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Meaning in life following deployment sexual trauma: Prediction of posttraumatic stress symptoms, depressive symptoms, and suicidal ideation

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ABSTRACT

Deployment sexual trauma (DST; i.e., sexual harassment or assault during deployment in the military) is associated with physical and mental health consequences, including posttraumatic stress disorder (PTSD), depression, and suicidal ideation (SI). Less attention has been placed on factors that may offer protection from deleterious mental health outcomes following DST. Global meaning in life (i.e., purpose, beliefs, goals, and subjective feelings) has been shown to be a protective factor against PTSD, depression, and SI following combat trauma; however, the extent to which meaning in life may affect outcomes following DST has not been investigated. Cross-sectional associations and Hayes mediation models were examined using baseline interview data from the Survey of Experiences of Returning Veterans sample (SERV; 850 recently returned veterans, 352 women). DST was associated with post-deployment posttraumatic stress symptoms (PTSS), depressive symptoms, and SI severity, and with decreased sense of meaning in life. Further, meaning in life was a significant mediator between DST and each of the three outcomes, even after controlling for demographic variables and combat experiences. The mediation models did not differ by gender. Findings suggest meaning in life may be an important clinical factor, both for the identification of risk and as a point of intervention.

1. Introduction

Military sexual trauma (MST) is “psychological trauma, which 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.” Sexual harassment is further defined as "repeated, unsolicited verbal or physical contact of a sexual nature which is threatening in character” (Title 38 U.S. Code 1720D). Deployment sexual trauma (DST) is MST (including harassment and assault) that occurs during deployment. MST is a major public health issue that has been recognized by the Department of Defense (DoD) and the Department of Veterans Affairs (VA) as associated with significant burden (Kimerling et al., 2007). Sexual harassment/assault prevention and response by the DoD and universal screening and mandated MST-related treatment benefits through the VA represent nationwide initiatives to address this problem. Despite these efforts, an alarmingly large proportion of Veterans in VA care continues to endorse MST (Wilson, 2018). Research efforts to inform the detection, prevention, and treatment of MST-related consequences are crucial, as the numbers of women veterans, younger veterans, and combat-exposed veterans continue to increase (Kimerling et al., 2007).

The prevalence of MST is difficult to establish for several reasons. In a study of 6.3 million veterans who received VHA services from fiscal years 2007 to 2011, 1.1% of men and 21.2% of women reported MST (including harassment and assault; Kimerling et al., 2016). A recent review of studies involving military personnel and Veterans reported that 3.9% of men and 38.4% of women endorsed MST (Wilson, 2018). In comparison, 1 in 6 women and 1 in 33 men in the United States have experienced sexual assault in their lifetime (National Institute of Justice Centers for Disease Control and Prevention, 1998). However, MST is often underreported for both men and women, due to factors such as stigma and fear of retribution (Morris et al., 2014; United States Department of Defense, 2012). One study suggested that over 60% of military sexual assault incidents are not officially reported (Office of Naval Inspector General, 2008). Further, marked inconsistencies in

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definitions, sampling, and research methods across studies contribute to difficulties with establishing prevalence (Surís and Lind, 2008). A recent survey of active-duty military estimated that 7% of men and 26% of women experienced sexual harassment or gender discrimination, and 1% of active-duty men and 5% of active-duty women experienced one or more sexual assaults in a one-year period (Morral et al., 2014). Estimates of MST specifically amongst female Iraq and Afghanistan-era veterans using VHA healthcare range from 14% to 49% (Haskell et al., 2010; Kimerling et al., 2010; Scott et al., 2014). Given the much higher proportion of men in the military, there are a significant number of male veterans who have also experienced MST.

MST is associated with multiple deleterious post-deployment outcomes for both male and female veterans, including various aspects of mental and physical health (e.g., Godfrey et al., 2015; Schry et al., 2015), interpersonal difficulties (Mondragon et al., 2015), and post-deployment readjustment (Katz et al., 2010). For both male and female veterans, psychiatric symptoms (e.g., posttraumatic stress, depressive, and dissociative symptoms) may be more severe following MST, as compared to military combat trauma (Sexton et al., 2017). Further, research has underscored the importance of examining gender differences in deployment experiences and post-deployment outcomes, as some studies have reported differential patterns of risk related to MST (Bryan et al., 2015; Kimerling et al., 2007; Monteith et al., 2016).

Veterans are at increased risk for PTSD compared to civilian adults, and women Veterans may be at particular risk (women veterans: lifetime prevalence = 13.4%; past year prevalence = 11.7%; women civilians: lifetime = 8.0%; past year = 8.6%; men veterans: lifetime = 7.7%; past year = 6.7%; men civilians: lifetime = 3.4%; past year = 2.6%; Lehavot et al., 2018). The association between MST and subsequent PTSD has been well established (for a review, see Surís and Smith, 2011). Further, some studies suggest a cumulative and/or synergistic effect of MST and combat exposure on risk for symptoms of PTSD (e.g., Kang et al., 2005; Scott et al., 2014). This is of increasing importance as women continue to join the military and occupy combat (or combat-exposed) roles in unprecedented numbers (Mattocks et al., 2012). The literature regarding gender differences in the relationship between MST and PTSD is inconclusive. In a large-scale study of VHA veterans, the relationship between PTSD and MST was nearly three times stronger for women (Kimerling et al., 2007). However, subsequent research has found equally deleterious effects of MST for men and women (Polusny et al., 2014), or higher rates of PTSD symptoms for men following MST (Hansen, 2018).

Recent estimates of depression in the United States indicate that 4.9% of adult men and 8.4% of adult women meet criteria for current depression (Centers for Disease Control and Prevention, 2011). Evidence suggests that Veterans may be at higher risk. One recent study reported a lifetime depression prevalence rate of 15.1% for all Veterans and 39.8% for Gulf War Veterans (Adjei Boakye et al., 2015). Further, women Veterans demonstrate higher risk relative to men (Maguen et al., 2012). In a study of OEF/OIF Veterans in VHA care, 39% of men and 48% of women screened positive for depression (Haskell et al., 2010). MST has been linked to depressive disorders for both men and women Veterans (e.g., Goldstein et al., 2017; Kang et al., 2005) and studies have reported no gender differences in depressive symptoms following MST (Hansen, 2018; Kimerling et al., 2007).

Veterans are at elevated risk for suicide compared to their adult, civilian peers. In 2015, age-adjusted suicide rates for male veterans were 1.3 times higher than those observed for U.S. civilian men and suicide rates among women veterans were 2.0 times higher than those observed for U.S. civilian women (U.S. Department of Veterans Affairs, 2018). Research has demonstrated a clear association between MST and suicidal ideation, suicide attempt(s), and suicide (Kimerling et al., 2007, 2016; Klingensmith et al., 2014). Studies of Iraq and Afghanistan veterans have reported that DST (Gradus et al., 2013) and MST (Monteith et al., 2016) predict post-deployment suicidal ideation. Again, mixed results have been reported regarding gender differences in these relationships. For example, Bryan et al. (2015) reported that in a sample of college student veterans and service members, MST only increased the risk of subsequent SI among men, whereas premilitary sexual trauma, rather than MST, increased the risk of subsequent SI for women. Likewise, Monteith et al. (2016) reported a stronger relationship between MST and suicidal ideation for men versus women veterans. Some have argued that men may be more negatively affected by MST due to traditional gender expectations (e.g., Juan et al., 2017). Conversely, when examining suicide death in a large scale Veterans' Health Administrative study from 2007–2011, Kimerling et al. (2016) reported that the relationship between MST and suicide was stronger for women.

Overall, risk for adverse mental health outcomes following MST is clear, but the mechanisms driving this effect have received much less attention. In recent years, a focus has been placed on investigating factors that may facilitate more positive psychological processes following a traumatic experience. For example, some studies have reported that posttraumatic growth, or perceptions of improved personal characteristics after encountering challenging events, is associated with hope, coping skills, and social support following trauma (Wu et al., 2019). Another construct that may be associated with outcomes following trauma is meaning in life. The notion that meaning is central to human life has a rich history and has often been theoretically applied in seeking to understand how humans confront highly stressful life experiences (Park, 2010). Frankl (1963) famously wrote about his experiences of surviving a Nazi concentration camp and developed a psychotherapeutic approach using meaning in life to survive and recover from trauma. More recently, sense of meaning or purpose in life has gained attention in multiple areas of psychology and psychiatry (George and Park, 2016; Park, 2010).

Park (2010) recently integrated several prominent theories on meaning into a coherent model that describes the process of meaning-making. First, people possess general cognitive frameworks through which they make sense of themselves and the world (termed global meaning in life). Next, traumatic experiences may disrupt these previously held beliefs, causing distress. Through meaning-making, individuals attempt to restore a sense of their lives as meaningful and the world as safe. Finally, the degree to which this process is successful determines psychological well-being following trauma.

Importantly, this model distinguishes between global meaning in life ("individuals' general orienting systems, consisting of beliefs, goals, and subjective feelings") and meaning-making, which is specific to interpretation of the traumatic experience. Park (2010) further stated, global meaning in life "appears to powerfully influence individuals' thoughts, actions, and emotional responses." (p. 258). Steger et al. (2006) distinguished between two components of global meaning in life: presence of meaning and search for meaning, the former of which was associated with life satisfaction and positive emotions and negatively correlated with depression, negative emotions, and neuroticism. Subsequent research has consistently linked presence of meaning with psychological well-being, as well as shown a negative relationship between meaning and adverse psychological outcomes (e.g., depression, SI) in the general population (e.g., Kleiman and Beaver, 2013; Steger et al., 2009).

Likewise, meaning in life is associated with decreased symptoms of PTSD, depression, and SI, and improved psychosocial functioning in military and veteran samples (Blackburn and Owens, 2015; Bryan et al., 2013; Currier et al., 2011). In one sample of veterans, meaning mediated the relationship between PTSD and SI, and between depression and SI (Sinclair et al., 2016). Further, meaning in life mediated the effects of moral injury on PTSD, depression, and SI (Currier et al., 2015). However, these existing studies either focused on combat experiences or did not ask about the type of trauma, were conducted in overwhelmingly male samples, and did not assess for MST. Research has reported that meaning-making is associated with more positive outcomes following sexual trauma more broadly (e.g., sexual assault (Koss and

Figueredo, 2004) and childhood sexual abuse (Wright et al., 2007)). Finally, some evidence suggests that meaning may be directly modifiable by treatment. For example, in a study of early retirees with SI, a meaningful personal goal intervention was successful in decreasing depressive symptoms and psychological distress (Lapierre et al., 2007). To our knowledge, no studies have examined the potential impact of meaning in life on risk for negative mental health outcomes following MST. Given the findings reviewed above, this omission may represent a significant opportunity for understanding how to foster more positive trajectories following MST.

1.1. Aims and hypotheses

The present study aimed to address this gap through secondary data analysis of the Survey of Experiences of Returning Veterans (SERV). The overarching objective was to explore a construct, meaning in life, with potential clinical implications in the prognosis and treatment of symptoms following MST. We hypothesized that DST would be positively associated with posttraumatic stress symptoms (PTSS), depressive symptoms, and SI severity, and negatively associated with meaning in life. Further, we hypothesized that meaning in life would help to explain (i.e., mediate) the relationship between MST and our three outcomes of interest (i.e., PTSS, depressive symptoms, and SI severity). Finally, gender differences were examined in the mediation models but no formal hypotheses were made, given that no prior studies have examined these models.

2. Methods

2.1. Procedures and participants

Data were analyzed from the SERV study (see Laws et al., 2016; Park et al., 2017; Smith et al., 2014 for more information about the SERV study procedures and primary findings). SERV is a longitudinal sample of recently returned Operation Iraqi Freedom, Operation Enduring Freedom, and Operation New Dawn veterans; however, only the baseline data was included in this investigation. Recruitment methods included the Internet (e.g., Facebook, YouTube), media outlets, the Department of Veterans Affairs (VA), resources such as listservs and closed circuit televisions in VA facilities, and word of mouth. Women were over-sampled to facilitate gender comparisons. While SERV is a convenience sample, most veterans were not engaged in VHA healthcare; therefore, it potentially offers a more representative sample of all veterans than do studies including only VHA patients. SERV is a national sample and includes veterans from every state. The baseline phone interview, a 60- to 75-minute interview conducted by a trained interviewer using validated measures, took place within five years following separation from service. All participants provided consent and study procedures were approved by the Institutional Review Board of the Department of Veterans Affairs. Eight-hundred and fifty veterans were interviewed at baseline. Observations (n = 40, 4.7%) with missing data for study variables of interest (after imputation, described below) were removed. The analysis sample included 810 participants, 337 (41.6%) women.

2.2. Measures

2.2.1. Deployment sexual trauma

The Deployment Risk and Resilience Inventory-2 (Vogt et al., 2013) is widely used to assess pre-, peri- and post-deployment experiences. The DRRI-2 contains 210 items (17 subscales) and the subscales have demonstrated strong internal consistency reliability and criterion-related validity (Maoz et al., 2016; Vogt et al., 2013). In cases of missing data on the two DRRI-2 subscales used in the present study (Sexual Harassment Scale and Combat Experiences Scale), scores were imputed for participants who answered at least 80% of items. Specifically, the missing item(s) were estimated using the average of the answered items. Participants who answered less than 80% were excluded from the analysis sample. The DRRI-2 Sexual Harassment Scale is comprised of 8 items measuring exposure to sexual harassment (e.g., “made crude and offensive sexual remarks directed at me, either publicly or privately”) and assault (e.g., “physically forced me to have sex”). Items are rated on a frequency scale ranging from 1 (“never”) to 4 (“many times”) and summed to produce total scores ranging from 8 to 32. This scale is limited to assessing experiences of MST in the context of deployment (DST). Cronbach's alpha in this sample was good (α = 0.88). The scale was significantly, positively skewed; therefore, a logarithmic transformation was applied and the transformed variable was used for all regression models.

2.2.2. Meaning in life

The Presence of Meaning in Life (MLQ-P) is a 5-item subscale of the Meaning in Life Questionnaire (Steger et al., 2006), a 10-item measure designed to assess sense of and search for meaning in life. Steger et al. (2006) reported good internal consistency and test-retest reliability, as well as convergent and discriminant validity of the MLQ subscales across time and informants. Aquino et al., 2015 provided further evidence of reliability and factorial validity. The MLQ-P was administered in this study to tap current sense of meaning (e.g., “My life has a clear sense of purpose.”; “I have a good sense of what makes my life meaningful.”; “I have discovered a satisfying life purpose.”). Summed total scores ranged from 5 to 35, and internal consistency in our sample was excellent (Cronbach's α = 0.91).

2.2.3. Posttraumatic stress symptoms

Posttraumatic stress symptoms (PTSS) were measured using the PTSD Checklist-Civilian Version (PCL-C; Wilkins et al., 2011), a widely used measure with 17 items that correspond with the Diagnostic and Statistical Manual of Mental Disorders, 4th ed., text rev. (DSM-IV; American Psychiatric Association, 2000) criteria for PTSD. Items are rated on a five-point Likert scale and were summed to create total scores ranging from 17 to 85. Previous studies have established the psychometric properties of the PCL (e.g., Andrykowski et al., 1998; Ruggiero et al., 2006) and Cronbach's alpha in the present sample was excellent (α = 0.96).

2.2.4. Depressive symptoms

A modified version of the Patient Health Questionnaire Depression Scale-8 (PHQ-8; Kroenke and Spitzer, 2002) assessed symptoms of depression. The PHQ-8 is widely used in research and clinical practice and has established reliability and validity properties (Kroenke and Spitzer, 2002; Kroenke et al., 2010). The version employed in the current study included identical items to the PHQ-8 but differed in time frame (past month versus past two weeks for PHQ-8). In addition, response options were dichotomous (“no” or “yes” for each symptom, nearly every day). Items were summed, producing total scores ranging from zero to eight, and Cronbach's alpha in the current sample was adequate (α = 0.80).

2.2.5. Suicidal ideation severity

Suicidal ideation (SI) severity was assessed using dichotomous questions corresponding to the five categories of the Columbia-Suicide Severity Rating Scale (C-SSRS; Posner et al., 2011). Posner et al. (2011) provided evidence for strong internal consistency, convergent and divergent validity, and high sensitivity and specificity for the C-SSRS. Matarazzo et al. (2018) provided further evidence of convergent, divergent, and predictive validity. In the current study, participants reported on ideation over the past three months and were classified into one of six categories based on the most severe item they endorsed (0 = no SI, 1 = wish to be dead, 2 = nonspecific active SI, 3 = active SI with plan, 4 = active SI with intent but no plan, and 5 = active SI with plan and intent). This scoring is consistent with recommendations by the scale developers (Posner et al., 2011). SI severity was analyzed as a

continuous variable, consistent with prior research (Conway et al., 2017). Due to significant positive skew and kurtosis, a square root transformation was applied and the transformed variable was used for all regression models.

2.2.6. Covariates

Participants self-reported on their age, race, ethnicity, level of education, marital status, and household income. Race (white versus minority race) and ethnicity (Hispanic/Latino/a versus not) variables were dichotomous. Age, in years, was classified as a categorical variable: <30, 30–39, 40–49, ≥50. The Combat Experiences Scale, a 17-item subscale of the DRRI-2, assessed the severity of various components of combat exposure, with summed total scores ranging from 0 to 85. Participants endorsed each experience (e.g., "I fired my weapon at enemy combatants") on a scale from "never" (0) to "daily or almost daily" (5). Internal consistency in this sample was excellent (Cronbach's $\alpha = 0.92$).

2.3. Data analyses

All analyses were conducted with IBM SPSS Statistics version 24. Descriptive statistics are reported for the entire analytic sample and stratified by gender. Bivariate comparisons (chi-square, independent samples *t*-test, one-way ANOVA, or Spearman correlations dependent on variable types) were conducted for demographics, DST, PTSS, depressive symptoms, and SI severity. Bivariate (Spearman's rho) associations between covariates of interest and primary study variables were assessed. Covariates that were independently associated with each outcome were included in the mediation models (see Table 3 note for list of covariates in each model). Transformed DST and SI severity variables were used for all regression models; the other study variables did not significantly violate assumptions of normality thus transformation was not necessary.

The SPSS PROCESS macro version 3.0 (Hayes, 2018) was used for mediation analyses (a separate mediation analysis was conducted for each of the three outcomes). The total effect is the effect of DST on each outcome without the mediator in the model and the indirect effect (i.e., the effect of DST on each outcome through meaning in life) is a measurement of the reduction in DST's association with each outcome when the mediator is included in the model. Significant Sobel tests and bootstrapped 95% confidence intervals for the indirect effect that do not include zero indicate statistically significant mediation. Finally, conditional process analysis ("moderated mediation") was conducted (Hayes' PROCESS model 58) to examine whether the three mediation models differed by gender. The index of moderated mediation indicates whether one or more of the mediation pathways differs dependent on gender). Again, statistical significance is indicated by 95% bootstrapped confidence intervals that do not include zero.

3. Results

3.1. Sample characteristics

Table 1 displays sample characteristics and associations with DST, both for the overall sample and stratified by gender. Descriptive statistics are reported in the original scale metric for DST and suicidal ideation (SI) severity (Tables 1 and 2), but the transformed variables were included in all subsequent analyses. Age was related to DST for women (highest DST for ages 30–39) and minority race was associated with higher DST for women but not men. For the total sample, DST was highest amongst the Divorced/Widowed/Separated group; whereas, DST was highest amongst the Never Married group for men only. DST was negatively correlated with income for the entire sample and combat was related to higher DST for women but not men. Women reported higher DST and men reported greater combat exposure. Finally, men endorsed higher posttraumatic stress symptoms (PTSS).

Table 1
Sample characteristics and associations with deployment sexual trauma.

	Total (n = 810)	Men [n = 473 (58.4%)]	Women [n = 337 (41.6%)]
Deployment sexual trauma [*M*(SD)]	9.65 (3.5)	8.57 (1.6)	11.18 (4.67)
Age [*n*(%)]	ns	ns	*
<30	285 (35.2)	192 (40.6)	93 (27.6)
30–39	296 (36.5)	166 (35.1)	130 (38.6)
40–49	165 (20.4)	90 (19)	75 (22.3)
50+	64 (7.9)	25 (5.3)	39 (11.6)
Race [*n*(%)]	**	ns	*
White	606 (74.8)	375 (79.3)	231 (68.5)
Minority race	204 (25.2)	98 (20.7)	106 (31.5)
Ethnicity [*n*(%)]	ns	ns	ns
Hispanic/Latino	95 (11.7)	63 (13.3)	32 (9.5)
Not Hispanic/Latino	715 (88.3)	410 (86.7)	305 (90.5)
Education [*n*(%)]	ns	ns	ns
Highschool or less	96 (11.9)	74 (15.6)	22 (6.5)
More than Highschool	714 (88.1)	399 (84.4)	315 (93.5)
Income [*M*(SD)][a]	3.21** (1.6)	3.17* (1.56)	3.28** (1.61)
Marital status [*n*(%)]	**	*	ns
Married/living with someone	410 (50.6)	260 (55.0)	150 (44.5)
Divorced/widowed/separated	172 (21.2)	89 (18.8)	83 (24.6)
Never married	227 (28.0)	123 (26.0)	104 (30.9)
Combat [*M*(SD)]	18.84** (16.19)	24.57 (17.17)	10.78* (10.27)
Meaning in life [*M*(SD)]	26.03** (6.81)	25.59** (6.77)	26.65*** (6.83)
PTSD symptoms [*M*(SD)]	47.22***(18.02)	48.44** (17.96)	45.51*** (18.0)
Depression [*M*(SD)]	3.00*** (3.15)	3.17* (3.12)	2.75*** (3.12)
SI severity [*M*(SD)]	0.39*** (1.01)	0.42* (1.06)	0.35*** (0.93)

Note: *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$ for associations with DST. Independent samples *t*-test, one-way ANOVA, or Spearman's rho was calculated depending on variable type.

[a] Income is a continuous variable ranging from 1 to 6, a mean household income of 3.21 is between the categories $35,000 to $50,000 and $50,000 to $75,000.

3.2. Total effects

Table 3 displays the association between DST and each of the three outcomes. As hypothesized, DST was a significant predictor of PTSS, depression, and SI, even after controlling for potential confounders ($p < 0.001$, see Table 3 for regression coefficients, significant tests, and covariates included in each model).

3.3. Mediation

Table 3 displays the regression coefficients and associated p-values for the association between the predictor and mediator. In each model, DST was associated with lower meaning in life ($p < 0.001$). Table 3 also displays the association between meaning in life and each outcome while controlling for DST, as well as the association between DST and each outcome controlling for meaning in life. Controlling for DST, lower meaning in life was associated with higher symptom endorsement on each of the three outcomes ($p < 0.001$). Further, the addition of meaning in life resulted in a decrease (relative to the total effect) in the proportion of each outcome accounted for by DST. The indirect effect of DST through meaning in life was significant in each model (see Table 3 for indirect effects, Sobel tests, and 95% bootstrapped confidence intervals; see Fig. 1 for visual representation of the mediation model for SI). These findings indicate that meaning in life significantly mediated the relationships between DST and all three outcomes.

Finally, conditional process analysis by gender revealed no significant differences in any of the mediation models. The bootstrapped 95% confidence intervals for the indices of moderated mediation (the difference between conditional indirect effects for men and women) are as follows: PTSS (−5.73, s.e. = 6.51, 95% CI [−19.79, 5.62]),

Table 2
Spearman correlation matrix among study variables stratified by gender.

Variable	DST	Combat	PTSS	Meaning	Depression	SI Severity
DST		0.07	0.14**	−0.14**	0.10*	0.10*
Combat	0.12*		0.36***	−0.12*	0.18***	0.07
PTSS	0.34***	0.31***		−0.47***	0.68***	0.41***
Meaning in Life	−0.22***	−0.12*	−0.46***		−0.40***	−0.35***
Depression	0.29***	0.18**	0.66***	−0.45***		0.43***
SI Severity	0.24***	0.15**	0.36***	−0.31***	0.38***	

Note: Values for men are listed above the diagonal and values for women are listed below the diagonal.
DST = Deployment Sexual Trauma.
PTSS = Posttraumatic Stress Symptoms.
SI = Suicidal Ideation.
$N = 810$.
* $p < 0.05$,.
** $p < 0.01$,.
*** $p < 0.001$.

Table 3
Summary of mediation models: unstandardized coefficients (standard errors in parentheses).

Outcome		Total effects models	Mediation analyses	
PTSS[a]		DST → PTSS	DST → Meaning in Life (Mediator)	DST & Meaning → PTSS
	DST[c]	34.77*** (5.01)	−9.05*** (2.06)	25.40*** (4.59)
	Meaning in Life	–	–	−1.04*** (0.08)
			Indirect effect of DST on PTSS through meaning 9.37*** (2.18) 95% CI [5.18, 13.78][e]	
			Sobel Test: $z = 4.15$, $p < 0.001$	
Depression[a]		DST → Depression	DST → Meaning in Life (Mediator)	DST & Meaning → Depression
	DST[c]	4.56*** (0.93)	−9.05*** (2.06)	2.95*** (0.87)
	Meaning in Life	–	–	−0.18*** (0.01)
			Indirect effect of DST on depression through meaning 1.6*** (0.38) 95% CI [0.87, 2.38][e]	
			Sobel Test: $z = 4.13$, $p < 0.001$	
SI[b,d]		DST → SI	DST → Meaning in life (Mediator)	DST & Meaning → SI
	DST[c]	0.87*** (0.17)	−8.92*** (2.04)	0.61*** (0.17)
	Meaning in Life	–	–	−0.03*** (0.00)
			Indirect effect of DST on SI through meaning 0.25*** (0.07) 95% CI [0.13, 0.40][e]	
			Sobel test: $z = 4.00$, $p < 0.001$	

Note: DST = Deployment Sexual Trauma; PTSS = Posttraumatic Stress Symptoms; SI = Suicidal Ideation Severity.
[a] Controlling for age, race, education, ethnicity, income, combat.
[b] Controlling for age, income, combat.
[c] Estimates reflect a 1 unit change in the log10 transformed DST scale.
[d] Estimates reflect a 1 unit change in the square root transformed SI scale.
[e] Bias-corrected standard error and confidence intervals were obtained with bootstrapping (10,000 samples).
*** $p < 0.001$.

depression (−0.53, s.e. = 1.07, 95% CI [−2.86, 1.40]), and SI severity (−0.26, s.e. = 0.21, 95% CI [−0.72, 0.11]).

4. Discussion

The detrimental mental health effects associated with MST are clear; however, little attention has been given to factors that may protect against these outcomes. This study aimed to inform this area by examining whether the experience of DST was associated with decreased meaning in life after deployment, and whether meaning in life affected the association between DST and negative post-deployment mental health outcomes. As hypothesized, DST was associated with lower meaning in life, higher PTSS, higher depressive symptoms, and greater SI severity. Further, decreased meaning in life mediated the association between DST and each of the negative mental health outcomes. In other words, the association between DST and PTSS, depressive symptoms, and SI severity was attenuated among veterans who reported higher meaning in life. These findings, although cross-sectional, suggest meaning in life may be an important mechanism in the relationship between DST and these mental health outcomes.

Conceptually, it follows that MST may reduce sense of meaning in life. While there are many reasons for joining the military, a sense of purpose/future direction is commonly cited (Mankowski et al., 2015). MST often leads to perceptions of institutional betrayal (wrongdoings by an institution on individuals dependent on that institution, including failure to prevent or respond supportively to members' experiences; Smith and Freyd, 2013), which have been linked to PTSD symptoms, depressive symptoms, and suicide attempts (Monteith et al., 2016). It seems logical that if one garners a sense of meaning from military experiences/identity, and then experiences institutional betrayal related to MST, questioning of life meaning may occur. The Department of Defense has reported that approximately 34–56% of service members who experience MST consider leaving the military (DoD, 2013), which may precipitate and/or result from questioning one's purpose in the military. In addition, several other associated consequences of MST may also have an impact on meaning in life. For example social isolation, impaired physical health, and decreased quality of life, as well as symptoms such as avoidance, emotional numbing, and anhedonia, are likely to impede engagement in a meaningful life (Surís et al., 2007).

These analyses were cross-sectional; therefore, alternative

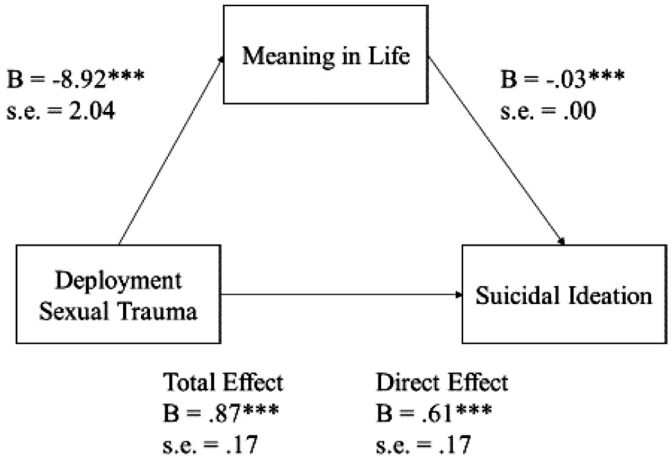

Fig. 1. Meaning in life mediates the association between deployment sexual trauma and severity of suicidal ideation

Lower meaning in life mediates the association between deployment sexual trauma (DST) and postdeployment suicidal ideation (SI) severity, controlling for age, income, and combat ($N = 810$). The indirect effect of DST on SI through meaning in life is presented in Table 3, along with Sobel tests and bias-corrected confidence intervals obtained through bootstrapping methods most appropriate to testing significance of the indirect effect. ***$p < 0.001$.

interpretations regarding the direction of causality must be considered. First, it is possible that meaning in life may represent more of a stable trait, and that those who possess higher meaning in life tend to fare better against life's challenges (as opposed to the notion that MST directly decreases meaning). Because the experience of DST occurred during deployment, it necessarily preceded the measurement of meaning in life and the outcome variables, which were all assessed at one time point (post-deployment). However, meaning in life was not measured before or during deployment; therefore, causal attributions cannot be made. Second, it is possible that MST led to symptoms of PTSD, depression, and SI, which then led to subsequent decreases in meaning in life. The current results are not intended to establish causality but rather to provide a promising starting point for future longitudinal investigations of these associations.

Consistent with previous studies, DST was more common among women in the SERV sample, but findings did not suggest that gender moderates the mediating effect of meaning on the association between DST and the three outcomes. This indicates that meaning in life may be protective for both men and women MST survivors. However, given the higher prevalence of MST among women veterans and the fact that these veterans are of high risk for suicide, it may be particularly important to explore how meaning in life can be incorporated into suicide prevention strategies for women veterans. As stated by Kimerling et al. (2016) "MST may negate the protective effect of female gender on suicide risk, where women who experienced MST showed similar risk of suicide over time as the average male VA user" (p. 689). From 2001 to 2014, suicide rates increased more substantially among female veterans than among male veterans (U.S. Department of Veterans Affairs, 2016); thus, there is a clear need to identify suicide prevention strategies that are acceptable and effective for both men and women veterans. Our findings suggest that assessing and working to increase meaning in life following MST may be one important clinical target.

4.1. Clinical implications

Although further research is needed before making broad clinical applications, these results suggest that clinicians working with veterans who have experienced MST should assess for and consider their general sense of meaning in life. The link between meaning and suicide risk may be of particular importance to clinicians, as suicide prevention is a national VHA priority, yet not enough research has been conducted on protective strategies. An inverse association between meaning in life and suicidal ideation has been documented in civilian (e.g., Kleiman and Beaver, 2013) and veteran (Sinclair et al., 2016) samples. As noted above, meaning in life may be directly modifiable by treatment. For example, in a study of early retirees with SI, a meaningful personal goal intervention was successful in decreasing depressive symptoms and psychological distress (Lapierre et al., 2007). Similarly, meaning-making interventions have been successfully employed to improve psychological adjustment to cancer (e.g., Lee et al., 2006). As suggested by Kleiman and Beaver (2013), it is plausible that such interventions may be modified for veterans who experience SI following MST.

Meaning may also be an important variable to consider during risk assessment, as an examination of meaning in life may facilitate a better understanding of both current symptoms and future risk. Clinicians routinely evaluate factors related to risk of harm to self or others, as well as protective factors such as demographic variables, social support, and limited access to means. Including a query regarding sense of meaning in life may provide important insight into both risk and protection, as well as facilitate a more patient- (vs. symptom-) centered interaction.

Finally, future research should examine the extent to which meaning in life may be impacted by existing treatment interventions. For example, the gold standard trauma-focused interventions, Prolonged Exposure (Foa et al., 2007) and Cognitive Processing Therapy (CPT; Resick et al., 2017) have demonstrated effectiveness for survivors of MST (Bedard-Gilligan et al., 2016; Suris et al., 2013). Specific mechanisms of change for these treatments for MST have been identified, such as attenuation of self-blame (Holliday et al., 2018a), decreases in suicide cognitions (Holliday et al., 2018b), and improved psychosocial and health functioning (Holliday et al., 2015). It stands to reason that a Veteran's sense of meaning in life may be enhanced implicitly through treatment; however, the failure to examine this mechanism more explicitly may represent a missed opportunity. For example, Holliday et al. (2015) reported that CPT did not improve Veterans' quality of life perceptions and concluded, "current psychosocial treatments may not adequately address quality of life impairment in Veterans with MST-related PTSD" (p. 432). Future examination of meaning in life as a modifiable factor in treatment may enhance outcomes such as quality of life. Likewise, the majority of MST survivors endorse a number of psychiatric diagnoses in addition to PTSD, such as depression and anxiety disorders (e.g., Kimerling et al., 2007); therefore, future research should examine meaning in life in the context of evidence-based treatments for depression, anxiety, and SI (such as Cognitive Behavioral and Acceptance and Commitment Therapy).

4.2. Limitations and future directions

As noted above, a major limitation is the cross-sectional design, which precludes the ability to draw conclusions about causality and temporality. As discussed by Maxwell and Cole (2007), caution should be exercised when interpreting the results of cross-sectional examinations of mediation, as they are likely to produce biased estimates of longitudinal mediation parameters. The purpose of this study was to provide an initial test of whether meaning in life statistically explains the relationship between DST and negative mental health outcomes. The overarching goal was to lay the groundwork for future longitudinal examinations. The use of screening tools (PCL-C and PHQ-8) rather than diagnostic interviews for PTSD and depression is an additional limitation, though well-validated scales were used. Additionally, the PCL-C is based on DSM-IV criteria for PTSD. Future studies should use updated measures, such as the PCL-5, which is based on the current Diagnostic and Statistical Manual of Mental Disorders, 5th ed. (American Psychiatric Association, 2013) criteria for PTSD. It should be

noted that the measurement of MST in this study was limited to experiences during deployment. Future work should examine whether there are qualitative differences between DST and MST that occurs at other points during military service.

Finally, more work is needed on the assessment of meaning of life as applied to MST, given that this was a preliminary, cross-sectional study that measured meaning with only five items. Further, as noted in the introduction, an important distinction should be made between global sense of meaning (assessed in this study), which is typically established early in life, and situational meaning (not assessed in this study), which refers to the meaning-making process initiated by a particular environmental event (e.g., a traumatic experience; Park, 2010). This process includes initial appraisal of the meaning of the trauma, discrepancy between one's global meaning and meaning of the trauma, and "meaning-making," or attempting to reduce the discrepancy between the two. As mentioned above, meaning-making is associated with more positive outcomes following sexual trauma (e.g., sexual assault (Koss and Figueredo, 2004) and childhood sexual abuse (Wright et al., 2007)); however, this process has not been examined in the context of MST. To fully understand meaning in life and meaning-making following trauma, it is critical to examine all aspects of the meaning model (global and situational, Park et al., 2010). Future studies should elucidate these processes specific to MST, which may provide insight into multiple potential points of intervention. Overall, PTSS, depressive symptoms, and SI are important to assess following disclosure of MST, and meaning in life warrants further attention as a potential mechanism of intervention.

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Declaration of Competing Interest

None to declare.

References

Adjei Boakye, E., Stringer, L.R., Tobo, B.B., Buchanan, P., 2015. Do depression rates differ by conflict era among war veterans? Value Health 18, A262. https://doi.org/10.1016/j.jval.2015.03.1525. -A262.

American Psychiatric Association, 2000. Diagnostic and Statistical Manual of Mental Disorders, 4th ed. Author, Washington, DC text rev.

American Psychiatric Association, 2013. Diagnostic and Statistical Manual of Mental Disorders, 5th ed. Author, Washington, DC.

Andrykowski, M.A., Cordova, M.J., Studts, J.L., Miller, T.W., 1998. Posttraumatic stress disorder after treatment for breast cancer: prevalence of diagnosis and use of the PTSD Checklist—civilian version (PCL—C) as a screening instrument. J. Consult. Clin. Psychol. 66, 586–590. https://doi.org/10.1037/0022-006X.66.3.586.

Aquino, T., Veloso, V.G., Aguiar, A.A., Serafim, T.D., Pontes, A.M., Pereira, G.A., Fernandes, A.S., 2015. Meaning in life questionnaire: evidence of its factor validity. Psicologia: Ciencia e Profissao 35, 4–19. http://dx.doi.org/10.1590/1982-3703001332012.

Bedard-Gilligan, M., Marks, E., Graham, B., Garcia, N., Jerud, A., Zoellner, L.A., 2016. Prolonged exposure and cognitive processing therapy for military sexual trauma-related posttraumatic stress disorder. In: Katz, L.S. (Ed.), Treating Military Sexual Trauma. Springer Publishing Co, New York, pp. 135–153.

Blackburn, L., Owens, G.P., 2015. The effect of self efficacy and meaning in life on posttraumatic stress disorder and depression severity among veterans. J. Clin. Psychol. 71, 219–228. https://doi.org/10.1002/jclp.22133.

Bryan, C.J., Bryan, A.O., Clemans, T.A., 2015. The association of military and premilitary sexual trauma with risk for suicide ideation, plans, and attempts. Psychiatry Res. 227, 246–252. https://doi.org/10.1016/j.psychres.2015.01.030.

Bryan, C.J., Elder, W.B., McNaughton-Cassill, M., Osman, A., Hernandez, A.M., Allison, S., 2013. Meaning in life, emotional distress, suicidal ideation, and life functioning in an active duty military sample. J. Posit. Psychol. 8, 444–452. https://doi.org/10.1080/17439760.2013.823557.

Centers for Disease Control and Prevention, 2011. Mental Illness Surveillance Among Adults in the United States. Retrieved from: https://www.cdc.gov/mmwr/preview/mmwrhtml/su6003a1.htm?s_cid=su6003a1_w#Tab2.

Conway, P.M., Erlangsen, A., Teasdale, T.W., Jakobsen, I.S., Larsen, K.J., 2017. Predictive validity of the Columbia-Suicide Severity Rating Scale for short-term suicidal behavior: a Danish study of adolescents at a high risk of suicide. Arch. Suicide Res. 21, 455–469. https://doi.org/10.1080/13811118.2016.1222318.

Currier, J.M., Holland, J.M., Chisty, K., Allen, D., 2011. Meaning made following deployment in Iraq or Afghanistan: examining unique associations with posttraumatic stress and clinical outcomes. J. Trauma. Stress. 24, 691–698. https://doi.org/10.1002/jts.20691.

Currier, J.M., Holland, J.M., Malott, J., 2015. Moral injury, meaning making, and mental health in returning veterans. J. Clin. Psychol. 71, 229–240. https://doi.org/10.1002/jclp.22134.

Department of Defense, 2013. Annual Report on Sexual Assault in the Military: Ffiscal Year 2012. Annual Report on Sexual Assault in the Military: Ffiscal Year 2012. 2. http://www.sapr.mil/public/docs/reports/FY12_DoD_SAPRO_Annual_Report_on_Sexual_Assault-volume_two.pdf.

Foa, E.B., Hembree, E.A., Rothbaum, B.O., 2007. Prolonged Exposure Therapy For PTSD: Emotional Processing of Traumatic Experiences: Therapist Guide. Oxford University Press, New York, NY. http://dx.doi.org/10.1093/med:psych/9780195308501.001.0001.

Frankl, V.E., 1963. Man's Search for meaning: an Introduction to Logotherapy. Washington Square Press, Oxford.

George, L.S., Park, C.L., 2016. Meaning in life as comprehension, purpose, and mattering: towards integration and new research questions. Rev. Gen. Psychol. 20, 205–220.

Godfrey, K.M., Mostoufi, S., Rodgers, C., Backhaus, A., Floto, E., Pittman, J., et al., 2015. Associations of military sexual trauma, combat exposure, and number of deployments with physical and mental health indicators in Iraq and Afghanistan veterans. Psychol. Serv. 12, 366–377. https://doi.org/10.1037/ser0000059.

Goldstein, L.A., Dinh, J., Donalson, R., Hebenstreit, C.L., Maguen, S., 2017. Impact of military trauma exposures on posttraumatic stress and depression in female veterans. Psychiat. Res. 249, 281–285. https://doi.org/10.1016/j.psychres.2017.01.009.

Gradus, J.L., Street, A.E., Suvak, M.K., Resick, P.A., 2013. Predictors of suicidal ideation in a gender-stratified sample of OEF/OIF veterans. Suicide. Life-Threat. 43, 574–588.

Hansen, H.R., 2018. Gender Differences in Suicidality Among Veterans Who Have Experienced Military Sexual Trauma. Gender Differences in Suicidality Among Veterans Who Have Experienced Military Sexual Trauma 78.

Haskell, S.G., Gordon, K.S., Mattocks, K., Duggal, M., Erdos, J., Justice, A., et al., 2010. Gender differences in rates of depression, PTSD, pain, obesity, and military sexual trauma among Connecticut war veterans of Iraq and Afghanistan. J. Womens Health 19, 267–271. https://doi.org/10.1089/jwh.2008.1262.

Hayes, A.F., 2018. Introduction to mediation, moderation, and conditional process analyses. A Regression-Based Approach, Second Edition. Guilford Press, New York.

Holliday, R., Holder, N., Surís, A., 2018a. Reductions in self-blame cognitions predict PTSD improvements with cognitive processing therapy for military sexual trauma-related PTSD. Psychiat. Res. 263, 181–184. https://doi.org/10.1016/j.psychres.2018.03.007.

Holliday, R., Holder, N., Monteith, L.L., Surís, A., 2018b. Decreases in suicide cognitions after cognitive processing therapy among veterans with posttraumatic stress disorder due to military sexual trauma: a preliminary examination. J. Nerv. Ment. Dis. 206, 575–578.

Holliday, R., Williams, R., Bird, J., Mullen, K., Surís, A., 2015. The role of cognitive processing therapy in improving psychosocial functioning, health, and quality of life in veterans with military sexual trauma-related posttraumatic stress disorder. Psychol. Serv. 12, 428–434. https://doi.org/10.1037/ser0000058.

Juan, M.D., Nunnink, S.E., Butler, E.O., Allard, C.B., 2017. Gender role stress mediates depression among veteran men with military sexual trauma. Psychol. Men. Mascul. 18, 243–250. https://doi.org/10.1037/men0000120.

Kang, H., Dalager, N., Mahan, C., Ishii, E., 2005. The role of sexual assault on the risk of PTSD among Gulf War veterans. Ann. Epidemiol. 15, 191–195.

Katz, L.S., Cojucar, G., Davenport, C.T., Pedram, C., Lindl, C., 2010. Post-deployment readjustment inventory: reliability, validity, and gender differences. Mil. Psychol. 22, 41–56. https://doi.org/10.1080/08995600903249222.

Kimerling, R., Gima, K., Smith, M.W., Street, A., Frayne, S., 2007. The veterans health administration and military sexual trauma. Am. J. Public Health. 97, 2160–2166. https://doi.org/10.2105/AJPH.2006.092999.

Kimerling, R., Makin-Byrd, K., Louzon, S., Ignacio, R.V., McCarthy, J.F., 2016. Military sexual trauma and suicide mortality. Am. J. Prev. Med. 50, 684–691. https://doi.org/10.1016/j.amepre.2015.10.019.

Kimerling, R., Street, A.E., Pavao, J., Smith, M.W., Cronkite, R.C., Holmes, T.H., et al., 2010. . Military-related sexual trauma among Veterans Health Administration patients returning from Afghanistan and Iraq. Am. J. Public Health 100, 1409–1412. https://doi.org/10.2105/AJPH.2009.171793.

Kleiman, E.M., Beaver, J.K., 2013. A meaningful life is worth living: meaning in life as a suicide resiliency factor. Psychiat. Res. 210, 934–939. https://doi.org/10.1016/j.psychres.2013.08.002.

Klingensmith, K., Tsai, J., Mota, N., Southwick, S.M., Pietrzak, R.H., 2014. Military sexual trauma in US veterans: results from the National Health and Resilience in Veterans Study. J. Clin. Psychiat. 75, e1133–e1139. https://doi.org/10.4088/JCP.14m09244.

Koss, M.P., Figueredo, A.J., 2004. Change in cognitive mediators of rape's impact on psychosocial health across 2 years of recovery. J. Consult. Clin. Psych. 72, 1063–1072. https://doi.org/10.1037/0022-006X.72.6.1063.

Kroenke, K., Spitzer, R.L., 2002. The PHQ-9: a new depression diagnostic and severity measure. Psychiatr. Ann. 32, 509–515. https://doi.org/10.3928/0048-5713-20020901-06.

Kroenke, K., Spitzer, R.L., Williams, J.B.W., Löwe, B., 2010. The Patient Health Questionnaire somatic, anxiety, and depressive symptom scales: a systematic review.

Gen. Hosp. Psychiatry 32, 345–359. https://doi.org/10.1016/j.genhosppsych.2010.03.006.
Lapierre, S., Dubé, M., Bouffard, L., Alain, M., 2007. Addressing suicidal ideations through the realization of meaningful personal goals. Crisis 28, 16–25. https://doi.org/10.1027/0227-5910.28.1.16.
Laws, H., Mazure, C.M., McKee, S.A., Park, C.L., Hoff, R., 2016. Within-unit relationship quality mediates the association between military sexual trauma and posttraumatic stress symptoms in veterans separating from military service. Psychol. Trauma-US. 8, 649–656. https://doi.org/10.1037/tra0000118.
Lee, V., Cohen, S.R., Edgar, L., Laizner, A.M., Gagnon, A.J., 2006. Meaning-making intervention during breast or colorectal cancer treatment improves self-esteem, optimism, and self-efficacy. Soc. Sci. Med. 62, 3133–3145. https://doi.org/10.1016/j.socscimed.2005.11.041.
Lehavot, K., Katon, J.G., Chen, J.A., Fortney, J.C., Simpson, T.L., 2018. Post-traumatic stress disorder by gender and veteran status. Am. J. Prev. Med. 54, e1–e9. https://doi.org/10.1016/j.amepre.2017.09.008.
Maguen, S., Luxton, D.D., Skopp, N.A., Madden, E., 2012. Gender differences in traumatic experiences and mental health in active duty soldiers redeployed from Iraq and Afghanistan. J. Psychiatr. Res. 46, 311–316. https://doi.org/10.1016/j.jpsychires.2011.11.007.
Mankowski, M., Tower, L.E., Brandt, C.A., Mattocks, K., 2015. Why women join the military: enlistment decisions and postdeployment experiences of service members and veterans. Soc. Work. 60, 315–323. https://doi.org/10.1093/sw/swv035.
Maoz, H., Goldwin, Y., Lewis, Y.D., Bloch, Y., 2016. Exploring reliability and validity of the deployment risk and resilience inventory-2 among a nonclinical sample of discharged soldiers following mandatory military service. J. Trauma Stress. 29, 556–562. https://doi.org/10.1002/jts.22135.
Matarazzo, B.B., Brown, G.K., Stanley, B., Forster, J.E., Billera, M., Currier, G.W., et al., 2018. Predictive validity of the columbia-suicide severity rating scale among a cohort of at-risk veterans. Suicide Life-Threat. https://doi.org/10.1111/sltb.1251f5.
Maxwell, S.E., Cole, D.A., 2007. Bias in cross-sectional analyses of longitudinal mediation. Psychol. Methods. 12, 23–44. https://doi.org/10.1037/1082-989X.12.1.23.
Mattocks, K.M., Haskell, S.G., Krebs, E.E., Justice, A.C., Yano, E.M., Brandt, C., 2012. Women at war: understanding how women veterans cope with combat and military sexual trauma. Soc. Sci. Med. 74, 537–545. https://doi.org/10.1016/j.socscimed.2011.10.039.
Mondragon, S.A., Wang, D., Pritchett, L., Graham, D.P., Plasencia, M.L., Teng, E.J., 2015. The influence of military sexual trauma on returning OEF/OIF male veterans. Psychol. Serv. 12, 402–411. https://doi.org/10.1037/ser0000050.
Monteith, L.L., Bahraini, N.H., Matarazzo, B.B., Gerber, H.R., Soberay, K.A., Forster, J.E., 2016. The influence of gender on suicidal ideation following military sexual trauma among veterans in the veterans health administration. Psychiatry Res. 244, 257–265. https://doi.org/10.1016/j.psychres.2016.07.036.
Morral, A.R., Gore, K.L., Schell, T.L., et al., 2014. Sexual Assault and Sexual Harassment in the US military: Top-Line Estimates For Active-Duty Service Members from the 2014 RAND Military Workplace Study. RAND Corporation, Santa Monica, CA. https://www.rand.org/pubs/research_reports/RR870.html, Accessed date: 25 January 2018.
Morris, E.E., Smith, J.C., Farooqui, S.Y., Surís, A.M., 2014. Unseen battles: the recognition, assessment, and treatment issues of men with military sexual trauma (MST). Trauma Violence Abus. 15, 94–101. https://doi.org/10.1177/1524838013511540.
National Institute of Justice & Centers for Disease Control & Prevention, 1998. Prevalence, Incidence and Consequences of Violence Against Women Survey. Retrieved from. https://www.ncjrs.gov/pdffiles/172837.pdf.
Office of Naval Inspector General, 2008. NAVINSGEN Sexual Assault Study Naval Inspector General Report to VCNO. Retrieved January 18, 2019, from. http://www.governmentattic.org/2docs/Navy-Sexual-Assault-Study_2004.pdf.
Park, C.L., 2010. Making sense of the meaning literature: an integrative review of meaning making and its effects on adjustment to stressful life events. Psychol. Bull. 136, 257–301. https://doi.org/10.1037/a0018301.
Park, C.L., Smith, P.H., Lee, S.Y., Mazure, C.M., McKee, S.A., Hoff, R., 2017. Positive and negative religious/spiritual coping and combat exposure as predictors of posttraumatic stress and perceived growth in Iraq and Afghanistan veterans. Psychol. Relig. Spirit. 9, 13–20. https://doi.org/10.1037/rel0000086.
Polusny, M.A., Kumpula, M.J., Meis, L.A., Erbes, C.R., Arbisi, P.A., Murdoch, M., et al., 2014. Gender differences in the effects of deployment-related stressors and pre-deployment risk factors on the development of PTSD symptoms in National Guard Soldiers deployed to Iraq and Afghanistan. J. Psychiat. Res. 49, 1–9. https://doi.org/10.1016/j.jpsychires.2013.09.016.
Posner, K., Brown, G.K., Stanley, B., Brent, D.A., Yershova, K.V., Oquendo, M.A., et al., 2011. The Columbia-Suicide Severity Rating Scale: initial validity and internal consistency findings from three multisite studies with adolescents and adults. Am. J. Psychiat. 168, 1266–1277. https://doi.org/10.1176/appi.ajp.2011.10111704.
Resick, P.A., Monson, C.M., Chard, K.M., 2017. Cognitive Processing Therapy for PTSD : A Comprehensive Manual. The Guilford Press, New York, NY.
Ruggiero, K.J., Rheingold, A.A., Resnick, H.S., Kilpatrick, D.G., Galea, S., 2006. Comparison of two widely used PTSD-screening instruments: implications for public mental health planning. J. Trauma. Stress. 19, 699–707. https://doi.org/10.1002/jts.20141.
Schry, A.R., Hibberd, R., Wagner, H.R., Turchik, J.A., Kimbrel, N.A., Wong, M., et al., 2015. Functional correlates of military sexual assault in male veterans. Psychol. Serv. 12, 384–393. https://doi.org/10.1037/ser0000053.
Scott, J.C., Pietrzak, R.H., Southwick, S.M., Jordan, J., Silliker, N., Brandt, C.A., et al., 2014. Military sexual trauma interacts with combat exposure to increase risk for posttraumatic stress symptomatology in female Iraq and Afghanistan veterans. J. Clin. Psychiatry 75, 637–643. https://doi.org/10.4088/JCP.13m08808.
Sexton, M.B., Raggio, G.A., McSweeney, L.B., Authier, C.C., Rauch, S.A.M., 2017. Contrasting gender and combat versus military sexual traumas: psychiatric symptom severity and morbidities in treatment-seeking veterans. J. Womens Health 26, 933–940.
Sinclair, S., Bryan, C.J., Bryan, A.O., 2016. Meaning in life as a protective factor for the emergence of suicide ideation that leads to suicide attempts among military personnel and veterans with elevated PTSD and depression. Int. J. Cogn. Ther. 9, 87–98. https://doi.org/10.1521/ijct.2016.9.1.87.
Smith, C.P., Freyd, J.J., 2013. Dangerous safe havens: institutional betrayal exacerbates sexual trauma. J. Trauma. Stress. 26, 119–124. https://doi.org/10.1002/jts.21778.
Smith, P.H., Potenza, M.N., Mazure, C.M., Mckee, S.A., Park, C.L., Hoff, R.A., 2014. Compulsive sexual behavior among male military veterans: prevalence and associated clinical factors. J. Behav. Addict. 3, 214–222. https://doi.org/10.1556/JBA.3.2014.4.2.
Steger, M.F., Frazier, P., Oishi, S., Kaler, M., 2006. The meaning in life questionnaire: assessing the presence of and search for meaning in life. J. Couns. Psychol. 53, 80–93. https://doi.org/10.1037/0022-0167.53.1.80.
Steger, M.F., Mann, J.R., Michels, P., Cooper, T.C., 2009. Meaning in life, anxiety, depression, and general health among smoking cessation patients. J. Couns. Psychol. 67, 353–358. https://doi.org/10.1016/j.jpsychores.2009.02.006.
Surís, A., Lind, L., 2008. Military sexual trauma: a review of prevalence and associated health consequences in veterans. Trauma Violence Abus. 9, 250–269. https://doi.org/10.1177/1524838008324419.
Surís, A., Lind, L., Kashner, T.M., Borman, P.D., 2007. Mental health, quality of life, and health functioning in women veterans: differential outcomes associated with military and civilian sexual assault. J. Interpers. Violence 22, 179–197. https://doi.org/10.1177/0886260506295347.
Surís, A., Link, M.J., Chard, K., Ahn, C., North, C., 2013. A randomized clinical trial of cognitive processing therapy for veterans with PTSD related to military sexual trauma. J. Trauma Stress. 26, 28–37. https://doi.org/10.1002/jts.21765.
Surís, A.M., Smith, J.C., 2011. Sexual assault in the military. In: Moore, B.A., Penk, W.E., Moore, B.A. (Eds.), Treating PTSD in Military Personnel: A Clinical Handbook. Guilford Press, New York, pp. 255–269.
United States Department of Defense, Sexual Assault Prevention and Response Office, 2012. Annual Report on Sexual Assault in the Military.
U.S. Department of Veterans Affairs, 2016. Office of Mental Health and Suicide Prevention. Suicide Among Veterans and Other Americans 2001 – 2014. August 2016. https://www.mentalhealth.va.gov/docs/2016suicidedatareport.pdf, Accessed date: 14 February 2018.
U.S. Department of Veterans Affairs, 2018. Office of Mental Health and Suicide Prevention. VA National Suicide Data Report 2005 – 2015. June, 2018.
Vogt, D., Smith, B.N., King, L.A., King, D.W., Knight, J., Vasterling, J.J., 2013. Deployment risk and resilience inventory-2 (DRRI-2): an updated tool for assessing psychosocial risk and resilience factors among service members and veterans. J. Trauma. Stress. 26, 710–717. https://doi.org/10.1002/jts.21868.
Wilkins, K.C., Lang, A.J., Norman, S.B., 2011. Synthesis of the psychometric properties of the PTSD checklist (PCL) military, civilian, and specific versions. Depress. Anxiety 28, 596–606. https://doi.org/10.1002/da.20837.
Wilson, L.C., 2018. The prevalence of military sexual trauma: a meta-analysis. Trauma Violence Abus. 19, 584–597. https://doi.org/10.1177/1524838016683459.
Wright, M.O., Crawford, E., Sebastian, K., 2007. Positive resolution of childhood sexual abuse experiences: the role of coping, benefit-finding and meaning-making. J. Fam. Violence 22, 597–608. https://doi.org/10.1007/s10896-007-9111-1.
Wu, X., Kaminga, A.C., Dai, W., Deng, J., Wang, Z., Pan, X., et al., 2019. The prevalence of moderate-to-high posttraumatic growth: a systematic review and meta-analysis. J. Affect. Disorders 243, 408–415. https://doi.org/10.1016/j.jad.2018.09.023.