

Posttraumatic stress disorder symptoms, levels of social support, and emotional hiding in returning veterans

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Abstract—The current study examines the associations among levels of social support, emotional hiding, and screening positive for posttraumatic stress disorder (PTSD) within a sample of 536 Operation Iraqi Freedom/Operation Enduring Freedom (OIF/OEF) veterans. Michigan and Ohio OIF/OEF veterans were contacted to complete a postdeployment mental health screening questionnaire developed as part of the Department of Veterans Affairs Ann Arbor Healthcare System's Serving Returning Veterans Mental Health Program. Approximately 30% of veterans screened positive for PTSD. All sources of social support, as well as emotional hiding, were significantly associated with screening positive for PTSD. Each unit increase of emotional hiding from spouses or significant others, friends, and family was associated with a 32% to 44% increase in odds of screening positive for PTSD. Additional research is needed to examine constructs related to social support and PTSD, such as emotional hiding, in order to identify areas for intervention.

Key words: combat, emotional hiding, mental health screening, OIF/OEF, postdeployment, PTSD, returning veterans, social support, survey, trauma.

INTRODUCTION

The recent military operations in Afghanistan (Operation Enduring Freedom [OEF]) and Iraq (Operation Iraqi Freedom [OIF]) constitute a sustained ground combat effort with significant effect on our military forces. According to data released by the Department of Defense, as of February 2, 2012, 1,478,370 OIF/OEF veterans have

left Active Duty and become eligible for Department of Veterans Affairs (VA) services [1]. Research on the mental health outcomes of veterans from previous conflicts has shown that combat exposure and deployment stress increase veterans' risk for posttraumatic stress disorder (PTSD), depression, substance abuse, impairments in social and occupational functioning, and use of healthcare services [2–7]. With regard to PTSD specifically, lack of social support has been associated with PTSD across various trauma samples [8–9], including OIF/OEF veterans [10], and thus has been a topic of investigation.

Several different models have been proposed and tested regarding the relationship between PTSD and social support. In line with the buffering model [11], the presence and utilization of positive social support resources has shown to promote natural recovery, thereby reducing negative outcomes for those who have experienced trauma [12]. Alternatively, the erosion model proposes that PTSD

Abbreviations: CI = confidence interval, OEF = Operation Enduring Freedom, OIF = Operation Iraqi Freedom, OR = odds ratio, PC-PTSD = primary care posttraumatic stress disorder screen, PTSD = posttraumatic stress disorder, SeRV-MH = Serving Returning Veterans Mental Health Program, VA = Department of Veterans Affairs, VAAHS = VA Ann Arbor Healthcare System.

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symptoms of social withdrawal and avoidance, numbing and detachment, and anger negatively affect the quality and quantity of received support by pushing away potential resources [13–14]. In support of this latter model, military veterans with PTSD have been shown to have intimacy and sociability difficulties, marital distress and relationship abuse, and parenting difficulties [15–18]. In reality, the buffering and erosion models may be bidirectional and temporally related. For example, if a person receives inadequate or problematic social support in the aftermath of trauma, he or she may be more likely to withdraw and avoid. This, in turn, may confer risk for developing PTSD. As an individual's PTSD becomes chronic over time, he or she may develop more distressed relationships as a byproduct of entrenched symptoms of numbing, avoidance, irritability, and anxiety.

Regardless of the directional or temporal relationship between social support (positive or negative) and PTSD, moving the field toward identifying and examining extensions of social support can help to translate this robust finding into targets for intervention (e.g., veteran-specific interventions to target PTSD and social functioning, interventions to target veterans' social environments, or a combination of the two). Emotional hiding, namely veterans' efforts to withhold or avoid talking about their emotions and problems with various social support agents, may provide one component of social support to explore with regard to the development and progression of PTSD. The converse of emotional hiding, emotional self-disclosure, is a related concept that has been explored among more general clinical populations [19] and is positively related to self-esteem, life satisfaction, and perceived social support [20]. In a sample of 400 participants, Hoyt et al. found that at-risk participants (military veterans and first responders) were less likely to disclose emotions related to potentially traumatic events than were college students reporting general emotional disclosure [21]. Considering that disclosing traumatic events is a critical component in some evidence-based treatments for PTSD (e.g., prolonged exposure therapy), veterans' degree of emotional hiding from social support agents and/or treatment providers may place veterans at risk for PTSD.

In an effort to build upon the existing literature with regard to PTSD, social support, and emotional hiding, we present survey data from a large sample of OIF/OEF veterans who participated in a routine postdeployment mental health screen. Lower levels of social support and higher levels of emotional hiding from social support

sources were hypothesized to be significantly associated with screening positive for PTSD. We present these findings as an initial effort to investigate emotional hiding among a large sample of OIF/OEF veterans.

METHODS

Sample

During their first year after registration at Veterans Integrated Service Network 11, VA Ann Arbor Healthcare System (VAAAHS), and between the years 2006 and 2009, a total of 734 OIF/OEF veterans were contacted by telephone or in person to complete a postdeployment mental health screening questionnaire developed as part of VAAAHS's Serving Returning Veterans Mental Health Program (SeRV-MH). Of the veterans, 536 had complete information on all of the variables of interest and were included in the present analyses. The screening questionnaire was administered by SeRV-MH case managers and included questions pertaining to demographics, perceived levels of social support, work and social adjustment, mental health and medical problems, and treatment utilization.

Measures

Posttraumatic Stress Disorder Symptoms

The primary care PTSD screen (PC-PTSD) comprises four items that are part of standard care in the screening of PTSD [22]. The PC-PTSD is highly correlated (0.83) with the Clinician-Administered PTSD Scale [23]. Among a VA primary care sample, the sensitivity and specificity of the PC-PTSD have been reported to be 0.78 and 0.87, respectively [22]. For the current study and consistent with the PC-PTSD's developers, veterans who endorsed three or more items were considered to screen positive for PTSD [22].

Social Support

Levels of social support were measured by asking veterans the following question: "On a 0–10 scale, with 10 being total support and 0 being no support, how much do you feel you get from the following sources since your return from OIF/OEF?" Respondents were asked this question in relation to each of the following sources of support: (1) immediate family (spouse or significant other, children), (2) family (parents, grandparents, brothers,

sisters, uncles, aunts), (3) friends, (4) coworkers, and (5) community.

Emotional Hiding

Emotional hiding was measured by asking veterans the following question: "On a 0–10 scale, with 10 being totally hiding and 0 being not at all hiding, how much do you feel that you need to hold back your feelings, thoughts, and difficulties from the following sources since your return from OIF/OEF?" Respondents were asked this question in relation to each of the five sources listed previously.

Statistical Analysis

First, basic descriptive statistics were used to characterize the sample. Cross-tabulations were performed to characterize the overall sample, and appropriate comparison tests (e.g., *t*-tests or chi-square tests) were conducted between those who screened positive and negative for PTSD. Second, logistic regression modeling was performed to examine associations between level of social support and the odds of screening positive for PTSD. Separate models were conducted for each source of support. Models were then expanded to include adjustment for the covariates of age, sex, race/ethnicity, and marital status, which have been found previously to be associated with PTSD [8,24] Third, an analogous approach was used to estimate associations between emotional hiding and screening positive for PTSD. Specifically, separate emotional hiding models were conducted in relation to each

source from which the respondent hid feelings. Unadjusted and adjusted models were estimated. Fourth, a series of logistic regression analyses were performed that included both support and hiding variables, for a given source, in the same model. As previously noted, the covariates of age, sex, race/ethnicity, and marital status were included in the adjusted models. Logistic regression calculates odds ratios (ORs) as the measure of strength of association, and 95 percent confidence intervals (CIs) are presented to aid interpretation. All analyses were conducted using Stata version 11 (StataCorp; College Station, Texas).

RESULTS

Description of Sample

Table 1 provides a description of the sample, both overall and by those who screened positive and negative for PTSD on the PC-PTSD. As shown in **Table 1**, of the 536 individuals included in the analyses, 29.29 percent screened positive for PTSD. The mean age for the group that screened positive on the PC-PTSD was similar to that of the group that screened negative. With respect to age categories, 31.72 percent of the veterans were ages 18 to 24 yr, 33.02 percent were ages 25 to 30 yr, 23.51 percent were ages 31 to 40 yr, and 11.75 percent were ≥ 41 yr (not shown in **Table 1**). The percentages of males and females were similar in both the positive and negative PC-PTSD groups. With respect to race/ethnicity,

Table 1.

Characteristics of Operation Iraqi Freedom/Operation Enduring Freedom veteran sample ($n = 536$).

Characteristic	Total	Positive PTSD Screen	Negative PTSD Screen	<i>t</i> -Test/Chi-Square*	<i>p</i> -Value
Total (%)	100.00	29.29	70.71	—	—
Age, yr (mean \pm SD)	30.38 \pm 8.21	30.70 \pm 8.15	30.25 \pm 8.24	−0.572	0.57
Sex (%)				0.788	0.38
Male	90.30	88.54	91.03		
Female	9.70	11.46	8.97		
Race/Ethnicity (%)				11.742	0.003
White	79.10	70.06	82.85		
Black	8.02	10.19	7.12		
Other/Unknown	12.87	19.75	10.03		
Marital Status (%)				6.710	0.04
Married/Cohabiting	42.16	44.59	41.16		
Separated/Divorced	12.50	17.20	10.55		
Single	45.34	38.22	48.28		

*Comparison test for "age" was *t*-test; for all others, chi-square tests were used.

PTSD = posttraumatic stress disorder, SD = standard deviation.

a significantly smaller percentage of OIF/OEF veterans in the positive screening group were white compared with the group that screened negative. The two groups also differed with respect to marital status. Specifically, a greater percentage of those who screened positive for PTSD were separated or divorced compared with those who screened negative for PTSD.

Association Between Levels of Social Support and Screening Positive for Posttraumatic Stress Disorder

Table 2 depicts results from the logistic regression models estimating the associations between levels of social support, by source, and the odds of screening positive for PTSD on the PC-PTSD. In the unadjusted models, for each source of social support, higher social support was associated with decreased odds of screening positive for PTSD. For example, for immediate family support, a one unit increase on the social support measure was associated with an 8 percent reduction in the odds of screening positive for PTSD (OR = 0.92; 95% CI = 0.87–0.96; $p < 0.001$). The estimated ORs for the other sources of social support were relatively consistent and ranged from 0.83 to 0.85. Additionally, after adjustment for age, sex, race/ethnicity, and marital status, results were nearly identical to those obtained for the unadjusted models.

Association Between Emotional Hiding and Screening Positive for Posttraumatic Stress Disorder

Table 3 presents the results from the logistic regression models linking levels of emotional hiding, by source, with the odds of screening positive for PTSD. For each source, higher levels of emotional hiding were associated with significantly increased odds of screening positive for PTSD. Of note, each unit increase on the measure assessing emotional hiding from a family member (parents, grandparents, brothers, sisters, uncles,

aunts) was associated with a 44 percent increase in odds of screening positive for PTSD (OR = 1.44; 95% CI = 1.34–1.54; $p < 0.001$). Estimates for emotional hiding from immediate family and hiding from friends were of similar magnitude (i.e., for immediate family, OR = 1.32; 95% CI = 1.25–1.40; $p < 0.001$; for friends, OR = 1.32; 95% CI = 1.24–1.40; $p < 0.001$). Finally, each unit increase in emotional hiding from the community and coworkers was associated with a 25 and 15 percent increased odds of screening positive for PTSD, respectively (i.e., for community, OR = 1.25; 95% CI = 1.18–1.31; $p < 0.001$; for coworkers, OR = 1.15; 95% CI = 1.10–1.21; $p < 0.001$). Adjustment for age, sex, race/ethnicity, and marital status did not appreciably change any of the estimates.

Models Simultaneously Examining Associations Between Levels of Social Support and Emotional Hiding and Screening Positive for Posttraumatic Stress Disorder

Table 4 displays the results from the series of logistic regression analyses that include both support and hiding variables, for a given source, in the same model. As shown in **Table 4**, the estimates from these analyses are generally consistent and minimally attenuated, as compared with the corresponding estimates displayed in the two previous tables (**Tables 2–3**). For example, the model simultaneously examining support and hiding from the immediate family shows that a one unit increase in social support was associated with a 7 percent reduction in the odds of screening positive for PTSD (OR = 0.93; 95% CI = 0.87–0.98; $p = 0.006$), even with concurrent adjustment for level of emotional hiding from the immediate family. The results from this model also show that for each unit increase on the emotional hiding

Table 2.

Unadjusted and adjusted associations between levels of support from different sources and screening positive for posttraumatic stress disorder (PTSD) on primary care PTSD screen ($n = 536$).

Support From Source	Unadjusted			Adjusted*		
	OR	95% CI	<i>p</i> -Value	AOR	95% CI	<i>p</i> -Value
Immediate Family	0.92	0.87–0.96	<0.001	0.91	0.86–0.96	<0.001
Family	0.84	0.79–0.89	<0.001	0.85	0.79–0.90	<0.001
Friends	0.83	0.79–0.88	<0.001	0.84	0.79–0.89	<0.001
Coworkers	0.84	0.80–0.88	<0.001	0.84	0.80–0.88	<0.001
Community	0.83	0.79–0.88	<0.001	0.83	0.79–0.88	<0.001

*Adjusted models adjust for age, sex, race/ethnicity, and marital status.

AOR = adjusted odds ratio, CI = confidence interval, OR = odds ratio.

Table 3.

Unadjusted and adjusted associations between levels of emotional hiding from different sources and screening positive for posttraumatic stress disorder (PTSD) on primary care PTSD screen ($n = 536$).

Hiding Feelings From Source	Unadjusted			Adjusted*		
	OR	95% CI	<i>p</i> -Value	AOR	95% CI	<i>p</i> -Value
Immediate Family	1.32	1.25–1.40	<0.001	1.33	1.25–1.41	<0.001
Family	1.44	1.34–1.54	<0.001	1.43	1.33–1.53	<0.001
Friends	1.32	1.24–1.40	<0.001	1.33	1.25–1.41	<0.001
Coworkers	1.15	1.10–1.21	<0.001	1.15	1.10–1.21	<0.001
Community	1.25	1.18–1.31	<0.001	1.24	1.17–1.31	<0.001

*Adjusted models adjust for age, sex, race/ethnicity, and marital status.

AOR = adjusted odds ratio, CI = confidence interval, OR = odds ratio.

Table 4.

Unadjusted and adjusted models examining associations between both levels of support and emotional hiding and screening positive for posttraumatic stress disorder (PTSD) on primary care PTSD screen ($n = 536$).

Model	Unadjusted			Adjusted*		
	OR	95% CI	<i>p</i> -Value	AOR	95% CI	<i>p</i> -Value
Immediate Family						
Support	0.93	0.87–0.98	0.006	0.93	0.87–0.99	0.02
Emotional Hiding	1.31	1.24–1.39	<0.001	1.32	1.24–1.40	<0.001
Family						
Support	0.93	0.86–0.99	0.046	0.94	0.87–1.01	0.12
Emotional Hiding	1.41	1.31–1.51	<0.001	1.41	1.31–1.51	<0.001
Friends						
Support	0.92	0.86–0.98	0.01	0.92	0.86–0.99	0.02
Emotional Hiding	1.28	1.20–1.37	<0.001	1.29	1.21–1.38	<0.001
Coworkers						
Support	0.85	0.81–0.90	<0.001	0.85	0.81–0.90	<0.001
Emotional Hiding	1.12	1.07–1.18	<0.001	1.12	1.07–1.18	<0.001
Community						
Support	0.87	0.82–0.92	<0.001	0.87	0.82–0.92	<0.001
Emotional Hiding	1.20	1.14–1.27	<0.001	1.19	1.13–1.26	<0.001

*Adjusted models adjust for age, sex, race/ethnicity, and marital status.

AOR = adjusted odds ratio, CI = confidence interval, OR = odds ratio.

measure for the immediate family, there was a 31 percent increase in the odds of screening positive for PTSD (OR = 1.31; 95% CI = 1.24–1.39; $p < 0.001$), holding constant levels of social support. Adjustment for age, sex, race/ethnicity, and marital status minimally affected the estimates; however, in the adjusted model, the estimate for family support did become nonsignificant ($p = 0.12$).

Sensitivity Analysis Examining Correlations Between Posttraumatic Stress Disorder Screening Items and Sources of Social Support and Emotional Hiding

In a sensitivity analysis to better understand whether the social support and emotional hiding measures and specific PTSD items were tapping into the same construct,

correlations between PTSD screening items and sources of social support and emotional hiding were conducted. The point biserial correlation coefficient ranges for the specific PC-PTSD items and the sources of social support are as follows: -0.14 to -0.34 for the PC-PTSD item assessing nightmares and intrusive thoughts and the sources of social support, -0.13 to -0.38 for the PC-PTSD item assessing avoidance and the sources of social support, -0.09 to -0.32 for the PC-PTSD item assessing hypervigilance and the sources of social support, and -0.28 to -0.45 for the PC-PTSD item assessing numbing and the sources of social support. The point biserial correlation coefficient ranges for the specific PC-PTSD items and the emotional hiding sources are as follows: 0.38 to 0.54 for the PC-PTSD item

assessing nightmares and intrusive thoughts and the emotional hiding sources, 0.33 to 0.56 for the PC-PTSD item assessing avoidance and the emotional hiding sources, 0.29 to 0.47 for the PC-PTSD item assessing hypervigilance and the emotional hiding sources, and 0.32 to 0.54 for the PC-PTSD item assessing numbing and the emotional hiding sources. Although the PTSD screening items and the social support and emotional hiding items are correlated, none appear to be tapping into the exact same construct (i.e., none are strongly correlated).

DISCUSSION

The current study examined the associations among levels of social support, emotional hiding, and screening positive for PTSD within a sample of OIF/OEF veterans. Higher levels of social support were associated with a significant reduction in the odds of screening positive for PTSD. The inverse associations between levels of social support from various sources (spouses or significant others, family, friends, coworkers, and community) and screening positive for PTSD are generally consistent with extant research [8–10,13]. Our findings, however, may not be readily compared with other studies that have employed more detailed PTSD diagnostic and social support tools. One difference we found in comparison with the available literature was the significant association between low levels of support from friends and positive PTSD screens. In contrast, Wilcox only found this relationship to hold true for military friends [10]. Unlike Wilcox's study, we did not assess separate categories of friendships (e.g., military and nonmilitary) but rather collapsed these relationships into one social support category. Thus, respondents in the current study likely considered all available friendships (including military friendships) when providing support ratings for this category. As noted by Wilcox, differentiating between the effects of social support from nonmilitary versus military friendships is an important measurement distinction to make in future studies when assessing the effect that different peer groups have on mental health functioning [10].

In a novel addition to the evidence base, veterans' self-reports of emotional hiding were significantly and positively associated with screening positive for PTSD, even after simultaneously taking into account the level of social support. In particular, higher levels of emotional hiding from family (defined as parents, grandparents, brothers, sisters, uncles, aunts) were associated with greater odds of screening positive for PTSD. Veterans in this study were primarily in their 20s and early 30s and thus may still be closely connected to (positively or nega-

tively) and/or dependent upon their families of origin in comparison with newer relationships established in adulthood (e.g., spouses or significant others, children, community members, coworkers). Significant findings also emerged regarding emotional hiding from other social support agents and screening positive for PTSD. Higher levels of emotional hiding from immediate family (defined as spouse or significant other, children) and friends were associated with increased odds of screening positive for PTSD; for both sources, a one unit increase was associated with 33 percent greater odds of a positive PTSD screen. Although we were unable to run mediational analyses due to our study's cross-sectional design, our findings regarding hiding from immediate family (defined as spouse or significant other, children) may be consistent with recent literature showing that military servicemembers' reluctance to disclose deployment and combat-related experiences mediates the relationship between intimate partner support and PTSD symptom severity [25]. With respect to hiding from the community, each unit increase on the measure was associated with a 24 percent increase in the odds of a positive PTSD screen. Emotional hiding from coworkers was also associated with screening positive for PTSD. In summary, veterans' reluctance to openly share their emotional experiences with social support agents is related to a higher risk for screening positive for PTSD, though the direction of this relationship is unclear.

It cannot be determined whether veterans who screened positive for PTSD rated available social support as less helpful due to symptoms reflective of the diagnosis (e.g., the erosion model [13–14]) or whether lower levels of social support conferred risk for PTSD (e.g., the buffering model [11]). Similar questions remain regarding emotional hiding. In practice, bidirectional processes likely influence these strong associations. Future studies with prospective designs are needed to examine the temporal relationship between emotional hiding and PTSD.

Limitations of this study merit attention. As a postdeployment screening protocol meant to cover a range of mental, physical, and social issues, the measures employed were brief so as to keep participant burden low (e.g., telephone screening time of 25–30 min). Thus, findings should be interpreted with caution. We were also not able to include additional assessment sources that could reveal whether a third variable may explain the associations observed in this study. For example, assessing objective levels of support via reports from spouses or significant others or friends and comparing these ratings with participants' perceptions of support may reveal important distinctions. In spite of these limitations, our study also has a number of strengths, including its large sample size and

the robust finding regarding the association between emotional hiding and screening positive for PTSD.

CONCLUSIONS

Given the field's heightened awareness of the importance of identifying OIF/OEF veterans' mental health needs postdeployment, the VA has implemented a number of screening efforts to better understand the needs and vulnerabilities of returning veterans. In addition, returning veterans and their families are provided with more postdeployment mental health education and resources than in previous conflicts (e.g., Center for Military Health Policy Research [26]). For clinicians working with returning veterans with PTSD, studies such as the current one suggest that it may be important to address veterans' perceptions of available social support as well as their thoughts and concerns about self-disclosing emotional material to treatment providers and/or social support agents. Further study regarding the construct of emotional disclosure and how it may be related to PTSD and treatment engagement and response is needed.

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