



Potential Mediating Role of Parenting Competence in the Relationship Between Posttraumatic Stress Disorder and Family Functioning Post-9/11 Veteran Parents

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Abstract

Objectives Repeated, extended deployments in support of OEF/OIF/OND have important implications for not only veterans, but also their family members. While this topic is beginning to garner more attention, more research is needed on the relationship between symptoms of posttraumatic stress disorder (PTSD), parenting factors, and family functioning among OEF/OIF/OND veterans. The present study aimed to: (1) examine the relationship between specific PTSD symptom clusters and family functioning among a sample of $N = 191$ treatment-seeking veteran parents who served after September 11, 2001; and (2) examine the mediating role of parenting sense of competence in this relationship.

Method Participants completed the PTSD Check List (PCL), the Parenting Sense of Competence Scale (PSOC), and the Family Assessment Device (FAD) as part of their initial evaluation in an outpatient mental health clinic.

Results Numbing and avoidance symptoms of PTSD (Criterion C; PCL_c) were associated with more problematic family functioning ($r = .164, p < .05$). There was a strong negative relationship between parenting competence and problematic family functioning ($r = -.514, p < .001$). Examination of the indirect effect of PSOC on the association between PCL_c and FAD based on 4000 bootstrapped samples revealed a significant indirect effect (point estimate = 0.0092; BCa CI = 0.0035, 0.0170), suggesting that decreased parenting sense of competence might mediate the relationship between numbing/avoidance symptoms and problematic family functioning.

Conclusions Future studies confirming the central role of parenting in the relationship between PTSD symptoms and family functioning are warranted.

Keywords Military · Posttraumatic stress · Parenting competence · Family functioning · Post-9/11

Since September 11, 2001, over 2.8 million United States service members have deployed to Iraq and/or Afghanistan, and this figure is expected to reach nearly 3.7 million by 2020 (National Center for Veterans Analysis and Statistics 2017). Operation Enduring Freedom (OEF), Operation Iraqi

Freedom (OIF), and Operation New Dawn (OND) represent the most sustained U.S. combat operations since Vietnam and have been characterized by repeated, extended deployments (Tanielian and Jaycox 2008). Many service members return home with physical injuries and mental health concerns, such as posttraumatic stress disorder (PTSD), with a recent meta-analysis estimating the prevalence of PTSD among OEF/OIF veterans at 23% (Fulton et al. 2015).

Deployment in support of OEF, OIF, and OND has important implications not only for service members, but also for their families. Of the 2.1 million veterans who deployed between 2001 and 2010, 59% were married, and 49% had dependent children (Institute of Medicine 2013). Parental deployment is a significant stressor for military-connected families, with unique demands placed on service members and at-home partners and caregivers during each

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phase of the deployment cycle. The reintegration phase may be particularly challenging for the family system, especially if veterans return with deployment-related mental health concerns (DeVoe and Ross 2012).

The literature suggests a robust association between combat exposure and family functioning as mediated by veteran PTSD symptoms (Galovski and Lyons 2004). While some (e.g., Evans et al. 2010) suggest that family functioning predicts PTSD symptoms, most of the literature has examined the reverse relationship. The National Vietnam Veterans Readjustment Study (Kulka et al. 1988) concluded that combat-exposed veterans experienced poorer family adjustment, and male veterans with PTSD reporting significantly lower levels of family functioning compared to those without PTSD. A longitudinal study of Vietnam veterans similarly demonstrated that combat exposure predicted less marital satisfaction at 14-year follow-up, and persisting PTSD symptoms were associated with worse family functioning (Koenen et al. 2008). These findings have been replicated in Operation Desert Storm (ODS) veterans (Taft et al. 2008), with numbing and arousal symptoms accounting for the indirect effect of combat exposure on family adjustment. Furthermore, a study of ODS veterans found avoidant coping was associated with higher levels of PTSD symptoms, which in turn were associated with lower family functioning (Creech et al. 2013).

Previous studies have also specifically explored the relationship between PTSD symptoms and parenting in combat-exposed veterans. Parenting competence reflects an individual's perceived parenting efficacy and satisfaction with the parental role (Johnston and Mash 1989). The NVVRS found that Vietnam veterans with PTSD reported more parenting problems than those without (Kulka et al. 1988). In another study, symptom severity among veterans with PTSD predicted parenting difficulties at 14-year follow-up (Koenen et al. 2008). Again, PTSD symptom severity and specifically the numbing/avoidance symptom cluster were negatively correlated with parenting satisfaction for veteran fathers (Samper et al. 2004). In fact, emotional numbing has been identified as the strongest correlate of Vietnam veterans' decreased perceived father-child relationship quality (Ruscio et al. 2002). Far less research has examined the impact of PTSD on parenting behaviors among post-9/11 service members and veterans, with somewhat mixed findings (see Creech and Misca 2017 for a review).

In a recent review, Creech and Misca (2017) applied the cognitive-behavioral interpersonal theory of PTSD (C-BIT; Dekel and Monson 2010; Monson et al. 2010) to the parent-child relationship and examined the influence of PTSD on parent-child functioning. Their model proposed that veteran

avoidance symptoms may interfere with participation in parent-child activities, while numbing symptoms may interfere with emotional engagement. In turn, children may accommodate avoidance behaviors, thereby creating and reinforcing a cycle that maintains parental PTSD symptoms (Creech and Misca 2017). In a study of service members deployed in the OIF/OEF/OND conflicts, Brockman and colleagues (2016) found that higher experiential avoidance among veteran parents with PTSD was associated with less positive engagement with their children, supporting that numbing/avoidance symptoms may play an important role in parenting behaviors that affect overall family functioning.

Although post-9/11 veterans experience repeated deployments and return home with higher rates of significant physical and mental injuries compared to other era veterans (Tanielian and Jaycox 2008), limited research exists on the relationship between PTSD symptoms, parenting factors, and overall family functioning in this population. Furthermore, existing research (e.g., Allen et al. 2010; Creech et al. 2016) has not examined all three factors (PTSD, parenting, and family functioning) within one model, limiting specific conclusions that can be drawn about the role of parenting and the parent-child relationship in a treatment-seeking veteran population. Identifying specific symptom clusters correlated with family functioning among veteran parents may further elucidate potential targets for preventive and treatment interventions.

The present cross-sectional study aims to examine the relationship between specific PTSD symptom clusters and family functioning among treatment-seeking veterans who served after September 11, 2001. Further, because parenting has been hypothesized to mediate the relationship between PTSD symptoms and family functioning (e.g., DeVoe and Ross 2012), we also tested the role of parenting sense of competence in this relationship. Based on the literature in other era veterans, we hypothesized that numbing/avoidance symptoms would be positively correlated with problematic family functioning. We also anticipated that this relationship would be mediated by parenting sense of competence.

Method

Participants

Participants were 241 treatment-seeking post-9/11 veteran parents (92.4% male, M age = 36.68, SD = 7.98) who were evaluated at a community-based outpatient clinic offering mental health services to veterans, service members, and their families. Additional veteran demographic characteristics are displayed in Table 1 for the final study sample (N = 191).

Table 1 Demographic and clinical characteristics in a sample of $N = 191$ treatment-seeking veteran parents who served after September 11, 2001

Characteristic	n (%) or M (SD)
Male ($n = 189$)	174 (92.1%)
Age ($n = 177$)	36.82 (7.82)
In a relationship ($n = 176$)	108 (61.4%)
Military rank ($n = 160$)	
Enlisted	49 (30.6%)
Non-commissioned officer	90 (56.3%)
Officer	21 (13.1%)
Military branch ($n = 181$)	
Air Force/Air Force Reserve	5 (2.8%)
Army/Army Reserve	77 (42.5%)
Marines/Marine Reserve	33 (18.2%)
Navy/Navy Reserve	12 (6.6%)
National Guard	51 (28.2%)
Coast Guard	3 (1.7%)
Military status ($n = 184$)	
Active Duty	41 (22.3%)
Discharged	90 (48.9%)
National Guard	34 (18.5%)
Retired	19 (10.3%)
PCL	56.00 (16.73)
FAD	2.18 (0.63)
PSOC ($n = 186$)	66.69 (12.72)

PCL PTSD Checklist, FAD General Functioning subscale of the Family Assessment Device, PSOC Parenting Sense of Competence Scale

Procedure

Demographic and self-report screening measures were routinely collected as part of each patient's baseline clinical assessment. Fifty participants (20.7%) were excluded from analyses for missing more than one item on the Family Assessment Device (FAD; Epstein et al. 1983), PTSD Checklist (PCL; Weathers et al. 1993), or Parenting Sense of Competence Scale (PSOC; Johnston and Mash 1989). Single items were imputed for the FAD ($n = 6$; 3.4%), PCL ($n = 11$; 5.8%), and PSOC ($n = 20$; 10.8%). Because data were collected primarily for clinical purposes, missing data for sociodemographic variables ranged from 1.0% (gender) to 11.0% (military rank). De-identified clinical data were maintained in a database repository approved by the Massachusetts General Hospital (Partners Healthcare) Institutional Review Board.

Measures

Demographic information

Veterans' demographic information, including age, sex, relationship status, military branch, military rank, and military status, were gathered during the intake evaluation process.

Posttraumatic stress disorder (PTSD)

PTSD symptoms were assessed using the 17-item PCL-Civilian Version (Weathers et al. 1993), which has been shown to have good validity and reliability in veterans (Dobie et al. 2002; Searle et al. 2015). The PCL consists of three subscales: re-experiencing symptoms (Criterion B; PCL_b), numbing and avoidance symptoms (Criterion C; PCL_c), and hyperarousal symptoms (Criterion D; PCL_d). Total scores range from 17 to 85, with higher scores indicating greater PTSD symptom severity. Total scores of 50 or greater are recommended as valid clinical cutoffs in a veteran population (Forbes et al. 2001; Weathers et al. 1993). Cronbach's alpha in our sample was excellent ($\alpha = .95$).

Family functioning

Overall family functioning was assessed using the 12-item General Functioning subscale of the Family Assessment Device (FAD; Epstein et al. 1983; Kabacoff et al. 1990), which has been shown to have good convergent and concurrent validity (Kabacoff et al. 1990). The FAD assesses dynamic family processes, including global family communication and support (e.g., "In times of crisis we can turn to each other for support," and "Individuals are accepted for what they are"). Total scores range from 1 to 4 and are generated by averaging all 12 item scores, with scores greater than or equal to two indicative of problematic family functioning. Cronbach's alpha in our sample was excellent ($\alpha = .93$).

Parenting sense of competence

Parenting sense of competence was assessed using the 16-item Parenting Sense of Competence Scale (PSOC; Bui et al. 2017; Johnston and Mash 1989), which has been shown to be psychometrically sound in a treatment-seeking veteran population (Bui et al. 2017). The PSOC consists of two subscales: efficacy and satisfaction. The efficacy subscale measures parents' perceived ability level in the parental role (e.g., "I meet my own personal expectations for expertise in caring for my child"), while the satisfaction subscale measures parents' anxiety, motivation, and frustration (e.g., "Being a parent makes me tense and anxious"). Total scores range from 16 to 96, with scores of 69 or below proposed to indicate low to moderate parental confidence (National Center for Telehealth and Technology 2010). Cronbach's alpha in our sample was good ($\alpha = .86$).

Data Analyses

Pearson's correlations and multiple regression analyses were performed to examine the overall relationships

between variables. Correlation coefficients between variables did not exceed the threshold for harmful effects of collinearity ($r > 0.7$; Tabachnick and Fidell 2012). An analysis based on a 4000-sample bootstrapping approach was conducted to test the indirect effect of parenting sense of competence in the relationship between PTSD symptoms and family functioning (Hayes and Preacher 2014; Preacher and Hayes 2008). The level of statistical significance was set to 0.05 (two-tailed), and the bias corrected and accelerated confidence intervals (BCa CIs) were set to 95% for the indirect effect analysis. All data analyses were performed using STATA version 14.1 (Stata Corporation, College Station, Texas).

Results

The majority of veterans ($n = 130$, 68.1%) reported clinically significant levels of PTSD symptoms and problematic family functioning ($n = 124$, 64.9%). More than half ($n = 105$, 56.6%) of veteran parents reported low to moderate parenting sense of competence.

Relationship Between PTSD Symptom Clusters, Family Functioning, and Parenting Sense of Competence

FAD scores were not correlated with deployment, military status, relationship status, gender, or total PCL scores (see Table 2). Pre-planned analyses by PTSD symptom cluster revealed that only PCL_c scores were significantly associated with FAD scores ($r = .16$, $p < .05$), such that veterans with elevated numbing and avoidance symptoms reported increased problematic family functioning. There was a moderate negative relationship between PSOC and FAD scores ($r = -.51$, $p < .001$), such that veterans with higher parental self-confidence reported lower levels of problematic family functioning. PSOC scores were also negatively associated with PCL_c scores ($r = -.21$, $p < .01$), such that higher numbing and avoidance symptoms were related to lower parenting competence. A multiple regression analysis examining PSOC and PCL_c scores as predictors of FAD score revealed that FAD was significantly associated with PSOC ($\beta = -.500$, $p < .001$), but not PCL_c, when both variables were included in the model ($F(2, 183) = 33.48$, $p < .001$; see Table 3).

Indirect Effect of Parenting Sense of Competence on the Relationship Between Numbing/Avoidance Symptoms and Family Functioning

Examination of the indirect effect of PSOC score on the association between PCL_c and FAD scores based on 4000

Table 2 Association between PTSD symptoms, parenting sense of competence, and family functioning in a sample of $N = 191$ treatment seeking veteran parents who served after September 11, 2001

	PCL	PCL_b	PCL_c	PCL_d	FAD
PSOC	-.173*	-.066	-.216**	-.181*	-.514***
FAD	.134	.110	.164*	.083	

PCL PTSD Checklist, PCL_b PCL re-experiencing subscale, PCL_c PCL numbing/avoidance subscale, PCL_d PCL hyperarousal subscale, FAD General Functioning subscale of the Family Assessment Device, PSOC Parenting Sense of Competence Scale

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 3 Regression analysis predicting family functioning in a sample of $N = 191$ treatment-seeking veteran parents who served after September 11, 2001

	B	SE	P
$F(2, 183) = 33.48$, $p < .001$, $R^2 = .268$			
PCL_c	.005	.005	.303
PSOC	-.025	.003	<.001

PCL_c PCL numbing/avoidance subscale, PSOC Parenting Sense of Competence

bootstrapped samples (Preacher and Hayes 2008) revealed a significant indirect effect (point estimate = 0.0092; BCa CI = 0.0035, 0.0170), suggesting that decreased parenting sense of competence might mediate the relationship between numbing/avoidance symptoms and poorer family functioning (see Fig. 1).

Discussion

The current study sought to examine the relationship between PTSD symptoms and family functioning among treatment-seeking post-9/11 veterans and, more specifically, to examine the role of parenting competence in this relationship. While total PTSD severity was not correlated with family functioning, our findings supported our hypothesis and replicated findings among other era veterans (Creech et al. 2013; Koenen et al. 2008; Kulka et al. 1988; Taft et al. 2008) that numbing/avoidance symptoms are linked to problematic family functioning. One possible interpretation is that increased behavioral avoidance and emotional numbing may interfere with a veteran's ability to participate in family activities and experience positive emotions with respect to not only general family processes, but also parenting interactions (e.g., Brockman et al. 2016; Creech and Misca 2017; Sherman et al. 2016). Our findings are also consistent with the cognitive-behavioral interpersonal theory of PTSD and suggest that the parent-child relationship may play a role in overall family functioning among post-9/11 veteran parents (Creech and Misca 2017).

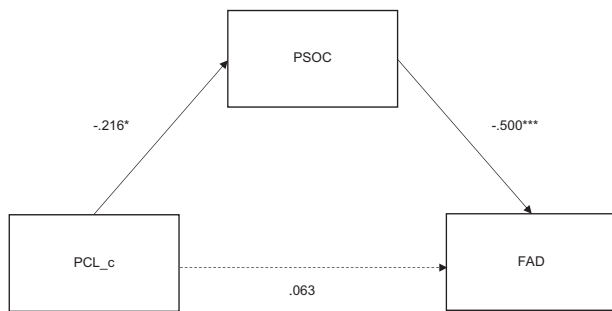


Fig. 1 Path diagram (including standardized regression coefficients) demonstrating parenting sense of competence as a mediator of the relationship between numbing/avoidance symptoms and family functioning in veteran parents who served after September 11, 2001 (point estimate = 0.0092; bias-corrected and accelerated 95% confidence interval = 0.0035, 0.0170). *Note.* *PCL_c* PCL numbing/avoidance subscale, *PSOC* Parenting Sense of Competence Scale, *FAD* General Functioning subscale of the Family Assessment Device. * $p < .05$, ** $p < .01$, *** $p < .001$

Our findings offer preliminary cross-sectional support for parenting competence as a potential mediator of the relationship between numbing and avoidance symptoms and problematic family functioning. Riggs and Riggs (2011) suggest that the detrimental effects of deployment on family functioning may be mitigated by effective parenting, open communication, and a secure parent-child relationship (DeVoe and Ross 2012; Riggs and Riggs 2011). Our findings provide preliminary evidence that parenting behaviors and attitudes may be a critical mechanism linking veteran PTSD symptoms and decreased family functioning. This aligns with previous findings demonstrating that adaptive relationship processes, such as parenting alliance, partially mediate the relationship between recent deployment, PTSD symptoms, and marital functioning (Allen et al. 2010). In fact, Gewirtz et al. (2016) found that veterans and their coparents who participated in a parenting intervention experienced increases in parenting efficacy at 6-month follow-up, which were associated with subsequent reductions in psychological distress at 12-month follow-up. Our results are, however, at odds with recent research that failed to report a significant correlation between parenting satisfaction and combat exposure or PTSD within a smaller subsample of veteran parents (Creech et al. 2016). Future longitudinal studies confirming the central role parenting plays in the relationship between PTSD symptoms and decreased family functioning are warranted, as are efforts to enhance screening and interventions to meet both the needs of veteran parents with PTSD and their families.

Limitations

Several limitations should be considered when interpreting our results. First and foremost, data are cross-sectional, precluding causal inference. It is possible that diminished

family functioning decreases parenting confidence, thereby increasing numbing/avoidance symptoms in veterans with PTSD. Future research should address if parenting competence changes over the course of trauma focused treatment, and how this impacts family functioning. Alternatively, it may be that certain parenting behaviors associated with PTSD, rather than one's sense of competence, lead to poorer family functioning. Future studies should address the distinction between parenting sense of competence and parenting behaviors amongst veterans with PTSD and examine how the distinct constructs impact family functioning. Due to the naturalistic study design, data on a range of potential co-founding variables, such as number and age of children in the family and partner symptomatology, were not collected and thus could not be controlled for in our analyses. Our results also rely exclusively on self-report, and PTSD symptoms were assessed using the PCL for *DSM-IV*. Longitudinal research is needed using multiple informants and multiple measurements to determine causal links between avoidance symptoms, veteran parental sense of competence, and family functioning in post-9/11 era military families.

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Author Contributions L.M.L.: designed the study, analyzed the data, and wrote the paper. A.M.B.: collaborated in the writing and editing of the final manuscript. E.M.G.: collaborated in the writing and editing of the final manuscript. B.Y.O.: collaborated in the writing and editing of the final manuscript. N.M.S.: consulted on study design and collaborated in the writing and editing of the final manuscript. E.B.: collaborated in study design, data analysis, and writing of the manuscript.

Compliance with Ethical Standards

Conflict of Interest Ms. Laifer, Ms. Blackburn, Dr. Goetter, and Dr. Ohye have nothing to disclose. Dr. Bui receives royalties on a textbook for Springer Nature and has received grant/research support from NIH, PCORI, and DOD. Dr. Simon has received grant/research support from AFSP, DoD, NIH, Janssen, PCORI, and Highland Street Foundation. She has served as a consultant for the MGH Psychiatry Academy, Aptinyx, Springworks, Praxis Therapeutics, and Axovant, and her spouse has equity in G1 Therapeutics.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the Massachusetts General Hospital (Partners Healthcare) Institutional Review Board and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent De-identified data were maintained in a database repository approved by the Massachusetts General Hospital (Partners Healthcare) Institutional Review Board. All data collection procedures have been IRB-approved. As patients completed measures as part of their clinical evaluation and care in an outpatient clinic, informed consent was not required.

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