



# Intolerance of uncertainty and obsessive-compulsive symptom expression



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## ABSTRACT

**Background and objectives:** Research suggests a relationship between intolerance of uncertainty (IU) and obsessive-compulsive disorder (OCD), though this has been limited to self-report measures of OCD symptoms. The current investigation examined the relationship between IU and multiple symptom domains of OCD using self-report and *in vivo* assessments of OC symptoms.

**Methods:** Five separate studies are presented in which undergraduate students ( $N = 603$ ) were administered a self-report measure of IU and tasks related to either ordering and arranging, checking, washing, contamination avoidance, or neutralization.

**Results:** Intolerance of uncertainty was found to be significantly related to each self-report measure of the OCD symptom domains ( $ps < .01$ ). Further, IU was predictive of performance on all *in vivo* tasks ( $ps < .05$ ) except one concerning neutralizing/harm-related obsessions.

**Limitations:** This study relied on an unselected sample and was correlational in design.

**Conclusions:** The current study demonstrates that IU is related to multiple OC symptom dimensions. Future experimental research is warranted to evaluate the causal role of IU in OCD.

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## 1. Introduction

Obsessive-compulsive disorder (OCD) is characterized by unwanted, intrusive thoughts (obsessions) causing distress or anxiety and repetitive behaviors or mental acts (compulsions) used to reduce discomfort associated with obsessions. Factor analysis of OCD symptoms has identified several subtypes of OCD including symmetry/ordering, checking, contamination/cleaning, and aggressive, sexual, or blasphemous obsessions (Abramowitz et al., 2010; Mataix-Cols, do Rosario-Campos, & Leckman, 2005). Because OCD is so heterogeneous in nature, certain maintaining factors may be more relevant to some symptom domains compared to others (Lee & Kwon, 2003; Viar, Bilsky, Armstrong, & Olatunji, 2011).

Cognitive models of OCD identify maladaptive beliefs in the etiology and maintenance of the disorder (Rachman, 1998; Salkovskis, 1985, 1999). Intolerance of uncertainty (IU) is one belief domain thought to underlie OCD (Obsessive Compulsive Cognitions Working Group, 1997). IU refers to a general characteristic defined by negative beliefs about uncertainty itself, its consequences, and

beliefs about one's ability to cope with uncertainty (Dugas & Robichaud, 2007). The Obsessive Compulsive Cognitions Working Group (OCCWG) further defines IU as "beliefs about the necessity of being certain, about the capacity to cope with unpredictable change, and about adequate functioning in situations which are inherently ambiguous" (OCCWG, 1997, p. 678). Individuals experiencing intolerance of uncertainty may respond to uncertainty by avoiding it and/or have difficulty functioning once exposed to uncertainty. Krohne (1989) implicates IU in his hypervigilant-avoidant model of anxiety, such that the intolerance of uncertainty results in hypervigilance for uncertainty and subsequent elevated negative, emotional arousal. Therefore, individuals strive to avoid uncertainty so as not to experience aversive emotional arousal and negative feelings evoked by uncertainty may hinder proper functioning. In short, Krohne's model posits that a vigilant attention to and processing of uncertainty as well as increased emotional reaction to uncertainty generates anxiety when negative beliefs about the consequences of uncertainty are present. Both increased vigilance for threatening stimuli and avoidance are well documented maintaining factors in anxiety, including OCD (Mogg & Bradley, 1998).

IU is increasingly conceptualized as a transdiagnostic factor underlying anxiety disorders and depression. In a recent review, Carleton (2012) highlights recent evidence that levels of IU in

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clinical populations with OCD, GAD and depression are comparable and elevated compared to scores from non-clinical populations. Further, he suggests that earlier findings implicating IU as a specific factor for GAD may be more a result of the way IU was measured. The Intolerance of Uncertainty Scale (IUS), which was used in much of this earlier research indicating the specificity of IU in GAD, contains items with elements specific to GAD. The Intolerance of Uncertainty Scale – short version (IUS-12; Carleton, Norton, & Asmundson, 2007) on the other hand has removed these disorder specific items resulting in a more robust measure of IU as a construct (Carleton, 2012). However, there have been mixed findings as to whether the relationships between IU and OC symptoms hold when controlling for other related variables (e.g., trait anxiety, negative affect, or symptoms of other anxiety disorders). Some research suggests that individuals with OCD may be more intolerant of uncertainty than individuals with other anxiety disorders and non-anxious controls (Steketee, Frost, & Cohen, 1998). Other studies indicate that there are no significant differences between the degree of associations between IU and OCD compared to GAD (Gentes & Ruscio, 2011) or that this difference is only observable with specific OC symptom dimensions (Tolin, Abramowitz, Brigidi, & Foa, 2003). Nevertheless, IU has been found to be uniquely predictive of OCD symptoms beyond other cognitive processes such as threat estimation, and responsibility beliefs (Fergus & Wu, 2010). Further, the association of IU with obsessive-compulsive symptoms has been consistently demonstrated (e.g., Boelen & Reijntjes, 2009; Dugas, Gosselin, & Ladouceur, 2001; Norton, Sexton, Walker, & Norton, 2005). These findings have also been replicated in a variety of samples including patient/treatment-seeking participants, individuals from the general community, and student samples (Gentes & Ruscio, 2011).

Current understanding of the relationship between IU and specific OC symptom domains remains limited. In a student sample, significant associations were found between OCD symptom domains measured by the Obsessive-Compulsive Inventory – Revised (OCI-R; Foa et al., 2002) and IU (Holaway, Heimberg, & Coles, 2006). In a clinical OCD sample, IU was significantly correlated with symptoms of washing, ordering, and checking, though it was unrelated to obsessions (Abramowitz, Wheaton, & Storch, 2008). Research examining IU in relation to individual obsessive-compulsive subtypes has sometimes centered specifically on checking. OCD patients with checking compulsions endorsed higher levels of IU than OCD non-checkers and non-anxious controls (Tolin et al., 2003). Moreover, in an experimental task designed to assess checking behavior by allowing participants to make an infinite number of “verifications,” patients with OCD showed greater uncertainty and checking behaviors compared to healthy volunteers (Rotge et al., 2008). Patients with primary checking compulsions exhibited this response pattern to a greater extent during the task than other patients and healthy volunteers.

Existing research linking IU to OCD possesses a few limitations. First, most information regarding the relationship between IU and measures of OC symptom domains has been limited to the use of OCI-R as an assessment of OCD symptoms. Furthermore, existing research linking IU with OCD has largely depended on self-report measures of OCD symptoms. Results based solely on the relationships between retrospective self-report variables may be spuriously high due to common method variance. Self-report measures remain subject to bias and interpretation as to what the measure or specific items are referring. Self-report measures of OCD, in particular, may be of concern due to the heterogenous nature of both obsessions and compulsions, leading to decreased ability to detect associations with only certain aspects of the disorder (e.g., certain compulsions or certain subdomains). Implementation of multimodal methods for assessing OC symptoms should allow for

more precise associations between IU and OC symptoms to be found.

The aim of the current studies was to evaluate the relationship between IU and OCD symptom domains using large unselected student samples. Such samples are often used in research of this kind, given the dimensional nature of OCD symptoms (Olatunji, Williams, Haslam, Abramowitz, & Tolin, 2008) as well as IU (Carleton et al., 2012). They also contain a broad range of symptoms and provide sufficient power for evaluating the unique associations between IU and OC symptoms. The study further sought to identify whether the relationships observed between IU and self-report measures of OC symptoms would be found using *in vivo* assessments of OC symptoms. We hypothesized that, consistent with previous research, (1) greater IU would be uniquely associated with greater self-reported OC symptoms, assessed using the Vancouver Obsessive Compulsive Inventory (VOCI; Thordarson et al., 2004) and the Symmetry, Ordering, Arranging Questionnaire (SOAQ; Radomsky & Rachman, 2004). We also predicted that greater IU would be associated with (2) greater checking urges and anxiety following a stove checking task; (3) greater avoidance and anxiety during a contamination behavioral approach task; (4) greater washing duration, urge to wash, and anxiety following hand immersion in a dirt mixture; (5) greater clutter-related discomfort and ordering duration on an ordering and arranging task; and (6) greater anxiety and neutralization in response to a sentence neutralization task. Five studies, each using a unique, unselected sample, were conducted in order to address these hypotheses. In Study 1, participants were also administered self-report measures of OC symptoms (in addition to a stove checking task) to address the first hypothesis mentioned above. Identical data analytic plans were used to evaluate the hypotheses. A conservative analytic approach was used to test the specificity of the associations between IU and OCD symptom measures. This was done using a series of regression analyses and controlling for symptoms of anxiety and depression when they were significantly related to the outcome measure.

## 2. Study 1

### 2.1. Methods

#### 2.1.1. Participants

One-hundred eleven ( $N = 111$ ) undergraduate students at the Florida State University were recruited through psychology courses. Students received course credit; participation was optional. The sample was predominantly female, 71.5%, and ethnically diverse: Caucasian (57.7%), African American (20.0%), Hispanic (13.1%), Asian (3.1%), and other (6.2). The age of the sample ranged from 18 to 42 ( $M = 19.65$ ;  $SD = 2.34$ ).

#### 2.1.2. Measures

The Intolerance of Uncertainty Scale-short version (Carleton, Norton, & Asmundson, 2007)<sup>1</sup> is a 12-item self-report scale measuring symptoms on a Likert-type scale anchored at 1 “not at

<sup>1</sup> Reviewing factor analytic research of the IUS, a two factor model was identified (Birrell, Meares, Wilkinson, & Freeston, 2011). The first factor, prospective anxiety, represents the desire for certainty and predictability, and the belief that uncertainty is a negative experience that is unfair and should be avoided (Buhr & Dugas, 2002; Sexton & Dugas, 2009). The second factor, inhibitory anxiety, represents the idea of paralysis or difficulty functioning in the face of uncertainty. For each study, all relationships examined between outcome variables and the IUS total scale were also examined with each subscale independently. The associations between outcome variables and each subscale of the IUS were comparable and did not show meaningful differences across studies.

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