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Differences in Intolerance of Uncertainty in OCD and Comorbid PTSD Underlying Attenuated Treatment Response

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Abstract

Extant research has found that patients with OCD+PTSD experience significantly worse symptoms, have higher treatment dropout rates, and are less responsive to treatment. While both disorders are characterized by intolerance of uncertainty (IU), it has been suggested that IU presents differently in OCD and PTSD. Specifically, individuals with OCD report greater struggles with prospective IU, or perceptions of threat related to future uncertainty, and individuals with PTSD report greater struggles with inhibitory IU, or inability to function in the face of uncertainty. However, it is not known how IU presents in patients with OCD+PTSD. Differences in IU were examined in patients with OCD+PTSD compared to OCD using a sample of 475 residential inpatients in an OCD and anxiety treatment program, and change in IU was examined as a potential mediator to symptom change across treatment. Patients with OCD+PTSD reported significantly greater inhibitory and prospective IU compared to patients with OCD and did not experience significant improvement in IU from baseline to discharge. In addition, they experienced significantly less OCD symptom improvement compared to patients with OCD. Whereas improvement in prospective IU partially explained OCD symptom improvement in patients with OCD, the same was not true for patients with OCD+PTSD. Findings suggest that IU should be of greater treatment focus when working with patients with OCD+PTSD; specific clinical recommendations are provided.

ABBREVIATIONS

OCD: Obsessive-Compulsive Disorder; PTSD: Posttraumatic Stress Disorder; OCD+PTSD: Comorbid OCD and PTSD; IU: Intolerance of Uncertainty; DSM-5: Diagnostic and Statistical Manual-5th Edition; ASI: Anxiety Sensitivity Index; DOCS: Dimensional Obsessive-Compulsive Scale; IUS: Intolerance of Uncertainty Scale; ERP: Exposure and Response Prevention

INTRODUCTION

Comorbidity in obsessive-compulsive disorder (OCD) and posttraumatic stress disorder (PTSD) is common, with studies showing comorbidity rates ranging from 19% to 41% [1-3]. Individuals with comorbid OCD and PTSD (OCD+PTSD) report more severe symptomatology and have poorer treatment response [2-7], perhaps due to exacerbation of phenotypically similar symptoms, including intrusive thoughts, excessive anxiety/fear, and cognitive, behavioral, and emotional avoidance of feared stimuli [7,8]. More broadly, both OCD and PTSD are characterized by threat overestimation, attentional bias to threat, and intolerance of uncertainty [9-12]. Intolerance of uncertainty (IU) manifests differently in OCD and PTSD, though it is unclear how a comorbid presentation may influence IU [10,11]. Examination of potential underlying mechanisms that represent barriers to treatment for patients with OCD+PTSD, such as IU, may help inform more individualized treatment for this population. To that end, the current study sought to examine IU as an explanatory mechanism for attenuated treatment response in patients with OCD+PTSD.

Individuals with OCD+PTSD represent an important population for study given treatment complications. Patients with OCD+PTSD are more likely to drop out of treatment prematurely and have attenuated response to classic treatments [2,4,5]. A 7-year longitudinal study found that, compared to individuals with OCD, individuals with OCD+PTSD reported more severe symptoms of OCD, poorer insight and quality of life, and higher mood and substance use comorbidity. Moreover, individuals with OCD+PTSD had more stable OCD symptom trajectories over time whereas individuals with OCD experienced greater reductions in OCD symptoms over time [6]. An examination of specific symptom domains found that individuals with probable OCD+PTSD may be characterized by more severe symptoms of OCD contamination, OCD responsibility for harm, injury, or bad luck, PTSD negative alterations in cognitions and mood, and PTSD arousal [7]. Interestingly, while it has been found that individuals with OCD+PTSD report significantly more severe symptoms of OCD overall compared to individuals with OCD, these individuals report similar levels of PTSD symptoms overall compared to individuals with PTSD [6,7]. These findings suggest that while poorer treatment response may be due in part to exacerbated

symptoms, there may be underlying mechanisms that make the comorbid diagnosis more difficult to treat using conventional methods.

IU, or a predisposition to perceive and respond negatively to ambiguity, is believed to be a central transdiagnostic component of anxiety [13,14]. Some theorize that IU is at the core of most OCD presentations and should be the primary focus for treatment [15], For those who are intolerant, uncertainty is perceived as unacceptable, unfair, threatening, and something to be avoided [16-21]. Several IU beliefs have been identified, including beliefs that uncertainty leads to behavioral inaction, uncertainty is upsetting and stressful, uncertainty has negative self-referent implications, unpredictable events are negative and should be avoided, and uncertainty about the future is unfair [16,22]. More recently, it has been suggested that two broader domains may best account for IU: prospective IU, or perceptions of threat related to future uncertainty (e.g., "One should always look ahead so as to avoid surprises"), and inhibitory IU, or behavioral inaction related to apprehension or inability to function in the face of uncertainty (e.g., "The smallest doubt can stop me from acting") [23,24]. Research has suggested that individuals with OCD may struggle more with prospective IU whereas individuals with PTSD may struggle more with inhibitory IU [10,11]. In addition, a study involving a sample of undergraduate students exposed to a campus shooting found that IU prospectively predicted the development of posttraumatic stress symptoms following trauma exposure [25].Thus, it is clear that IU plays a central role in the development and/or maintenance of both OCD and PTSD, yet its role in a comorbid diagnosis of OCD+PTSD remains unclear.

IU has behavioral implications that can present barriers to treatment. It has been found that individuals with high IU are less confident about high-risk decisions [26], have a tendency to select less valuable and less probable rewards that are more immediately available [27], and may be more likely to engage in behaviors intended to increase certainty [28]. Exposure therapies for OCD and PTSD emphasize behavioral change through increased approach versus avoidance coping [29], yet IU can lead to apprehension about making necessary behavioral change that precipitates symptom reduction. For example, patients who are uncertain that treatment will be effective for them may be less likely to fully commit to treatment; patients may be resistant to engaging in exposure therapies due to behavioral inaction associated with not knowing the outcome of the exposure; and patients may inadvertently neutralize the anxiety elicited by exposures by utilizing compulsions and safety behaviors intended to obtain certainty about a feared outcome. Learning to tolerate uncertainty is a key component of exposure therapy, particularly with patients whose fears are not easily disconfirmed (e.g., the feared outcome is in the distant future or is vaguely defined) [29]. It could be argued that all OCD compulsions and PTSD safety behaviors are rooted in a perceived need for certainty; handwashing, list-making, reassurance-seeking, checking, avoidance, scanning, etc., are all intended to reduce uncertainty about a feared outcome from contamination to trauma revictimization. Reducing patients' perception that they need certainty (an inherently unobtainable goal) helps to reduce reliance on compulsions and safety behaviors as a means of reacting to and managing anxiety and fear.

Despite its potential to interfere with treatment progress, little is known about how IU impacts treatment outcomes. Specifically, although differences in IU among individuals with OCD and PTSD have been observed [10,11], it is not clear how IU may characterize a comorbid diagnosis of OCD+PTSD, and how this presentation may differentially impact treatment outcomes. To that end, the current study has several aims: 1) to examine baseline differences in IU in patients with OCD compared to patients with OCD+PTSD; 2) to examine changes in IU over the course of treatment in patients with OCD compared to patients with OCD+PTSD; and 3) to examine treatment response (i.e., OCD symptom change) as a function of IU in patients with OCD compared to patients with OCD+PTSD, controlling for the known overlapping effect of anxiety sensitivity [30-32].

MATERIALS AND METHODS

Methods

Participants and procedure: Participants included 475 patients treated between January 2016 and September 2019 in the OCD and Anxiety residential treatment program of Rogers Behavioral Health in Oconomowoc, Wisconsin. The treatment program provides longer-term, daily, multidisciplinary care that includes individual, group, and family therapy, medication management by psychiatrists, medical support by nursing staff, and dietary support as needed. The primary mode of treatment provided is cognitive behavioral therapy with an emphasis on exposure and response prevention (ERP). Additional therapeutic interventions include dialectical behavior therapy, cognitive restructuring, and recreational therapy. Upon admission, participants received a diagnosis of OCD and/or PTSD according to Diagnostic and Statistical Manual-5th Edition (DSM-5)[8] criteria by a licensed psychiatrist who conducted clinical diagnostic interviews. All patients in the sample had a diagnosis of OCD, and 4.4% (n = 21) were diagnosed with OCD+PTSD. Patients who provided written informed consent to have their assessment data deidentified and used for research were administered baseline and discharge self-report assessments.

Participants ranged in age from 18 to 67 (M = 29.4, SD = 11.9) and identified their race as follows: 87.9% as White (n = 413), 3.2% as Asian (n = 15), 2.8% as Black (n = 13), 0.6% as American Indian or Alaskan Native (n = 3), 0.4% as Native Hawaiian or Pacific Islander (n = 2), and 5.1% as unsure or refused (n = 24). An additional 5.1% of the sample identified as Hispanic or Latinx (n = 24). Participants identified their gender identity as follows: 51.7% cisgender female (n = 246), 47.8% cisgender male (n = 227), and 0.4% transgender/gender non-conforming (n = 2). Patients with OCD and OCD+PTSD did not significantly differ on any demographic characteristics.

Measures

Anxiety Sensitivity Index (ASI) [33]: The ASI is a 16-item self-report measure of anxiety sensitivity encompassing fear of somatic sensations, loss of cognitive control, and others noticing anxiety symptoms [34]. Items are rated on a 5-point Likert scale and total scores range from 0-64. The ASI has demonstrated strong internal consistency (α = .88); in the current study, internal consistency was likewise strong (α = .90).

Dimensional Obsessive-Compulsive Scale (DOCS) [35]: The DOCS is a 20-item self-report measure of OCD symptoms that fall under four domains: Contamination; responsibility for harm, injury, or bad luck; unacceptable obsessional thoughts; and symmetry, completeness, or exactness. Each domain includes items, rated on a 5-point Likert scale, encompassing time occupied by obsessions and compulsions, avoidance, distress, functional impairment, and difficulty disregarding obsessions and resisting compulsions. A total score is computed by summing all items and can range from 0-80. The DOCS has demonstrated very strong internal consistency and test-retest reliability [35]; in the current study, internal consistency was likewise strong (α = .88).

Intolerance of Uncertainty Scale (IUS) [22]: The IUS is a 27-item self-report scale of emotional, cognitive, and behavioral reactions to uncertainty. Items are rated on a 5-point Likert scale indicating how much they agree to each item (0 = *not at all characteristic of me,* 5 = *entirely characteristic of me*) and are summed to create two subscales: uncertainty has negative behavioral and self-referent implications (i.e., inhibitory IU) and uncertainty is unfair and spoils everything (i.e., prospective IU); a total score is derived by summing both subscales. The IUS has demonstrated strong internal consistency (α = .91); in the current study, internal consistency was likewise strong (α = .95).

RESULTS AND DISCUSSION

Results

An independent samples t-test was run in SPSS to examine bivariate, baseline group differences in outcomes and covariates. As expected, individuals with OCD+PTSD reported significantly more severe OCD symptoms, intolerance of uncertainty, and anxiety sensitivity compared to individuals with OCD (Table 1).

A multigroup path analysis was run in *R* to model group differences in the proposed mediation model. Path analysis is an extension of multiple regression that examines the comparative strength of direct and indirect relationships within a proposed causal model [36]. Multigroup analysis is a method in which a categorical moderating effect is modeled such that differences in the strength of direct and indirect effects can be examined by group membership. It is predicated on the theory that the strength of these effects will differ as a function of grouping [37]. Because change scores are misleading in that they do not account for baseline severity, the current study modeled discharge inhibitory and prospective IU as mediators and included baseline inhibitory and prospective IU as respective covariates. Significant pathways between baseline OCD symptoms and IU, and IU to discharge OCD symptoms, would represent changes in IU underlying OCD symptom change over the course of treatment. Additionally, given its known relationship to OCD, PTSD, and intolerance of uncertainty [30-32], baseline anxiety sensitivity was included as a covariate (Figure 1). Because of the number of predictors, the model was just-identified and fit statistics are not available for either model.

Inhibitory IU was not a significant mediator for either patients with OCD or OCD+PTSD. For patients with OCD, although inhibitory IU was predicted by baseline OCD symptoms and predicted discharge OCD symptoms, baseline OCD symptoms were not significantly predictive of inhibitory IU (p = .06). For patients with OCD+PTSD, baseline OCD symptoms predicted inhibitory IU, and inhibitory IU predicted discharge OCD symptoms, however the model was not overall significant because baseline OCD symptoms did not significantly predict discharge OCD symptoms once covarying effects were considered (Table 2).

For patients with OCD, prospective IU was a significant, partial mediator of the relationship between baseline and discharge OCD symptoms. The model suggests that OCD symptom improvement over the course of treatment is partially explained by improvement in prospective IU. For patients with OCD+PTSD, the only significant pathway that was found was between prospective IU and discharge OCD symptoms (Table 2).

To better understand the relationship between changes in IU and OCD symptoms across treatment, post-hoc paired samples t-tests were conducted (Table 3). Unexpectedly (yet consistent with path analysis findings), although both patients with OCD and OCD+PTSD experienced significant improvements in OCD symptoms from baseline to discharge, only patients with OCD experienced significant improvements in inhibitory and prospective IU. Patients with OCD+PTSD did not experience significant improvement in either type of IU.

Table 1: Differences in baseline and discharge scores by diagnosis.

	OCD		OCD+PTSD			
Baseline	***M***	***SD***	***M***	***SD***	***t***	***df***
OCD	31.50	14.81	43.55	16.94	3.54***	470
IU-Inhibitory	45.96	15.04	53.35	10.79	2.17*	470
IU-Prospective	38.19	12.02	47.40	8.35	4.72***	22.64
ASI	27.39	15.54	33.60	13.26	2.01*	470
Discharge	***M***	***SD***	***M***	***SD***	***t***	***df***
OCD	17.56	12.00	33.12	21.28	2.99*	16.57
IU-Inhibitory	35.64	13.80	44.94	15.88	2.684**	319
IU-Prospective	31.27	11.58	42.88	13.47	3.987***	319
ASI	17.75	11.69	26.24	17.19	2.01	16.84

Note. ASI = Anxiety Sensitivity Index.33 * p < .05. ** p < .01. *** p < .001.
Abbreviations: OCD: Obsessive-Compulsive Disorder; OCD+PTSD: Comorbid OCD and PTSD; IU: I intolerance of Uncertainty; ASI: Anxiety Sensitivity Index

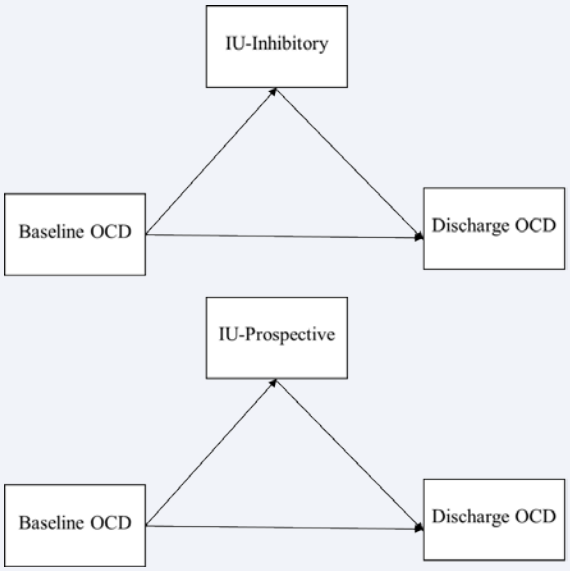

Figure 1 Proposed multigroup meditational models for OCD and OCD+PTSD groups.
Note. Covariates of anxiety sensitivity and baseline IU not pictured.

Table 2: Multigroup path analysis modeling change in inhibitory and prospective IU as mediating symptom change over treatment.

IU-Inhibitory	**OCD**			**OCD+PTSD**		
	b	**Std. Error**	***β***	***b***	**Std. Error**	***β***
Discharge IU-Inhibitory						
Baseline OCD (a)	.09	.05	0.1	.46	.19	.45*
ASI	-.03	.06	-.03	.38	.28	.29
Baseline IU-Inhibitory	.54	.06	.58***	.35	.32	.22
Discharge OCD						
Discharge IU-Inhibitory (b)	.48	.04	.56***	1.12	.3	.91***
Baseline OCD (c)	.42	.04	.53***	.2	.27	.16
ASI	.01	.04	.01	-.24	.36	-.15
Baseline IU-Inhibitory	-.22	.05	-.28***	-.74	.4	-.38
Mediating Effect of IU-Inhibitory						
Indirect effect (c')	.04	.02	.06			
Total effect	.47	.04	.58***			
IU-Prospective	**OCD**			**OCD+PTSD**		
	b	**Std. Error**	***β***	***b***	**Std. Error**	***β***
Discharge IU- Prospective						
Baseline OCD (a)	.09	.04	.12*	.22	.18	.27
ASI	-.05	.05	-.06	.27	.3	.27
Baseline IU-Prospective	.6	.05	.62***	.38	.46	.23
Discharge OCD						
Discharge IU-Prospective (b)	.54	.05	.53***	1.01	.34	.65**
Baseline OCD (c)	.41	.04	.52***	.43	.26	.34
ASI	.01	.05	.01	-.43	.41	-.27
Baseline IU-Prospective	-.25	0.06	-.26***	.01	.63	<.01
Mediating Effect of IU-Prospective						
Indirect effect (c')	.05	.02	.06*			
Total effect	.46	.04	.58***			

Note. ASI = Anxiety Sensitivity Index (Peterson & Heilbronner, 1987). ASI and baseline IU-Inhibitory and baseline IU-Prospective included as covariates.
* $p < .05$. ** $p < .01$. *** $p < .001$.
Abbreviations: OCD: Obsessive-compulsive Disorder; OCD+PTSD: Comorbid OCD and PTSD; IU: Intolerance of Uncertainty; ASI: Anxiety Sensitivity Index.

Table 3: Symptom change from baseline to discharge based on diagnostic group.

	Baseline		Discharge				
OCD	***M***	***SD***	***M***	***SD***	***M* diff.**	***t***	***df***
OCD	31.92	14.59	17.41	11.76	14.51	20.83***	301
IU-Inhibitory	45.97	14.56	35.58	13.77	10.39	14.12***	301
IU-Prospective	38.31	12.01	31.17	11.55	7.14	12.40***	301
ASI	27.79	13.31	17.73	11.72	10.07	14.52***	301
OCD+PTSD	***M***	***SD***	***M***	***SD***	***M* diff.**	***t***	***df***
OCD	45.38	14.45	35.19	20.14	10.19	2.23*	15
IU-Inhibitory	52.81	10.41	46.56	14.87	6.25	1.93	15
IU-Prospective	48.25	7.58	44.38	12.37	3.88	1.37	15
ASI	34.50	11.65	27.81	16.43	6.69	2.21*	15

Note. ASI = Anxiety Sensitivity Index [33].
* $p < .05$. *** $p < .001$.
Abbreviations: OCD: Obsessive-compulsive Disorder; OCD+PTSD: Comorbid OCD and PTSD; IU: Intolerance of Uncertainty; ASI: Anxiety Sensitivity Index

Discussion

Patients with OCD+PTSD report more severe symptomatology, poorer treatment response, and are more likely to drop out of treatment prematurely [2,4-7]. IU is believed to be a transdiagnostic feature of both disorders that may explain worsened treatment outcomes, yet little is known about how IU presents in patients with OCD+PTSD and how changes in IU during treatment may explain differences in treatment response. Using a sample of patients in a residential treatment program for OCD and anxiety, controlling for the known effects of anxiety sensitivity [30-32], the current study found that patients with OCD+PTSD reported significantly worse inhibitory and prospective IU at baseline. Importantly, whereas patients with OCD experienced OCD symptom reductions that coincided with reductions in prospective IU, patients with OCD+PTSD did not report significant reductions in either type of IU over the course of treatment. Moreover, patients with OCD+PTSD reported less improvement in OCD symptoms over the course of treatment and maintained significantly more severe OCD symptoms at discharge compared to patients with OCD. The findings suggest that the stable trajectory of intolerance of uncertainty for patients with OCD+PTSD may partially explain poorer treatment response.

Existing research has suggested that individuals with OCD are more emotionally intolerant of uncertainties related to the future whereas individuals with PTSD are more behaviorally immobilized in response to uncertainty [10,11], the current study found that patients with OCD+PTSD experience significantly greater intolerance to both types of uncertainty. Although prospective and inhibitory IU characterizes OCD and PTSD, respectively, findings from the current study provide evidence that IU is of greater concern for individuals with OCD+PTSD. In addition to anxiety habituation and building self-efficacy, allowing oneself to have a corrective learning experience is a central component of ERP [38]. In many cases, the corrective experience is learning that the feared outcome either did not occur, or if it did occur, it was less threatening than anticipated. However, focusing on the probability of a feared outcome occurring may inadvertently reinforce patients' perceived need for certainty [15]. In such cases, it is recommended instead that the corrective experience be framed as being better able to tolerate uncertainty regarding the feared outcome. Given the struggles with IU experienced by patients with OCD+PTSD, providers might consider emphasizing this type of corrective experience over probability estimates that may unintentionally exacerbate IU.

In addition to reporting greater IU at baseline compared to patients with OCD, patients with OCD+PTSD did not experience any significant improvement in IU over the course of treatment. Patients with OCD, conversely, experienced significant improvement in both inhibitory and prospective IU. Of interest to the current study was how changes in IU may explain differences in treatment response, given the established research that patients with OCD+PTSD are less responsive to treatment [2,4-6], Whereas improvements in prospective IU was found to partially explain OCD symptom change over the course of treatment for patients with OCD, the same was not found for patients with OCD+PTSD. Patients with OCD+PTSD appear to be more resistant or less able to adjust their beliefs about uncertainty even when engaging in treatment with a focus on IU.

The findings suggest that attenuated treatment response in this population is likely due not only to exacerbated OCD symptomology [6,7], but also to more severe and less malleable IU. Patients with OCD+PTSD may benefit from a greater focus on IU over the course of treatment. This increased attention to IU may include comprehensive psychoeducation about IU, how it manifests, and its role in symptom maintenance, as well as incorporation of challenges targeting IU. For example, both ERP and Prolonged Exposure (PE) are recognized as among the gold-standard treatments for OCD and PTSD, respectively [39,40]. Providers treating patients with OCD+PTSD should consider specific targets for inhibitory and prospective IU in exposure work. Inhibitory IU exposures should include OCD- or PTSD-specific uncertainties that tend to trigger behavioral inaction as well as exposures targeting general inhibitory IU (e.g., ordering food at a restaurant without reviewing the menu first). Prospective IU exposures should similarly involve OCD- and PTSD-specific uncertainties related to the future but can

also include exposures targeting general prospective IU (e.g., randomly selecting the order of a nighttime routine). Broadly, patients with OCD+PTSD may benefit from concurrent OCD- and trauma-focused treatments in part because this double dose of treatment may, in turn, help to reduce IU and ultimately promote better treatment outcomes.

LIMITATIONS AND FUTURE DIRECTIONS

The current study is limited by its use of a demographically homogenous sample, including a small sample of OCD+PTSD patients. Although bivariate analyses suggested no demographic differences in patients with OCD and OCD+PTSD, future research with more diverse and larger samples will provide stronger evidence for the findings. Future research would benefit from an inclusion of a PTSD sample to determine how IU may differ between patients with OCD+PTSD and PTSD; this represents a particularly important comparison given what is known about the severity of inhibitory IU in patients with PTSD. Studies seeking to replicate and extend the present findings may wish to examine treatment outcomes in patients completing concurrent ERP and trauma-focused treatment. This would also allow for meaningful examination into the reduction of PTSD symptoms, in combination with OCD symptoms, across treatment. Similarly, findings would be greatly strengthened if replicated using randomized control trials which would ensure standardization of treatment. For example, although a subset of the sample was diagnosed with PTSD, it is not known whether and how this was addressed during treatment. In addition, data was not available regarding patient's trauma history, so it is not known whether the relationships among OCD, PTSD, and IU are retained regardless of trauma type. Future research may wish to account for trauma type to ensure that trauma type does not differentially predict IU or treatment response. Lastly, because the model was just-identified, fit statistics could not be generated to compare the overall model fit between patients with OCD and OCD+PTSD. One benefit to multigroup analysis is the ability to conduct measurement invariance tests, which examine whether constructs are conceptually similar between groups. This is done sequentially such that equality is assessed for factor structure, loadings, intercepts, residuals, and means [41]. Due to sample constraints, measurement invariance tests could not be run in the current study. It is recommended that future studies seek to include groups of 200 or more so that measurement invariance tests can be reliably run and interpreted [42].

CONCLUSION

The current study is the first to our knowledge to examine OCD treatment response as a function of differences in IU for patients with OCD and OCD+PTSD. High rates of comorbidity in this population highlight the need for greater understanding into the reasons for worsened treatment response so that treatment can be tailored to more effectively treat comorbid symptoms of OCD and PTSD. The findings provide some understanding into why patients with OCD+PTSD are less responsive to treatment overall and underscore the need to expand incorporation of IU into OCD treatment when working with a comorbid OCD+PTSD population.

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