



# Anxiety sensitivity, catastrophic misinterpretations and panic self-efficacy in the prediction of panic disorder severity: Towards a tripartite cognitive model of panic disorder



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## ABSTRACT

The present study examined the contribution of three main cognitive factors (i.e., anxiety sensitivity, catastrophic misinterpretations of bodily symptoms, and panic self-efficacy) in predicting panic disorder (PD) severity in a sample of patients with a principal diagnosis of panic disorder. It was hypothesized that anxiety sensitivity (AS), catastrophic misinterpretation of bodily sensations, and panic self-efficacy are uniquely related to panic disorder severity. One hundred and sixty-eight participants completed measures of AS, catastrophic misinterpretations of panic-like sensations, and panic self-efficacy prior to receiving treatment. Results of multiple linear regression analyses indicated that AS, catastrophic misinterpretations and panic self-efficacy independently predicted panic disorder severity. Results of path analyses indicated that AS was direct and indirectly (mediated by catastrophic misinterpretations) related with panic severity. Results provide evidence for a tripartite cognitive account of panic disorder.

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## Introduction

Cognitive accounts of panic disorder (PD) have emphasized the role of different cognitive factors, including catastrophic misinterpretation of bodily sensations (Clark, 1986), anxiety sensitivity (McNally, 2002; Reiss & McNally, 1985), and panic self-efficacy (Casey, Oei, & Newcombe, 2004). Clark's model has generally been the dominant cognitive model of PD. The central characteristic of this model is the occurrence of catastrophic misinterpretation of benign bodily sensations (a catastrophe, in this context, was conceptualized by Clark as an immediate, impending disaster). This theory has been valuable in explaining the repetitive nature of panic attacks through a circular mechanism of cognition and perception, and it has demonstrated cognitive driven treatment applications (Craske & Barlow, 2008). Even though some studies have not provided a clear support for the relationship between catastrophic misinterpretation of bodily sensations and PD (Fentz et al., 2013; Richards, Richardson, & Pier, 2002), clinical evidence tends to support the role of catastrophic misinterpretation of bodily sensations in the prediction of PD severity and in the mechanisms

of change in cognitive-behavior therapy for PD (Casey, Newcombe, & Oei, 2005; Casey, Oei, Newcombe, & Kenardy, 2004; Clark, 1999; Hofmann et al., 2007; Khawaja & Oei, 1998). Likewise, prior research has suggested that panic disordered patients are more likely than people with other anxiety disorders to interpret bodily sensations as physical or psychological catastrophes (Austin & Richards, 2006; Clark et al., 1997; Khawaja & Oei, 1998).

Anxiety sensitivity (AS) is a construct conceptually distinct from trait anxiety (McNally, 1994; Sandin, Chorot, & McNally, 2001; Taylor, 1999) and closely related to the concept of catastrophic misinterpretations of bodily symptoms. It was first described by Reiss and McNally (1985) as a dispositional variable defined by the fear of anxiety symptoms, arising from beliefs that the experience of fear/anxiety and related physical sensations has harmful somatic, psychological or social consequences. Even though AS has shown to be a relevant factor across all the anxiety disorders (Naragon-Gainey, 2010; Wheaton, Deacon, McGrath, Berman, & Abramowitz, 2012), convergent evidence from cross-sectional and longitudinal studies has revealed positive relationships between AS and: (a) a diagnosis of PD (Chorot, Sandin, Valiente, Santed, & Romero, 1997; Olatunji & Wolitzky-Taylor, 2009; Sandin, Chorot, & McNally, 1996; Taylor, 1999; Taylor, Koch, & McNally, 1992), (b) measures of PD symptoms (Deacon & Valentiner, 2001), (c) development of new panic attacks (Li & Zinbarg, 2007; Schmidt,

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Lerew, & Jackson, 1999), (d) course of PD severity (Pérez-Benítez et al., 2009), and (e) changes in PD severity during cognitive-behavior therapy for PD (Gallagher et al., 2013) (see Naragon-Gainey, 2010, for a recent meta-analysis).

Cross-cultural research has shown that the structure of AS is multifactorial, consisting of a superordinate factor (general AS) and three lower order correlated factors (physical concerns, cognitive concerns, and social concerns) (Sandin, Chorot, Valiente, Santed, & Lostado, 2004; Taylor, 1999; Taylor et al., 2007; Zinbarg, Barlow, & Brown, 1997). In addition, it has been suggested that the lower-order dimensions of AS are specifically related to particular types of anxiety symptoms and disorders. Accordingly, physical concerns appears to be most closely related with PD and/or PD symptoms whereas social concerns were found to be strongly related to fear of negative evaluation and social phobia (Deacon & Abramowitz, 2006; Olthuis, Watt, & Stewart, 2014; Pérez-Benítez et al., 2009; Rodríguez, Bruce, Pagano, Spencer, & Keller, 2004; Taylor et al., 2007; Wheaton et al., 2012). Although results concerning the specificity of the cognitive dimension are mixed, recent works suggest a strong association between AS cognitive concerns with panic symptoms (Naragon-Gainey, 2010) and with a diagnosis of PD and/or generalized anxiety disorder (Taylor et al., 2007; Wheaton et al., 2012). However, no relevant associations have been found between AS social and PD (diagnosis or symptom severity).

Both AS and catastrophic misinterpretation of bodily sensations are negative cognitions related to fear of interoceptive symptoms. Generally, much of the past research has equated these two constructs, being considered at least as overlapping constructs. According to some authors (Cox, 1996; Taylor, 1995, 2000), Clark's cognitive theory could be subsumed within the broader theory of fears, phobia and panic developed by Reiss and McNally (1985). However, such authors distinguished these two concepts in terms of state-trait, describing anxiety sensitivity as a trait (i.e., an individual difference variable) that predisposes to make catastrophic misinterpretation of bodily sensations (i.e., a state cognitive construct). That is to say, people with high AS have an "enduring tendency" to make catastrophic misinterpretations (catastrophic arousal beliefs –i.e., a state). In a similar vein, McNally (1994) stated that whereas AS is a dispositional construct, catastrophic misinterpretation of bodily sensations is an episodic concept. However, apart from this state-trait distinction, McNally (2002) also outlined more core conceptual differences between AS and catastrophic misinterpretation of bodily symptoms. Perhaps the most relevant one was that, in contrast to Clark's model, the AS approach does not imply the existence of catastrophic attributions. As McNally stated, the anxiety-sensitivity hypothesis assumes that people with high AS may dread bodily sensations as merely signaling another panic or fear of panic, not necessarily in the catastrophic way described by Clark (1986). Therefore, according to this author a main difference between these two constructs is that AS may operate on panic process and severity without the intervention of catastrophic misinterpretations. In line with this theoretical differentiation between these two cognitive factors involved in PD, one could argue that AS is a dispositional variable different from catastrophic misinterpretation of bodily symptoms.

Given the lack of previous works concerning this question, a first purpose of the present study was to examine the unique association between AS and catastrophic misinterpretation in predicting panic severity. Based on prior research, we assumed that both AS and catastrophic misinterpretation of bodily symptoms are critical in determining panic severity. Also, based on the conceptual separation between AS and catastrophic misinterpretation of bodily sensations, we expected that AS should predict panic severity after controlling for the effects of catastrophic misinterpretation of bodily sensations. Thus, high levels of AS and

high levels of catastrophic misinterpretation of bodily sensations should independently predict high panic severity. Assuming the three components of AS and catastrophic misinterpretation (i.e., physical, cognitive/mental, and social), we hypothesized that AS physical concerns should predict PD severity partialling out the effects of the physical dimension of catastrophic misinterpretation. Although the association of panic with AS cognitive concerns is less consistent than with AS physical concerns, based on recent research (Naragon-Gainey, 2010; Taylor et al., 2007; Wheaton et al., 2012) we expected a similar pattern; in contrast, no significant effects were expected for AS social. Also, based on past theories concerning relationships between AS and catastrophic misinterpretations (Cox, 1996; McNally, 1990, 1994; Taylor, 1995, 2000), a second goal was to investigate whether catastrophic misinterpretation mediates the association between AS and PD severity. It was expected that AS should be positively associated with panic severity, and that this relationship might be mediated by catastrophic misinterpretations (indirect effect of AS). According to theory (Fava & Morton, 2009; McNally, 2002; Pilecki, Arentoft, & McKay, 2011), we also hypothesized a direct relationship between AS and panic severity, independent of the influence of catastrophic misinterpretations.

Recently, Casey, Oei, and Newcombe (2004) emphasized the implication of panic self-efficacy (a positive cognitive factor) in the psychopathology of PD. Panic self-efficacy refers to the individual's perceived ability to cope with or control perceived danger in relation to panic attacks (Casey, Oei, Newcombe, et al., 2004). These authors proposed a new cognitive model of panic (named "integrated cognitive model of panic disorder") in which both catastrophic misinterpretation of bodily sensations and panic self-efficacy independently contribute to maintenance of panic severity. Catastrophic misinterpretation of bodily sensations and a lack of panic self-efficacy are assumed to play central roles in the psychopathology of PD (Casey, Oei, & Newcombe, 2004). A few recent works have examined the role of panic self-efficacy and catastrophic misinterpretations as predictors of PD severity in patients with a diagnosis of PD. Some recent studies have provided preliminary empirical support for a relationship between these constructs and PD severity (Casey, Oei, Newcombe, et al., 2004; Fentz et al., 2013; Gallagher et al., 2013; Richards et al., 2002). Casey, Oei, Newcombe, et al. (2004) investigated the role of self-efficacy and catastrophic misinterpretation of bodily sensations, concluding that these two constructs independently predicted panic severity. Gallagher et al. (2013) provided evidence that changes in self-efficacy and AS during cognitive-behavior therapy influence subsequent changes in panic symptoms. Fentz et al. (2013) found that panic self-efficacy was significantly related to anxiety symptoms during the course of cognitive-behavior therapy for panic disordered patients, and Richards et al. (2002) found slight support for a predictive power of panic self-efficacy on panic severity in a sample of people with PD.

Thus a third aim of the present study was to examine simultaneously the role of these three core cognitive factors (AS, catastrophic misinterpretation of bodily sensations, and panic self-efficacy) in predicting panic severity. We hypothesize that AS should predict panic severity after controlling for the effects of catastrophic misinterpretation of bodily sensations and panic self-efficacy. It was hypothesized a similar pattern to panic self-efficacy and catastrophic misinterpretation of bodily sensations; each of these variables should predict panic severity after controlling for the remaining two cognitive factors. Likewise, we expected a similar pattern including congruent domains of AS and catastrophic misinterpretation, except for the social domain.

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