

Discomfort Intolerance: Evaluation of a Potential Risk Factor for Anxiety Psychopathology

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Discomfort intolerance, defined as an individual difference in the capacity to tolerate unpleasant bodily sensations, is a construct recently posited as a risk factor for panic and anxiety psychopathology. The present report used a biological challenge procedure to evaluate whether discomfort intolerance predicts fearful responding beyond the effects of trait anxiety and a well-established psychological vulnerability factor (i.e., anxiety sensitivity). Nonclinical community participants ($N=44$) with no history of panic attacks or any Axis I condition completed a 35% CO₂ challenge. Results are consistent with our hypothesis suggesting that discomfort intolerance incrementally predicts increased subjective reactivity to the challenge. Moreover, there was some suggestion that discomfort intolerance interacted synergistically with anxiety sensitivity to increase anxiety-related symptoms. These findings add to a small but growing literature suggesting that discomfort intolerance may play a role in the development of anxiety problems.

IN RECENT YEARS, significant advances have been made in the identification of psychological risk factors for anxiety psychopathology (McNally, 2002). Converging lines of evidence suggest that

anxiety disorders in adulthood may represent manifestations of an underlying constitutional vulnerability or diathesis for anxiety that is partly genetic and variably expressed over the life cycle. An individual's overall risk for psychopathology is believed to be a function of personal genetic and nongenetic resiliency and vulnerability factors, environmental risk and protective factors, and an interaction among these factors. This paper describes a relatively unexplored but promising risk factor for anxiety psychopathology: discomfort intolerance (DI).

Any cursory survey of extreme behaviors quickly leads to awareness of marked individual differences in the capacity to tolerate physical discomfort. For example, the competitive eater Takeru Kobayashi can consume over 50 hot dogs in 12 minutes. The construct of DI is intended to tap such individual differences relating to the capacity to withstand uncomfortable physical sensations. Thus, DI is very similar to pain tolerance (or intolerance), but instead of focusing solely on the ability to tolerate painful stimuli, DI refers to a much broader array of sensations that are uncomfortable but not necessarily painful. DI is not to be confused with distress intolerance, which refers to a decreased capacity to withstand negative *affective* states (Simons & Gaher, 2005). At least among some individuals, pain tolerance is unrelated to measures of affective states (Geisser, Robinson, & Pickren, 1992), suggesting that the ability to tolerate physical discomfort is not necessarily correlated with the ability to tolerate negative emotions. Similarly, DI is likely to be somewhat related to the construct of experiential avoidance (EA). EA is defined as an individual difference variable that reflects unwillingness to experience aversive cognitions and affective states

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(Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Although EA shares some conceptual overlap with DI and has been found to be predictive of pain tolerance (Feldner et al., 2006), there remain a number of important differences. First, as Hayes et al. (1996) suggest, EA subsumes avoidance not only of bodily sensations but also emotions, thoughts, memories, and behavioral predispositions. Thus, EA is much broader than the tolerance of physically uncomfortable sensations. In addition, EA primarily represents a strategy to escape from or modify aversive emotional experience, whereas DI more closely taps an individual difference variable referring to the subjective construal of sensations as either tolerable or threatening that may or may not include actual avoidance.

We have argued, and prior studies have shown, that DI is related to anxiety. Extrapolating from cognitive models of anxiety, the detection and interpretation of physical sensations, particularly problematic interpretation of arousal sensations (i.e., anxiety sensitivity; AS), is believed to be critical in the generation of anxiety (Reiss & McNally, 1985). In the case of panic disorder (PD), for example, these models presume that threatening interpretation of arousal is critical to the onset and maintenance of the condition (Clark, 1986). Thus, when detected sensations are deemed threatening, the individual should experience fear. DI is relevant to the nexus between perception of sensation and interpretation of sensation and is likely to influence both. For instance, sensations that are not perceived cannot be readily interpreted or acted on (e.g., some people have heart attacks with little awareness and fail to present for medical services). Relative to those low in tolerance, people with high tolerance of sensations are unlikely to perceive or attend to some sensations. This provides more or less of an opportunity for problematic interpretive processes to take hold. Similarly, DI is likely to influence these interpretive processes. Having a long history of experiencing, tolerating, and recovering from high levels of physical discomfort may inoculate one against interpreting symptoms as threatening. Thus, DI is likely to influence interpretation of sensations, including AS as one key interpretive problem relevant to anxiety psychopathology.

On the other hand, DI and AS are unlikely to be isomorphic. AS is believed to arise from any number of learning-based experiences that could lead to threatening ideas about arousal (Reiss & McNally, 1985). DI is likely to be only one factor that can influence AS. Moreover, AS refers to interpretation of a subset of sensations (i.e., arousal sensations or those having to do with anxiety).

Since DI taps a larger universe of sensations, it is likely to contribute to other interpretive processes having to do with nonarousal sensations. Conceivably, one could develop fear of nonarousal sensations that ultimately leads to anxiety problems. The conceptual distinction between DI and AS is supported empirically. In two prior reports, the association between DI and AS has ranged from .33 to .38 and DI has uniquely predicted panic attacks (Schmidt & Lerew, 1998; Schmidt, Richey, & Fitzpatrick, 2006).

Consistent with the model specified, Schmidt and Lerew (1998) found that DI prospectively predicted some indices of anxiety-related impairment as well as sick days. In fact, DI contributed unique predictive variance, among other risk factors such as AS (Schmidt, Lerew, & Trakowski, 1997). In a later study, Schmidt and Cook (1999) found that DI was elevated among patients with panic disorder. More recently, we have reported the psychometric properties of a self-report measure of DI: the Discomfort Intolerance Scale (Schmidt et al., 2006). Taken together, these studies by our group provide preliminary evidence suggesting that DI may act as a risk factor for anxiety psychopathology.

The purpose of the present report is to expand upon earlier work by investigating whether DI is predictive of fearful responding to a biological challenge. Laboratory-based biological challenges offer controlled methods of understanding biological and psychological factors that influence the generation of fear and complement other research methods. These challenges have been widely used in anxiety disorders (for a review, see McNally, 1994, pp. 43–70) as well as investigations of psychological risk factors for anxiety (Schmidt et al., 2000; Zvolensky et al., 2004). To further increase our confidence that DI represents a premorbid risk factor for anxiety, the present study utilized a nonclinical sample of individuals screened for a history of anxiety psychopathology, including spontaneous panic attacks. Use of this type of sample rules out the potential confound resulting from some consequence of existing anxiety psychopathology. Moreover, we were interested in examining whether DI is predictive of fearful responding to the challenge after controlling for other related psychological constructs, including trait anxiety and AS. Because AS is related to DI, and AS has been found to be a risk factor for anxiety, it is important to show that DI adds uniquely to the prediction of anxiety. Similarly, it is important to demonstrate that DI is predictive of anxiety after accounting for such overarching constructs as trait anxiety (Lilienfeld,

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