Symptom overlap in posttraumatic stress disorder and major depression

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Abstract

Over the past decade there has been consistent criticism of the diagnostic criteria of posttraumatic stress disorder (PTSD) because of its high comorbidity with other mental disorders. Part of the problem surrounding PTSD may be related to the heterogeneity of its symptoms. In fact, recent research has identified a subset of PTSD symptoms, including symptoms of numbing and dysphoria, that may explain much of the overlap between PTSD and major depressive disorder (MDD). The present study sought to extend prior work by investigating the various subsets of PTSD symptoms in individuals from all four diagnostic combinations of PTSD and MDD (no MDD-PTSD, MDD-only, PTSD-only, and comorbid MDD-PTSD). Consenting participants completed diagnostic interviews and were categorized into the four groups. Based on responses to a self-report measure of PTSD symptoms, participants with no MDD-PTSD reported the least severe symptoms while the participants with comorbid MDD-PTSD reported the most severe symptoms. Interesting, participants in the MDD-only and PTSD-only groups consistently reported similar scores across all PTSD symptom scales. These findings further highlight the problematic diagnostic criteria and comorbidity in PTSD and emphasize the need to incorporate transdiagnostic treatment practices that focus on the overlapping symptoms, rather than specific diagnostic categories.

1. Introduction

For over a decade, there has been consistent concern and criticism of the diagnostic criteria and organization of the mood and anxiety disorders in the Diagnostic and Statistical Manual of Mental Disorders (DSM; Widiger and Clark, 2000; Krueger et al., 2005; Stein and Rauch, 2008). The majority of criticism focuses on the high comorbidity found among the anxiety and mood disorders with comorbid Axis I disorders in 57% and 81% of individuals with the respective disorders (Brown et al., 2001). Other criticisms include the polythetic nature of

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DSM criteria, which permits extensive within-category heterogeneity, and the problematic boundary disputes created by the categorical distinction in the DSM (Krueger et al., 2005).

Although these criticisms are common across the mood and anxiety disorders, particular attention has been centered on diagnostic criteria and symptom overlap in posttraumatic stress disorder (PTSD; Rosen et al., 2008; Resick and Miller, 2009; Frueh et al., 2010), with comorbidity estimates between 62% and 92% in population-based surveys (Perkonigg et al., 2000; Keane et al., 2007). Several authors have attempted to explain the comorbidity between PTSD and other related disorders through various theoretical models of psychopathology (for review, see Keane et al., 2007). These models include: 1) categorizing disorders into externalizing (e.g., substance use disorders and antisocial personality disorder) and internalizing (unipolar mood and anxiety disorders) groups and identifying related subtypes of PTSD (e.g., externalizers and internalizes) based its comorbidities (Miller et al., 2003), and 2) combining PTSD and related disorders into broad classes based on common diathesis and symptom presentations (Watson, 2005).

Part of the problem surrounding PTSD may be related to the heterogeneity of its symptoms (Frueh et al., 2010). Factor analytic investigations of the symptoms of PTSD have consistently demonstrated two slightly different four-factor model models (Yufik and Simms, 2010), with the first model separating symptoms into intrusions, avoidance, numbing, and arousal factors (King et al., 1998) and the second model separating symptoms into intrusions, avoidance, dysphoria, and hyperarousal factors (Simms et al., 2002). In both models, a subset of PTSD symptoms (numbing and dysphoria factors) appears to be closely related to the symptoms of other mood and anxiety disorders, in particular major depressive disorder (MDD). Similarly, recent factor analytic research demonstrated that these overlapping PTSD symptoms (numbing and dysphoria) load more strongly with MDD symptoms than other more specific PTSD symptoms (intrusions, avoidance, arousal) in veterans with PTSD (Gros et al., 2010). In addition, another recent study used Rasch modeling to demonstrate that PTSD and MDD symptom items represented a single, underlying dimension, rather than two separate dimensions, in trauma-exposed participants in the National Comorbidity Survey-Replication (Elhai et al., 2011). Together, these studies of the factor models and symptom overlap may help to explain PTSD's comorbidities (Watson, 2005; Yufik and Simms, 2010).

The present study further investigated the comorbidities and symptom overlap in PTSD. In particular, the study sought to replicate and extend the previous findings on PTSD and MDD symptoms in a large sample of veterans from a cross-sectional investigation in primary care clinics in four Veterans Affairs Medical Centers (VAMC) in the southeastern United States (Magruder et al., 2004, 2005). However, in contrast to recent studies that investigated individuals with PTSD and/or trauma histories (Gros et al., 2010; Elhai et al., 2011), the present study included large samples of individuals with all four diagnostic combinations of PTSD and/or MDD (i.e., no MDD-PTSD; MDD-only, PTSD-only, and comorbid MDD-PTSD). In addition, based on recent findings suggesting differential correlations between the various PTSD symptoms and depression (Gros et al., 2010; Yufik and Simms, 2010), the present study also separated the symptoms of PTSD into subscales based on the two four-factor models (King et al., 1998; Simms et al., 2002). Together, these modifications and extensions should allow for a more thorough investigation of the symptoms of PTSD, even in individuals without a diagnosis of PTSD. Based on the previous findings (Gros et al., 2010), symptom severity for all PTSD subscales was expected to be highest in the comorbid MDD-PTSD group and lowest in the no MDD-PTSD group. In addition, the specific symptoms of PTSD (intrusion, avoidance, and arousal/ hyperarousal) were expected to be more severe in PTSD-alone compared to MDD-alone participants, while non-specific

symptoms of PTSD (dysphoria and numbing) were expected to be equivalent in the two groups.

2. Method

2.1. Participants

Through two primary data collections at the four VAMCs, 1076 primary care patients received a baseline interview at the initial appointment and 884 (82.1%) completed a follow-up phone interview. The average participant was 59.5 (SD=12.7) years old, male (78.7%), Caucasian (61.1%), married (64.1%), unemployed and/or retired (65.3%), completed some college (37.0%), served in the Army (56.1%), and did not serve in a warzone (50.9%). Based on results of two clinically administered structured interviews (Clinician Administered PTSD Scale [CAPS]; Blake et al., 1990 and the Mini International Neuropsychiatric Interview [MINI]; Sheehan et al., 1998), participants were categorized into four diagnostic groups: no MDD-PTSD (n=687), MDD-only (n=90), PTSD-only (n=34), and comorbid MDD-PTSD (n=73).

2.2. Procedures

All procedures were approved by the Research and Development Office at each VAMC and their local Institutional Review Board. Participants were randomly selected from the master list of primary care patients from the 1999 fiscal year at each of the VAMCs. Stratifying on hospital, patient lists were generated and blocks of 200 eligible patients were sent to each VAMC. Letters of invitation were mailed to eligible patients to explain the study. Preselected patients were approached at the time of their next primary care visit and invited to participate in the study procedures (74% participated). Data collection was completed in two phases, with the second of which involved an oversample of female Veterans (Grubaugh et al., 2006). Patients with diagnosed dementia, octogenarians, and nonagenarians were excluded due to concerns regarding their ability to recall study-relevant information.

All consenting participants completed a brief demographic interview (e.g., age, ethnicity, marital status, working status, education, military service, and disability status) and the PTSD Checklist-Civilian (PCL-C; Blanchard et al., 1996) at the time of their primary care appointment at the VAMC. Afterwards, a follow-up phone interview was arranged that involved the Trauma Assessment for Adults Questionnaire (TAA; Resnick et al., 2003) to assess for PTSD criterion A, a lifetime occurrence of a potentially traumatic event. For those who met this criterion, the CAPS was administered to complete the PTSD diagnostic assessment. The MINI also was administered to assess other psychiatric disorders.

All interviewers were master's-level clinicians trained and supervised on the assessment instruments by a licensed clinical psychologist and project investigator. The reliability of these interviews was investigated through a random sample of interviews conducted by speakerphone (approximately 8%). The inter-rater reliability analysis demonstrated a 100% concordance among interviewers for PTSD diagnosis on the CAPS (Magruder et al., 2005). The use of telephone interviews of potential trauma is common in the literature with strong psychometric support and virtually no statistical differences in rates of trauma exposure or PTSD diagnoses when compared to traditional in-person interviews (Rohde et al., 1997; Acierno et al., 2003; Aziz and Kenford, 2004; Acierno et al., 2007).

2.3. Measures

2.3.1. PTSD checklist – civilian—The PCL-C is a 17-item measure designed to assess PTSD symptom severity (Blanchard et al., 1996). Respondents are presented with 17

specific symptoms of PTSD and asked to rate "how much you have been bothered by that problem in the last month" on a 5-scale Likert scale, ranging from 1 (not at all) to 5 (extremely). The PCL has been shown to have excellent internal consistency (αs>0.94) and excellent test-retest reliability across studies (r=0.96; Orsillo et al., 2001). In addition, the PCL has demonstrated excellent convergent validity with alternative measures of PTSD (rs range from 0.77 to 0.93). For the purposes of the present study, the PCL-C was separated into symptom scales based on two common factor models in the literature (King et al., 1998; Simms et al., 2002). Each scale demonstrated acceptable reliability in the present findings (αs>0.78).

2.3.2. Trauma Assessment for Adults Questionnaire—The TAA is a 13 item measure designed to assess the experience of specific potentially traumatic events known to lead to PTSD or other posttraumatic difficulties (Resnick et al., 2003). The TAA has been widely used to assess lifetime incidence of trauma in various populations, including military veterans, mental health patients, medical patients, college students, and community residents (Gray et al., 2009). The psychometric properties of the TAA, including its temporal stability and convergent validity with other PTSD measures, have received support in the literature (Gray et al., 2009).

2.3.3. Clinician Administered PTSD Scale—The CAPS is a clinician-rated scale designed to diagnose current and lifetime PTSD (Blake et al., 1990). The CAPS targets the 17 specific PTSD symptoms from the DSM to assess the intensity and frequency of each symptom on a five-point Likert scale. The CAPS has been shown to have adequate internal consistency (αs ranged from 0.73 to 0.95), inter-rater reliability on the same interview (rs ranged from 0.92 to 0.99), and test-retest reliability across different interviewers (rs ranged from 0.77 to 0.98; Orsillo et al., 2001). In addition, the CAPS has demonstrated adequate convergent validity to alternative measures of PTSD (rs ranged from 0.77 to 0.91). Finally, the diagnosis established by the CAPS has been found to be comparable to alternative structured interviews, including the Structured Clinical Interview for the DSM-IV (SCID;First et al., 1996; Weathers et al., 1999). For the purposes of the present study, the current symptoms of PTSD, rather than lifetime, were used to determine PTSD diagnosis.

2.3.4. Mini International Neuropsychiatric Interview—The MINI is a structured diagnostic interview designed to provide a brief, but accurate, assessment of a wide range of DSM-IV disorders (Sheehan et al., 1998). The MINI has demonstrated adequate inter-rater and test-retest reliability across most disorders (Sheehan et al., 1998). The MINI diagnoses also demonstrated adequate concordance with the SCID across most disorders. Interestingly, the MINI diagnoses took at least 50% less time to administer in comparison to the same modules of the SCID.

2.4. Data analytic plan

A series of omnibus ANOVAs were conducted to evaluate group differences across the four diagnostic categories (no MDD-PTSD, MDD-only, PTSD-only, and comorbid MDD-PTSD) within each of the PTSD symptom scales of the PCL-C as defined by the models specified by Simms et al. (2002) and King et al. (1998). Demographic covariates were included in the analysis to control for the effects of age, sex, race, marital status, employment status, and a history of substance use. Additionally, having served in a combat zone was added as a covariate due to the expected increase in mental health symptoms as a result of having served in combat. Pending evidence of significant differences between the categories, three a priori planned comparisons were conducted: 1) psychiatric diagnosis (MDD-only, PTSD-only, comorbid MDD-PTSD) compared to no diagnosis (no MDD-PTSD); 2) comorbid MDD-PTSD compared to a single diagnosis (MDD-only and PTSD-only); and 3) MDD-

only compared to PTSD-only. A bonferroni correction was applied to the current analyses to reduce the chance of making a Type 1 error such that α 0.02 was required for significance. The data were screened for violations of the assumptions of ANOVA. The PCL subscales were found to have a positive skew due to the inclusion of participants that lacked a diagnosis. Due to the presence of skew in one subsample that was only used in the first comparison and the robustness of ANOVA to violations of multivariate normality, no actions were taken to address the skew.

3. Results

An omnibus ANOVA was conducted to assess group differences across the diagnostic categories (No Diagnosis, MDD-only, PTSD-only, and Comorbid PTSD and MDD). The findings suggested there were significant differences within each of the factors of intrusions, avoidance, dysphoria, numbing, and hyperarousal as per the Simms et al. and King et al. subscales, $Fs > 142.4$; $ps b 0.01$ (Table 1).

The findings demonstrated that participants with a diagnosis of MDD-only, PTSD-only, or MDD-PTSD had significantly higher scores on all of the PTSD symptom scales as compared to those in the no MDD-PTSD group ($ts > 17.4$; $ps b 0.01$), suggesting that participants with a diagnosis reported significantly more symptoms than those without a diagnosis. The second comparison indicated that participants with comorbid MDD-PTSD had significantly higher scores on all of the PTSD symptom scales as compared to those with a diagnosis of MDD-only or PTSD-only ($ts > 2.8$; $ps b 0.01$), suggesting that participants with comorbidity reported more severe symptoms than those with a single diagnosis. Finally, there were no significant differences between participants with MDD-only and PTSD-only for any of the PTSD symptom scales ($ts b 1.3$; $ps > 0.19$), suggesting participants with MDD-only and PTSD-only consistently reported comparable symptom levels.

4. Discussion

The present study investigated the symptoms of PTSD in a large sample of patients from VA primary care settings. As predicted and consistent with other recent research (Gros et al., 2010), the findings demonstrated that participants with psychiatric diagnoses (MDD and/or PTSD) reported more severe symptoms than participants without a psychiatric diagnosis (no MDD and/or PTSD) and participants with comorbid MDD and PTSD reported more severe symptoms than participants with a single diagnosis (MDD or PTSD). It also was predicted that participants with MDD-alone and PTSD-alone would report similar levels of nonspecific symptoms of PTSD and dissimilar levels of specific symptoms of PTSD, as identified in the previous literature (Gros et al., 2010). Contrary to these predictions, participants with MDD-alone and PTSD-alone consistently reported comparable symptom levels across each of the PTSD symptom scales.

The comparable PTSD symptom levels in participants with MDD-alone and PTSD-alone suggest that there may be fewer differences than the DSM categorical system suggests, as participants were indistinguishable across scores on self-reported symptom scales of PTSD. This finding is consistent with quantitative hierarchical models of the emotional disorders that suggest that PTSD would be better classified as a mood disorder, rather than anxiety disorder (Watson, 2005). It also may help to explain the especially high comorbidity between MDD and PTSD, including the comorbidity findings in the present study (i.e., participants were more likely to have comorbid MDD-PTSD than PTSD-alone). In addition, the comorbidity findings suggest that comorbidity may be a better indicator of symptom severity than number of symptoms present.

The comparable PTSD symptom findings also highlight the significance of the DSM criterion A of PTSD (i.e., presence of a traumatic event). There has been considerable discussion of criterion A in the recent literature (e.g., Kilpatrick et al., 2009), including proposed changes that remove the requirement that a traumatic event be accompanied by a reaction of fear, helplessness, and horror in the next version of the DSM (Frueh et al., 2010). In the present study, the presence of a criterion A defined trauma was the only symptom that separated participants with MDD from participants with PTSD. Participants with MDD that did not meet criterion A for a traumatic event could not be diagnosed with PTSD on the CAPS, even though they reported similar PTSD symptom severity on the PCL-C. This suggests that any loosening of DSM criterion A for PTSD may result in even higher comorbidity between the two disorders.

Given the high comorbidity between the disorders and the unlikely incorporation of alternative models of diagnosis in the next DSM (e.g., Brown and Barlow, 2009; Gros et al., 2011), researchers and clinicians alike may need to shift their practices to address multiple, comorbid disorders at once, rather than focusing on a single disorder. Recently, transdiagnostic treatments have been developed to emphasize the commonalities of the emotional disorders and treat their highly overlapping symptoms (Barlow et al., 2010). Preliminary findings for the efficacy of transdiagnostic treatment approaches have been very promising with additional studies ongoing (Barlow et al., 2010; Ellard et al., 2010). Together, these developments could lessen the significance of the problematic boundaries and comorbidity among MDD, PTSD, and other mental disorders by addressing multiple overlapping and comorbid disorders within the same unified protocol.

There are a few limitations in the present study. The present findings focus on a single cross-sectional assessment of PTSD symptoms. Future research should incorporate additional assessments of PTSD and MDD at multiple time points to better understand the relations between the symptoms of these disorders and how they develop over time. The present findings also were limited to a veteran sample from primary care settings. Although this sample improved upon the previous research with a larger, non-psychiatric sample (Gros et al., 2010), future studies should include participants from non-veteran community settings to further generalize the findings. Third, the diagnostic interviews were completed over the telephone. Although there is literature to support the reliability of telephone interviews (Rohde et al., 1997; Acierno et al., 2003; Aziz and Kenford, 2004; Acierno et al., 2007), in-person methods should be considered in future investigations.

In conclusion, the present study found comparable levels of the PTSD symptoms in both participants with MDD-only and PTSD-only and more severe PTSD symptoms in participants with comorbid MDD and PTSD. The pattern of findings suggests that these two disorders may have more overlap than previously understood (Gros et al., 2010), further highlighting the concerns with comorbidity and problematic boundaries in the DSM-defined mood and anxiety disorders. Although the proposed revisions to the DSM are unlikely to address these concerns and may worsen comorbidity if PTSD criterion A is altered, a shift towards transdiagnostic approaches to treatment could reduce the significance of the diagnostic categories and their comorbidities by providing a unified model to address their highly overlapping symptoms.

Acknowledgments

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Table 1

Descriptive statistics and group differences on the PTSD symptom scales in the MDD and PTSD diagnostic groups.

PTSD symptom scale	No MDD-PTSD	MDD-only	PTSD-only	Comorbid MDD-PTSD	F
	n=687	*n*=90	*n*=34	*n*=72	
Intrusions	6.1_a (2.5)	10.0_b (5.4)	11.4_b (5.5)	14.8_c (5.4)	185.0^*
Avoidance	2.8_a (1.5)	5.6_b (2.6)	5.3_b (2.7)	6.2_c (2.5)	142.4^*
Dysphoria (Simms)	11.2_a (4.5)	20.1_b (9.1)	21.0_b (9.1)	25.5_c (8.5)	209.4^*
Numbing (King)	7.3_a (3.2)	13.4_b (5.6)	13.3_b (5.6)	16.6_c (5.6)	183.4^*
Hyperarousal (Simms)	2.7_a (1.6)	4.5_b (2.7)	4.9_b (2.3)	6.9_c (2.5)	143.5^*
Hyperarousal (King)	6.6_a (2.9)	12.6_b (5.4)	11.2_b (5.6)	16.2_c (5.5)	192.5^*

All PTSD symptom scales were from the PTSD Checklist – Civilian Version. Simms=based on factor model presented in Simms et al. (2002). King=based on factor model presented in King et al. (1998). Intrusions and Avoidance scales contain the same items in both factor models. Disorder columns presented as mean (standard deviation). Subscripts indicate significant differences within a factor (row).

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  $p<0.01$.