



Testing whether posttraumatic stress disorder and major depressive disorder are similar or unique constructs[☆]

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ABSTRACT

Posttraumatic stress disorder (PTSD) and major depressive disorder (MDD) co-occur frequently, are highly correlated, and share three symptoms in common. In the present paper, the authors tested whether PTSD and MDD are similar or unique constructs by examining their symptoms using Rasch modeling. Data were used from the 766 trauma-exposed subjects in the National Comorbidity Survey-Replication (conducted in the early 2000s) with PTSD and MDD symptom ratings. Results demonstrate that MDD symptoms were less frequently endorsed than PTSD symptoms—even for the three symptoms shared between the disorders. PTSD and MDD items represented a single, underlying dimension, although modest support was found for a secondary sub-factor. Removing their shared symptoms, and additional depression-related dysphoria symptoms, continued to result in a single underlying PTSD-MDD symptom dimension. Results raise further questions about PTSD's distinctiveness from MDD, and the causes of their comorbidity.

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1. Introduction

In recent years, significant challenges have been raised about posttraumatic stress disorder's (PTSD) construct validity (McHugh & Treisman, 2007; Rosen & Frueh, 2007; Spitzer, First, & Wakefield, 2007). One particular construct problem involves PTSD's substantial symptom overlap, shared variance and comorbidity with other mood and anxiety disorders—especially major depressive disorder (MDD) (Frueh et al., 2000). The present paper empirically examines the extent to which PTSD and MDD are similar or unique, including the impact of their symptom overlap, using a nationally representative, trauma-exposed sample of U.S. residents.

Symptom overlap with other disorders is a particularly problematic issue with PTSD, raising questions about its distinctiveness as a mental disorder (McHugh & Treisman, 2007; McNally, 2003;

Spitzer et al., 2007). Four PTSD symptoms overlap with other mood and anxiety disorders: anhedonia (criterion C4), sleep difficulty (D1), irritability (D2), and concentration difficulty (D3). MDD in particular shares PTSD's criteria C4, D1 and D3 in its major depressive episode symptom criteria.

Because of PTSD's symptom overlap with major depression, it is not surprising that these two disorders are highly comorbid. In fact, nationally representative studies reveal that 48–55% of individuals with a lifetime history of PTSD have also met criteria for a major depressive episode (Elhai, Grubaugh, Kashdan, & Frueh, 2008; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Moreover, diagnostic comorbidity between PTSD and major depression is even higher in clinical samples (reviewed in Keane & Kaloupek, 1997).

Furthermore, PTSD and depression instrument severity scores tend to be highly intercorrelated. For instance, the most widely used DSM-IV-based PTSD severity measures have been identified as the Clinician-Administered PTSD Scale (CAPS), Posttraumatic Stress Disorder Checklist (PCL) and Posttraumatic Diagnostic Scale (PDS) (Elhai, Gray, Kashdan, & Franklin, 2005). Based on psychometric studies of these instruments, PTSD-depression severity correlations generally range from .61 to .75 for the CAPS (reviewed in Weathers, Keane, & Davidson, 2001), .63 to .67 for the PCL (Adkins, Weathers, McDevitt-Murphy, & Daniels, 2008; Ruggiero, Del Ben, Scotti, &

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Rabalais, 2003), and from .59 to .79 for the PDS (Adkins et al., 2008; Foa, Cashman, Jaycox, & Perry, 1997).

On the other hand, evidence with adults and adolescents demonstrates that the PTSD-major depression symptom overlap is not solely responsible for their high comorbidity, based on community samples (Elhai et al., 2008; Ford, Elhai, Ruggiero, & Frueh, 2009), military veterans in primary care (Grubaugh, Long, Elhai, Frueh, & Magruder, 2010), and clinical samples (Franklin & Zimmerman, 2001). For example, Elhai et al. (2008) discovered using adult data from the National Comorbidity Survey-Replication (NCS-R) that the lifetime prevalence rate of a major depressive episode among those with PTSD (54.72%) remained essentially the same when removing PTSD's overlapping symptoms and applying a prorated PTSD diagnostic algorithm (54.41%). Additionally, Ford et al. (2009) used adolescent data from the National Survey of Adolescents and also revealed unchanging prevalence rates with the original PTSD diagnostic algorithm (75.7%) vs. diagnosing PTSD without the overlapping symptoms (76.6%). Thus, although overlapping symptoms between PTSD and major depression intuitively would explain their high comorbidity, empirically such symptom overlap is not the sole cause.

Another possible explanation for PTSD's shared variance with major depression could involve additional *DSM-IV* PTSD symptoms that do not overlap with major depression's symptoms, but are depression-related. Simms, Watson, and Doebbeling (2002) initially tested and found support for a dysphoria factor among PTSD's symptoms, including the three PTSD-MDD overlapping symptoms (discussed above) in addition to memory impairment of the trauma (C3), emotional detachment (C5), constricted affect (C6), sensing a foreshortened future (C7), and irritability (D2). Dysphoria, considered a non-specific measure of distress, correlated .80 with depression scale measures—even higher than it correlated with other PTSD measures (ranging from .51 to .61) (Simms et al., 2002). And, dysphoria correlates less with trauma exposure endorsements than other PTSD factors do (Armour & Shevlin, 2010). Interestingly, after adjusting analyses for depression severity, Elklit, Armour, and Shevlin (2010) found that dysphoria's factor loadings were the most attenuated, but numerous other items' loadings were attenuated as well. Relatedly, Marshall, Schell, and Miles (2010) discovered that dysphoria items were no more correlated with distress measures than other PTSD items were. Overall, these findings suggest that depression accounts for substantial variance in PTSD, but not only through dysphoria. Nonetheless, numerous additional studies with community and clinical samples have found substantial support for the dysphoria factor in PTSD (most recently, Carragher, Mills, Slade, Teesson, & Silove, 2010; Elhai, Ford, Ruggiero, & Frueh, 2009; Engdahl, Elhai, Richardson, & Frueh, in press; Naifeh, Richardson, Del Ben, & Elhai, 2010; Shevlin, McBride, Armour, & Adamson, 2009).

1.1. Study aims

The present study used Rasch modeling with data from the NCS-R (Kessler, 2006) to examine the potential similarity or distinctiveness of PTSD in relation to major depression. Specifically, we explored the role of PTSD's overlapping and dysphoria symptoms in the PTSD-depression relationship. Since extant research demonstrates that PTSD and MDD are highly comorbid and highly intercorrelated, we hypothesized that (1) PTSD and depression symptoms would overlap in terms of their frequency of item endorsements (especially the overlapping symptoms), and (2) some evidence should support PTSD and depression as represented by a single construct, but support for unidimensionality should diminish especially after removing the overlapping and dysphoria symptoms. Investigating this issue is important for etiological, epidemiological and differential diagnostic purposes in the context of

PTSD and MDD. Findings will inform the ongoing process of understanding and redefining PTSD's characteristics, and more generally will have implications for our understanding of posttraumatic reactions.

2. Method

2.1. Sample

The NCS-R was a nationally stratified, multistage area household probability sample study of non-institutionalized adults (age 15 and older) (Kessler, 2006). The NCS-R was conducted with 9282 participants in the early 2000s (NCS-R Part I), with demographic characteristics presented in previous NCS-R reports (Kessler et al., 2004). The University of Michigan's Institutional Review Board approved the study, in compliance with the Declaration of Helsinki, and required subject informed consent prior to participation. The present paper used data from the representative subsample of participants completing the NCS-R Part II (which evaluated PTSD; $n = 5692$).

2.2. Instruments

The diagnosis of *DSM-IV* mental disorders was conducted with the World Mental Health Survey Initiative version of the structured Composite International Diagnostic Interview (CIDI) (Kessler & Ustun, 2004). The CIDI evidences adequate convergence with other similar measures (Andrews & Peters, 1998; Haro et al., 2006).

Interviewing with the CIDI was straightforward for most mental disorders, including querying the nine core *DSM-IV* MDD symptoms (using binary "yes"/"no" lifetime symptom ratings). The procedures for querying the 17 *DSM-IV* PTSD symptoms were slightly more complex. Specifically, participants were first asked in behaviorally specific terms about previous exposure to 26 traumatic events meeting *DSM-IV*'s PTSD stressor criterion (A1) (e.g., combat exposure, disaster, life-threatening accidents, assault, witnessed indirect traumas to others, etc.). Only those participants endorsing a traumatic event with initial fear, helplessness or horror (Criterion A2) were subsequently queried by NCS-R interviewers about *DSM-IV* PTSD symptoms. PTSD symptom queries involved binary ("yes"/"no") lifetime symptom ratings about one's trauma. For those endorsing more than one trauma, the most upsetting occurrence of their most upsetting traumatic event type was used for symptom ratings. For individuals whose most upsetting trauma occurrence was different from a trauma that was randomly selected by NCS-R investigators, they were instructed to rate their PTSD symptoms separately for each event, in which case we analyzed their ratings from the most upsetting trauma.

2.3. Analyses

NCS-R Part II sampling weights were used for all analyses, to adjust for differential household size, non-response, and post-stratification. We only used data from participants who (in addition to endorsing PTSD's Criterion A1) had endorsed Criterion A2 in reference to an index trauma on which PTSD ratings were made ($n = 871$). For participants with multiple sets of PTSD ratings, we used ratings from their most upsetting event.

We further excluded 105 subjects missing more than four (24%) of PTSD's symptom items (leaving 766 remaining participants). These subjects were missing items because of skip-out diagnostic rules (if a participant did not meet PTSD's criterion B or C, s/he was not subsequently queried about remaining PTSD criteria); thus, including them would have required estimating their missing data, which were not missing randomly, but because they skipped out

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