



## Posttraumatic stress disorder's dysphoria dimension and relations with generalized anxiety disorder symptoms

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### ABSTRACT

The present study investigated symptom relations between two highly comorbid disorders – posttraumatic stress disorder (PTSD) and generalized anxiety disorder (GAD) – by exploring their underlying dimensions. Based on theory and prior empirical research it was expected that the dysphoria factor of PTSD would be more highly related to GAD. As part of a longitudinal project of mental health among Ohio National Guard Soldiers, 1266 subjects were administered the Posttraumatic Stress Disorder Checklist (PCL) and Generalized Anxiety Disorder-7 scale (GAD-7). Confirmatory factor analyses (CFAs) were conducted to examine two models of PTSD and to determine which PTSD factors were more related to the GAD factor. The results indicate that the GAD factor was significantly more highly correlated with PTSD's dysphoria factor than with all other PTSD factors, including PTSD's reexperiencing factor, avoidance factor, and hyperarousal factor. Results indicate GAD was not significantly more highly correlated with numbing than most other factors of PTSD. The results are consistent with prior research. Implications of the results are discussed in regards to PTSD in DSM-5, comorbidity and diagnostic specificity.

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## 1. Introduction

Posttraumatic stress disorder (PTSD) often co-occurs with other psychopathology. According to a large-scale epidemiological study, 88% of individuals with PTSD report at least one other mental disorder (Kessler et al., 1995). PTSD is most comorbid with mood, anxiety and substance use disorders (Kessler et al., 1995). PTSD's comorbidity with generalized anxiety disorder (GAD) is as high as 15% and 17% in women and men, respectively. However, little is known about potential mechanisms that account for these comorbidity rates between PTSD and GAD. The present study explored this issue by analyzing the underlying dimensions of PTSD to assess for shared components between PTSD and GAD symptoms.

### 1.1. PTSD's factor structure

The underlying dimensionality (or, factor structure) of PTSD has been widely investigated. Using confirmatory factor analysis (CFA), research has largely investigated three-factor (American Psychiatric Association, 2000), four-factor (King et al., 1998; Simms et al., 2002) and five-factor models (Elhai et al., 2011a). The three-factor DSM-IV model categorized PTSD into three symptom clusters: reexperiencing, effortful avoidance and emotional numbing, and hyperarousal. Although this model is well researched, it is not supported in the literature (reviewed in Elhai and Palmieri, 2011; Yufik and Simms, 2010).

King et al. (1998) introduced the four-factor emotional numbing model as an alternative model. This model was founded on empirical support to suggest that the avoidance and numbing construct was better represented as two distinct factors (Asmundson et al., 2004; Foa et al., 1995). Empirical support for this model has been demonstrated in the extant literature

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(reviewed in Elhai and Palmieri, 2011). The emotional numbing model was used as the basis for the new DSM-5 model and will thus be utilized as one of the models in the present analyses.

Another four-factor model supported in the literature is the dysphoria model (Simms et al., 2002). For the dysphoria model, in addition to partitioning out the avoidance and numbing factors, three hyperarousal symptoms are combined with numbing symptoms to create a dysphoria factor. This model is founded on theory suggesting that distress/dysphoria is an underlying component of mood and anxiety disorders (Watson, 2005). A meta analysis demonstrated that the dysphoria model has slightly better fit than the numbing model (Yufik and Simms, 2010). Adaptations and extensions of the dysphoria model are now being considered as well such as the dysphoric arousal model (Elhai et al., 2011a). This model further differentiates the dysphoria and arousal factors into three factors of numbing, dysphoric arousal and anxious arousal. The Anhedonia model, a further extension of the dysphoric arousal model, has also recently been introduced using DSM-5 data that distinguishes the numbing cluster into negative affect and anhedonia symptom clusters (Liu et al., 2014).

### 1.2. GAD's factor structure

Under less debate is the factor structure of GAD. We utilized the GAD-7 to investigate the factor structure for GAD. The GAD-7 is a short, self-report questionnaire assessing for GAD symptoms (Spitzer et al., 2006). Several studies indicate a one-factor solution (Dear et al., 2011; Löwe et al., 2008; Spitzer et al., 2006), demonstrating that GAD symptoms as measured by the GAD-7 represent a unidimensional construct. Although one study demonstrated the GAD-7 as having more than one factor (Kertz et al., 2013) it will be conceptualized uni-dimensionally in the present study as most prior research supports a one-factor solution (Dear et al., 2011; Löwe et al., 2008; Mills et al., 2014; Ryan et al., 2013; Spitzer et al., 2006).

### 1.3. PTSD and GAD comorbidity

It has been proposed that the high comorbidity rates between PTSD and other psychopathology may be due to their shared symptoms (Spitzer et al., 2007). If PTSD contained only diagnostic components and symptoms specific to PTSD (rather than symptoms overlapping with other mood and anxiety disorders), perhaps these rates would decline. However, despite removing such overlapping symptoms in various mood and anxiety disorders, the same comorbidity rates for PTSD remain (Elhai et al., 2008; Grubaugh et al., 2010). Given these results, more investigations regarding the high comorbidity between PTSD and GAD were needed using alternative methods.

One possible explanation for PTSD's comorbidity is the common underlying dimensions theory (reviewed in Watson, 2005, 2009). Under this framework, PTSD's comorbidity with mood and anxiety disorders is attributed to a specific underlying component: emotional distress and dysphoria. Distress and dysphoria are distinct yet similar constructs; distress is represented broadly by subjective negative affect; dysphoria involves more specific distressing feelings of depression-related affect. It would thus be expected that in contrast to other symptom dimensions of PTSD, a dysphoria factor, which contains both dysphoric and distress components, would demonstrate more of a link to mood and anxiety disorders.

This theory has yielded somewhat mixed findings within the PTSD literature. Whereas some studies have demonstrated that PTSD's dysphoria items are more related to external measures of emotional distress (Biehn et al., 2013; Elhai et al., 2011b; Forbes et al., 2010; Gros et al., 2012), other studies have not yielded this

finding (Forbes et al., 2012; Marshall et al., 2010; Miller et al., 2010). Despite the mixed findings, one study has specifically examined the relation between PTSD's dysphoria with GAD (Grant et al., 2008). The results indicated that a GAD factor was more highly correlated with PTSD's dysphoria factor than the other factors of PTSD. One study tested the dysphoria model after controlling for GAD and found that the variance attributed to GAD was localized in the reexperiencing, hyperarousal and dysphoria factors (Armour et al., 2011). Given the high comorbidity rates between PTSD and GAD, further investigations are warranted. Additionally, when latent factors are used, as opposed to measuring dysphoria and distress as total scores, dysphoria almost always uniquely predicts emotional distress.

There are several explanations for the mixed findings regarding dysphoria's specificity to other mood and anxiety disorders. For example, Forbes et al. (2012) used relatively diffuse rather than disorder-specific measures of emotional distress in addition to exploring the relationships using the latent factors of several mental disorders. Additionally, Miller et al. (2013) used a measure of PTSD that has demonstrated inflated prevalence rates, potentially confounding the findings. And finally, Marshall et al. (2010) attempted specifically to link PTSD's factors to a general distress component by using items from two separate measures of anxiety and depression. The present study attempted to improve on previous methodology by specifically measuring GAD symptoms as the distress dimension. Using this methodology, dysphoria almost always predicts the distress dimension being assessed (Biehn et al., 2013; Contractor et al., 2014).

### 1.4. Study aims and hypotheses

We explored the underlying structure of PTSD and GAD symptoms while also examining relations between the two constructs as part of a longitudinal study of mental health among Ohio National Guard soldiers. The project began prior to the release of DSM-5, thus limiting us to utilize DSM-IV data. Two latent models of PTSD that are most highly supported in the literature were used to explore comorbidity: the dysphoria model (Simms et al., 2002) and the emotional numbing model (King et al., 1998). Specifically, we hypothesized that the GAD factor would be more related to PTSD's dysphoria and numbing factors than to PTSD's reexperiencing, avoidance and hyperarousal factors. This is based on theory suggesting a dysphoria component underlies the mood and anxiety disorders in addition to categorizing PTSD and GAD as mood and anxiety disorders (Watson, 2005, 2009) and on prior empiricism (Grant et al., 2008).

It is important to examine PTSD's relations with other disorders given the high comorbidity rates between PTSD and other disorders. We used a disorder-specific measure of distress (GAD) for more precise measurement. Considering that some investigations of comorbidity using latent factors have demonstrated that a dysphoria component explains the relationship between PTSD and other mood/anxiety disorders, we expected to find similar results for GAD in our study as well. Unique to our study is that we modeled GAD in relation to PTSD's dysphoria specifically as a distress variable, which is how it is conceptualized according to Watson (2005, 2009).

## 2. Methods

### 2.1. Procedure and participants

The present study was part of a prospective longitudinal study of mental health among members of Ohio National Guard Members serving between July 2008 and February 2009, with a valid mailing address, invited to participate in a telephone survey consisting of self-report (non-diagnostic) measures (Calabrese et al., 2011).

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