interventions to improve sexual function among sexual trauma survivors who have served in the military. That is, such interventions may be most effective if they target depression symptoms and PTSD-related anhedonia. While several individual evidenced-based treatments for depression (see review, Hofmann et al., 2012) and PTSD (see meta-analyses, Asmundson et al., 2019; Foa et al., 2007) exist, none specifically target comorbid PTSD and depression. However, research shows that Prolonged Exposure (Foa et al., 2007), and Cognitive Processing Therapy (Resick and Schnicke, 1993) while specifically PTSD interventions, reduced both PTSD and depression severity (Powers et al., 2010; Resick et al., 2002). Such results suggest that by targeting PTSD symptoms, clinicians may simultaneously reduce depressive symptoms.

Given the interpersonal nature of sexual function, it is possible that

couples' therapy interventions may be particularly helpful in this domain. Though not specific to depression or sexual function, Cognitive-Behavioral Conjoint Therapy for PTSD (CBCT; Monson and Fredman, 2012) has been shown to be effective for SM/Vs with a trauma history (Monson et al., 2004; Monson et al., 2011; Schumm et al., 2013). Other couples' therapy interventions have also been shown to be effective in reducing distress in SM/Vs (Kugler et al., 2019), but similar to CBCT, they are not specific to depression and/or sexual function. Finally, though it is possible to treat depression effectively with medications, many medications have side effect profiles that negatively impact sexual function (Preeti et al., 2018). As such, psychotherapy may be the most effective strategy.

Findings also support the utility of targeted screening for sexual function among partnered SM/Vs with a history of sexual assault. Though additional screening measures might present an additional burden to clinics that already utilize universal screening for depression, PTSD, and MST (e.g., VA), targeted screening among assault MST survivors who are specifically endorsing depression and PTSD-related anhedonia may help identify those most at risk for sexual function. The *Female Sexual Function Index* (Rosen et al., 2000) may be an optimal screening measure given its brevity relative to other brief screenings for women (e.g., *Brief Index of Sexual Functioning for Women*, Taylor et al., 1994).

Limitations of the current study include the use of a non-representative convenience sample of female SM/Vs whose responses may not generalize to all SM/Vs. Participants were recruited from social media and listservs. Screening criteria could not be confirmed using objective measures. As only 76% of females who use the internet are active on social media (Pew Research Center, 2014), it is possible this study may not generalize to all female SM/Vs. Data regarding the sex and military service history of the romantic partner was not collected and could yield important information about these relationships. Data were also based on self-report and cross-sectional in nature. Thus, while we model depression as a precursor to sexual function, the true directionality of this association cannot be detected and it is established that the association of depression and sexual function is bidirectional in nature (Atlantis and Sullivan, 2012). Future research in this area may be strengthened by the use of clinical interviews that assess for the presence of diagnosable distress rather than severity of symptoms. Such research may also examine the utility of evidenced-based treatments for depression and PTSD as a mechanism to increase sexual function among partnered SM/Vs. Our study did not include a measure of childhood sexual abuse, which has been linked to adult sexual dysfunction (e.g., Maseroli et al., 2018) and other relationship difficulties (Miller et al., 2013). Finally, our sample was restricted to partnered females, which comprise only a subset of all active duty and veteran samples. Future research may consider the utility of examining these constructs in sexually active single female and male SM/Vs.

Notwithstanding these limitations, the present study provides novel information about the nature of the association of assault MST and sexual function among partnered female SM/Vs. Findings revealed that the association of assault MST with sexual function was indirect, through depression severity and PTSD-related anhedonia. Clinics providing care to sexual trauma survivors may consider targeted screening for sexual function and those providing direct intervention may be most effective if they target depression symptoms and PTSD-related anhedonia. The use of medications that increase sexual dysfunction may complicate clinical interventions.

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Author contributions

Dr. Blais had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Study concept and design: Blais, Livingston

Acquisition, analysis, or interpretation of data: Blais, Livingston, Fargo

Drafting of the manuscript: Blais, Livingston, Fargo

Statistical analysis: Blais, Livingston, Fargo

Obtaining funding: Blais

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Supplementary materials

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