Journal of Anxiety Disorders 28 (2014) 266–275

Contents lists available at ScienceDirect

Journal of Anxiety Disorders

Unique relations among anxiety sensitivity factors and anxiety, depression, and suicidal ideation

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ARTICLE INFO

Article history:
Received 30 July 2013
Received in revised form
16 December 2013
Accepted 19 December 2013

Keywords:
Anxiety sensitivity
Anxiety
Depression
Suicidal ideation

ABSTRACT

Anxiety sensitivity (AS) is composed of three lower-order dimensions, cognitive concerns, physical concerns, and social concerns. We examined the relations between AS dimensions using a more adequate assessment of subscales (ASI-3) than has previously been used, and measures of anxiety and mood disorders as well as suicidal ideation in a sample of 256 (*M* age = 37.10 years, *SD* = 16.40) treatment-seeking individuals using structural equation modeling. AS cognitive concerns was uniquely associated with generalized anxiety disorder (GAD), obsessive–compulsive disorder (OCD), major depressive disorder (MDD), post-traumatic stress disorder (PTSD), and suicidal ideation. AS physical concerns was uniquely associated with OCD, social anxiety disorder (SAD), panic disorder (PD), and specific phobia. AS social concerns was uniquely associated with SAD, GAD, OCD, and MDD. These results highlight the importance of considering the lower-order AS dimensions when examining the relations between AS and psychopathology.

Anxiety sensitivity (AS) is the fear of experiencing anxiety or anxiety related physiological sensations and the potential cognitive, physiological, and social consequences associated with these experiences (McNally, 2002; Reiss, 1997; Taylor & Cox, 1998). This construct is a trait-like characteristic, unique from other traits such as negative affectivity or trait anxiety in that AS reflects a fear of the consequences of anxiety whereas negative affectivity reflects a general predisposition to experience multiple negative emotions and trait anxiety reflects a predisposition to experience anxiety specifically (Lilienfeld, 1997; Taylor, 1999). Numerous studies have implicated AS as a risk-factor for not only anxiety disorders, but also major depressive disorder (MDD), and suicidality (e.g., Capron, Cougle, Ribeiro, Joiner, & Schmidt, 2012; Olatunji & Wolitzky-Taylor, 2009). Further, AS is best classified as a malleable risk factor, as several interventions have effectively targeted this construct (e.g., Keough & Schmidt, 2012; Schmidt et al., 2007). Numerous studies have also identified an underlying multidimensional structure of AS (e.g., Taylor et al., 2007; Zinbarg, Barlow, & Brown, 1997). However, most studies examining the relations between AS and associated psychopathology have not examined these associations at a more refined level by including the lower-order AS dimensions.

Whereas AS was originally conceptualized as a unidimensional construct (Reiss, 1991; Reiss & McNally, 1985), and measures such as the Anxiety Sensitivity Index (ASI; Reiss, Peterson, Gursky, & McNally, 1986) were developed to reflect this, studies employing factor analytic methods have repeatedly demonstrated that AS is best conceived as a hierarchical construct, comprised of a single higher-order AS factor and several lower-order factors representing different facets of AS (e.g., Lilienfeld, Turner, & Jacob, 1993; Taylor et al., 2007; Zinbarg et al., 1997). Most researchers agree that there are three lower-order dimensions, cognitive concerns, physical concerns, and social concerns (e.g., Taylor et al., 2007; Wheaton, Deacon, McGrath, Berman, & Abramowitz, 2012; Zinbarg et al., 1997), though some researchers have found one- to four-factor solutions to best represent AS (see Taylor, 1999 for review). The cognitive concerns dimension reflects fear of cognitive dyscontrol. The physical concerns dimension reflects fear of the physical sensations that accompany anxiety. Finally, the social concerns dimension reflects fear that publicly observable anxiety reactions will lead to social rejection or ridicule (Taylor et al., 2007).

Extant empirical work has provided some evidence that lower-order AS dimensions are differentially related to certain anxiety disorders as well as depression (e.g., Naragon-Gainey, 2010; Wheaton et al., 2012; see Olatunji & Wolitzky-Taylor, 2009 for review). Consideration of AS at the lower-order level has provided incremental validity above and beyond AS as a unitary construct (Olatunji & Wolitzky-Taylor, 2009; Wheaton et al., 2012). Based on the nature of the AS physical concerns dimension (i.e. fear of physical anxiety symptoms) and early empirical work, AS physical

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http://dx.doi.org/10.1016/j.janxdis.2013.12.004

concerns has been most clearly associated with panic disorder (PD) and agoraphobia (Olatunji & Wolitzky-Taylor, 2009; Zinbarg, Brown, Barlow, & Rapee, 2001), although there is some evidence to indicate an association between AS physical concerns and PTSD as well (Asmundson & Stapleton, 2008). Studies have indicated that, for PD, the relation with lower-order AS dimensions may be specific to AS physical concerns (Rector, Szacun-Shimizu, & Leybman, 2007; Rodriguez, Bruce, Pagano, Spencer, & Keller, 2004; Zinbarg et al., 1997).

The cognitive concerns dimension of AS has most often been identified with generalized anxiety disorder (GAD). Olatunji and Wolitzky-Taylor's (2009) conceptual model of the lower-order AS dimensions linked AS cognitive concerns with GAD based on the phrenophobic nature of the construct as well as empirical evidence of a moderate relation between AS cognitive concerns and GAD (Blais et al., 2001; Rector et al., 2007; Rodriguez et al., 2004; Zinbarg et al., 2001). However, empirical evidence suggests that, of the lower-order AS dimensions, AS cognitive concerns may be the most related to depression (Deacon, Abramowitz, Woods, & Tolin, 2003; Rector et al., 2007) and post-traumatic stress disorder (PTSD; Lang, Kennedy, & Stein, 2002; Vujanovic, Zvolensky, & Bernstein, 2008).

AS social concerns have been most associated with social anxiety disorder (SAD) in conceptual models of AS dimensions (Olatunji & Wolitzky-Taylor, 2009). This is consistent with the nature of the construct (i.e. fear of publicly observable anxiety symptoms) and extant empirical work (McWilliams, Stewart, & MacPherson, 2000; Zinbarg & Barlow, 1996). At face value, AS social concerns appear to be predominately related to SAD. However, extant work has found that AS social concerns were associated with other anxiety disorders as well as major depressive disorder (MDD; Naragon-Gainey, 2010; Wheaton et al., 2012), suggesting that AS social concerns may be a broader risk factor for mood and anxiety disorders than has previously been suggested.

A recent meta-analysis conducted by Naragon-Gainey (2010) has helped clarify the relations between lower-order AS dimensions and mood and anxiety disorders. This meta-analysis explored relations between lower-order AS dimensions (measured primarily by the ASI) and symptom measures of MDD, PD, agoraphobia, SAD, PTSD, obsessive–compulsive disorder (OCD), GAD, and specific phobia. Although this meta-analysis only examined zero-order relations, and therefore cannot address the unique relations between lower-order AS dimensions and mood and anxiety disorders, the findings are mostly in line with prior claims of specificity between lower-order AS dimensions and mood and anxiety disorders. For example, MDD was most associated AS cognitive concerns. SAD was most associated with AS social concerns, and GAD was more associated with AS cognitive concerns. However, for other mood and anxiety disorders, less specific conclusions could be drawn. PD was more associated with both AS cognitive and physical concerns than with AS social concerns. Although there were few studies ($n = 4$–5) that examined the relations between lower-order AS dimensions and OCD and specific phobia, tentative conclusions were available. For OCD and specific phobia, all three AS dimensions were similarly related, suggesting that these symptoms are related to AS generally, and not to one specific facet of AS.

Studies have also implicated AS in other forms of psychopathology. For example, Schmidt, Woolaway-Bickel, and Bates (2001) found that AS cognitive concerns were strongly associated with suicidal ideation in a sample of outpatients with PD. Recent work has replicated and extended the finding that AS cognitive concerns are associated with suicidal ideation in a number of populations with elevated suicidality including cigarette smokers, Russian citizens, and psychology outpatients (Capron, Blumenthal, et al., 2012; Capron, Allan, Norr, Zvolensky, & Schmidt, 2013; Capron, Kotov, & Schmidt, 2013). This same line of research has found a less consistent association between AS physical concerns and suicidality. AS physical concerns appear to moderate the relationship between AS cognitive concerns and suicide attempt history (Capron, Cougle, et al., 2012; Capron, Kotov, et al., 2013), but not suicidality (Capron, Blumenthal, et al., 2012). AS social concerns were significantly associated with suicide attempt history in a large outpatient sample (Capron, Fitch, et al., 2012) but this result was not replicated in other samples (Capron, Kotov, et al., 2013).

Although the differential relations between lower-order AS dimensions and psychopathology has been explored, there are several notable limitations of past research. Primarily, most studies have used the ASI to assess these relations. There are several issues associated with using the ASI in this context. Because the ASI was created as a global measure of AS (Peterson and Reiss, 1992), items designed to measure the lower-order dimensions were not balanced, with most items assessing AS physical concerns (Deacon & Valentiner, 2001; Taylor, Rabian, & Federoff, 1999), limiting the reliability and content validity of the AS cognitive concerns and social concerns dimensions (Taylor et al., 2007). The ASI-3 was specifically designed to address reliability and validity concerns of the ASI and other similar measures (Taylor et al., 2007). Therefore, research using the ASI-3 to measure the lower-order AS dimensions is needed to verify and expand on findings from research using the ASI as the limited validity of AS cognitive concerns and social concerns dimensions may have masked or attenuated specific relations between these dimensions and psychopathology. For example, there is some debate as to whether PTSD is specifically associated with AS cognitive concerns or AS physical concerns (e.g., Asmundson & Stapleton, 2008; Lang et al., 2002). This discrepancy might be partially attributable to the limited reliability of the AS cognitive concerns dimensions. Of the few studies using the ASI-3 to examine the relations between the lower-order AS dimensions and psychopathology (e.g., Taylor et al., 2007; Wheaton et al., 2012), none have examined the unique relations between lower-order AS dimensions, controlling for the other AS dimensions.

1. Current study

There is increasing evidence that the lower-order AS dimensions differentially operate as risk factors for various forms of psychopathology (e.g., Naragon-Gainey, 2010; Rector et al., 2007; Wheaton et al., 2012). A central aim of this study was to provide information regarding the unique relations between lower-order ASI-3 dimensions and psychopathology using a measure better suited to evaluate AS dimensions. There has been one prior study that has examined the relations between psychopathology and lower-order AS dimensions using the ASI-3 (e.g., Wheaton et al., 2012); however, this report only evaluated a subset of disorders associated with AS (i.e., GAD, OCD, PD, and SAD). Further, they did not examine whether the relations between lower-order AS dimensions and psychopathology were specific to particular lower-order dimensions. A greater understanding of the *specific* and *unique* relations between lower-order AS dimensions and psychopathology can aid in refining conceptual models of the relation between AS and mood and anxiety disorders as well as other forms of psychopathology. We examined the relations between lower-order ASI-3 dimensions and several anxiety disorder symptoms, including GAD symptoms, SAD symptoms, and OCD symptoms as well as other dimensionally measured forms of psychopathology that AS has been deemed a risk factor for, including MDD symptoms and suicidal ideation. Latent variable techniques (i.e., structural equation modeling) were used because they easily allow for the examination of whether the path estimates from specific AS dimensions were stronger for some disorders than for others and for the examination of whether the path estimates to specific disorders were stronger in some dimensions as compared to others (Cheung