Support for the general and specific bifactor model factors of anxiety sensitivity

Nicholas P. Allan *, Brian J. Albanese, Nicole A. Short, Amanda M. Raines, Norman B. Schmidt *

Department of Psychology, Florida State University, Tallahassee, FL 32306-4301, USA

ABSTRACT

Anxiety sensitivity (AS), has been conceptualized as a hierarchical construct, comprising three lower-order dimensions. Recent findings suggest that AS may be better conceptualized as a general dimension and unrelated physical, cognitive, and social concerns dimensions (a bifactor model). The current study was designed to examine whether a bifactor model best represented AS in a sample of 878 college-age participants (M_{age} = 19.01, SD = 1.45). Further, given that specific relations between lower-order AS dimensions and emotional distress have been found (i.e., physical concerns and fear-based emotional distress, cognitive concerns and distress-based emotional distress), specificity between AS factors and negative affect (NA), worry, depression, social anxiety, and panic attacks was examined. The bifactor model fit the data best. Further, of all the AS factors, the general factor was most associated with NA. Accounting for general AS, cognitive concerns was related to worry and depression and social concerns was related to worry, depression, and social anxiety. Physical concerns was not related to emotional distress. These findings indicate that AS consists of a general facet, associated with emotional distress generally, and several facets more specifically associated with components of emotional distress.

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1. Introduction

Anxiety Sensitivity (AS) is a well-established trait-like construct reflecting a propensity to fear sensations associated with anxious arousal (Reiss & McNally, 1985). AS was initially studied as a risk factor for panic and agoraphobia. However, heightened levels of AS have now been linked to other anxiety disorders and depression (Naragon-Gainey, 2010; Olatunji & Wolitzky-Taylor, 2009), substance abuse (Schmidt, Buckner, & Keough, 2007), and increased suicidality (Capron et al., 2012). As such, AS may function as a transdiagnostic risk factor for a broad range of psychopathology.

To best utilize AS as a transdiagnostic risk factor, it is important to fully understand the underlying structure of this construct. AS is typically conceptualized as a hierarchical construct comprising three distinct but related lower-order dimensions: physical concerns (fears of physiological arousal), cognitive concerns (fears of mental capacitation), and social concerns (fears of publically observable symptoms of anxiety). Although historically, AS was most commonly measured with the Anxiety Sensitivity Index (ASI; Reiss, Peterson, Gursky, & McNally, 1986), factor analytic studies

have demonstrated that the recently developed Anxiety Sensitivity Index-3 (ASI-3; Taylor et al., 2007) appears to best capture the lower-order dimensions of AS (Allan et al., in press; Taylor et al., 2007; Wheaton, Deacon, McGrath, Berman, & Abramowitz, 2012). However, researchers have recently questioned whether this hierarchical model best represents the structure of AS (e.g., Ebesutani, McLeish, Luberto, Young, & Maack, 2014; Osman et al., 2010).

It has recently been argued that AS may be best represented as a bifactor model. Bifactor models suggest the presence of a single general factor reflecting the common variance among all manifest variables (i.e., items), as well as orthogonal factors reflecting the variance among clusters of items (Reise, 2012). The general factor represents the broad construct being measured (e.g., AS), and group factors represent more narrow constructs (e.g., physical, cognitive, and social concerns). This is in contrast to hierarchical models that conceptualizes the general factor as a higher-order factor and the group factors as lower-order oblique factors. Several recent studies, have found that a bifactor model fits the structure of AS better than a hierarchical model (Ebesutani et al., 2014; Osman et al., 2010). However, given the relative paucity of studies examining a bifactor model of AS, it is important to replicate these findings, particularly since there is still a need to provide validity for the distinct AS factors.

Whereas Ebesutani et al. (2014) found that a bifactor model of AS best fit the data, they argued that the AS should be classified as

* Corresponding authors at: Department of Psychology, Florida State University, P.O. Box 3064301, Tallahassee, FL 32306-4301, USA (N.B. Schmidt).
  E-mail addresses: allan@psy.fsu.edu (N.P. Allan), schmidt@psy.fsu.edu (N.B. Schmidt).

a unidimensional construct. Ebesutani et al. (2014) argued for AS as unidimensional because only the general AS construct was related to an external measure of anxiety, trait anxiety (as measured by the trait scale of the State-Trait Anxiety Inventory [STAI]). However, given that trait anxiety, especially as measured by the STAI, has shown non-specific relations with emotional distress disorders (i.e., mood and anxiety; e.g., Kennedy, Schwab, Morris, & Beldia, 2001), this may not be the most appropriate measure to provide external validation for AS physical, cognitive, and social concerns dimensions. In contrast to Ebesutani et al. (2014) and Osman et al. (2010) argued that the AS could be used as a unidimensional measure of AS, but also that there was support for the specific factors as well as these specific factors were correlated with external mood and anxiety measures.

Emotional distress disorder symptoms provide utility for determining external validity of the physical, cognitive, and social concerns dimensions. Distress disorders are those that are characterized by pervasive sadness and worry, such as generalized anxiety disorder (GAD) and major depressive disorder (MDD). Fear disorders are those characterized by phobic avoidance of external threats, such as panic disorder (PD) and specific phobia (Clark & Watson, 2006; Krueger, 1999; Sellbom, Ben-Porath, & Bagby, 2008).

Based on evidence that AS physical and cognitive concerns dimensions relate to symptoms of disorders classified as fear and distress emotional distress disorders, respectively, Allan et al. (in press) examined the relations between correlated lower-order AS factors and fear and distress disorders in a community sample of smokers. Results indicated AS physical and cognitive concerns uniquely predicted fear and distress factors, respectively. Further, AS social concerns significantly predicted both the fear and distress factors, suggesting that AS social concerns may confer a more general risk for emotional distress disorders. However, in another study examining the relations between the lower-order dimensions of AS and anxiety and depression, AS social concerns was the only unique predictor of social anxiety (Allan, Capron, Raines, & Schmidt, 2014), suggesting at least some degree of specificity to social anxiety for the AS social concerns dimension.

1.1. Current study

The current study was designed to replicate the findings that AS is better represented as a bifactor model including a general AS component and distinct AS physical concerns, AS cognitive concerns, and AS social concerns factors than as a correlated factors model (Ebesutani et al., 2014; Osman et al., 2010). It was hypothesized that a bifactor model would provide the best fit of the ASI-3. The present study was also designed to provide validity for the specific AS factors by examining the relations between the AS factors and general NA, and several symptom measures that have been linked to the specific factors of AS (i.e., worry, social anxiety, depression, and panic attacks; e.g., Allan et al., 2014, in press; Olatunji & Wolitzky-Taylor, 2009). It was hypothesized that NA would be related to the common AS factor only. It was also hypothesized that the common AS factor would be associated with all measures of psychopathology. It was further hypothesized that specific AS factors would be uniquely associated with specific fear and distress constructs. Although variance common to all the items is hypothesized to be best accounted for by a general factor, variance unique to the specific AS domains should still reflect more circumscribed risk not fully captured by the common AS factor (i.e., items specific to AS cognitive concerns might reflect cognitive biases). Given that AS cognitive concerns appears to be associated with and worry and depression have been implicated as *distress* facets of emotional distress disorders (e.g., Allan et al., in press), it was expected that significant relations would be found for AS

cognitive concerns and worry and depression. Although AS social concerns appears to generalize to most emotional distress disorders symptoms, it was hypothesized that AS social concerns would be significantly associated with social anxiety only as it is thought that the general links between AS social concerns and emotional distress disorders is better explained by the AS common variance. Finally, given that AS physical concerns appears to be associated with and social anxiety and panic attacks have been implicated as *fear* facets of emotional distress disorders (e.g., Allan et al., in press), it was hypothesized that AS physical concerns would be significantly associated with social anxiety and panic attacks.

2. Methods

2.1. Participants

The sample included 878 participants recruited from a large southern university. Participants were primarily female (65.3% female) with ages ranging from 17 to 33 ($M = 19.01$, $SD = 1.45$). The racial composition of the sample was distributed as such: 81.5% Caucasian, 7.7% African American, 3.1% Asian, .1% American Indian, 6.3% other (e.g., bi-racial) and 1.3% declined to respond. Regarding ethnicity, 83.7% of the sample identified as non-hispanic.

2.2. Measures

2.2.1. Anxiety sensitivity

Anxiety sensitivity was assessed using the ASI-3, an 18-item self-report questionnaire measuring feared consequences of anxious arousal (Taylor et al., 2007). The ASI-3 is composed of three subscales, physical concerns, cognitive concerns, and social concerns. Previous research has demonstrated that the ASI-3 is a psychometrically sound and valid measure of AS (Taylor et al., 2007). Within the current investigation, the ASI-3 and the physical, social, and cognitive concerns subscales demonstrated good to excellent internal consistency (α's = .91, .82, .80, and .88, respectively).

2.2.2. Depression

Depression was measured using the Beck Depression Inventory-2 (BDI-2). The BDI-2 is a 21-items self-report questionnaire assessing various symptoms of depression experienced over the past two weeks (Beck, Steer, & Carbin, 1988). The BDI-2 has strong psychometric properties, which include high internal consistency and good test–retest reliability (Beck et al., 1988). The BDI-2 demonstrated excellent internal consistency ($\alpha = .90$) in the present investigation.

2.2.3. Negative affect

Negative affect was measured using ten items from the Negative Affect (NA) scale of the Positive and Negative Affect Schedule-Expanded Form (PANAS-X; Watson & Clark, 1999). Previous research has demonstrated acceptable internal consistency, temporal reliability, and convergent validity for the PANAS-X (Watson, 1999). Within the current investigation, the 10-item NA subscale demonstrated good internal consistency ($\alpha = .90$). This measure was administered to only 66% of the sample, although there were no differences across levels of the other measures or demographics for those who received the NA subscale versus those who did not.

2.2.4. Panic

Panic symptoms were assessed using the Panic Disorder Severity Scale (PDSS). The PDSS is a 7-item self-report questionnaire assessing various panic related variables such as frequency of panic attacks, fear and avoidance, and impairment in occupational and