

# Psychological Trauma: Theory, Research, Practice, and Policy

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# Anger Intensification With Combat-Related PTSD and Depression Comorbidity

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Anger is becoming more widely recognized for its involvement in the psychological adjustment problems of current war veterans. Recent research with combat veterans has found anger to be related to psychological distress, psychosocial functioning, and harm risk variables. Using behavioral health data for 2,077 treatment-seeking soldiers who had been deployed to Iraq and Afghanistan, this study examined whether anger disposition was intensified for those who met screen-threshold criteria for posttraumatic stress disorder (PTSD) and major depressive disorder (MDD). Anger was assessed with a 7-item screening measure previously validated with the study population. The study tested the hypothesis that anger would be highest when “PTSD & MDD” were conjoined, compared with “PTSD only,” “MDD only,” and “no PTSD, no MDD.” PTSD and depression were assessed with well-established screening instruments. A self-rated “wanting to harm others” variable was also incorporated. Age, gender, race, military component, military grade, and military unit social support served as covariates. Hierarchical multiple regression was used to test the hypothesis, which was confirmed. Anger was intensified in the PTSD & MDD condition, in which it was significantly higher than in the other 3 conditions. Convergent support was obtained for “wanting to harm others” as an exploratory index. Given the high prevalence and co-occurrence of PTSD and MDD among veterans, the results have research and clinical practice relevance for systematic inclusion of anger assessment postdeployment from risk-assessment and screening standpoints.

*Keywords:* anger, PTSD, depression, combat, military

The United States has deployed over 2 million military service members in support of Operations Enduring Freedom (OEF; Afghanistan) and Iraqi Freedom (OIF; Iraq). Converging evidence from population-based (Hoge, Auchterlonie, & Milliken, 2006; Milliken, Auchterlonie, & Hoge, 2007), treatment-seeking (Andersen, Wade, Possemato, & Ouimette, 2010; Seal et al., 2009), and nontreatment-seeking samples (Maguen et al., 2010; Seal et al., 2008) indicates that posttraumatic stress disorder (PTSD) and major depressive disorder (MDD) are the most prevalent psychiatric diagnoses among U.S. troops deployed to OEF/OIF. The frequent co-occurrence of PTSD and depression among war veterans is well documented (e.g., Grieger et al., 2006; Guerra, Calhoun, & the Mid-Atlantic Mental Illness Research, Education and Clinical Center Workgroup, 2011; Ikin, Creamer, Sim, & McKenzie, 2010; Seal, Bertenthal, Miner, Sen, & Marmar, 2007). However, when those diagnostic conditions are in focus, attention to anger is relegated to symptom status, thereby missing the broader relevance of anger dysregulation for postcombat

psychosocial adjustment. Because anger is associated with PTSD and with MDD, we examined whether anger is intensified when they are comorbid because that would have adverse downstream consequences for veterans.

Recent studies with OEF/OIF veterans have brought anger more strongly into focus. Elbogen et al. (2010b) found that serving in a war-zone, firing a weapon in combat, deployment duration, and combat exposure were each associated with difficulty managing anger, aggressive impulses, and problems controlling violence. Maguen et al. (2010) found that, after controlling for covariates, combat exposure and killing in combat were significant predictors of anger. Assessing 88,235 soldiers returning from deployment and 6 months later, Milliken et al. (2007) estimated that “concerns about interpersonal conflict” increased 4-fold. Sayer et al. (2010) reported that “problems controlling anger” was the most prevalent (57% of 754 veterans) readjustment problem. Novaco, Swanson, Gonzalez, Gahm, and Reger (2012) found anger to be associated with impairments in mental health, physical health, and psychosocial functioning, controlling for personal background, combat exposure, and symptoms of PTSD and depression among 3,528 OEF/OIF soldiers postdeployment.

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## Anger, PTSD, and Depression

Anger and combat-related PTSD are strongly associated (Orth & Wieland, 2006). One theory suggests that combat veterans with PTSD experience anger as part of dyscontrol syndrome marked by heightened physiological arousal, hostile cognitive appraisal, and

antagonistic behavior in response to threat perceptions (Chemtob, Novaco, Hamada, Gross, & Smith, 1997; Novaco & Chemtob, 2002). In line with this conjecture, veterans with PTSD, compared with veterans without PTSD, report greater anger in reaction to trauma-related scripts (Pitman et al., 1990) and become angry more rapidly, more intensely, and with stronger physiological arousal to relived anger experience (Beckham et al., 2002). Olatunji, Ciesielski, and Tolin (2010) found that psychological difficulties with anger differentiated PTSD from non-PTSD anxiety disorders, and the anger-PTSD association was highest in war trauma samples.

Among PTSD symptoms, one finds not only anger but also depression; for example, on the Mississippi Scale of Combat PTSD (Keane, Caddell, & Taylor, 1988), there are five items with anger/aggression content (cf., Novaco & Chemtob, 2002) and many depression content items (e.g., "I feel as though I cannot go on," "I have cried for no good reason," "I still enjoy doing many things I used to enjoy" (reverse code) as well as other sad affect, sleep disturbance, and trouble concentrating items that are comparable to items on standardized depression measures. Hence, there are measurement contamination issues. Anger is not among MDD symptoms, but it commonly accompanies MDD (e.g., Fava & Rosenbaum, 1998; Novaco, 2010; Pasquini, Picardi, Biondi, Gaetano, & Morosini, 2004). Depressed individuals report higher anger than those that are not depressed (e.g., Koh, Kim, & Park, 2002; Riley, Treiber, & Woods, 1989), and that association occurs in military samples (Hull et al., 2003; Owens, Chard, & Cox, 2008), including research with the present study's anger measure (e.g., Evans, McHugh, Hopwood, & Watt, 2003; Maguen et al., 2010). In seeking to learn about anger among combat veterans, PTSD and depression have relevance, and with regard to assessment, we must attend to symptom overlap.

### Anger's Relevance for Co-Occurring PTSD and MDD

Co-occurring PTSD and depression postcombat is exemplified in national data from 303,223 OEF/OIF treatment-seeking veterans (Cohen, Marmar, Ren, Bertenthal, & Seal, 2009). Of the 65,603 diagnosed with PTSD, 53% had comorbid depression. That comorbidity among veterans is associated with more mental health specialty visits, more total outpatient visits, and higher mental health care costs (Chan, Cheadle, Reiber, Unutzer, & Chaney, 2009).

Anger and interpersonal conflict have been found to be greater among OEF/OIF veterans screened positive for PTSD or MDD separately. Sayer et al. (2010) did not assess depression, but 84% of OEF/OIF veterans with possible PTSD had "more problems controlling anger" since deployment, and 61% had "thoughts or concerns about hurting someone"—each rated more than double that for those negative on the PTSD screen. Raab, Mackintosh, Gros, and Morland (2013) found that MDD and dysphoria partially mediated the relationship between PTSD and anger, but they did not report on levels of anger when PTSD and MDD were conjoined.

Anger's manifestations include interpersonal conflict, self-harm, and violence. Studying 18,305 soldiers at 3 months and 12 months after combat in Iraq, Thomas et al. (2010) reported that approximately 40% had physical eruptions of anger reactions, more than 30% threatened someone with physical violence, and

more than 15% got into a physical fight. Problematic anger among combat veterans is routinely observed, but its possible intensification when PTSD and MDD are conjoined has not been examined. If such intensification of anger were to be found, then that would have relevance for violence prevention because multiple studies have shown that anger is predictive of violence by psychiatric patients before, during, and after hospitalization (cf. Novaco, 2011). It would also have relevance for combat veterans' PTSD treatment in giving enhanced priority to anger when depression was comorbid.

### Present Study Hypotheses

The present study concerns self-assessment behavioral health data obtained from military service members in the course of routine clinical care. We hypothesized that—controlling for age, gender, military component, rank, combat exposure, and perceived deployment social support—participants who met screening criteria for both PTSD and MDD would report higher anger than those meeting screening criteria for either disorder alone or neither disorder. We used psychometric screening measures for PTSD, depression, and anger without symptom overlap.

The anger measure used in the present study was previously validated with this OEF/OIF population (Novaco et al., 2012). Because the risk for harm to others is commonly flagged as a clinical concern for psychologically distressed service members and because it is part of the anger construct, we tested whether it is heightened when PTSD and MDD are conjoined using a self-rated index. Social support was incorporated as a control variable because of its established relevance for postdeployment psychological adjustment.

### Method

#### Participants

Data were obtained from 2,077 U.S. soldiers (1,823 males and 254 females) who were deployed to Iraq and Afghanistan and subsequently presented for behavioral health services at a large military installation from September 2005 to June 2007 (for additional details, see Novaco et al., 2012). Participants presented with various concerns and were referred by different sources (e.g., self, command, medical, or psychological professional). This study included data from all participants who completed the study measures described below.

#### Measures

As part of standard clinical intake, participants completed a computerized screening questionnaire. Our analyses are restricted to demographic and military service background variables and to standardized measures of combat exposure and psychiatric symptoms (PTSD, depression, suicide ideation, and anger).

**Demographic and military service data.** We coded age, gender, ethnicity, military service component, and highest rank attained.

**Combat Exposure Scale.** The Combat Exposure Scale (CES; Keane et al., 1989) is a seven-item scale that assesses wartime stressors, providing a continuous index of combat exposure events

and intensity. Items are rated on a 5-point metric and weighted for severity. It has shown moderately high internal consistency ( $\alpha = .85$ ), excellent test-retest reliability ( $r = .97$ ; Keane et al., 1989), and moderate convergent validity with the Mississippi Scale for combat-related PTSD (Keane, Newman, & Orsillo, 1997).

**Deployment Risk and Resilience Inventory–Deployment Social Support.** The Deployment Risk and Resilience Inventory–Deployment Social Support (DRRI-DSS; King, King, & Vogt, 2003) is a 12-item scale assessing perceived social support while deployed, including assistance/encouragement from the military in general, unit leaders, and other unit members. Items are rated on a 5-point scale and weighted equally. Scale scoring is by summation, with high internal reliability (King et al., 2003; King, King, Vogt, Knight, & Samper, 2006). Its use in the present study is as a covariate.

**Primary Care–Posttraumatic Stress Disorder Screen.** The Primary Care–Posttraumatic Stress Disorder Screen (PC-PTSD; Prins et al., 2004) is a four-item instrument developed for use in primary care. Participants respond dichotomously (*yes/no*) to re-experiencing, avoidance, hyperarousal, and numbing symptoms over the past month. Its diagnostic reliability, test-retest reliability, and operating characteristics have been demonstrated (Ouimette, Wade, Prins, & Schohn, 2008; Prins et al., 2004). For OIF veterans, a cutoff score of 3 has shown diagnostic efficiency (sensitivity = .76, specificity = .92 in Bliese et al., 2008; sensitivity = .83, specificity = .85 in Calhoun et al., 2010); thus, that cutoff was applied in the present study. The PC-PTSD measure was used to avoid item overlap (occurring on other PTSD symptom measures) with *Diagnostic and Statistical Manual of Mental Disorders (DSM)*-based depression scale items (i.e., anhedonia, impaired concentration, and sleep problems). The present sample size was restricted by available data on this measure.

**PHQ-9 Depression Scale.** The Patient Health Questionnaire-9 (PHQ-9) Depression Scale (Kroenke & Spitzer, 2002) is a nine-item scale assessing the nine MDD symptoms in *DSM* (fourth edition, text revision; American Psychological Association, 2000). Symptoms are rated from 0 (*not at all*) to 3 (*nearly every day*) for presence over the past 2 weeks, summing to a total score. As a screen for depression, the PHQ-9 has strong psychometric properties (e.g., Arroll et al., 2010; Kroenke, Spitzer, & Williams, 2001). To index MDD, we used the recommended cutpoint of 10 or above (Arroll et al., 2010; Gilbody, Richards, Brealey, & Hewitt, 2007), which equates to a score of 2 (*more than half the days*) on five or more symptoms. The PHQ-9 has extensive use with military populations (Wells, Horton, LeardMann, Jacobson, & Boyko, 2013).

**Dimensions of Anger Reactions.** The Dimensions of Anger Reactions (DAR; Novaco, 1975) is a 7-item scale assessing anger frequency, intensity, duration, and antagonism and anger's perceived impairment on work performance, social relationships, and health. Respondents rate items from 0 (*not at all*) to 8 (*absolutely*). Items are weighted equally and scale scoring is by summation. When used with the larger sample ( $N = 3,525$ ) of service members deployed to OEF/OIF from which the present study sample was distilled (Novaco et al., 2012), the DAR score ( $\alpha = .92$ ) had strong concurrent validity, discriminant validity against anxiety and depression measures, and construct validity with multiple measures of psychosocial functioning and of harm to self and others. Forbes et al. (2004) found the DAR to be unidimensional, reliable, and

sensitive to change over time and to have strong convergent validity.

**Risk of harm to others.** The risk of harm to others was assessed by a single item asking respondents to endorse the frequency of "wanting to harm someone" (1 = *never* to 5 = *almost always*) over the past week; 68.9% of the sample endorsed *never* or *rarely*, 17.9% endorsed *sometimes*, and 13.2% endorsed *often* or *almost always*. Given the limitations of this item, we consider analyses with it to be exploratory. However, a single-item, patient-rated index of violence risk has been predictive of postdischarge community violence, and incrementally so, above established risk assessment tools (Skeem, Manchak, Lidz, & Mulvey, 2013).

## Statistical Analyses

On the basis of screening criteria for the PC-PTSD (cutoff score  $\geq 3$ ) and PHQ-9 (cutoff score  $\geq 10$ ), participants were divided into four mutually exclusive categories: (a) "no PTSD, no MDD"; (b) "MDD only"; (c) "PTSD only"; and (d) "PTSD & MDD."

These four groups were then compared on demographic and military-related variables. For categorical variables, comparisons were done by  $\chi^2$  tests. For continuous variables, mean scores were compared by the Welch robust test (Welch, 1951), which is comparable to an analysis of variance, but it takes into account that population variances differ significantly and sample sizes are unequal.

Next, multiple regressions (controlling for age, gender, rank, military component, combat exposure, and perceived social support) were performed to test the hypothesis that participants who met screening criteria for PTSD and MDD would report greater anger than would those meeting screening criteria for PTSD only, MDD only, or neither. The "PTSD and MDD" group was set as the reference group, dummy-coding the other three diagnostic groups. Our exploratory hypothesis regarding wanting to harm others was tested in a similar manner. Statistical analyses were performed using Statistical Packages Social Sciences (SPSS) version 18.0.

## Results

Demographic and military service variables for the full sample ( $N = 2,077$ ) are in Table 1. The vast majority of participants (87.8%) were male soldiers of enlisted military grade. Descriptive statistics for combat exposure, social support, and psychological distress indices are in Table 2, along with internal reliabilities, which range from .81 to .94. The  $\alpha$  for the DAR is .92.

Intercorrelations are also in Table 2. Combat exposure had small to moderate correlations with the PTSD and MDD screening measures and with anger. Deployment social support was inversely correlated with anger, PTSD, and depression. The PC-PTSD and PHQ-9, which do not share items, were moderately correlated. DAR anger scores had moderate range correlations with the PC-PTSD and the PHQ-9, and it is substantially correlated with wanting to harm others.

The sample ( $N = 2,077$ ) was divided into four groups as shown in Table 3. A total of 745 participants (35.9%) were classified as no PTSD, no MDD. The remainder was classified as follows: 395 (19.0%) met criteria for MDD only, 262 (12.6%) met criteria for PTSD only, and 675 (32.5%) met criteria for PTSD & MDD.

Table 1  
Demographic and Military Service Characteristics of Study  
Sample ( $N = 2,077$ )

Variable	<i>n</i>	%
Gender		
Female	254	12.2
Male	1,823	87.8
Age (years)		
18–24	489	23.5
25–29	577	27.8
30–34	384	18.5
35–40	340	16.4
≥41	287	13.8
Race		
White	1,346	64.8
African American	194	9.3
Hispanic	270	13.0
Native American or Alaskan Native	39	1.9
Asian or Pacific Islander	92	4.4
Other	136	6.5
Military Component		
Reserve/National Guard	850	40.9
Regular	1,227	59.1
Military Grade		
Junior Enlisted (E1–E4)	792	38.1
Midgrade Enlisted (E5–E6)	977	47.0
Senior Enlisted (E7–E9)	168	8.1
Officer	140	6.7

Analyses (analysis of variance [ANOVA] and  $\chi^2$ ) for differences in demographic and military service variables are in Table 3. The groups did not differ by race; however, significant differences were found for age, gender, military component, rank, combat exposure, and deployment social support. Thus, these six variables were used as covariates in the multiple regressions.

Regression analyses, with all variables entered (see Table 4), tested the hypothesis that the PTSD & MDD reference group would have higher DAR scores than the no PTSD, no MDD; MDD only; or PTSD only groups, each of which was dummy-coded. Those meeting PTSD and MDD screening criteria reported significantly more anger than did their counterparts meeting screening criteria for either disorder alone or for neither disorder, as indicated by the negative  $\beta$ s for those other three conditions. For DAR scores (possible range, 0–56), the unstandardized *B* coefficients revealed that the PTSD & MDD group averaged 15.2 points higher than the no PTSD, no MDD group; 4.9 points higher than the MDD only group; and 9.8 points higher than the PTSD only group. With respect to the descriptive statistics for the DAR (see Table 2), the difference between the PTSD & MDD group and the PTSD only group is more than half a standard deviation. Figure 1 presents the group means adjusted for the covariates.

Our exploratory hypothesis regarding “wanting to harm someone” was also tested with this hierarchical regression design, with PTSD & MDD as the reference group. The overall model was significant,  $F(9, 2,067) = 53.55, p < .001, R^2 = .19$ . The tests were significant for no PTSD, no MDD ( $\beta = -0.30, t = 11.91, p < .001$ ) and for PTSD only ( $\beta = -0.11, t = 4.94, p < .001$ ). The unstandardized *B* coefficients for the wanting to harm someone item (possible scores range from 1 to 5) revealed that service members in the PTSD & MDD group averaged 0.71 points higher on this item than did those in the no PTSD, no MDD group, and

0.38 points higher than did the PTSD only group. The PTSD & MDD group had higher wanting to harm someone scores than did the MDD only group, but the score differences did not attain significance ( $p = .067$ ).

## Discussion

Anger and aggressive behavior are salient postdeployment psychological adjustment problems for combat veterans (Elbogen et al., 2010b; Sayer et al., 2010; Thomas et al., 2010). Thomas et al. (2010) found that, among OIF veterans not seeking treatment, approximately 40% reported “getting angry with someone and kicking, smashing, or punching something” at least once in the past month when assessed at 3 and 12 months postdeployment. In our previous study with the parent sample of these OEF/OIF soldiers, anger was related to multiple impairments in psychosocial functioning and physical well-being, including family relationships and employment, as well as risk for harm to self and others (Novaco et al., 2012). Given that the association of anger with PTSD (especially for war trauma) is well established, that anger is also associated with mood disorders, and that PTSD and MDD are often comorbid among veterans, the present study examined whether anger disposition was amplified in postdeployed service members who met screening criteria for both PTSD and MDD.

Our hypothesis was confirmed: Comorbid PTSD and MDD was associated with higher anger scores than when screening criteria were met for PTSD only, for MDD only, or for neither condition. The relevance of this finding is underscored by the high prevalence of comorbid PTSD and MDD found in large-sample studies of OEF/OIF veterans. It is important to note that neither the PTSD nor the MDD measure contained anger/irritability items, and there was no symptom overlap between the PTSD and the MDD measures that we used.

Consistent with the designation of PTSD as one of the “signature injuries” of OEF/OIF, 45% ( $n = 937$ ) of our sample met screening criteria for PTSD. Of those who screened positive for PTSD, 72% also met screening criteria for MDD ( $n = 675$ ). PTSD (probable) was more often accompanied by MDD (probable) than either manifested alone. Although comorbidity varies across stud-

Table 2  
Pearson Bivariate Correlations and Descriptive Statistics for  
Combat Exposure, Social Support, and Psychological  
Distress Indices

Indices	2	3	4	5	6	<i>M</i>	<i>SD</i>	$\alpha$
1. CES	.10	.18	.16	.40	.11	15.92	9.99	.82
2. DRRI-DSS		-.35	-.27	-.11	-.30	35.11	12.38	.94
3. DAR			.63	.40	.56	19.26	14.9	.92
4. Harm Others				.28	.38	2.03	1.16	—
5. PC-PTSD					.49	2.06	1.59	.81
6. PHQ-9						10.39	6.72	.89

Note. CES = Combat Exposure Scale; DRRI-DSS = Deployment Risk and Resilience Inventory–Deployment Social Support; DAR = Dimensions of Anger Reactions; Harm Others = item assessing frequency of wanting to harm someone in the past week (1 = *never* to 5 = *almost always*); PC-PTSD = Primary Care–Posttraumatic Stress Disorder Screen; PHQ-9 = Patient Health Questionnaire-9. All coefficients  $>.10$  are significant at  $p < .001$ .

Table 3  
Group Comparisons on Demographics and Military Service Variables

Variable	No PTSD, no MDD (n = 745)	MDD only (n = 395)	PTSD only (n = 262)	PTSD & MDD (n = 675)	Statistical analysis
Age	31.4 (8.33)	31.5 (8.31)	31.3 (7.58)	30.4 (7.66)	$F = 2.62, p = .049$
Male	88.3%	84.3%	92.7%	87.3%	$\chi^2 = 10.84, p = .013$
White	63.5%	66.6%	66.0%	64.7%	$\chi^2 = 1.29, p = .731$
Active component	51.7%	60.8%	60.7%	65.6%	$\chi^2 = 29.60, p < .001$
Enlisted rank	92.3%	92.7%	90.5%	95.7%	$\chi^2 = 10.90, p = .012$
CES	12.8 (9.69)	12.3 (8.87)	20.9 (8.67)	19.6 (9.34)	$F = 110.55, p < .001$
DRRI-DSS	37.99 (12.30)	32.2 (11.13)	38.7 (11.49)	32.3 (12.42)	$F = 42.71, p < .001$

Note. PTSD = posttraumatic stress disorder; MDD = major depressive disorder; CES = Combat Exposure Scale; DRRI-DSS = Deployment Risk and Resilience Inventory–Deployment Social Support. Data are given as percentage or *M* (*SD*).

ies, our estimate is comparable to rates reported for similar samples (Cohen et al., 2009; Seal et al., 2007).

The sample’s CES-indexed level of combat exposure is comparable to OEF/OIF veterans in postdeployment mental health registry studies by Guerra et al. (2011) and McDonald et al. (2008). CES was significantly associated with anger, although not strongly—the correlation ( $r = .18$ ) is comparable to that ( $r = .20$ ) reported by Jakupcak et al. (2007). Deployment social support, which was used as a covariate, was inversely correlated ( $-.35$ ) with anger and with symptoms of PTSD ( $-.11$ ) and MDD ( $-.30$ ). Those latter findings support the premise that social support buffers the psychological effects of combat trauma (e.g., Pietrzak, Johnson, Goldstein, Malley, & Southwick, 2009).

The exploratory hypothesis regarding wanting to harm someone was partially confirmed because the comparison was not significant in the MDD only condition. That marginal result may have been due to the variable being a one-item measure with insufficient variance; however, Skeem et al. (2013) found a single-item index

to be prospectively and incrementally predictive of violent behavior by psychiatric patients. Nevertheless, we note that the self-rated harm-others risk was significantly higher in the PTSD & MDD condition than in the PTSD only condition, which suggests that the PTSD + Depression combination might call for added clinical attention regarding violence risk. Our study data also show that suicidal ideation is intensified in the PTSD & MDD condition, which could be disinhibiting for violence. Because harming behavior is part of the anger construct, the hypothetical mediational role of anger for heightening an inclination to harm others in the context of PTSD and depression merits fuller investigation.

Our study is limited by being correlational and cross-sectional. Longitudinal research with predeployment and postdeployment anger measures is needed. Second, our measures of PTSD and MDD were selected to avoid item overlap contamination; however, the PC-PTSD screen, despite its diagnostic efficiency (Bliese et al., 2008), contains only four PTSD symptoms. It is important to

Table 4  
PTSD, MDD, and Their Co-Occurrence as Predictors of Anger With Covariates

Predictors	<i>B</i>	<i>SE B</i>	$\beta$	<i>t</i>	<i>P</i>
Age	-0.11	0.04	-0.06	-3.07	.002
Gender	1.71	0.85	0.04	2.01	.044
Military component	0.47	0.58	0.02	0.81	.416
Rank	-1.75	1.09	-0.03	-1.60	.109
CES	0.12	0.03	0.08	4.08	<.001
DRRI-DSS	-0.31	0.02	-0.26	-13.77	<.001
No PTSD, no MDD	-15.16	0.70	-0.49	-21.73	<.001
MDD only	-4.91	0.80	-0.13	-6.14	<.001
PTSD only	-9.77	0.90	-0.22	-10.87	<.001

Note. PTSD = posttraumatic stress disorder; MDD = major depressive disorder; CES = Combat Exposure Scale; DRRI-DSS = Deployment Risk and Resilience Inventory–Deployment Social Support. Model  $F(9, 2,067) = 116.52, p < .001, R^2 = .33$ . The dependent variable is Dimensions of Anger Reactions total score. Covariates: gender (female = 0, male = 1); military component (Reserve/National Guard = 0, Active Component = 1); rank (Enlisted = 0, Officer = 1). Diagnostic groupings: no MDD, no PTSD = not meeting criteria for PTSD or MDD; MDD only = meeting criteria for probable major depression only (PHQ-9 cutoff score  $\geq 10$ ); PTSD only = meeting criteria for probable PTSD (Primary Care–Posttraumatic Stress Disorder Screen cutoff score  $\geq 3$ ). The category of PTSD & MDD is the reference group against which the other diagnostic groupings are dummy-coded.

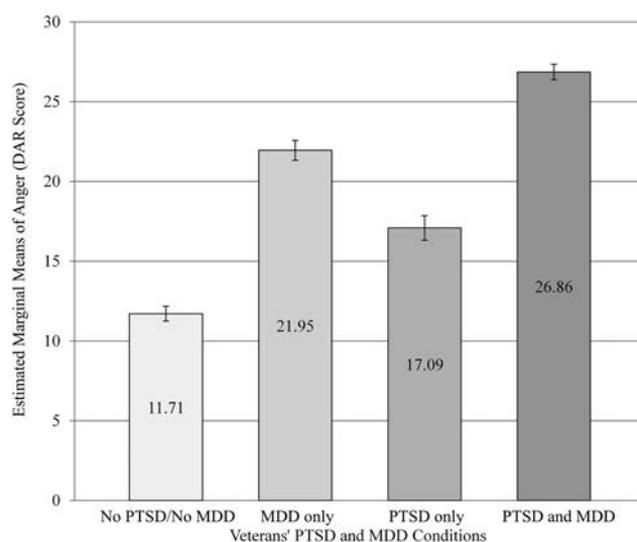


Figure 1. Estimated marginal means of anger (DAR scores) for service members’ PTSD & MDD condition controlling for age, gender, military component, rank, combat exposure, and deployment social support. Error bars represent the standard error of the mean. DAR = Dimensions of Anger Reactions; PTSD = posttraumatic stress disorder; MDD = major depressive disorder.

emphasize that these results were obtained with self-administered screening instruments; these results do not reflect diagnostic rates. Whether our findings would hold for clinical diagnoses of PTSD and MDD remains to be ascertained. Third, the sample involved only U.S. OEF/OIF soldiers, which limits generalizability to other trauma populations. Fourth, the study relied on self-report methodology and was conducted with treatment-seeking soldiers. Whether the results generalize to broader military populations is unknown, but military affiliated medical providers, as well as commanders, are entrusted with ascertaining if service members are at risk for harm to others or self-harm.

Our study results inform research and clinical practice. Jakupcak et al. (2007) concluded that “providers should screen for anger and aggression among Iraq and Afghanistan War veterans who exhibit symptoms of PTSD and incorporate relevant anger treatments into early intervention strategies” (p. 945). Our study with a validated anger screen for the OEF/OIF population extends that conclusion by Jakupcak and colleagues with evidence that anger is also a salient problem for veterans meeting screening criteria for MDD, and even more so when PTSD and MDD are comorbid. An important domain for veterans where harmdoing and anger have received research and clinical attention is domestic violence, and anger has been found to mediate the relationship between PTSD and partner abuse (Taft, Street, Marshall, Dowdall, & Riggs, 2007). Our findings suggest that clinicians working with veterans engaging in intimate partner violence should heighten their attention to anger when MDD is comorbid with PTSD. With regard to research implications, our findings on the exploratory harmdoing measure, conjoined with the anger results, constitute a direction for future studies.

That anger is amplified for OEF/OIF combat veterans who report PTSD and MDD symptoms has bearing on a wide range of their psychological adjustment problems. Elbogen et al. (2010a) identified anger as an important risk factor for clinical decision-making regarding violence risk among military veterans. Anger among combat veterans with PTSD is responsive to treatment (e.g., Chemtob, Novaco, Hamada, & Gross, 1997; Marshall et al., 2010; Morland et al., 2010; Shea, Lambert, & Reddy, 2013). Because it is known that exposure-based therapies are effective in the treatment of combat-related PTSD, it can be noted that the anger treatment used in the Chemtob et al. (1997) and the Shea et al. (2013) studies is grounded in the Novaco stress inoculation approach (each study having its own adaptations), which involves progressive, hierarchical exposure to provocation experiences and application of therapeutically acquired cognitive restructuring, arousal reduction, and behavioral coping skills.

Anger treatment best proceeds from case formulation. There is much to be learned about how anger activators, manifestations, and reaction parameters might vary in association with PTSD and MDD. Heightened anger among veterans with PTSD and MDD may stem from (a) additive adversities and frustrations, (b) a dynamic interaction between PTSD and MDD symptoms, or (c) shared transdiagnostic processes associated with PTSD and MDD (e.g., threat perception and selective attention). Although empirically supported treatments for PTSD and MDD are available within the Veterans Affairs health-care system, whether these treatments attend to veterans’ simultaneously experiencing PTSD, MDD, and anger symptoms would seem to be an important line of inquiry.

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