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# Further investigation of the association between anxiety sensitivity and posttraumatic stress disorder: Examining the influence of emotional avoidance

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ABSTRACT

Anxiety sensitivity (AS) and the tendency to avoid emotions have both been identified as vulnerability factors for the development and maintenance of posttraumatic stress disorder (PTSD). Furthermore, both cross-sectional and prospective research have provided evidence that emotional avoidance and AS interact to predict anxiety symptoms, such that AS may only be associated with anxiety-related pathology among those who exhibit a tendency to avoid their emotions. The purpose of the present study was to determine if this moderator model extends to PTSD within a sample of substance dependent patients. Specifically, this study examined if AS is associated with PTSD only among individuals with high (vs. low) levels of negative emotional avoidance. As predicted, results of a logistic regression analysis revealed a significant interaction between negative emotional avoidance and AS in predicting PTSD status. Follow-up analyses revealed a significant positive association between AS and PTSD status for participants high in negative emotional avoidance; however, AS was not associated with PTSD for those low in negative emotional avoidance. This finding remained even when relevant covariates were included in the model. Results confirm hypotheses and are consistent with the extant anxiety-risk literature.



## 1. . Introduction

Despite the high lifetime prevalence of traumatic exposure, only a small fraction of those exposed to a traumatic event eventually develop posttraumatic stress disorder (PTSD; Breslau & Kessler, 2001). However, given the severe psychological distress and functional impairment associated with PTSD (Amaya-Jackson et al., 1999; Brady, Killeen, Brewerton, & Lucerini, 2000), researchers have expended considerable effort toward identifying risk and resiliency factors for the development and maintenance of PTSD symptoms. Although much of the research in this area to date focuses on specific risk and resiliency factors in isolation (Agaibi & Wilson, 2005), theoretical literature highlights the importance of examining the interplay among cognitive, physiological, behavioral, and emotional processes in order to improve our understanding of the pathogenesis of PTSD (e.g., Ehlers & Clark, 2000; Foa & Kozak, 1986; Frewen & Lanius, 2006). More specifically, research is needed to examine the conditions under which established PTSD risk factors are more or less likely to relate to a PTSD diagnosis.

One well-established risk factor for PTSD is anxiety sensitivity (AS; for a review, see Naragon-Gainey, 2010). AS is conceptualized as a fear of anxiety-related sensations due to beliefs that such sensations will have adverse psychological, social, and physical outcomes (Reiss & McNally, 1985). Although related to the construct of trait anxiety, AS is considered a distinct construct. Specifically, whereas AS indicates a tendency to respond with fear to symptoms of anxiety, trait anxiety is characterized by fearful responding to stressors more generally (McNally, 2002). Empirical literature supports the differentiation of these constructs (Ehlers, 1995; Schmidt, Lerew, & Jackson, 1997).

Cross-sectional research has consistently shown a positive association between AS and PTSD symptoms (McDermott, Tull, Gratz, Daughters, & Lejuez, 2009; Naifeh, Tull, & Gratz, 2012; for a review, see Elwood, Hahn, Olatunji, & Williams, 2009), and, with the exception of panic disorder, PTSD is associated with higher levels of AS than all other anxiety disorders (Taylor, Koch, &

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McNally, 1992). Moreover, AS has been found to prospectively predict PTSD symptoms: (a) 6- and 12-months post-physical injury (Marshall, Miles, & Stewart, 2010); (b) 1-month after entry into treatment for alcohol use disorders (Simpson, Jakupcak, & Luterek, 2006); and (c) 12- and 24-months post-baseline assessment in a nonclinical sample, even after controlling for baseline PTSD symptoms and trait anxiety (Feldner, Zvolensky, Schmidt, & Smith, 2008). Together, this research suggests that AS is a robust risk factor for the development and maintenance of PTSD symptoms.

Importantly, however, recent research suggests that the relation of AS to negative outcomes may depend on the extent with which an individual engages in efforts to avoid, eliminate, or alter the frequency or intensity of unwanted internal experiences (i.e., experiential avoidance; Hayes, Strosahl, & Wilson, 1999; Hayes, Wilson, Gifford, Follette, & Strosahl, 1997), such as negative emotions. As noted by Kashdan, Zvolensky, and McLeish (2008), "… there is a growing recognition that how individuals regulate emotional experiences, particularly whether they accept or avoid emotional experiences, is critical in understanding how anxious and fearful responding is maintained and exacerbated" (p. 430). Consistent with this premise, Bardeen, Fergus, and Orcutt (2013) found that the positive association between AS and anxiety became stronger as experiential avoidance increased – a relation that has also been observed prospectively. Specifically, Bardeen, Fergus, and Orcutt (2014) found that AS at baseline predicted anxiety symptoms approximately one month later, but only among participants who had relatively higher levels of experiential avoidance at baseline. Notably, although the studies by Bardeen et al. (2013, 2014) assessed experiential avoidance in general, rather than the avoidance of emotions in particular, their findings have relevance to the understanding of the role of emotional avoidance in the relation between AS and anxiety. Specifically, it has been suggested that experiential avoidance most commonly applies to the avoidance of emotional experiences (Hayes et al., 1999). Moreover, consistent with this suggestion, the measure used to assess experiential avoidance in these studies (the Acceptance and Action Questionnaire-II; Bond et al., 2011) overlaps considerably with measures of emotional avoidance (Karekla & Panayiotou, 2011). Thus, these findings collectively demonstrate the need to build upon existing research focused on the relation between AS and PTSD by examining the moderating role of emotional avoidance.

Although PTSD symptoms have been found to be positively associated with experiential avoidance in general (Kumpula, Orcutt, Bardeen, & Varkovitzky, 2011; Marx & Sloan, 2005; Pickett, Bardeen, & Orcutt, 2011; Plumb, Orsillo, & Luterek, 2004), the avoidance of negative emotions in particular is considered especially relevant to PTSD. The avoidance of emotions has been described as a central factor in the development and maintenance of PTSD symptoms following traumatic exposure (see Salters-Pedneault, Tull, & Roemer, 2004), and both negative emotionality and the avoidance of emotions are emphasized in the current diagnostic criteria for PTSD (American Psychiatric Association [APA], 2013). Research also indicates that emotional avoidance in general (vs. trauma-specific emotional distress in particular) is associated with PTSD (e.g., Roemer, Litz, Orsillo, & Wagner, 2001). Moreover, studies demonstrate a positive association between the avoidance of emotions and PTSD symptoms (Naifeh et al., 2012; Tull, Hahn, Evans, Salters-Pedneault, & Gratz, 2011; see also Salters-Pedneault et al., 2004).

As noted above, research suggests that AS and a tendency to avoid unpleasant internal experiences interact to predict anxiety, such that the association between AS and anxiety becomes stronger as the tendency to avoid internal experiences increases (Bardeen et al., 2013; 2014). Given the overlap between anxiety pathology and PTSD, as well as the noted associations among PTSD, AS, and emotional avoidance, it is likely that emotional avoidance moderates the relation between AS and PTSD. Specifically, AS has been found to be associated with increased fear responding to emotionally-salient stimuli (Stein, Simmons, Feinstein, & Paulus, 2007). Consequently, following exposure to a traumatic event, a pre-existing tendency to believe that anxiety symptoms will have negative consequences may contribute to the development of a conditioned fear response to anxious arousal stemming from that exposure. When this conditioned fear response is combined with a tendency to avoid negative emotions, functional exposure to anxiety and cues for this anxiety would be prevented, contributing to a greater likelihood of PTSD. As such, the proposed relation between AS, emotional avoidance, and PTSD is consistent with Mowrer's (1960) two-factor theory of fear acquisition and maintenance.

Past research on the relation between AS, emotional avoidance, and anxiety has primarily focused on nonclinical populations (e.g., Bardeen et al., 2013; 2014). Consequently, we chose to conduct a preliminary test of this model within a clinical population – substance dependent patients. Substance dependent patients are a particularly relevant population in which to test this model, given both their elevated rates of PTSD (Brady, Back, & Coffey, 2004) and their high levels of AS (Buckner, Proctor, Reynolds, Kopetz, & Lejuez, 2011; McDermott et al., 2009) and emotional avoidance (Naifeh et al., 2012). Consistent with previous research, we hypothesized that patients with versus without PTSD would report significantly higher levels of both AS and negative emotional avoidance. Furthermore, we predicted that negative emotional avoidance would moderate the association between AS and PTSD, such that AS would be associated with the presence of a current PTSD diagnosis only among those with relatively higher levels of negative emotional avoidance.

## 2. Method

### 2.1. Participants

Participants for the current study included 198 patients (97 women) from a substance use disorder inpatient treatment facility who reported exposure to at least one potentially traumatic event. Participants ranged in age from 18 to 59 years ($M=34.3$, $SD=10.0$) and were ethnically diverse (59.6% White; 37.4% African American; 1.5% Latina; 1.0% Native American, and 0.5% Asian/Southeast Asian). With regard to educational attainment, 70.2% of participants had received their high school diploma or GED, with 37.4% continuing on to complete at least some higher education. The majority of participants were unemployed (65.7%) and single (62%), with a household income of less than $20,000 (66.2%).[1]

### 2.2. Measures

AS was assessed via the Anxiety Sensitivity Index–3 (ASI-3; Taylor et al., 2007). The ASI-3 is an 18-item self-report measure that assesses the fear of anxiety-related sensations due to physical, cognitive, and social concerns. Respondents are asked to rate each item on a 5-point scale (0=*very little* to 4=*very much*) based on the degree to which they agree with each statement. Higher scores are indicative of higher levels of AS. The ASI-3 has been found to demonstrate adequate reliability and discriminant, convergent, and criterion-related validity (Taylor et al., 2007). Within the present sample, the ASI-3 ($M=22.00$, $SD=16.44$, *range*=0–72) had

[1] The sample of the present paper does not overlap with that presented in Bordieri, Tull, McDermott, and Gratz (2014).