Stomaching uncertainty: Relationships among intolerance of uncertainty, eating disorder pathology, and comorbid emotional symptoms

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ABSTRACT

Intolerance of uncertainty (IU) is proposed to be a transdiagnostic vulnerability factor for various emotional disorders. There is robust evidence for the role of IU in anxiety and depressive disorders, but a paucity of evidence in eating disorders (ED). This study evaluated the factorial validity, internal consistency, and convergent validity of the Intolerance of Uncertainty Scale—Short Form (IUS-12; Carleton, Norton, & Asmundson, 2007), and examined whether IU is associated with ED pathology and comorbid emotional symptoms, in a clinical sample with EDs ($N = 134$). A unitary factor solution provided the best fit. The IUS-12 showed excellent internal consistency, and good convergent validity. IU had an indirect effect on dietary restraint, purging, and emotional symptoms via overvaluation of eating, weight, and shape. The indirect effect was not significant for bingeing. Findings provide partial support for the notion that IU is a vulnerability factor for ED pathology and support the notion that IU is a transdiagnostic vulnerability factor for emotional symptoms. Limitations, research implications, and future directions for research are discussed.

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1. Introduction

Eating disorders (EDs) are characterised by abnormal eating and eating-related behaviour (e.g., self-induced vomiting), and concerns over weight and shape (American Psychiatric Association, 2013). EDs are distressing and disabling disorders that are associated with high rates of comorbidity with emotional disorders and mortality (Allen, Byrne, Oddy, & Crosby, 2013; Crow et al., 2009; Stice, Marti, & Rohde, 2013). Current evidence-based treatments for EDs are inefficacious for the majority of patients (Wilson, Grilo, & Vitousek, 2007), so it is critical that theoretical models are elaborated to include additional mechanisms that can be targeted to enhance treatment outcomes. Intolerance of uncertainty (IU), defined as the tendency to perceive and react negatively on a cognitive, emotional, and behavioural level to uncertain situations regardless of the actual probability of the feared outcome (Carleton, Norton, & Asmundson, 2007), may be an important yet relatively neglected construct within the ED literature. There is robust

evidence implicating IU in the development and maintenance of anxiety disorders and depression (Boswell, Thompson-Hollands, Farchione, & Barlow, 2013; Carleton et al., 2012; Mahoney & McEvoy, 2012). Despite theory and early evidence suggesting that IU may also increase vulnerability to EDs, research investigating this possibility is scarce (Sternheim, Startup, & Schmidt, 2011).

IU is theorised to increase vulnerability for a range of psychological disorders, particularly anxiety (Boswell et al., 2013). Anxiety is a common emotional response to beliefs that future threatening events are both possible and uncontrollable (Boswell et al., 2013). Individuals with IU tend to interpret uncertainty as threatening and stressful and therefore rely on maladaptive strategies such as worrying, obsessional doubt, compulsions, and avoidance in an effort to gain control and increase certainty that feared negative consequences will not occur (Boswell et al., 2013; Carleton et al., 2012). The non-occurrence of negative outcomes is then attributed to these maladaptive strategies, which reinforces and increases the use of these strategies over time (Boswell et al., 2013). IU and associated avoidance and over-control are evident in various emotional disorders such as obsessive-compulsive disorder, social phobia and panic disorder (Boelen & Reijntjes, 2009; Boswell et al., 2013). IU and control are also evident in EDs, which are characterised by over-controlled eating or eating-related behaviours to increase

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certainty that rigid rules about eating, weight, and shape will not be violated, and to manage a perceived lack of control in life and negative affect (Einstein, 2014; Fairburn, Cooper, & Shafran, 2003a; Sternheim, Konstantellou, Startup, & Schmidt, 2011). IU is thus hypothesised to be a transdiagnostic mechanism that drives cognitions (e.g., worry and obsessions) and behaviours (e.g., compulsive checking, avoidance, dietary restraint) associated with various anxiety disorders and EDs (Roblek & Frank, 2012).

The 'triple vulnerabilities model' of emotional disorders proposes that there are common underlying biological and psychological vulnerabilities across disorders, along with more disorder-specific processes (Barlow, 2004). Within this framework, IU may be a transdiagnostic psychological vulnerability that increases the risk of multiple psychological disorders (Carleton et al., 2012; Harvey, Watkins, Mansell, & Shafran, 2004). The nature of the beliefs, assumptions, and associated behavioural strategies individuals develop to provide a sense of control and certainty may represent disorder-specific vulnerabilities that distinguish between symptom profiles of different disorders (Boswell et al., 2013; Thibodeau et al., 2015).

IU may represent a direct or indirect risk factor for ED psychopathology. For instance, IU is a transdiagnostic risk factor for clinically significant anxiety (Carleton, 2012), which may increase the risk of EDs (Frank et al., 2012). Anxiety disorders and EDs are highly comorbid and anxiety disorders tend to temporally precede EDs (Keel, Klump, Miller, McGue, & Iacono, 2005). Thus, anxiety is considered to be a significant factor in the development and maintenance of EDs (Roblek & Frank, 2012). Women with EDs (Frank et al., 2012) and individuals with problematic eating attitudes (Konstantellou & Reynolds, 2010) report significantly higher levels of IU compared to controls. Together, these findings are consistent with IU being a shared underlying mechanism for both anxiety disorders and EDs.

The transdiagnostic model of EDs proposes that the core psychopathology of EDs is the overvaluation of eating, weight, and shape and their control, which leads to extreme weight control behaviours such as self-induced vomiting (purging) and dietary restraint (Fairburn et al., 2003a). The model further posits that additional mechanisms (clinical perfectionism, core low self-esteem, mood intolerance, and interpersonal difficulties) may interact with core ED pathology to further perpetuate the disorder (Fairburn et al., 2003a). A comparison study of two cognitive-behavioural treatments (CBT) of EDs, one targeting core ED symptoms (CBT-Ef) and the other targeting the additional mechanisms of EDs (CBT-Eb), found that while both were effective treatments, CBT-Eb resulted in greater improvements in ED pathology for individuals who presented with the additional maintaining features of EDs (Fairburn et al., 2009). In another study consisting of outpatients with EDs (*n* = 125), enhanced CBT for EDs (CBT-E; Fairburn et al., 2003a) resulted in significant improvements in eating disorder pathology, anxiety, depression, stress, self-esteem, perfectionism, interpersonal difficulties, and quality of life (Byrne, Fursland, Allen, & Watson, 2011). These findings support the notion of transdiagnostic mechanisms maintaining ED pathology.

Incorporating IU as a transdiagnostic factor in theoretical models, case formulations and treatment plans has the potential to address common mechanisms across eating and comorbid disorders (Boswell et al., 2013; Einstein, 2014; Harvey et al., 2004). However, more studies investigating IU in ED samples are needed. If individuals with EDs perceive themselves as unable to tolerate uncertainty in their life in general (e.g., I always want to know what the future has in store for me), or in relation to weight and shape in particular (e.g., uncertainty about meeting their targeted weight

or standards of caloric restriction), and this contributes to anxiety and the development of rigid dietary rules and eating behaviours, then IU would represent an important transdiagnostic treatment target. Specifically, cognitive behavioural strategies could be implemented to challenge maladaptive beliefs about uncertainty and to promote more effective strategies for managing uncertainty than over-control (Roblek & Frank, 2012).

A significant impediment to understanding the relationship between IU and ED pathology is that existing measures of IU have not been validated in ED samples. It cannot be assumed that IU manifests similarly in eating, anxiety and depressive disorders. The psychometric properties IU measures might be similar for these disorders given the high rates of comorbidity (Keel et al., 2005) and if ED behaviours serve a similar function to emotional disorder behaviours, namely to reduce uncertainty and associated distress (Roblek & Frank, 2012). Alternatively, if IU is more specific to anxiety and depression than ED symptoms, or if particular aspects of IU are more relevant than others to the etiology or maintenance of ED psychopathology, then the properties of IU measures might differ between the disorders.

The short version of the IU Scale (IUS-12; Carleton et al., 2007) has demonstrated a more stable factor structure than the original version (Freeston, Rhéaume, Letarte, Dugas, & Ladouceur, 1994) in samples with anxiety and affective disorders (McEvoy & Mahoney, 2011). In these samples the IUS-12 comprises two factors, prospective and inhibitory IU (McEvoy & Mahoney, 2011). Prospective IU, characterised as the cognitive domain of IU, is associated with fear and anxiety of future events, while inhibitory IU, characterised as the behavioural domain of IU, is associated with inhibition of action in the face of uncertainty (Mahoney & McEvoy, 2012). In support of the convergent validity of the IUS-12, the subscales were significantly associated with symptom measures of various anxiety disorders and depression, neuroticism, and distress (McEvoy & Mahoney, 2011). Evidence of divergent validity was also found, as the prospective IU subscale was uniquely associated with repetitive negative thinking and OCD symptoms, whereas the inhibitory IU subscale was uniquely associated with symptoms of agoraphobia, social anxiety, panic disorder, and depression (McEvoy & Mahoney, 2011). In the framework presented here, IUS-12 items could assess vulnerability to emotional symptoms and compensatory controlling behaviours when uncertain events are encountered in general (e.g., "*I always want to know what the future has in store for me*"), but could also be applied to vulnerability to rigid dietary rules and compensatory behaviours upon exposure to body image-related triggers (e.g., I always want to know what the future has in store for me [*in terms of weight gain*]). Given the importance of investigating the potential role of IU in EDs, evidence of internal consistency, reliability and validity of the IUS-12 needs to be demonstrated within samples of individuals with EDs.

The first aim of this study was to evaluate the psychometric properties of the IUS-12 in an ED sample, including factorial validity, internal consistency, and convergent validity. It was hypothesised that the IUS-12 would replicate the two-factor structure found within anxiety disorders and depression (McEvoy & Mahoney, 2011). It was also expected that the IUS-12 would have significant positive associations with measures of depression, anxiety, stress, repetitive negative thinking, perfectionism, interpersonal problems, and ED pathology, and significant negative associations with self-esteem. The second aim was to evaluate whether IU has an indirect association with ED behaviours (dietary restraint, bingeing, purging) and emotional symptoms (anxiety, depression) via overvaluation of eating, weight, and shape (see Fig. 1). It was hypothesised that this indirect effect would be significant.