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Research report

# Evaluating the unique contribution of intolerance of uncertainty relative to other cognitive vulnerability factors in anxiety psychopathology

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#### ABSTRACT

*Background:* Intolerance of uncertainty (IU) is a cognitive vulnerability factor associated with a wide range of anxiety psychopathology. Other cognitive vulnerabilities such as anxiety sensitivity (AS), distress tolerance (DT), and discomfort intolerance (DI) have also been investigated as constructs of interest across anxiety disorders. As researchers increasingly uncover viable transdiagnostic vulnerabilities to anxiety, it becomes important to determine the degree of overlap between these constructs.

*Methods:* The present studies examined the unique relationships between IU, other vulnerability factors (AS, DT, and DI) and social anxiety, obsessive-compulsive, and worry symptoms across two nonclinical samples (n=217, n=241).

*Results:* Findings were highly consistent across samples. IU was significantly associated with anxiety symptoms in all analyses, even when accounting for other transdiagnostic risk variables. Anxiety sensitivity, was uniquely related to social anxiety and obsessive-compulsive symptoms in all analyses, but was related to worry in only one study. Distress tolerance was only uniquely associated with worry. Discomfort intolerance was not uniquely related to the anxiety symptoms in any analyses.

*Limitations:* Future research should attempt to replicate the findings in a clinical population and utilize a longitudinal design.

*Conclusions:* The robust and incremental relationships between IU and anxiety symptoms suggests the potential benefit of targeting IU in the context of transdiagnostic anxiety treatments.

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# 1. Introduction

Intolerance of uncertainty (IU) is an individual difference variable that has emerged in recent research as a construct of interest within anxiety psychopathology. IU is defined as "a cognitive bias that affects how a person perceives, interprets, and responds to uncertain situations on a cognitive, emotional, and behavioral level" (Dugas et al., 2004). Individuals high in IU experience the possibility of a future negative event as threatening and unacceptable, regardless of the probability of the event actually happening (Dugas et al., 2001). Generalized anxiety disorder (GAD) and worry were the first forms of anxiety psychopathology thought to be associated with IU (Dugas and Ladouceur, 2000; Holaway et al., 2006). As a central tenet in their cognitive model of GAD, Dugas and Robichaud (2007) conceptualize IU as a dispositional characteristic of individuals at risk for GAD. Within this model, those high

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in IU interpret ambiguous situations as more threatening relative to those low in IU. Due to the inherent uncertainty present in everyday life, IU is seen as a contributing factor to the avoidance and chronic worry seen in GAD. More recently, IU has been associated with a wide range of anxiety conditions including obsessive-compulsive disorder (OCD; Holaway et al., 2006), social anxiety symptoms (Boelen and Reijntjes, 2009; Carleton et al., 2010), hoarding symptoms (Oglesby et al., 2012), as well as depression (McEvoy and Mahoney, 2011). Within these disorders, IU is proposed to be a vulnerability factor contributing to increased avoidance behaviors, such as worry and compulsive checking in GAD and OCD respectively. In addition, given the recent research linking IU to a myriad of anxiety and depressive disorders, IU has been proposed as an important transdiagnostic maintaining factor (McEvoy and Mahoney, 2011).

The interest in IU as a transdiagnostic construct is recent, but extensive work exists for other cognitive vulnerability factors for anxiety. Anxiety sensitivity (AS) is a well-established construct referring to the fear of the consequences of anxiety-related sensations (Reiss and McNally, 1985). Research has established





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AS as a risk factor for anxiety disorders and found that individuals with anxiety disorders have higher AS than individuals without an anxiety disorder (Kearney et al., 1997; Rabian et al., 1993; Taylor et al., 1992). Distress tolerance (DT) is an additional variable of interest in anxiety disorder research. DT refers to an individual's ability to experience and endure negative emotional states (Simons and Gaher, 2005). Individuals that are low in DT display a decreased capacity to tolerate negative emotions, whereas individuals that are high in DT display an increased capacity to tolerate negative emotions. Low DT has been associated with a variety of negative outcomes such as anxiety and depressive symptoms, eating psychopathology, and problematic substance use (Anestis et al., 2007: O'Cleirigh et al., 2007: Simons et al., 2005). Similar to DT, discomfort intolerance (DI) is a construct used to measure the ability to tolerate uncomfortable physical sensations (Schmidt et al., 2006a, 2006b). Previous research has suggested that DI may be an additional risk factor for anxiety psychopathology (Schmidt et al., 2006a, 2006b, 2007).

Recent work has examined the relationships between cognitive vulnerability factors. Bernstein et al. (2009) proposed a hierarchical model of AS, DT, and DI. According to their model, AS and DT are distinct yet related lower order factors of a common higher order affect tolerance and sensitivity factor, while DI is a distinct construct. Another study found AS to be a subfactor of DT within a higher order affect tolerance factor, with DI being part of a distinct higher order factor of physical intolerance (Mitchell et al., 2013). Confirmatory factor analysis revealed that AS and IU are better modeled as separate, correlated factors (r=0.68) rather than loading on a single higher order factor (Carleton et al., 2007). These results suggest that AS and IU are related yet distinct constructs. Other investigators have posited that AS may function only as a mediator of the relationship between negative affect and certain anxiety symptoms, while IU explains additional independent variance above and beyond negative affect in certain anxiety symptoms (Norton and Mehta, 2007; Norton et al., 2005).

A concern in the development of treatments targeting cognitive vulnerability factors is the degree of overlap between these constructs and specific anxiety symptoms. One study found that AS and IU are independently related to neuroticism (Sexton et al., 2003), a personality trait associated with anxiety disorders (Barlow, 2002). Studies have also revealed that IU predicts significant variance in social anxiety symptoms and worry above and beyond AS and neuroticism (Boelen and Reijntjes, 2009; Carleton et al., 2010; Dugas et al., 2001). However, there are no studies to date that investigate the unique contribution of IU across different anxiety disorder symptoms above and beyond the effects of AS, DT, and DI.

The present study seeks to examine the unique relationship between IU and symptoms of social anxiety disorder, obsessivecompulsive disorder, and generalized worry controlling for the effects of AS, DT, and DI. The main hypothesis for the study is that IU will show a unique relationship with social anxiety, obsessivecompulsive, and worry symptoms above and beyond the contributions of AS, DT, and DI.

# 2. Study 1 methods

#### 2.1. Participants

Participants consisted of 217 college students from a large university in the Southern United States. Participants were primarily female (69.1%) with ages ranging from 17 to 26 (M=18.85, SD=1.38). Eighty percent of the participants were Caucasian, 9% African American, 3% Asian, and 7% Other (e.g., bi-racial).

#### 2.2. Measures

## 2.2.1. Anxiety sensitivity

The Anxiety Sensitivity Index-3 (ASI-3) was used to measure fear of anxiety related sensations (Taylor et al., 2007). In the present study, the ASI-3 demonstrated excellent internal consistency ( $\alpha$ =0.90).

### 2.2.2. Discomfort intolerance

The *Discomfort Intolerance Scale* (DIS) was used to measure tolerance of physical discomfort (Schmidt et al., 2006). In the present study, the DIS demonstrated adequate internal consistency ( $\alpha$ =0.68).

# 2.2.3. Distress tolerance

The *Distress Tolerance Scale* (DTS) was used to measure individual differences in the ability to experience and withstand negative psychological states (Simons and Gaher, 2005). In the present study, the DTS demonstrated excellent internal consistency ( $\alpha$ =0.91).

## 2.2.4. Intolerance of uncertainty

Intolerance of uncertainty was measured using the *Intolerance* of *Uncertainty Scale* (IUS). The IUS is a 27-item self-report questionnaire assessing the degree to which individuals are able to tolerate the uncertainty of ambiguous situations, the cognitive and behavioral responses to uncertainty, perceived implications of uncertainty, and attempts to control the future (Freeston et al., 1994). In the present sample, the coefficient alpha for the total score was 0.95, indicating excellent internal consistency.

#### 2.2.5. Negative affect

The negative affect subscale from the *Positive Affect Negative Affect Schedule* (PANAS-NA) was used to measure negative affect (Watson et al., 1988). In the present study, the PANAS-NA demonstrated good internal consistency ( $\alpha$ =0.85).

#### 2.2.6. Obsessive-compulsive symptoms

The Obsessive-Compulsive Inventory-Revised (OCI-R) is an 18-item self-report measure of the six obsessive-compulsive symptom dimensions (Foa et al., 2002). Due to research suggesting that OCD and hoarding are distinct syndromes, the present study assessed for non-hoarding OCD symptoms (Pertusa et al., 2010; Samuels et al., 2008). As has been done in previous research, a modified total score was created by removing the hoarding items from the OCI-R (Oglesby et al., 2012). This was done to ensure that hoarding symptoms were not driving the relationship between OCD symptoms and IU. The OCI-R non-hoarding items demonstrated excellent internal consistency ( $\alpha$ =0.91) in the present study.

# 2.2.7. Social anxiety symptoms

The Social Interaction Anxiety Scale (SIAS) was used to measure social anxiety symptoms (Mattick and Clarke, 1998). In the present sample, the coefficient alphas for the total score was.88 indicating very good internal consistency.

#### 2.2.8. Worry

The *Penn State Worry Questionnaire* (PSWQ) is a 16-item scale measuring symptoms related to generalized anxiety disorder (Meyer et al., 1990). In the present study, the PSWQ demonstrated acceptable internal consistency ( $\alpha$ =0.78).

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