Understanding Relations Between Intolerance of Uncertainty, Social Anxiety, and Body Dissatisfaction in Women

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Abstract: Body dissatisfaction (BD) is highly prevalent among young females and is associated with negative mental health outcomes. Social anxiety (SA) has been identified as an important determinant of BD; however, potential factors underlying SA-related BD remain unstudied. Research indicates that intolerance of uncertainty (IU), the tendency to respond negatively to uncertainty, may be critical for developing and maintaining SA. The current study investigated whether IU is associated with SA and whether SA, in turn, is related to BD. In a cross-sectional study, 139 women completed an online survey measuring IU, SA, and BD. Correlation analyses showed that IU, SA, and BD were strongly positively associated. A mediation analysis revealed that higher levels of IU were indirectly related to more BD through higher levels of SA. A direct effect of IU on BD was also found. These findings suggest that individuals with SA-related BD may benefit from interventions targeting IU.

Key Words: Intolerance of uncertainty, social anxiety, body dissatisfaction

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Body dissatisfaction, referring to subjective dissatisfaction with body size and/or shape (Van den Berg et al., 2002), is recognized as a public health problem, especially in women (Fiske et al., 2014). As body dissatisfaction is associated with a wide range of disadvantageous outcomes (*e.g.*, Grogan, 2016), it is important to identify determinants and underlying mechanisms of body dissatisfaction. Different theoretical frameworks, including social comparison theory (Festinger, 1954), objectification theory (Fredrickson and Roberts, 1997), and the tripartite influence model (Van den Berg et al., 2002), as well as empirical findings (*e.g.*, Bakhtiarpoor et al., 2011; Cash et al., 2004), suggest that social anxiety is a key predictor in the development and maintenance of body dissatisfaction. In this article, intolerance of uncertainty (IU) is investigated as one potential factor preceding social anxiety and related body dissatisfaction.

IU refers to "a dispositional characteristic that results from a set of negative beliefs about uncertainty and its implications and involves the tendency to react negatively on an emotional, cognitive, and behavioral level to uncertain situations and events" (Buhr and Dugas, 2009, p. 216). Individuals with high IU display a negative interpretation bias for ambiguous and uncertain information whereby neutral stimuli are interpreted as more uncertain and consequently as more negative, which in turn leads to anxiety and distress (Buhr and Dugas, 2002). Growing research confirms IU as a transdiagnostic factor contributing to a wide range of anxiety and emotional disorders (Boswell et al., 2013), including social anxiety disorder (Boelen and Reijntjes, 2009; Carleton et al., 2010; Hezel et al., 2019).

As social-evaluative situations inherently comprise uncertainty and ambiguity, a low tolerance for this uncertainty is likely to increase social evaluative-related anxiety (Boelen and Reijntjes, 2009). Because body image (including body dissatisfaction) is largely formed by the experience of social interactions and social evaluations (Van den Berg et al., 2002), social evaluative-related anxiety may in turn translate into to body dissatisfaction (e.g., Bakhtiarpoor et al., 2011; Izgiç et al., 2004). Moreover, previous research has linked IU to disorders marked by extreme body dissatisfaction, that is, anorexia nervosa and bulimia nervosa (Brown et al., 2017; Frank et al., 2012) and body dysmorphic disorder (BDD; Summers et al., 2016). This suggests that IU may be a potentially relevant factor in the context of body dissatisfaction. Taken together, these results provide a basis for the potential value of exploring IU as a determinant of social anxiety–driven body dissatisfaction.

AIMS AND HYPOTHESES

This study explores whether IU is a factor preceding social anxiety and consequently body dissatisfaction. We hypothesize that (1) social anxiety is positively associated with body dissatisfaction; (2) IU is positively associated with social anxiety and body dissatisfaction; and (3) IU has an indirect effect on body dissatisfaction via social anxiety.

METHODS

Participants and Procedure

Participants were recruited via advertisements on websites and flyers distributed throughout Utrecht University, the Netherlands. After opening the link to the online questionnaire, participants had to complete an informed consent form in which voluntary participation and anonymity were emphasized. A total of 139 women with a mean (SD) age of 25.96 (9.67) years (range, 19–65 years) fully completed the questionnaire. The sample was highly educated as all participants had a university (of applied sciences) entrance qualification (13.7%) or a university (of applied sciences) degree (86.3%).

Measures

Intolerance of Uncertainty

The Dutch version (De Bruin et al., 2006) of the 27-item Intolerance of Uncertainty Scale (IUS; Freeston et al., 1994) was used to measure different aspects of IU. Responses were given on a 5-point Likert scale ranging from 1 (not at all characteristic of me) to 5 (entirely characteristic of me). The total score was calculated by summing up all items, with higher scores indicating higher levels of IU ($\alpha = 0.92$; mean [SD], 71.42 [15.96]).

Social Anxiety

Social anxiety was measured with the Dutch version (Boelen and Reijntjes, 2009) of the Social Phobia Inventory (SPIN; Connor et al., 2000). It contains 17 items that assess fear, avoidance, and

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physiological arousal characterizing social phobia in the preceding week. Responses were given on a 5-point scale ranging from 0 (not at all) to 4 (extremely). The total score was calculated by summing up all items, with higher scores indicating higher social anxiety severity ($\alpha = 0.93$; mean [SD], 14.18 [11.67]).

Body Dissatisfaction

Body dissatisfaction was assessed with the 20-item Dutch version of the Body Attitude Test (BAT; Probst et al., 1995). It assesses three domains of body dissatisfaction, that is, negative appreciation of body size, lack of familiarity with one's own body, and general dissatisfaction. Items were answered on a 6-point scale ranging from 0 (never) to 5 (always). Items were recoded if appropriate and summed up, with higher scores representing more body dissatisfaction ($\alpha = 0.94$; mean [SD], 33.83 [17.19]).

Statistical Analysis

Statistical analyses were performed with IBM SPSS Statistics Version 25 and PROCESS for SPSS v3.3 (Hayes, 2018). First of all, bivariate associations between the study variables were analyzed using Pearson correlation coefficients. Subsequently, a mediation analysis with IU as independent variable, social anxiety as mediator, and body dissatisfaction as dependent variable was calculated. The mediation analysis contained the following three subanalyses (Hayes, 2018). First, a simple regression analysis was conducted to estimate the association of IU with social anxiety. Second, a hierarchical regression analysis in which IU was entered in step 1 and social anxiety was entered in step 2 was conducted to estimate the total (step 1) and direct (step 2) effects of IU as well as the effect of social anxiety (step 2) on body dissatisfaction. Third, the indirect effect of IU on body dissatisfaction via social anxiety was determined by means of a bootstrap analysis with 5000 bootstrap samples generating 95% percentile bootstrap confidence intervals. All coefficients are reported in standardized form.

RESULTS

Means for the IUS-27, SPIN, and BAT fell within normal range of comparable studies with nonclinical samples (Buhr and Dugas, 2006; Boelen and Reijntjes, 2009; Probst et al., 1995).

Bivariate Associations Between IU, Social Anxiety, and Body Dissatisfaction

All three variables were strongly positively associated ($0.54 \leq r\,(139) \leq 0.62$; p values < 0.001).

Total, Direct, and Indirect Effects of IU on Body Dissatisfaction

The results of the regression analyses are presented in Figure 1. The simple regression analysis revealed a significant positive effect of IU on social anxiety, indicating that more IU is associated with more social anxiety. A total of 38.4% of the variance in social anxiety could be explained, $F(1, 137) = 87.02$, $p < 0.001$.

The hierarchical regression analysis revealed in step 1 a significant positive total effect and in step 2 a significant positive direct effect of IU on body dissatisfaction. This indicates that more IU is associated with more body dissatisfaction, before and after controlling for social anxiety. Furthermore, step 2 of the hierarchical regression analysis yielded a significant positive effect of social anxiety on body dissatisfaction, indicating that more social anxiety is associated with more body dissatisfaction. In step 1, 28.5% of the variance in body dissatisfaction could be explained by IU, $F(1, 137) = 56.12$, $p < 0.001$. In step 2, IU and social anxiety explained a total of 35.7% of the variance in body dissatisfaction, $F(2, 136) = 39.27$, $p < 0.001$.

The bootstrap analysis revealed a significant positive indirect effect of IU on body dissatisfaction via social anxiety (0.22; 95% confidence interval, 0.078–0.348). This indicates that more IU is associated with more body dissatisfaction through more social anxiety.

DISCUSSION

The objective of this study was to investigate IU as one potential factor preceding social anxiety-related body dissatisfaction. As expected and in line with previous study results (e.g., Hezel et al., 2019), higher levels of social anxiety were associated with higher levels of body dissatisfaction. Furthermore, the finding that higher levels of IU were associated to higher levels of social anxiety corroborates earlier studies (e.g., Boelen and Reijntjes, 2009), highlighting IU as an important contributing factor to social anxiety.

The results of this study highlight the importance of IU to body dissatisfaction. The positive relation between IU and body dissatisfaction found in this study fits in nicely with research findings in people with eating disorders (Frank et al., 2012), which are characterized by extreme body dissatisfaction. More importantly, as shown by the mediation analysis, part of the linkage of IU with body dissatisfaction could be explained by social anxiety. In other words, IU seems to facilitate specific negative experiences associated with social interactions, namely social anxiety, which in turn fuels body dissatisfaction. However, because social anxiety only partially accounted for the relationship between IU and body dissatisfaction it is likely that other factors not assessed in the current study further explain this relationship. For example, higher IU has been linked to lower self-esteem (Renjan et al., 2016), which in turn is an important predictor of body dissatisfaction (Wichstrøm and von Soest, 2016).

Following the present findings, it can be argued that individuals with social anxiety–related body dissatisfaction may benefit from body image programs that target IU. Previous studies have shown that IU is a malleable mechanism and cognitive behavioral therapy-type interventions for IU have shown success for reducing IU and social anxiety (Boswell et al., 2013).

Limitations and Future Directions

Because of the cross-sectional design, the direction of causality in the associations between the constructs could not be determined. Based on the social comparison theory (Festinger, 1954), objectification theory (Fredrickson and Roberts, 1997), and the tripartite influence model (Van den Berg et al., 2002), the proposed model is plausible. However, it is also reasonable to assume that the relationship between

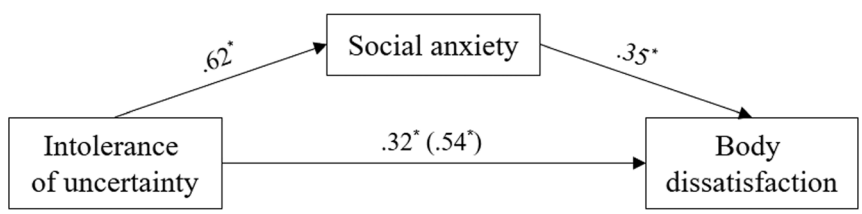

FIGURE 1. Results of the regression analyses. The total effect derived from step 1 of the hierarchical regression analysis is displayed in parentheses. *$p < 0.001$.

body image and social anxiety is a reciprocal one. IU may provide a novel avenue to disentangle the complexity of the relationship between body dissatisfaction and social anxiety and help gain insight into different patient groups (*i.e.*, those with social anxiety-related body dissatisfaction versus those with body dissatisfaction driven by other factors), thus informing intervention programs. Longitudinal studies are needed to further examine this relationship.

Although the sample consisted of young female students, a group known for their relatively higher levels of body dissatisfaction (Woertman and van den Brink, 2008), we did not specifically select participants on these higher levels of body dissatisfaction, and therefore, findings may not necessarily generalize to clinical groups with extreme body dissatisfaction (*i.e.*, eating disorders and BDD). Seeing that IU is a transdiagnostic marker in both social anxiety disorder and eating disorders (Boelen and Reijntjes, 2009; McEvoy and Mahoney, 2012; Sternheim et al., 2011), it is likely that the found relationships are relevant in these disorders. Testing this study's model within a clinical population therefore seems an important future step.

CONCLUSIONS

In sum, the direct relationship found between IU and body dissatisfaction and the indirect relationship through social anxiety suggests that IU is associated with social anxiety–related body dissatisfaction, hereby identifying one potential route through which body dissatisfaction is developed and maintained. Findings suggest that individuals experiencing social anxiety–related body dissatisfaction may benefit from interventions targeting IU.

DISCLOSURE

The authors declare no conflict of interest.

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