

Compulsively Seeking Certainty: Clarifying the Association Between Intolerance of Uncertainty and Compulsion Severity in OCD

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Abstract

Intolerance of uncertainty (IU), the dispositional tendency to fear the unknown, has clinical implications across a variety of disorders. While research has linked IU and OCD, relatively little is known about this association. Previous studies have focused on IU's association with overall OCD severity and specific symptom dimensions, but we do not yet understand to what degree this cognitive vulnerability is associated with each of the two cardinal symptoms: obsessions and compulsions. Additionally, few studies have examined the established IU subtypes—prospective and inhibitory IU—as unique contributors to OCD severity. Given the ubiquity of uncertainty in daily life and the potential for IU to influence obsessive-compulsive processes, further investigation of this cognitive vulnerability in OCD is warranted. In a sample of patients diagnosed with OCD, partial correlations were conducted to determine the association between OCD severity (separately examining obsessions and compulsions) and IU (separately examining prospective and inhibitory IU). These analyses revealed positive correlations between IU and compulsion severity, specifically. And of the IU subtypes, this link was specifically associated with prospective IU. The results of this correlational study contribute to the literature on IU in OCD, suggesting prospective IU as a cognitive mechanism that may be involved in the maintenance of compulsions.

Keywords OCD, intolerance of uncertainty, prospective IU, compulsions, anxiety

Obsessive-compulsive disorder (OCD) is characterized by the presence of obsessions, compulsions, or both (American Psychiatric Association, 2013). Obsessions are persistent thoughts, urges, or images that cause distress; while compulsions are neutralizing thoughts or actions aimed at suppressing obsessions and providing relief. To facilitate effective treatment development and better understand its etiology, there is a need to further understand the mechanisms and nuances of OCD, including its associated cognitive mechanisms.

One such cognitive mechanism is intolerance of uncertainty (IU). Uncertainty is ubiquitous in daily life (“Will there be traffic today?”), and distress may arise from wanting certain answers. IU is a cognitive

vulnerability that varies across individuals, and those high on it believe they need guaranteed outcomes and have a perceived inability to cope with unpredictability (Buhr & Dugas, 2002; Dugas & Robichaud, 2007).

IU and Its Dimensions

IU was initially conceptualized in the context of generalized anxiety disorder (GAD) (Dugas et al., 1998), has been linked to many anxiety disorders (Boelen & Reijntjes, 2009; Carleton et al., 2014), and seems closely tied to the maintenance of anxiety itself (Buhr & Dugas, 2009). Subsequently, IU has been increasingly recognized as a transdiagnostic vulnerability across a range of disorders—including depression (Boswell et al., 2013; Carleton et al., 2012),

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Received: 15 Feb 2022 | Revision Received: 22 July 2022 | Accepted: 8 Aug 2022

Handling Editor: David A. Preece

Published by Black Swan Psychological Assessments Pty Ltd

www.emotionandpsychopathology.org

post-traumatic stress disorder (PTSD; Bardeen et al., 2013), and eating disorders (Renjan et al., 2016)—and improvements in IU are correlated with successful treatment outcomes across various anxiety and depressive disorders (Boswell et al., 2013). IU has also been studied in OCD-related disorders, such as hoarding disorder (Wheaton et al., 2016) and obsessive-compulsive personality disorder (Wheaton & Ward, 2020).

The modern understanding of IU reveals it as a multifaceted construct with a two-dimensional structure which includes prospective IU and inhibitory IU (verified by factor analysis of the most commonly utilized measure of IU; Carleton et al., 2007; McEvoy & Mahoney, 2011). Prospective IU—the desire for predictability—stems from the need for guaranteed outcomes and drives an active response in seeking certainty (e.g., organizing everything for a party well in advance because the prospect of unforeseen events at it is upsetting). Meanwhile, inhibitory IU—uncertainty paralysis—represents an inability to respond in the face of uncertainty, culminating in a paralysis of thought and action in the face of even small doubts (e.g., being unable to decide which present to buy your mother because you are not sure which gift she would like most; Berenbaum et al., 2008; Birrell et al., 2011). Importantly, factor analysis has confirmed this two-factor structure in OCD (Jacoby et al., 2013). Prospective IU is closely associated with worry, while inhibitory IU often leads to avoidance (Berenbaum et al., 2008). Research indicates differential associations of these subtypes with various psychopathologies: prospective IU is more closely associated with GAD; while inhibitory IU is strongly related to depression, social anxiety, PTSD, and panic disorder (Carleton et al., 2012; McEvoy & Mahoney, 2011; Tolin et al., 2003).

IU in OCD

Research is relatively clear about the role of IU in OCD—at least in terms of its association with overall symptom severity or to very specific symptoms, such as checking behaviors (Holaway et al., 2006; Lind & Boschen, 2009; Tolin et al., 2003). The need for certainty was postulated as a core dysfunctional belief that contributes to obsessions by encouraging someone to overestimate neutral situations as threatening (OCCWG, 1997). Compulsive behaviors (e.g., checking) are in turn conceptualized as an attempt to reestablish certainty. Temporally, IU may be a key factor between the onset of obsessions and the urge to perform compulsions.

Supporting this theory, people with OCD indeed exhibit elevated IU, and in fact they show statistically similar IU to people with GAD (Holaway et al., 2006). Further, higher IU is associated with greater overall

OCD severity in both adults and children (Calleo et al., 2010; Hezel et al., 2019), though its causal role is unclear (Faleer et al., 2017), as is its relationship to disorder-specific scenarios (e.g., the uncertainty of whether you turned off the stove) versus general uncertain scenarios (Hezel et al., 2019; Jensen & Heimberg, 2015).

Much of this research has focused on the association between IU and increased compulsions of several specific types—particularly checking and repeating (Fourtounas & Thomas, 2016; Overton & Menzies, 2002; Tolin et al., 2003), and also washing, ordering, and arranging (Sarawgi et al., 2013). For example, within the doubt/checking subtype, IU fully mediated the relationship between doubt obsessions and checking compulsions (Lind & Boschen, 2009) such that there was no significant relationship between doubt and checking after IU was considered. Thus, the pathway by which doubt provokes urges to check may be fully explained by finding the uncertainty of this doubt intolerable. A similar mediation was found between perfectionism and OCD severity, with no relationship between perfectionism and OCD symptoms—often believed to be highly related—after IU was considered (Reuther et al., 2013). In terms of IU dimensions, both prospective and inhibitory IU have been associated with doubts and checking, while only prospective IU is associated with symmetry, ordering, and not-just-right experiences (Jacoby et al., 2013). However, in addition to these investigations, it is important to determine whether IU is linked to compulsions as a whole, before focusing in on specific subtype behaviors, as the specification of these behaviors may be premature without first looking at the broader construct of compulsive behavior.

Examining compulsions as a whole is important for several reasons. First, compulsivity is a transdiagnostic construct found in a range of disorders, and research increasingly looks at compulsivity across, and despite, diagnostic category (Ouden, 2022). By examining compulsions in an expanded view (rather than specifically at, e.g., checking), results may have transdiagnostic implications. In clinical settings, a compulsion like checking is specific to OCD, but understanding a patient's more generalized compulsivity may relate more closely to the compulsivity underlying their other comorbid disorders as well (e.g., substance use, eating disorders). Relatedly, there has been movement in the field away from solely symptom-based diagnostic categories (e.g., DSM-5), and towards frameworks such as the Hierarchical Taxonomy of Psychopathology (HiTOP; Kotov, 2017), which aims for a dimensional classification based on the observed covariation of symptoms. Second, focusing on specific compulsions alone does not always align with how compulsions are

Table 1. Demographic Characteristics

Characteristics	<i>N</i>	<i>M</i> (<i>SD</i>)	<i>%</i> (<i>Range</i>)
Age		36.42 (11.02)	(21-58)
Gender			
Male	30		58.82
Female	20		39.22
Other	1		1.96
Ethnicity			
Hispanic	8		15.69
Non-Hispanic	42		82.35
Not Reported	1		1.96
Race			
Caucasian	38		74.51
African American/Black	0		0
Asian	4		7.84
American Indian/Alaska Native	0		0
Native Hawaiian/Pacific Islander	0		0
Multi-Racial/Other	7		13.73
Not Reported	2		3.92
Employment			
Employed, Full-Time	17		33.33
Employed, Part-Time	11		21.57
Unemployed	7		13.73
Retired	0		0
Student, Full-Time	6		11.76
Student, Part-Time	3		5.88
On Disability	2		3.92
Not Reported	5		9.80

reported in clinical settings. Occasionally, a patient's specific compulsions shift with time (e.g., one month: checking; the next: washing), and/or they may have difficulty identifying and describing their specific compulsive behaviors. Knowledge about IU's associations with compulsions, broadly speaking, improves our understanding of such patients.

With the aim of better understanding OCD patients who are primarily obsessional vs highly compulsive, research on OCD benefits from parsing these two apart. Although obsession and compulsion severity are often correlated, they are presumed to be separable phenomena; indeed, the DSM-5 has embedded this directly in the criteria for the disorder, as a diagnosis of OCD can be given when someone has obsessions or compulsions (APA, 2013), and some patients report greater severity in one than the other (Masellis, Rector, & Richter, 2003). In treatment, some people with OCD seem to respond to targeting one more than the other, and previous studies highlight the importance of being able to target either obsessions or compulsions (Falkenstein et al., 2020). In sum, understanding the unique mechanisms of each symptom area may help harness such mechanisms to better enable targeted treatments.

The Current Study

Overall, despite the increase in research, many questions about IU's role in OCD remain unanswered. The first purpose of the current study is to address the following: the extant literature presents a zoomed out view in terms of IU being broadly associated with OCD severity and a very zoomed in view of IU being associated with specific symptoms that a subset of people with OCD exhibit. However, it lacks an essential mid-level view: it remains unclear to what degree IU is associated with each of the two cardinal symptom areas—obsessions and compulsions—before breaking them down into subtypes. For example, for the patient who has severe obsessions but relatively less severe compulsions, is IU still an issue? It would be particularly interesting to establish a unique association with compulsions, as doing so could reveal an underlying purpose of compulsive behavior—reestablishing certainty or, conversely, reestablishing that the series of attempts to reduce uncertainty via compulsions may have increased intolerance of the uncertainty.

The second purpose of the current study is to examine associations that include the newest thinking on the two-factor structure of IU in OCD. Prospective IU, which represents a proactive as opposed to avoidant

Table 2. Descriptive Statistics of Measures

Measure	<i>M</i>	<i>SD</i>	<i>Range</i>
Y-BOCS Severity Scale	25.98	5.66	14–36
Y-BOCS Obsession Severity Subscale	13.02	2.79	8–18
Y-BOCS Compulsion Severity Subscale	12.96	3.24	5–18
Intolerance of Uncertainty Scale	33.61	11.05	12–55
IUS Prospective Subscale	20.45	6.59	7–34
IUS Inhibitory Subscale	13.16	5.14	5–23
Hamilton Depression Rating Scale (HDRS-17)	9.35	6.60	1–31

approach to seeking certainty (Birrell et al., 2011), logically maps on to compulsive behavior and warrants investigation. To date, studies that have examined the two established IU dimensions in OCD have taken the initial step to confirm the validity of the two-factor structure (Jacoby et al., 2013), and they have examined these two factors as associated with compulsive tendencies in a nonclinical sample (Fourtounas & Thomas, 2016; McEvoy & Mahoney, 2011) but not in a clinical OCD sample. Thus here, in addition to examining links between obsessions and compulsions and IU generally, we will also examine those with prospective and inhibitory IU specifically. Finding that compulsions are specifically associated with prospective IU would support the idea that people with OCD experience formidable distress in anticipation of uncertainty and attempt to manage it by actively implementing strategies into their routine—some of which could be compulsive behaviors.

Therefore, this study aims to determine whether IU (and its two dimensions) differentially relate to obsession and compulsion severity in OCD.

Method

Participants

The authors used an existing data set designed to explore OCD psychopathology and phenomenology, and to screen eligibility of individuals interested in OCD-specific research studies, between June 2016 and January 2020. All data collection procedures were approved by the university's Institutional Review Board. Twenty-six participants from the initial sample ($n=77$) were excluded due to incomplete measures. This included missing Y-BOCS ($n=4$) and/or missing IUS scores ($n=23$). Missingness analyses were conducted and confirmed that these data were missing completely at random (MCAR). The final sample included 51 participants, aged 21–58 ($M=36.42$, $SD=11.02$). Self-reported gender, race, and other demographics are shown in Table 1. Participants were excluded if they were younger than 18 and/or endorsed active suicidality.

Measures

Structured Clinical Interview for DSM-5 - Research Version (SCID-5-RV). To ensure a primary OCD diagnosis and assess comorbid diagnoses, the SCID-5-RV (First et al., 2015) was administered by trained study clinicians.

Yale-Brown Obsessive Compulsive Scale (Y-BOCS). To assess OCD severity present in the prior week, the Y-BOCS (Goodman et al., 1989), including the severity scale and the symptom checklist, was administered to the participants by an independent evaluator clinician (MD or PhD). The Y-BOCS Severity Scale is a 10-item, clinician-administered instrument that is considered the gold standard measure of OCD symptom severity. Its Obsession subscale includes the sum of the five items related to obsessive thoughts (e.g., daily hours occupied by obsessions) and its Compulsion subscale includes the sum of the five items related to compulsive behaviors (e.g., how distressed one would feel if they could not perform compulsions). All 10 items are scored on a 5-point scale ranging from 0 (“no symptoms”) to 4 (“extreme symptoms”). Total severity scores correspond to the following ratings: subclinical (0–7), mild (8–15), moderate (16–23), severe (24–31), and extreme (32–40). The α in our current sample was .80, .72 and .70 for the Y-BOCS overall scale, Obsession subscale, and Compulsion scales, respectively – indicating good internal consistency for all.

Intolerance of Uncertainty Scale (IUS). To assess IU, participants completed the IUS-27 (Freeston et al., 1994), a 27-item, self-report questionnaire designed to measure responses to ambiguity, the implications of uncertainty, and attempts to establish control. The items (e.g., “Uncertainty makes me uneasy, anxious, or stressed”) are rated on a 5-point Likert scale ranging from 1 (“Not at all characteristic of me”) to 5 (“Entirely characteristic of me”). The IUS-12 (Carleton et al., 2007) is a 12-item short form version of the original 27-item scale and measures two factors: prospective IU (seven items) and inhibitory IU (five items). Sample items include “Unforeseen events upset me greatly” (Prospective IU) and “The smallest doubt can stop me

Table 3. Zero-Order Correlations ($n = 51$)

	Y-BOCS Obsessions	Y-BOCS Compulsions	Overall IU	Prospective IU	Inhibitory IU	HDRS-17
Y-BOCS Overall	.93**	.95**	.36**	.34*	.33*	.52**
Y-BOCS Obsessions		.76**	.22	.19	.23	.50**
Y-BOCS Compulsions			.44**	.44**	.39**	.47**
Overall IU				.95**	.92**	.40**
Prospective IU					.77**	.34*
Inhibitory IU						.42**

from acting” (Inhibitory IU). The IUS-12 exhibits strong psychometric properties and is generally regarded as the preferred measure (Carleton et al., 2007; Jacoby et al., 2013; McEvoy & Mahoney, 2011). While the 27-item version was administered to our sample, only the IUS-12 questions contained within it were analyzed. One item was omitted from analyses due to a changed wording that altered the meaning of the item. Given this, the range of possible scores was 11–55, with higher scores indicating higher IU. The α in our current sample was .91, .86, and .87 for the IUS-12, prospective, and inhibitory scales, respectively—indicating strong internal consistency for all.

Hamilton Depression Rating Scale (HDRS-17).

To control for comorbid depressive symptoms, as depression has been linked to IU (Boswell et al., 2013; Carleton et al., 2012), the 17-item HDRS-17 (Hamilton, 1960) was administered by an independent evaluator clinician (PhD or MD). Items (which cover a range of depressive symptoms, e.g., mood, sleep) are scored on Likert scales and summed. Total scores range from 0–53, with higher scores indicating higher levels of depression. Scores are translated to five severity categories: subclinical (0–7), mild (8–13), moderate (14–18), severe (19–22), and very severe (≥ 23). The HDRS-17 is considered the gold standard measure of depression and is the most widely used worldwide (Vindbjerg et al., 2019). The α in our current sample was .80, indicating good internal consistency.

Research Design

Procedure. Following completion of a brief phone screen to determine eligibility, participants were brought in for screening procedures at a research

university’s Department of Psychiatry. Participants were excluded if they were younger than age 18, did not have OCD as a primary diagnosis, and/or endorsed active suicidality (assessed via the Columbia-Suicide Severity Rating Scale). Participants provided informed consent. During their visit, they completed a researcher-administered SCID-5-RV and the assessment measures described above. In some cases, participants completed the IUS in an at-home survey following their initial screening visit.

Data Analyses. Descriptive statistics were computed for all measures of interest and are shown in Table 2. Parametric assumptions were ensured for all inferential statistical tests, which are described below.

Results

To examine the overall association between OCD symptom severity and IU, zero order Pearson correlations were conducted between IUS-12 and all Y-BOCS scores (see Table 3). As shown, there was a significant positive correlation between IUS-12 score and Y-BOCS Total score, with a medium effect size ($r = .36, p = .009$), such that more severe OCD symptoms corresponded with more severe IU. However, when depressive symptoms (HDRS-17 scores) were accounted for, this association was no longer significant ($r_{\text{partial}} = .20, p = .166$).

Next, partial correlations with IU were separately conducted on the Y-BOCS Compulsions and Y-BOCS Obsessions scores (see Table 4) to isolate those associations while removing the effects of other variables on this relationship. The correlation between

Table 4. Partial Correlations Between IUS and Y-BOCS Compulsion, Obsession, and Total Scores (n=51)

Correlation	Partialled Out	<i>r</i>	<i>p</i>
Y-BOCS Compulsions	HDRS-17	.41*	.004*
	Y-BOCS Obsessions		
Y-BOCS Obsessions	HDRS-17	-.28	.055
	Y-BOCS Compulsions		
Y-BOCS Total	HDRS-17	.20	.166

Note. *Significant $p < .05$.

IUS-12 score and Y-BOCS Compulsions – controlling for Y-BOCS Obsessions and HDRS-17 score – was significant, with a medium effect size ($r_{\text{partial}} = .41$, $p = .004$), such that more severe compulsions were associated with more severe IU. This result remained significant with or without controlling for Y-BOCS Obsessions. The correlation between IUS-12 and Y-BOCS Obsessions – controlling for Y-BOCS Compulsions and HDRS-17 – was in the negative direction but was not statistically significant ($r_{\text{partial}} = -.28$, $p = .055$).

To compare these two partial correlation coefficients and determine if they are different from one another, a Fisher's r -to- Z transformation was used. This showed that the two coefficients were statistically different from one another, with a large effect size ($z = 3.52$, $p < .001$), such that IU is differentially predictive of compulsion severity more so than obsessional severity.

Next, to examine whether this association with compulsions was unique to one of the subtypes of IU – prospective and inhibitory – partial correlations were conducted between each of these IUS-12 subscales and Y-BOCS Compulsions (see Table 5). The correlation between Prospective IU and Y-BOCS Compulsions – controlling for HDRS-17, Y-BOCS Obsessions, and Inhibitory IU – was significant, with a medium effect size ($r_{\text{partial}} = .34$, $p = .017$), such that more severe compulsions were associated with more severe prospective IU. See Figure 1 for a scatterplot of this correlation. The equivalent partial correlation between Inhibitory IU and Y-BOCS Compulsions was not significant ($r_{\text{partial}} = -.04$, $p = .777$).

Using a Fisher's r -to- Z transformation, these two correlations were found to be significantly different, with a large effect size ($z = -1.96$, $p = .05$), such that compulsion severity is differentially predictive of prospective vs inhibitory IU.

Discussion

Compulsions, Obsessions, and Overall IU

In this study, we examined IU's relationship with obsession and compulsion severity in a sample of adults with OCD. Our results indicated that those with higher IU reported more severe compulsions, while they did not report more severe obsessions – if anything, they trended toward less severe obsessions. The IU-compulsion correlation is consistent with previous investigations that linked high IU to specific subtypes of compulsions; e.g., checking, repeating, washing (Fourtounas & Thomas, 2016; Lind & Boschen, 2009; Overton & Menzies, 2002; Tolin et al., 2003). However, this study is the first to find an association with compulsions in general, collapsed across subtypes.

There are several explanations for this link between IU and compulsion severity. One possibility is that high IU increases a person's drive to perform compulsions (in line with Sarawgi et al., 2013). Previous literature has asserted that people with a lower threshold for tolerating such uncertainty (e.g., "I can't stand the possibility that I may make a mistake") may feel the need to actively decrease the associated anxiety by performing compulsions (e.g., "I'll recheck until I'm sure I did it right"; Fourtounas & Thomas, 2016; Tolin et al., 2003). Compulsions may increase certainty by giving people a sense of control over a feared negative consequence, replacing it with a more tolerable outcome ("Now my hands are clean; so I'm less likely to infect someone"). This possibility aligns with findings that the pathway through which obsessions provoke compulsive urges may be via the intolerance of the uncertainty of those obsessions (Lind & Boschen, 2009; Reuther et al., 2013).

Due to the correlational nature of the present investigation, the reverse relationship may also be true: frequent performance of compulsions may subsequently exacerbate IU. In this model, the short-lived relief provided by compulsions allows one to briefly escape the distress from uncertainty, which in turn (via negative reinforcement) lowers one's threshold for tolerating uncertainty in the future. In other words, the historical avoidance of uncertainty may stoke more fear of it. Future experimental studies

Table 5. Y-BOCS Compulsion Severity and IUS Subtype Scores (Prospective and Inhibitory), Controlling for Depressive Symptoms (HDRS-17 Score) and Y-BOCS Obsession Severity (n=51)

Correlation	Partialled Out	<i>r</i>	<i>p</i>
Prospective IU	HDRS-17	.34*	.017*
	Y-BOCS Obsessions Inhibitory IU		
Inhibitory IU	HDRS-17	-.04	.777
	Y-BOCS Obsessions Prospective IU		

Note. *Significant $p < .05$.

could help determine the causal direction of this IU-compulsion relationship.

This study is the first to our knowledge to test the association between Y-BOCS obsession severity and IU, and it did not find a significant association. Although previous research has linked IU to general OCD severity (Lind & Boschen, 2009; Reuther et al., 2013), our findings found no correlation with obsession severity specifically. While obsessions do revolve around themes of uncertainty (Goodman et al., 1989), it seems their severity is not necessarily coupled with intolerance of that uncertainty. Conversely, insofar as compulsions are themselves attempts to reestablish certainty, frequent and intense performance of them directly reflects an aversion to the unpredictable.

Compulsions and Prospective IU

More specifically, the present study is the first to break down the IU-compulsion association to examine whether it is specific to the prospective or inhibitory dimensions of IU. Results suggest that the link between IU and compulsion severity is unique to the prospective dimension. Thus, highly compulsive OCD patients seem to be more susceptible to the anxiety in anticipation of uncertainty (the prospective dimension), rather than experiencing an inability to act and an uncertainty paralysis (the inhibitory dimension). Indeed, OCD patients are acting—using their compulsions to resolve uncertainty.

This could be because compulsions reflect a desire for predictability. When a thought exaggerates the potential for an adverse consequence, negative affect increases (Foa & Kozak, 1986; Salkovskis, 1985). In OCD, the next step of this cycle is often to perform a compulsive behavior. The compulsion then prevents the patient from learning that they can tolerate a degree of uncertainty and that the feared outcome is unlikely to occur. In turn, this increases the desire for predictability—and the need to feel like one is preventing a negative outcome—when faced with a similar situation in the future. Such a cycle could be reasonably expected to both increase and/or be

increased by prospective IU, which is often characterized as a “desire for predictability” (Berenbaum et al., 2008; Birrell et al., 2011). Further, this desire for predictability and need to prevent aversive outcomes is future-oriented, which is consistent with the anticipatory nature of prospective IU, rather than with the ruminative nature of inhibitory IU (McEvoy & Mahoney, 2011).

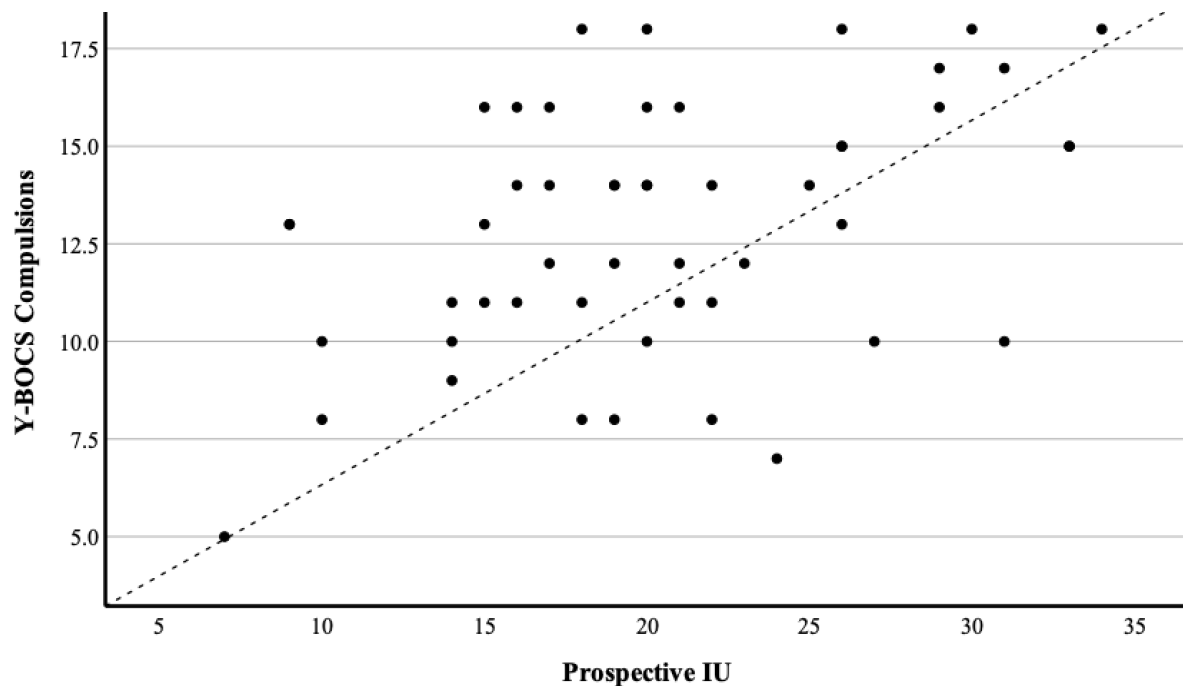
Conversely, it makes sense that compulsion severity is not associated with inhibitory IU, insofar as this IU dimension reflects an inability to act in the face of uncertainty (i.e., analysis paralysis). Almost definitionally, compulsions are an action taken to relieve the distress of a tentative negative outcome. Although compulsions may not be the most effective action to take, OCD patients may still have a sense of being able to do something about their uncertainty-related distress rather than avoiding it all together.

Clinical Implications

In terms of etiology, our findings suggest that the more likely means through which IU underlies OCD symptom severity is via compulsions, rather than obsessions. As such, further research that establishes causality of this relationship could ultimately suggest that OCD treatments, such as exposure and response prevention (ERP; Foa et al., 2012), would benefit from targeting IU, and especially targeting prospective IU, to reduce compulsions. Interventions directly addressing IU—including identifying cognitive distortions about the inability to tolerate unpredictability, mindfulness strategies to help sit with uncertainty-related anxiety, and behavioral exposures that target worry about unpredictable events—may be crucial to the therapeutic goal of reducing compulsive behavior.

Limitations and Future Directions

The present study has several limitations. First, the findings are correlational, and we cannot make causal conclusions about the relationship between IU and compulsions. Future research may wish to investigate

Figure 1. *Partial Correlation Between Prospective IU Subscale Score and Y-BOCS Compulsion Severity Score*

causality. Second, the correlations between compulsion severity and overall IU as well as prospective IU had a medium effect size, and a larger effect size would indicate a more meaningful and distinct association. Third, while the clinical sample size for this study is adequate, future research in a higher-powered sample may help elucidate a few of the findings. For instance, the correlation between IU and obsessions controlling for compulsion severity yielded a nonsignificant correlation that was trending in the negative direction. If a negative correlation does exist, this would be interesting albeit counterintuitive, and perhaps a larger sample size would reach the conventional threshold of significance. Relatedly, due to strong correlations between obsession and compulsion severity and obsession and depression severity, it is also important to consider the possibility of a suppressor effect here. However, such collinearity mainly affects the standard errors of the estimates, rather than the main estimate itself, thereby suggesting that the positive association between IU and compulsion severity is indeed distinct.

Fourth, our data included the omission of one item on the IUS-12 from the prospective IU subscale. The good internal consistency of the prospective scale ($\alpha = .86$) supports the validity of interpreting these results, but future studies should verify our results with the full subscale. Fifth, for the clinician-administered measures (YBOCS and HDRS-17), one rater

conducted the evaluation at each time point, and inter-rater reliability was not assessed. Finally, the current study consisted primarily of clinical research participants at an academic research setting, which may limit the external validity of the sample. Future research may benefit from using a larger sample size within different settings (e.g., community clinic, hospital, VA).

The results of the present study contribute to the current literature on IU and compulsion severity in OCD. Prospective IU—the desire for predictability—appears to be a particularly important cognitive component that not only provides some insight into the purpose of compulsive behavior, but also asserts itself as a factor in the maintenance of OCD.

Additional Information

Funding

This study was supported in part by the National Institutes of Mental Health R01MH105461 (Dr. Rodriguez).

Conflict of Interest

In the last three years, Dr. Rodriguez has served as a consultant for Epiodyne, received research grant support from Biohaven Pharmaceuticals, and a stipend from APA Publishing for her role as Deputy Editor at

The American Journal of Psychiatry. The other authors report no additional financial or other relationships relevant to the subject of this manuscript.

Ethical Approval

All data collection procedures were approved by Stanford University's Institutional Review Board (35150).

Data Availability

The data that support the findings of this study are available from the corresponding author, Hannah Raila, upon reasonable request.

Author CRediT Statement

Alexis Moore, Carolyn Rodriguez, and Hannah Raila decided the scope and content of the study. Alexis Moore, Hanyang Shen, and Hannah Raila decided the methodology. Alexis Moore conducted the literature review, formal analysis, and wrote the first draft of the manuscript. Michael Wheaton, Carolyn Rodriguez, and Hannah Raila contributed to writing subsequent drafts. All authors approved the final version of the manuscript.

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