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Relations between Social Support, PTSD Symptoms, and Substance Use in Veterans

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Abstract

Social support plays a significant role in the development, maintenance, and treatment of posttraumatic stress disorder (PTSD). However, there has been little investigation of social support with PTSD and its frequent comorbid conditions and related symptoms. Substance use disorders (SUD) are one set of conditions that have yet to be investigated in combination with PTSD and social support. As compared to civilians, veterans are at increased risk for developing both PTSD and SUD. In this study, veterans (N=171) with symptoms of PTSD (76% met diagnostic criteria) and SUD (83% met diagnostic criteria for any dependence) were recruited and completed clinician-rated and self-report measures of PTSD, SUD, and social support. Overall, low social support was reported in the sample. When controlled for the other disorder's symptoms, PTSD symptoms demonstrated a significant negative relation and SUD symptoms demonstrated a significant positive relation to social support. The PTSD findings are consistent with previous studies on PTSD and social support without SUD comorbidity. However, the SUD findings are inconsistent with previous studies, which focused primarily on older veterans. Together, these findings highlight the significance of social support in individuals with PTSD and SUD, and promote future research within comorbid presentations.

Keywords

posttraumatic stress disorder; social support; alcohol; veterans

Posttraumatic stress disorder (PTSD) is a chronic, debilitating disorder associated with significant distress and impairment. PTSD is the most common mental health disorder among veterans, with approximately 15% of veterans meeting current diagnostic criteria (Seal, Berthel, Miner, Sen, & Marmar, 2007). The presence of comorbid substance use disorders (SUD) with PTSD also is a substantial health concern among veterans. SUD co-occurs with PTSD among roughly 40% of veterans with PTSD (Petrakis, Rosenheck, &

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Desari, 2011; Pietrzak, Goldstein, Southwick, & Grant, 2011), and those with co-occurring PTSD and SUD suffer a more complicated course of treatment and less favorable treatment outcomes compared to individuals with either disorder alone (Back, 2010; Back, Waldrop, & Brady, 2009; Cohen & Hien, 2014; McCauley, Killeen, Gros, Brady, & Back, 2012). Given the high prevalence and distress associated with comorbid PTSD and SUD, efforts aimed at identifying potential protective factors are especially important for advancing the prevention and treatment of the complex combination of these two conditions.

Social support is a potentially important feature in understanding how to prevent or treat PTSD. Findings consistently demonstrate that limited social support is associated with more severe PTSD symptoms (Brewin, Andrews, & Valentine, 2000), as well as more severe impairment and suicidal ideation (DeBeer, Kimbrel, Meyer, Gulliver, & Morrisette, 2014). Social support also is posited to be a key mechanism in the prevention and treatment of PTSD (Whealin, DeCarvalho, & Vega, 2008). Literature also has demonstrated that social support is a diverse construct both in empirical measurement and its manifestations in day-to-day life. For example, literature indicates that social support available from different individuals in one's social network (e.g., intimate partners, family members, military unit members and friends) may be differentially influential on symptoms and treatment engagement (Laffaye, Cavella, Drescher, & Rosen, 2008; Pietrzak, Johnson, Goldstein, Malley, & Southwick, 2009). In addition to the source of social support, specific forms of social support, such as positive social interactions, are negatively associated with pre-treatment PTSD symptom severity, whereas high perceived emotional support is positively associated with increased PTSD treatment response (Price, Gros, Strachan, Ruggiero, & Acierno, 2011).

Social support, including the lack thereof, is a salient correlate of SUD treatment engagement and outcome as well (Manuel, McCrady, Epstein, Cook, & Tonigan, 2002; McCrady, 2004; Zywiak, Longabaugh, & Wirtz, 2002). Individuals with PTSD and co-occurring SUD are more likely than individuals without SUD to have numerous health and psychosocial complications and lower social support has been documented in those with PTSD and co-occurring disorders than individuals with a single diagnosis (Campbell et al., 2007). (Blanco, Xu, Brady, Perez-Fuentes, Okuda, & Wang, 2013; Bove & Rosenheck, 2015; Kaier, Possemato, Lantinga, Maisto, & Ouimette, 2014; Pietrzak et al., 2011). Indeed, the nature of PTSD and SUD symptomatology, the complicating factors that accompany comorbidity, and associated behaviors such as poor communication related to emotional numbing, aggressive behavior secondary to hyperarousal symptoms, or anger and distrust secondary to chronic substance use behaviors may hinder the availability and, hence, the protective utility, of adaptive social support among veterans. However, the research examining the association between PTSD comorbidities and social support remains limited.

One of the few existing studies that examined the effects of PTSD and co-occurring disorders on social support included a large sample ($N = 1825$) of veterans from Operations Enduring/Iraqi Freedom (OEF/OIF). In this study, Brancu and colleagues (2014) found that PTSD was associated with greater distress and lower social support. Veterans with PTSD and a co-occurring mental health disorder did not demonstrate lower social support than veterans with PTSD alone. One factor that may partially explain these findings is the

heterogeneity of comorbidities observed in the study, which included a wide variety of mental health diagnoses. Perhaps examining the effects of comorbidity on social support at the disorder level may reveal more distinct patterns of association (e.g., PTSD and SUD). For example, DeBeer and colleagues (2014) examined the role of social support on suicidal ideation using a more homogenous group of individuals with PTSD and comorbid mood disorders. The findings demonstrated that low social support interacted with PTSD and mood symptoms, resulting in greater suicidal ideation than those with higher levels of social support.

Given the equivocal findings among the limited existing research, there is need for further investigation in this area with a particular focus on common patterns of PTSD comorbidity, such as that with SUD. Developing an improved understanding of these complex associations may facilitate the development and modification of treatment approaches to enhance social support and thereby improve treatment engagement and outcome among individuals with co-occurring PTSD and SUD. Thus, the purpose of the current study was to address this gap in the literature by examining social support among veterans with PTSD and co-occurring SUD. Given the complicated clinical presentation of this comorbid group, it was predicted that (1) greater severity of PTSD symptoms and (2) greater severity of SUD symptoms would be associated with lower levels of perceived social support.

Method

Participants

Veterans ($N = 171$) seeking treatment for comorbid PTSD and SUD were recruited from Veterans Affairs (VA) treatment clinics, newspaper and internet advertisements, and flyers posted at local mental health clinics and colleges. Inclusion criteria involved: 1) veteran, reservist, or member of the National Guard, 2) 18-65 years old, 3) significant symptoms of PTSD and SUD, 4) substance use in the past 90 days, and 5) fluency in English. Exclusion criteria included: 1) current or history of psychotic symptoms or bipolar affective disorders; 2) current suicidal or homicidal ideation and intent; 3) current eating disorder or dissociative identity disorder; 4) individuals already participating in ongoing PTSD or SUD treatment; and 5) severe cognitive impairment as indicated by a Mini Mental Status Exam score < 21 . Data were collected as part of an ongoing NIDA-sponsored randomized controlled trial investigating the efficacy of an integrated psychosocial treatment for co-occurring PTSD and SUD among veterans (Back et al., 2012).

Procedures

Potential participants were given a full description of the study procedures and asked to read and sign an institutional review board-approved informed consent form before any study procedures or assessments were conducted. The baseline assessment involved semi-structured clinical interviews, including the Clinician Administered PTSD Scale (CAPS) (Blake et al., 1995) and the Mini International Neuropsychiatric Interview (MINI) (Sheehan et al., 1998). Participants also completed the PTSD Checklist-Military (PCL-M) (Weathers et al., 1993) and the Timeline Follow-Back (TLFB) (Sobell & Sobell, 1992) and the

Deployment Risk and Resiliency Inventory (DRRI) (King, King, Vogt, Knight, & Samper, 2006).

Measures

Clinician Administered PTSD Scale—The CAPS is a clinician-rated scale designed to diagnose current and lifetime PTSD (Blake et al., 1995). The CAPS targets the 17 specific PTSD symptoms from the DSM-IV to assess the intensity and frequency of each symptom on a five-point Likert scale. The CAPS conducted at baseline was focused on past month symptoms. Providers of the CAPS attended a 2-4 hour CAPS training, watched and co-rated at least two administrations of the CAPS, administered at least two CAPS under the direct supervision of a co-rating supervisor, and demonstrated acceptable inter-rater reliability on their administrations. The CAPS has been shown to have adequate internal consistency, inter-rater reliability on the same interview, and test-retest reliability over different interviewers (Orsillo, 2002). The internal consistency in the present study was $\alpha = .91$.

Deployment Risk and Resiliency Inventory—The DRRI consists of 13 subscales to assess pre-deployment, active duty, and post-deployment factors in recently returning combat veterans (King et al., 2006). For the current study, the social support subscale was of interest – the DRRI-L (Post-Deployment Support; items include, “I am carefully listened to and understood by family members or friends” and “Among my friends or relatives, there is someone I go to when I need good advice”). Work with Veterans has shown the DRRI to demonstrate acceptable internal consistency for the subscales (α s > .81) and convergent and discriminative validity (Vogt, Proctor, King, King, & Vasterling, 2008). The internal consistency in the present study was $\alpha = .74$.

Mini International Neuropsychiatric Interview—The MINI is a clinician-rated structured diagnostic interview designed to provide a brief, but accurate, assessment of a wide range of DSM-IV psychiatric disorders, including mood and anxiety disorders, and substance use disorders (Sheehan et al., 1998). The MINI was used to assess all of its targeted disorders with the exception of PTSD, which was assessed via the CAPS. Similar training procedures were used for the MINI as were used for the CAPS. The MINI has demonstrated adequate inter-rater and test-retest reliability across most disorders, and specifically has shown good inter-rater reliability with other structured diagnostic interviews (Sheehan et al., 1998).

PTSD Checklist – Military—The PCL-M is a 17-item self-report measure designed to assess PTSD symptom severity related to military/combat-related trauma (Weathers et al., 1993). Respondents are presented with 17 specific symptoms of PTSD and asked to rate “how much you have been bothered by that problem in the last month” on a 5-point Likert scale. A score 50 or above on the PCL-M is suggestive of a PTSD diagnosis (Forbes, Creamer, & Biddle, 2001; Weathers et al., 1993). The PCL has been shown to have excellent internal consistency in veterans, victims of motor vehicle accidents, and sexual assault survivors and excellent test-retest reliability in veterans. In addition, the PCL has demonstrated excellent convergent validity with alternative measures of PTSD (Orsillo, 2002). The internal consistency in the present study was $\alpha = .87$.

Timeline Follow-Back—The TLFB is a retrospective measurement of daily substance use (Sobell & Sobell, 1992). The measure is completed via a calendar format and at the direction of a trained assessor to enhance recall. In the present study, the TLFB assessed use of alcohol, stimulants (e.g., cocaine), opiates (e.g., heroin), marijuana, prescription drugs (e.g., prescription opioids, benzodiazepines, and psychostimulants), and nicotine over the past 60 days. The TLFB has demonstrated good psychometric properties in the literature, including test-retest reliability, convergent and discriminant validity with other measures, and agreement with collateral informants and urine assays (Fals-Stewart et al., 2000).

Data Analysis

Of the initial 171 participants, 28 participants were excluded due to missing data on any of the primary measures. An additional 11 participants were excluded due to errors in their reporting on the TLFB. There were no differences between the excluded and included participants on demographics ($p > .26$), psychiatric diagnoses ($p > .72$), social support ($p = .08$), PTSD symptoms ($p > .26$), or alcohol use ($p = .29$). All remaining participants were included in the analyses. A series of hierarchical regression analyses were conducted to identify the unique relations among social support and PTSD symptoms and substance use. In the first step of each of these analyses, demographic variables (i.e., age, gender, race, relationship status, and employment status) were entered as covariates. Social support (DRRI) was entered in the second step. The analyses were conducted multiple times, with each measure of PTSD symptom severity (CAPS and PCL-M) and substance use (TLFB – Alcohol Use, TLFB – Stimulant Use, TLFB – Opiate Use, TLFB – Marijuana Use, TLFB – Prescription Drug Misuse) entered as a dependent variable. In addition, the non-matching variable was included in the first step (PTSD as covariate for SUD as dependent; SUD as covariate for PTSD as dependent variable). The distribution of all dependent variables was investigated to inform final inclusion of variables. Separate models were run with the CAPS and PCL-M to investigate the reliability of the findings across clinician-rated and self-reported PTSD symptoms. The CAPS and PCL are considered “gold standards” in the measurement of PTSD and are frequently studied together in this way (Orsillo, 2002).

Results

Demographics of the Sample

The average participant was 41.7 years old ($SD = 12.0$), male (90.9%), White (50.0%) or Black (47.1%), and unemployed (68.9%). The majority of participants were either married (31.1%) or divorced/widowed (44.7%). The average number of years of education was 13.8 years ($SD = 1.8$) and 59.1% had been deployed to Operations Enduring Freedom, Iraqi Freedom, or New Dawn (OEF/OIF/OND).

The majority of participants were diagnosed with PTSD (76.5%) and endorsed elevated symptoms consistent with a PTSD diagnosis on the PCL-M ($M = 59.3$; $SD = 12.9$). The majority of participants also were diagnosed with alcohol dependence (73.3%) and reported 25.0 total days used within the past 60 days ($SD = 21.2$). Approximately 38.9% also met criteria for current drug dependence. The average DRRI social support score was 46.6 ($SD =$

8.8) and these scores were normally distributed within the sample (skewness = 0.29; kurtosis = 0.44).

Regression Analyses

Prior to completing the regression analyses, the distribution of each dependent variable was investigated. TLFB – Alcohol Use, CAPS, and PCL-M variables were found to have acceptable skewness (ranged -0.671 to 0.528) and kurtosis (ranged -0.674 to 0.376) and were included in the regression analyses. However, TLFB – Stimulant Use, TLFB – Opiate Use, TLFB – Marijuana Use, and TLFB – Prescription Drug Misuse evidenced unacceptable skewness (ranged 2.560 to 7.746) and kurtosis (ranged 5.631 to 67.361). There was significant missing data in these variables that may have contributed to their skewness and kurtosis and greatly limited their possible interpretation. Thus, these variables were excluded from the analyses.

In the analyses with PTSD as the dependent variable (Table 1), social support was used to predict the scales assessing PTSD symptoms with separate models for the CAPS and PCL-M scores. The first step included demographics and TLFB – Alcohol Use. The first steps in both models were significant ($F_s > 2.17$; $p_s < 0.05$). The second step added social support and significantly increased the variance explained in both models ($F_{change} > 7.8$; $p_s < .007$). With the addition of the second step, social support emerged with significant relation to PTSD symptoms in each of the models ($t_s < -2.7$; $p_s < .004$) above and beyond alcohol use, whereas greater social support was predictive of less severe PTSD symptoms in the CAPS and PCL-M.

In the analyses with alcohol use as the dependent variable (Table 1), demographic variables, PTSD symptoms (separate models for CAPS and PCL-M symptoms), and social support were used to predict alcohol use. The first step with demographics and PTSD symptoms was significant in the model with the CAPS ($F = 2.72$; $p = .02$), but not significant in the model with the PCL-M ($F = 1.72$; $p = .122$). The second step with social support was significant in both models ($F_s > 2.92$; $p_s < .008$), with significant R^2 s ($F_{change} > 9.4$; $p_s < .004$) as well as the social support variable ($t_s < 3.0$; $p < .004$), whereas greater social support was predictive of greater alcohol use symptoms.

Discussion

The present study investigated the relations among PTSD, co-occurring SUD, and social support in veterans. Consistent with our hypotheses, social support had a significant relation to PTSD symptoms, as well as alcohol use. Social support was associated with PTSD and alcohol use above and beyond the comorbid condition (self-reported PTSD as covariate for SUD as dependent; self-reported SUD as covariate for PTSD as dependent variable), suggesting that social support had an independent relation with each cluster of symptoms in this sample. Increased social support was associated with less severe PTSD symptoms. However, the alcohol use findings were in the opposite direction, with increased social support was associated with increased alcohol use. Interestingly, average social support in this sample appears lower than averages reported in two recent studies also using the DRRI, including a VA treatment-seeking sample of OEF/OIF Veterans (Pietrzak et al., 2010) as

well as National Guard soldiers returning from OIF with or without new onset PTSD (Polusny et al., 2011). Together, these findings highlight the significance of social support in veterans with symptoms of PTSD and alcohol use.

The PTSD findings are consistent with previous findings for social support. Social support is associated with the lack of development of PTSD following trauma exposure (Kilpatrick et al. 2007; Pietrzak et al., 2010; Wilcox, 2010), and plays a significant role in the successful treatment of PTSD (Price et al., 2011). The current study is the first to investigate this relation in veterans with comorbid PTSD and SUD. Despite the noted relation between increased social support and increased alcohol use, increased social support was associated with less severe PTSD symptoms. This finding is surprising due to the more severe symptoms when both disorders are present. That is, more severe PTSD symptoms are associated with increased SUD symptoms (McCauley et al., 2012). This relation among the three variables may further highlight the detrimental (decreased) nature of poor social support in PTSD, independent of the presence of a SUD.

The current findings regarding the relation between alcohol use and social support were in contrast to our hypothesis as well as the previous literature (Ren, Skinner, Lee, & Kazis, 1999; Sacco Bucholz, & Harrington, 2014). More specifically, previous research shows that while adaptive social support is consistently associated with successful substance use treatment outcomes, some studies have reported no significant relation between alcohol use severity and social support (Ren et al., 1999; Sacco et al., 2014) and others reporting a small negative relation between the two (Boscarino, 1995). The present findings suggest that increased social support was associated with increased alcohol use. Although the findings are contrary to the literature, there are a few possible hypotheses for these findings which may inform future investigation. First, the present study was completed on a much younger sample of veterans from recent combat theatres (e.g., OEF/OIF/OND), suggesting possible differences in veterans from varying eras of service. Additionally, previous research has demonstrated robust positive associations between younger age and greater alcohol use in adult samples (Centers for Disease Control and Prevention, 2012) and that younger adults are more likely to drink in social settings to enhance social enjoyment (Gruenewald, Remer, & LaScala, 2014; O'Hara, Armeli, & Tennen, 2015). One recent study of heavy-drinking OEF/OIF veterans indicated that those with comorbid PTSD were more likely to attribute their alcohol misuse to symptom self-medication, while those without PTSD were more likely to drink to enhance social experiences (McDevitt-Murphy, Fields, Monohan, & Bracken, 2015). Perhaps the younger veterans enrolled in our study were engaged in more socially rewarding drinking activities, or had less opportunity to experience negative consequences of prolonged heavy drinking, which may account for the perceived association between social support and alcohol use observed here. Finally, the literature examining associations between SUD and social support among veterans is limited, suggesting that differences in drinking patterns and associations with social support may have transitioned over time and with important contextual changes such as prolonged U.S. engagement in the conflicts in Iraq and Afghanistan. A further complicating factor is that social support is conceptualized and measured in widely varying ways across the literature. Additional research on similar samples attending to the nuances of social support source and type is

needed to replicate the present findings and investigate these hypotheses among more current and representative veteran samples.

Despite the interaction of PTSD and alcohol use symptoms, the overall level of social support was low in the present study and particularly when compared to other similar studies of veterans and with the same social support measure (Pietrzak et al., 2010; Polusny et al., 2011). This finding may suggest that the relation between more severe PTSD symptoms and decreased social support may be much stronger than the relation between increased alcohol use and increased social support, resulting in overall lower social support.

As social support has been found to be protective against the development of PTSD and important in the related treatment outcome in veterans with PTSD, treatments for PTSD and associated comorbidities should incorporate a social support building component to improve symptoms and potentially reduce future relapse. One example is the use of Concurrent Treatment of PTSD and Substance Use Disorders Using Prolonged Exposure (COPE; Back et al., 2015), which contains instruction to complete “healthy activities that you have lost interest” in as part of the “in vivo” exposure exercises. Additional examples include dyadic interventions targeting co-occurring PTSD and SUD such as Significant-Other Enhanced CBT (McDevitt-Murphy, 2011) and Couple Treatment for alcohol use disorder and PTSD (Schumm, Monson, O’Farrell, Gustin, & Chard, 2015). Both treatments aim to enhance social support gained from partners to simultaneously reduce symptomatology and improve dyadic functioning. Although additional research is needed, the use of treatments that encourage improvements in social support could have added benefits in PTSD psychotherapeutic outcomes.

The present study contains several limitations. First, only single measures for social support and alcohol use were used, limiting their reliability and comparison across self-report and clinician-rated assessments. In addition, the sample contained an insufficient number of participants endorsing use of other substances of abuse and therefore the findings cannot generalize to use of other substances. Although the majority of veterans were deployed to OEF/OIF/OND, a minority of participants were veterans from other conflicts. Finally, the study was limited to a cross-sectional investigation and cannot inform treatment or changes over time. Each of these limitations should be addressed in future research on this topic.

The present study investigated the relations among social support, PTSD, and SUD symptoms in a sample of veterans. The findings supported previous investigations on PTSD and social support, but demonstrated a different pattern for SUD and social support. Together, these findings highlight the significance of social support among individuals with PTSD and SUD, and further emphasize its potential importance in the prevention and treatment of these challenging and commonly co-occurring disorders.

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Table 1
Hierarchical Regression Analysis Testing Social Support Predicting PTSD Symptoms and Alcohol Use

Step	Variable	B	SE	β	t	F	R ²
Clinician Administered PTSD Scale (CAPS)							
1	Age	-0.41	0.19	-0.20	-2.16*	3.08**	0.128**
	Gender	-7.54	7.11	-0.90	-1.06		
	Race	-3.41	2.60	-0.11	-1.31		
	Relationship Status	4.02	2.60	0.13	1.55		
	Employment Status	-2.72	4.67	-0.05	-0.58		
	TLFB – Alcohol Use	0.23	0.09	0.22	2.55*		
2	DRRI – Social Support	-0.91	0.24	-0.32	-3.79***	4.97***	0.090***
PTSD Checklist – Military (PCL-M)							
1	Age	-0.13	0.10	-0.12	-1.28	2.18*	0.092*
	Gender	-5.23	3.80	-0.12	-1.38		
	Race	-0.16	1.27	-0.01	-0.12		
	Relationship Status	-2.95	1.40	-0.19	-2.11*		
	Employment Status	0.71	2.50	0.03	0.28		
	TLFB – Alcohol Use	0.07	0.05	0.13	1.46		
2	DRRI – Social Support	-0.37	0.13	-0.24	-2.80**	3.09**	0.052**
TLFB – Total Days Used – Alcohol (with CAPS)							
1	Age	-0.08	0.19	-0.04	-0.41	2.72*	0.115*
	Gender	9.57	6.77	0.12	1.42		
	Race	2.88	2.48	0.10	1.16		
	Relationship Status	-2.44	2.50	-0.09	-1.00		
	Employment Status	-7.14	4.42	-0.14	-1.62		
	CAPS – PTSD	0.21	0.08	0.22	2.55*		
2	DRRI – Social Support	0.83	0.23	0.31	3.57***	4.37***	0.082**
TLFB – Total Days Used – Alcohol (with PCL-M)							

Step	Variable	B	SE	β	t	F	R ²
1	Age	-0.05	0.18	-0.03	-0.29	1.72	0.074
	Gender	7.91	6.80	0.10	1.16		
	Race	0.66	2.27	0.03	0.29		
	Relationship Status	-0.49	2.54	-0.19	-0.19		
	Employment Status	-9.51	4.37	-0.19	-2.18*		
	PCL – PTSD	0.23	-0.16	0.13	1.46		
2	DRRI – Social Support	0.71	0.23	0.27	3.08***	2.93***	0.064***

Note.

* = $p < .05$;

** = $p < .01$;

*** = $p < .001$.