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Research report

# Psychosocial buffers of traumatic stress, depressive symptoms, and psychosocial difficulties in veterans of Operations Enduring Freedom and Iraqi Freedom: The role of resilience, unit support, and postdeployment social support

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ABSTRACT

*Background:* Little research has examined the role of protective factors such as psychological resilience, unit support, and postdeployment social support in buffering against PTSD and depressive symptoms, and psychosocial difficulties in veterans of Operations Enduring Freedom (OEF) and Iraqi Freedom (OIF).
*Materials and methods:* A total of 272 OEF/OIF veterans completed a survey containing PTSD and depression screening measures, and questionnaires assessing resilience, social support, and psychosocial functioning.
*Results:* Lower unit support and postdeployment social support were associated with increased PTSD and depressive symptoms, and decreased resilience and psychosocial functioning. Path analyses suggested that resilience fully mediated the association between unit support and PTSD and depressive symptoms, and that postdeployment social support partially mediated the association between PTSD and depressive symptoms and psychosocial functioning.
*Limitations:* Generalizability of results is limited by the relatively low response rate and predominantly older and reserve/National Guard sample.
*Conclusions:* These results suggest that interventions designed to bolster unit support, resilience, and postdeployment support may help protect against traumatic stress and depressive symptoms, and improve psychosocial functioning in veterans.



## 1. Introduction

Epidemiologic surveys of Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) veterans have found high rates of posttraumatic stress disorder (PTSD), depression, and related conditions (Tanielian and Jaycox, 2008). While it is well known that these conditions may negatively affect psychosocial functioning and quality of life in this population (e.g., Milliken et al., 2007), little research has examined the role of protective factors such as psychological resilience, unit support, and postdeployment social support in buffering against PTSD and depressive symptoms, and psychosocial difficulties.

Psychological resilience, which refers to an individual's capacity to successfully adapt or change in the face of adversity,

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protects against the development of combat-related PTSD in Vietnam veterans (King et al., 1998; Waysman et al., 2001) and Army Reserve soldiers (Bartone, 1999). Aspects of resilience such as positive emotions, cognitive flexibility, meaning-making, and active coping also protect against the deleterious effects of depression (Southwick et al., 2005).

Social support also protects against depression (Paykel, 1994; Southwick et al., 2005), and PTSD, with meta-analyses suggesting that it is among the strongest negative predictors of PTSD (Oliver et al., 1999; Brewin et al., 2000; Ozer et al., 2008). Higher perceived social support has also been linked to increased resilience (Bonanno et al., 2007) and lower risk of PTSD in Vietnam veterans (King et al., 1998), prisoners of war (Engdahl et al., 1997) and United Nations soldiers (Kaspersen et al., 2003). An understanding of associations between resilience, social support, PTSD and depressive symptoms, and functioning in OEF/OIF veterans is important, as it may help guide the development of interventions to enhance resilience and support, and promote successful readjustment to civilian life after deployment.

This study examined associations between resilience, unit support, postdeployment social support, traumatic stress and depressive symptoms, and psychosocial functioning 2 years following return from deployment in a sample of OEF/OIF veterans. Path analyses tested the hypotheses that unit support may help enhance psychological resilience (Bartone, 2006; Oliver et al., 1999), which in turn reduces PTSD and depressive symptom severity, and that postdeployment social support may mediate the relationship between PTSD and depressive symptoms and psychosocial difficulties (Oxman and Hull, 2001; Zatzick et al., 1997). We hypothesized that resilience would mediate the relationship between unit support and PTSD and depressive symptoms, and that postdeployment social support would mediate the relationship between PTSD and depressive symptoms and psychosocial difficulties.

## 2. Methods

### 2.1. Sample

Participants ($N = 272$) completed the Connecticut OEF/OIF Veterans Needs Assessment Survey. OEF/OIF veterans were identified alphabetically from a review of copies of discharge papers (DD-214s) by the Connecticut Department of Veterans' Affairs until names and addresses of 1000 potential respondents were obtained. To maintain confidentiality, surveys were addressed and mailed by the Connecticut Department of Veterans' Affairs. No personal identifying information was made available to the authors. The survey was mailed in October 2007 to a sample of 1000 veterans who had served between 1/1/03 and 3/1/07; as of 2/08, 285 surveys were returned for an overall return rate of 28.5%. Respondents were older than non-respondents in the sampling frame (33.4 vs. 31.3 years, $t(998) = 2.87$, $p = .004$). On average, time between return from deployment to OEF/OIF and survey completion was $26.9 \pm .7$ months.

### 2.2. Assessment instruments

The *Unit Support Scale* (USS) is a self-report measure from the Deployment Risk and Resilience Inventory (DRRI; King et al., 2006) that assesses the quality of relationships and degree of cohesion between a soldier and his/her unit. Cronbach's $\alpha = .93$.

The *Postdeployment Social Support Scale* is a self-report measure from the DRRI that assesses the extent to which family, friends, coworkers, employers, and community provide postdeployment emotional support and instrumental assistance. Cronbach's $\alpha = .82$.

The *Connor–Davidson Resilience Scale* (Connor and Davidson, 2003) is a self-report measure of psychological resilience. Higher scores reflect greater resilience. Cronbach's $\alpha = .94$.

The *Combat Experiences Scale (CES)* is a self-report instrument from the DRRI that assesses exposure to combat (e.g., firing a weapon, witnessing injury and death). Higher scores reflect more combat exposure. Cronbach's $\alpha = .93$.

*The Posttraumatic Stress Disorder Checklist-Military Version (PCL-M;* Weathers et al., 1991) is a 17-item instrument based on DSM-IV criteria for PTSD. Higher scores indicate greater posttraumatic stress symptoms. Cronbach's $\alpha = .96$.

The *Patient Health Questionnaire-9* (Kroenke and Spitzer, 2002) is a 9-item self-report screening instrument for depression derived from the clinician-administered Primary Care Evaluation of Mental Disorders. Higher scores indicate greater depressive symptoms. Cronbach's $\alpha = .92$.

The *Psychosocial Difficulties Scale (PDS)* is a 23-item questionnaire developed by two of the authors (M.B.G., J.C.M.) that assesses psychosocial functioning in family and peer relationships (e.g., "have difficulty connecting emotionally with family and/or friends"), and work, school, and financial functioning (e.g., "have difficulty finding employment"; "have difficulty paying bills"). Ratings are "Not a concern", "A slight concern", "A moderate concern", and "A major concern". Higher scores indicate greater psychosocial difficulties. Cronbach's $\alpha = .89$.

### 2.3. Data analysis

Non-normally distributed data (e.g., PCL-M scores) were transformed using logarithmic base 10 transformations. Pearson correlations were computed between measures of social support and resilience, PTSD and depressive symptoms, and psychosocial difficulties. Path analyses were conducted to test the hypotheses that resilience mediates the relationship between unit support and PTSD and depressive symptoms; and that postdeployment social support mediates the relationship between PTSD and depressive symptoms and psychosocial difficulties. Data from all respondents were included in these analyses, including those with and without positive screens for PTSD and depression. Model fit was evaluated using a number of fit statistics, including $\chi^2$, root mean square error of approximation (RMSEA), comparative fit index (CFI), and Tucker–Lewis Index (TLI). By convention, lower, non-significant $\chi^2$ values, RMSEA values $\leq .08$, and CFI and TLI values $\geq .90$ indicate acceptable model fit (Kline, 2005). Path coefficients are presented as standardized regression weights ($\beta$).

## 3. Results

The mean age of the total sample was $34.9 \pm .4$ years, 89% were white, 82% completed at least some college education, the majority (72%) were in the National Guard or reserves and

**Table 1**
Mean scores and correlations between variables.

| | Mean (SD) | Postdeployment social support | Resilience | Combat exposure | PTSD symptoms | Depressive symptoms | Psychosocial difficulties |
|---|---|---|---|---|---|---|---|
| Unit support | 41.3 (11.9) | .36** | .40** | .05 | −.23** | −.31** | −.12 |
| Postdeployment social support | 55.4 (10.5) | | .51** | −.19* | −.56** | −.53** | −.53** |
| Resilience | 73.8 (16.1) | | | .04 | −.53** | −57** | −.40** |
| Combat exposure | 39.5 (16.7) | | | | .41** | .31** | .28** |
| PTSD symptoms | 35.9 (18.0) | | | | | .79** | .62** |
| Depressive symptoms | 7.3 (6.8) | | | | | | .55** |

*Note*. PTSD= posttraumatic stress disorder; SD = standard deviation.
* $p<.01$.
** $p<.001$.

28% were on active duty; 87% were in the Army, 9% Marines, 2% Air Force, and 2% multiple branches.

Table 1 shows mean scores and standard errors, and correlations between all measures. Unit support scores correlated with scores on all other variables except combat exposure and psychosocial difficulties. Postdeployment social support scores correlated positively with resilience scores and negatively with scores on all other variables. Resilience scores correlated negatively with measures of PTSD and depressive symptoms, and psychosocial difficulties, but they were not associated with combat exposure. Combat exposure scores correlated negatively with postdeployment social support scores and positively with measures of PTSD and depressive symptoms, and psychosocial difficulties. PTSD and depressive symptoms correlated positively with scores on a measure of psychosocial difficulties.

Fig. 1 shows the final path models, both of which had a good fit: PTSD symptom model: $\chi^2(7)=4.78$, $p=.69$; RMSEA = .00, CFI = 1.00, TLI = 1.00; Depressive symptom model: $\chi^2(7)=5.86$, $p=.12$; RMSEA = .04; CFI = .99; TLI = .96. All paths in the final models were statistically significant (all $p$'s<.001). In the just-identified models (i.e., perfect fit to data with paths between all variables), the paths between unit support and PTSD and depressive symptoms, combat exposure and unit support, resilience, and functioning, and resilience and functioning were not significant (all $\beta$'s<.06, all $p$'s>.26); accordingly, these paths were removed from the final models. As shown in Fig. 1, resilience fully mediated the relationship between unit support and both PTSD and depressive symptoms; unit support also predicted increased postdeployment social support. Combat exposure was associated with increased PTSD symptoms, resilience with increased postdeployment social support, and PTSD and depressive symptoms with greater psychosocial difficulties. Postdeployment social support partially mediated the association between PTSD and depressive symptoms and psychosocial difficulties.

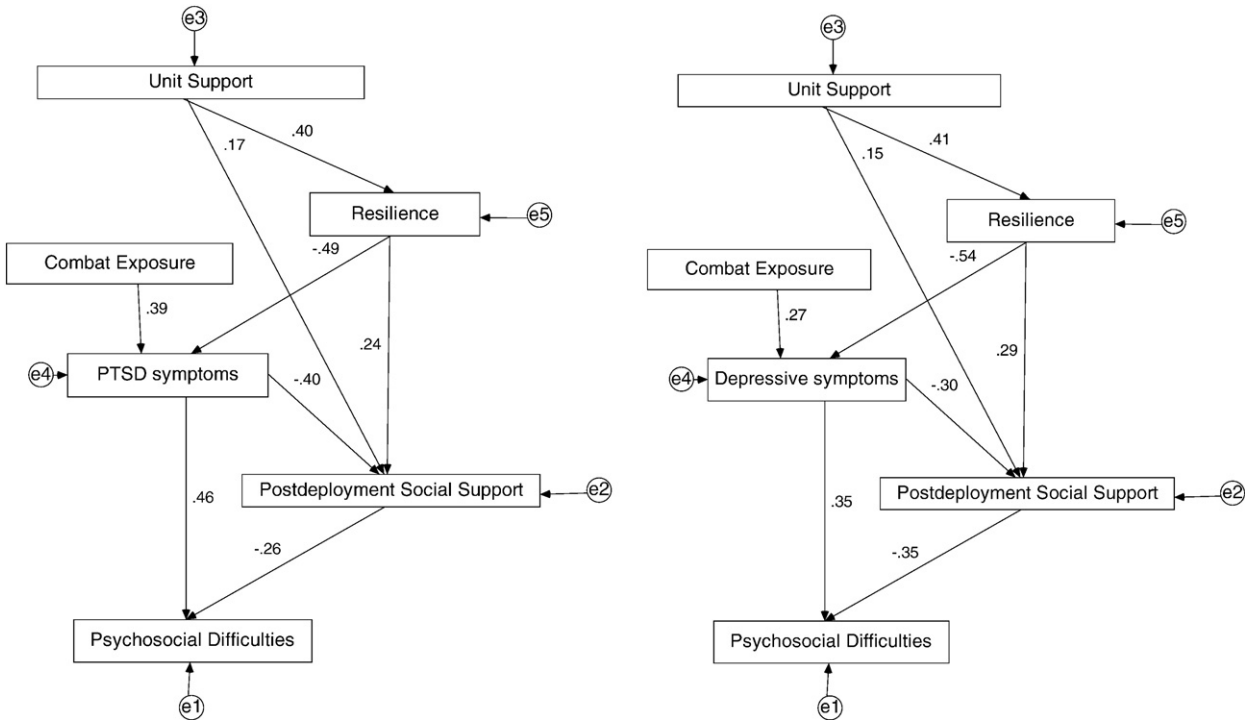


**Fig. 1.** Path diagrams showing relationships among support variables, resilience, PTSD and depressive symptoms, and psychosocial functioning.

## 4. Discussion

This study examined the role of protective factors such as resilience and social support in protecting against traumatic stress and depressive symptoms, and psychosocial difficulties in OEF/OIF veterans. Results suggested that resilience, unit support, and postdeployment social support serve as psychosocial buffers of PTSD and depressive symptoms, and psychosocial difficulties at 2 years after deployment.

Resilience fully mediated the relationship between unit support and PTSD and depressive symptoms. Previous research on resilience similarly found that social support is associated with increased resilience (Bonanno et al., 2007; Oliver et al., 1999) and lower risk of PTSD in military samples (King et al., 1998; Engdahl et al., 1997; Kaspersen et al., 2003). This finding suggests that high levels of perceived unit support were associated with increased resilience, which in turn is associated with decreased PTSD and depressive symptoms. Unit support may enhance resilience by promoting feelings of personal control and self-efficacy, which may foster the development of active coping styles and increased ability to reappraise stressful situations (Sumer et al., 2005; Benight and Harper, 2002; Southwick et al., 2005; Bartone, 2006). Unit support may also bolster resilience by promoting meaning-making in the face of stressful experiences (Cole et al., 2006). While more research is needed to tease apart the temporal relationship between unit support and resilience (i.e., does unit support lead to increased resilience or do more resilient people attract more unit support?), this finding highlights the importance of unit support and resilience in protecting against PTSD and depressive symptoms in OEF/OIF veterans.

Postdeployment social support partially mediated the relationship between PTSD and depressive symptoms and psychosocial difficulties. This finding replicates previous research demonstrating the protective role of social support in preserving functioning in both PTSD (Zatzick et al., 1997) and depression (Taylor, 2004; Oxman and Hull, 2001). It also suggests that providing early social support may reduce the documented postdeployment increase in PTSD symptoms and comorbid conditions for OEF/OIF veterans (Milliken et al., 2007). Social support may enhance functioning by fostering effective coping strategies (Holahan et al., 1995), reducing involvement in high-risk behaviors or avoidance coping (Muris et al., 2001), promoting self-efficacy (Hays et al., 2001), and reducing loneliness (Bisschop et al., 2004). Resilience and social support likely operate synergistically to decrease the likelihood of developing PTSD and depression. Indeed, a study of a nationally representative sample of 1632 Vietnam veterans found that both hardiness, an aspect of resilience, and postwar social support were negatively associated with PTSD symptoms, and that social support accounted for a substantial amount of the indirect effect of hardiness on PTSD (King et al., 1998).

The finding that increased resilience was associated with increased postdeployment social support also corroborates previous research, which found that resilient individuals tend to be skilled at constructing social networks and seeking out social support in times of need (Sharkansky et al., 2000). Resilience and social support may also protect against PTSD and depressive symptoms and enhance functioning by decreasing hypothalamic–pituitary–adrenal (HPA) axis reactivity and stress-related physiological arousal (Heinrichs et al., 2003; Southwick et al., 2005). They may also promote active task-oriented coping (Campbell-Sills et al., 2006), which enhances adaptation to stress by decreasing avoidance symptoms, behavioral withdrawal, and emotional disengagement (Southwick et al., 2005; Tiet et al., 2006).

Methodological limitations of this study must be noted. First, given the relatively low response rate to the survey, generalizability of the findings may be limited. Nevertheless, demographic, deployment, and clinical characteristics of survey respondents in the current study were generally comparable to those of a nationally representative sample of OEF/OIF veterans (Tanielian and Jaycox, 2008), though the current survey sample consisted of older, and predominantly white and Army reserve/National Guard veterans, so results are likely best generalized to this population. Second, self-report screening instruments were used to assess PTSD and depression symptoms. Whether these results are generalizable to larger, predominantly active duty, and/or more diverse samples of OEF/OIF veterans when formal clinical interviews and diagnostic instruments are utilized remains to be examined. Finally, due to the cross-sectional design of this study, we were unable to examine temporal relationships among the variables assessed. More research is needed to examine the interrelationships among these variables with respect to deployment. For example, it is not clear whether unit support enhances resilience or if resilient individuals are better able to attract unit support. Future research should also employ a broader array of biological and psychosocial measures, including measures of successful adjustment, in examining predictors of psychological symptoms/disorders and functioning, and evaluate the utility of interventions designed to bolster unit support, resilience, and postdeployment social support in improving readjustment to civilian life in OEF/OIF veterans and other trauma-exposed populations.

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**Conflict of interest**

None of the authors have any conflicts of interest.

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