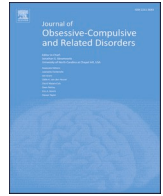




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# To achieve a sense of rightness: The joint role of Not Just Right Experiences and Intolerance of Uncertainty in Obsessive-Compulsive Disorder

Belén Pascual-Vera<sup>a,b,\*</sup>, Amparo Belloch<sup>b</sup>, Marta Ghisi<sup>c</sup>, Claudio Sica<sup>d</sup>, Gioia Bottesi<sup>c</sup>

<sup>a</sup> Department of Psychology and Sociology, University of Zaragoza, Spain

<sup>b</sup> Department of Personality Psychology. Research Unit for Obsessive-Compulsive and Related Disorders (I'TOC). University of Valencia, Spain

<sup>c</sup> Department of General Psychology, University of Padova, Via Venezia 8, 35131, Padua, Italy

<sup>d</sup> Psychology Section, Department of Health Sciences, University of Firenze, Via San Salvi, 12, (Padiglione 26), 50135, Florence, Italy

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## ABSTRACT

**Background/Objective:** Not Just Right Experiences (NJREs) are currently considered as one of the motivators of Obsessive-Compulsive Disorder (OCD), but the ways through which NJREs affect OCD symptoms remains unclear. The aim of the present study was to examine the putative mediational role of Intolerance of Uncertainty (IU) in the association between NJRE severity and OCD symptoms in patients with OCD.

**Method:** Sixty-two patients with OCD completed self-report measures of NJREs, OCD symptoms, and IU.

**Results:** IU mediated the relationship between NJRE severity and OCD symptoms. Furthermore, NJRE severity emerged as moderator of the path, suggesting that the mediational role of IU is stronger when the severity of NJREs increases.

**Conclusion:** Findings support the importance of NJREs in OCD, as well as the specific contribution of IU in the maintenance of this disorder.

## 1. Introduction

Dysfunctional beliefs about obsessions are conceptualized to increase anxiety and fear of harm in individuals. According to cognitive models of Obsessive-Compulsive Disorder (OCD), dysfunctional beliefs (e.g., beliefs that threat is ever-present, beliefs that unwanted intrusive thoughts are dangerous, beliefs that one is personally responsible for anticipating and preventing harm) are therefore considered risk factors for the development of OC symptoms or behavioral, cognitive, and emotional features that are indicative of the disorder (e.g., Obsessive Compulsive Cognitions Working Group (OCCWG, 2005; Rachman, 2002; Salkovskis, 1999). Nonetheless, many patients with OCD do not report a subjective sense of threat or fear, but they engage in compulsions to manage and reduce inner and diffuse feelings of incompleteness (INC) (Summerfeldt, 2004) or experiences that things are not just right (i.e., Not Just Right Experiences, NJREs), until they achieve a state or feeling of perfection (Coles, Frost, Heimberg, & Rheume, 2003; Coles, Heimberg, Frost, & Steketee, 2005). The importance of these experiences in OCD is also acknowledged in the Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition (DSM-5) when considers them

as one of the “affective responses” of the disorder (American Psychiatric Association [APA], 2013, p.239).

Research has extensively supported the relationship between NJREs and a variety of OCD symptoms (i.e., Belloch et al., 2016; Bragdon & Coles, 2017; Coles et al., 2003; Cogle, Fitch, Jacobson, & Lee, 2013; Fornés & Belloch, 2017; Fornés, Ruiz, & Belloch, 2016; Sica, Caudek, Chiri, Ghisi, & Marchetti, 2012). Even though most of the research has focused on symmetry and ordering/arranging symptoms, NJREs have been described as occurring in other OCD symptom dimensions, such as washing, checking, hoarding and neutralizing, suggesting that these experiences may underlie most manifestations of OCD (e.g., Belloch et al., 2016; Cogle, Goetz, Fitch, & Hawkins, 2011; Sica et al., 2012; Taylor et al., 2014). Moreover, in a study with 85 individuals with a diagnosis of OCD, no differences were found in the scores of the distress caused by six symptom domains between two subgroups of patients scoring high vs. low in incompleteness (Bragdon & Coles, 2017). Lastly, a family study showed that the offspring of individuals who scored high in OCD symptoms reported higher scores on NJRE than the offspring of non-symptomatic individuals (Sica, Bottesi, Caudek, Orsucci, & Ghisi, 2016).

\* Corresponding author. Department of Psychology and Sociology, School of Social and Human Sciences, University of Zaragoza, Campus of Teruel, C/ Ciudad Escolar s/n, 44003, Teruel, Spain.

E-mail address: [belen.pascual@unizar.es](mailto:belen.pascual@unizar.es) (B. Pascual-Vera).

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One important question is whether the above-mentioned dysfunctional harm-related beliefs might also play some role on the NJREs: Intolerance of Uncertainty (IU) is one of the OCD-related belief that has been a focus of interest in the realm of research about NJREs. This is defined 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). There are several reasons that justify the interest of IU in relation to NJREs. From a theoretical perspective, the earliest theorists of OCD (e.g., Reed, 1985; Shapiro, 1965) considered that patients with this disorder seem to be unable to experience conviction about their acts. This is especially remarkable in patients with checking and arranging symptoms, to the point that malignant doubt and uncertainty is their central and persistent clinical characteristic (Dar, 2004). Research has supported this assumption, showing that OC-checkers show high IU and find uncertainty more distressing compared to OC-non checkers and non-anxious controls (Tolin, Abramowitz, Brigidi, & Foa, 2003).

Uncertainty has been also associated to other psychopathological aspects of OCD, such as less confidence in cognitive processes as memory (Tuna, Tekcan, & Topcuoglu, 2005), perception (Hermans et al., 2008), or ability to concentrate (Nedeljkovic & Kyrios, 2007), which is revealed even in milder levels of IU (Toffolo, van den Hout, Engelhard, Hooge, & Cath, 2014). Moreover, it has been argued that high levels of IU might precede clinical OCD by acting as a vulnerability factor for the disorder (Nedeljkovic & Kyrios, 2007; Toffolo et al., 2014), and has showed to be particularly relevant in predicting severity of OCD symptoms above all other belief domains (i.e., Steketee, Frost, & Cohen, 1998).

Regarding the relationship between IU and NJREs, Fergus (2014) found that perfectionism and uncertainty scores of the Obsessive Beliefs Questionnaire (OBQ-20; OCCWG; 2003; 2005) significantly predicted NJREs in non-clinical individuals, suggesting that the expectations about a desired perceptual state of perfection and certainty may lead NJREs to be particularly frequent and distressing. Similar results were reported by Bragdon and Coles (2017), who found a subgroup of individuals with OCD that obtained high scores on incompleteness and low scores on beliefs of inflated responsibility and overestimation of threat, whereas they had high scores on beliefs reflecting perfectionism and uncertainty. Authors argued that, in this subgroup of patients, OCD symptoms may had been better explained as motivated by incompleteness/NJRE. Slightly different results were observed by Belloch et al. (2016), because in their sample of OCD patients perfectionism and IU beliefs showed the weakest associations with NJREs, compared with the relationships between NJRE and the other belief domains (i.e., responsibility and importance/thought control). Finally, Bottesi, Ghisi, Sica, and Freeston (2017) examined specifically the putative role of IU on OCD checking symptoms, through NJREs, in a non-clinical sample. The findings revealed that NJREs mediated the path from IU and checking, suggesting that an inability to tolerate uncertainty may cause individuals to check repeatedly, until they attain a sense of certainty and “just right” feeling.

Taken together, prior studies support that a relationship exists among NJREs, IU and OCD symptoms. Nonetheless, the pathway by which NJREs might influence on OCD symptoms needs further support, especially in individuals with a clinical diagnosis of OCD. According with current cognitive conceptualizations (i.e., Bragdon & Coles, 2017), NJREs could be viewed as a primary motivator of OCD symptoms, especially compulsions, thus paralleling the functional relationships between obsessions and compulsions. From this perspective, IU would reasonably represent a mediational factor of the relationship between NJREs and OCD symptoms. Thus, the main purpose of the current study was to examine whether IU may be a putative mediator of the relationship between NJREs and OCD symptoms in a clinical sample of patients with a formal diagnosis of OCD.

## 2. Method

### 2.1. Participants

A group of 62 treatment seeking outpatients, 38 males and 24 females, with a primary diagnosis of OCD following DSM-5 criteria (APA, 2013) participated in the study. Up to 54.8% of individuals (N = 34) were Spanish and 45.2% (N = 28) were Italian. Their mean age was 31.86 (SD = 11.04) years, ranging from 18 to 62 years. Regarding education, 78.3% had finished or were attending higher studies (≥13 years of education), 20% had medium studies level (5–12 years of education) and 1.7% had elementary studies (≤5 years of education). The employment profile of the sample was as follow: 37.3% were employed, 31.4% were student, 23.5% were unemployed, 3.9% were retired, and 4% were full-time homemaker or had a non-classified occupation. Most of the individuals were single (65.6%), 27.9% married/cohabitating, 4.9% separated/divorced, and 1.6% widowed. Between-group comparisons (Spanish vs. Italian OCD patients) revealed no differences on education level ( $\chi^2(2, N = 60) = 3.492, p = .175$ ), employment profile ( $\chi^2(5, N = 51) = 3.472, p = .628$ ) and marital status ( $\chi^2(3, N = 61) = 2.410, p = .492$ ).

At the intake, the main OCD symptom domains among the Spanish and the Italians participants were, respectively, the following: sexual/immoral/religious (1 patient and 0 patients); aggression/harm (8 patients and 1 patient), contamination/cleaning (7 patients and 14 patients), doubts/mistakes/checking (5 patients and 7 patients), symmetry/ordering (1 patient and 3 patients), superstitious/magical thinking/repeating (7 patients and 0 patients). Four Spanish patients and three Italian patients had other OC symptoms (e.g., illness-related, hoarding, relationship-OCD related). Regarding comorbidity, 10 Spanish patients (31.25%) had one or more secondary comorbid disorders: Major Depression/dysthymia (4 patients), Generalized Anxiety Disorder/Social Anxiety Disorder (2 patients), and dysfunctional personality traits (4 patients). In addition, 11 Italian patients (39.28%) had one or more secondary comorbid disorders, specifically: Generalized Anxiety Disorder/Panic Disorder (7 patients), Major Depression (3 patients), and Obsessive-Compulsive Personality Disorder (1 patient).

Spanish and Italian patients were comparable with respect to gender, age, and in the scores of all self-report measures (described in the next section), as shown in Table 1. Therefore, we used the sample as a whole for all the analyses.

### 2.2. Measures

#### 2.2.1. Socio-demographic data sheet

The data assessed were the following: age, gender, years of education, employment profile, and marital status. Additional questions about the participants’ current mental and physical health status and

**Table 1**  
Differences between Spanish and Italian OCD patients in the study’s measures.

Measures	Spanish OCD (n = 32)	Italian OCD (n = 28)	$\chi^2/t (df)$	p
Gender (% male)	58.8	64.3	.193	.660
Age	30.43 (10.04)	33.5 (12.06)	1.073 (58)	.288
NJREQ-R-N	3.67 (2.42)	3.92 (2.47)	.404 (60)	.688
NJREQ-R-S	31.05 (9.13)	31.14 (10.93)	.033 (60)	.974
OBQ-IU	4.47 (1.34)	4.86 (1.15)	1.215 (60)	.229
OCI-R Total	28.41 (11.51)	27.07 (13.71)	-.418 (60)	.677

Note: Data are Means (SD). NJREQ-R-N: Not Just Right Experiences Questionnaire Revised-Number subscale; NJREQ-R-S: Not Just Right Experiences Questionnaire Revised-Severity subscale; OBQ-IU=Obsessive Beliefs Questionnaire-Intolerance of Uncertainty subscale; OCI-R: Obsessive-Compulsive Inventory-Revised.

treatments were also included.

### 2.2.2. Not Just Right Experiences Questionnaire-Revised (NJREQ-R; Coles et al., 2005)

This self-report questionnaire contains 19 items in three parts. The first 10 items present sample NJREs and instructs respondents to indicate whether they experienced them within the past month (Yes/No response format). The sum of the reported experiences refers to the NJRE-number. The second part (2 items) asks respondents to indicate which NJRE occurred most recently and when. In the third part (7 items), respondents rate the frequency, intensity, immediate distress, delayed distress, rumination, urge to respond, and sense of responsibility associated with the most recent NJRE on scales from 1 to 7. The sum of the ratings on these last 7 items comprises the NJRE-severity score. Excellent psychometric properties characterize both the Italian (Ghisi, Chiri, Marchetti, Sanavio, & Sica, 2010) and Spanish (Carrasco & Belloch, 2013) versions of the NJREQ-R. In the current study only the NJRE-severity score was used. Its internal consistence value was excellent ( $\alpha = .91$ ).

### 2.2.3. Obsessive-Compulsive Inventory-Revised (OCI-R; Foa et al., 2002)

It is an 18-item self-report questionnaire that assesses distress associated with obsessive-compulsive symptoms. The OCI-R provides a total score (ranging from 0 to 72) and scores on six subscales: washing, checking, ordering, obsessing, hoarding and neutralizing. The OCI-R demonstrated good psychometric properties in both the Italian (Sica et al., 2009) and Spanish (Belloch et al., 2013) versions. In the present study, only the total score was used. The Cronbach's  $\alpha$  value for the total score was satisfactory:  $\alpha = 0.81$ .

### 2.2.4. Obsessive Beliefs Questionnaire (OBQ; Obsessive Compulsive Cognitions Working Group OCCWG (2003), p. 2005)

The OBQ is a self-report questionnaire originally consisting of 87 items (7-point scale) and then reduced to 44. It assesses the main belief domains identified by the OCCWG as central to OCD. A total score is also computed by summing the scores for each domain. The OBQ is a widely used measure of OC cognitive domains and has shown good internal consistency as well as good validity in Italian (Sica et al., 2004) and Spanish (Ruiz, Godoy, & Gavino, 2008) samples. In the current study only the IU subscale was used ( $\alpha = 0.82$ ).

## 2.3. Procedure

The study participants were consecutively recruited in two outpatient mental health clinics specialized in the treatment of OCD and related disorders, located in two sites: Padova (Italy) and Valencia (Spain). The two clinics are university-based and provides specialized psychological services to the general community. Patients were individually screened with a full history and examination by one of the authors (all PhD-level clinical psychologists). As far as the Spanish patients are concerned, intake assessment consisted of the Anxiety and related Disorders Interview Schedule for DSM-5, lifetime version (ADIS-5-L; Brown & Barlow, 2014) to determine diagnoses of current and past disorders. With respect to the Italian subsample, all clinical diagnoses were established using the Structured Clinical Interview for DSM-5 (SCID-5; First, Williams, Karg, & Spitzer, 2015) and the Structured Clinical Interview for DSM-5 Personality Disorders (SCID-5-PD; First, Williams, Benjamin, & Spitzer, 2016). Information about basic demographic data (age, gender, occupation, educational level, socio-economic status), medical conditions and current/past psychological or pharmacological treatments were recorded. Before being included in the study, all potential participants were asked for their explicit consent to participate. After giving his or her explicit signed consent, each patient was given a questionnaire packet containing the self-report questionnaires described in the instruments section. The questionnaires were administered individually face-to-face with the

evaluator in a single session lasting from 45 to 60 min. At the time of the study, none of the Spanish patients had started psychological treatment, but twenty-six had started treatment with SSRIs between 4 and 6 days before completing the questionnaires. With respect to Italian patients, all of them were recruited before treatment. Nine of them were already assuming medication (SSRIs), whereas the remaining were unmedicated. The study was conducted in accordance with the Declaration of Helsinki and the research protocol was approved by the Ethics Committees boards of each research site (Ethics Committee of Psychological Sciences, University of Padova; University of Valencia).

## 2.4. Data analysis

All statistical analyses were performed using the software Statistical Package for the Social Sciences (SPSS) version 25. An alpha level of 0.05 (two-tailed) was used for all statistical tests. The *t*-student (independent sample) was computed to examine the differences between the OCD participants from the two sites in the study measures and socio-demographic data. Correlations among all study measures were examined by Pearson's correlations. Differences in correlations were tested using Fisher's *r* to *z* transformations.

Subsequently, a mediation model was tested: the NJREQ-R-severity score was entered as the independent variable, the OCI-R total score was entered as the dependent variable, and the OBQ-IU subscale was entered as the mediator. Models were tested through the PROCESS macro for SPSS and a bootstrapping approach was applied: mediation exists when a 95% CI of the indirect effect estimated from the bootstrap procedure excludes zero (Hayes, 2013). Ten thousand bootstrap samples and 95% bias-corrected CIs were used to evaluate the significance of the indirect effect and, in case it was significant, its effect size was measured as the ratio of indirect to total effect. Lastly, to assess the magnitude of indirect effects at a particular value of the NJREQ-R-severity score (i.e., conditional indirect effects), the same model was run including the NJREQ-R-severity score as the independent variable as well as the moderator (i.e. moderated mediation).

## 3. Results

The three study variables were significantly associated. The largest coefficients were found between the OCI-R total score and the scores on the other two questionnaires (NJREQ-R-severity:  $r = 0.529$ ;  $p < .01$ ; OBQ-IU:  $r = 0.445$ ;  $p < .01$ ), whereas the lowest was between the OBQ-IU and the NJREQ-R-severity ( $r = 0.260$ ;  $p = .041$ ). The correlation between OCI-R and the NJREQ-R scores was significantly higher than the observed between the OBQ-IU and the NJREQ-R measures ( $z = 1.75$ ,  $p = .08$ ).

### 3.1. Mediation and moderated mediation findings

The obtained mediation model is shown on Fig. 1, which also reports the respective unstandardized regression coefficients. Regarding the direct effects, the scores on the NJREQ-R-severity positively predicted the scores on the OBQ-IU subscale ( $b = 0.0332$ ;  $SE = 0.0159$  95% CIs = 0.0013, 0.0651), and the OBQ-IU subscale scores were predictive of the OCI-R total score ( $b = 3.2418$ ,  $SE = 1.0437$ , 95% CIs = 1.1533, 5.3303). The NJREQ-R-severity score also predicted the score on the OCI-R total ( $b = 0.5588$ ,  $SE = 0.1335$ , 95% CIs = 0.2917, 0.8260). The overall model was significant ( $F_{1,60} = 23.3692$ ,  $p < .001$ ) and explained 28.03% of the variance in the total score of OCI-R.

Both the total effect of NJREQ-R-severity scores on OCI-R total score ( $b = 0.6666$ ,  $SE = 0.1379$ , 95% CIs = 0.3908, 0.9424) and the indirect effect of NJREQ-R-severity scores on OCI-R total score were significant ( $b = 0.1078$ ,  $SE = 0.0664$ , 95% CIs = 0.0075, 0.2809), thus suggesting that the OBQ-IU subscale mediates the path. The ratio of indirect to total effect of NJREQ-R-severity on OCI-R total through the OBQ-IU subscale was 0.1617 ( $SE = 0.0896$ , 95% CIs = 0.0186, 0.3812), which indicates

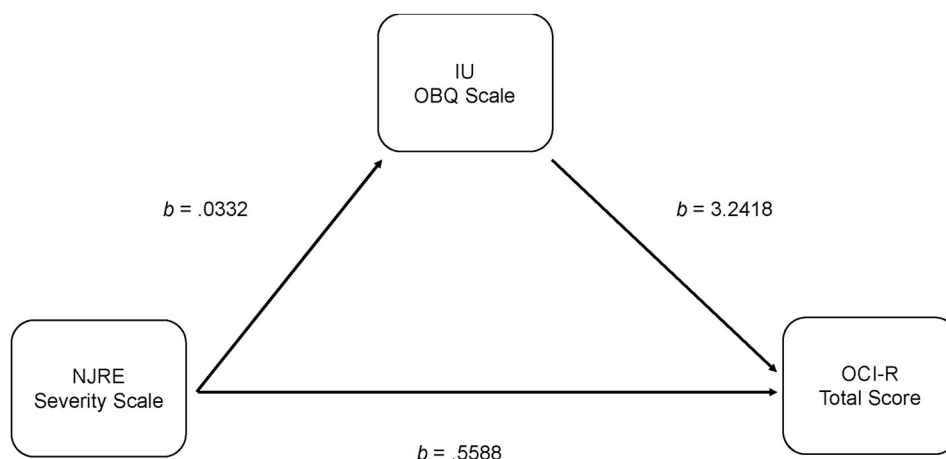


Fig. 1. Unstandardized regression coefficients between the NJREQ-R-severity score, the OBQ-IU subscale score and the OCI-R total score in OCD patients.

that the OBQ-IU subscale mediated the 16.17% of the path.

Furthermore, the moderated mediation analysis revealed that the NJREQ-R-severity × OBQ-IU subscale interaction was significant and positive ( $b = 0.1942$ ,  $SE = 0.0947$ , 95% CIs = 0.0046, 0.3838), indicating that NJREQ-R-severity moderates the mediation. Fig. 2 shows the bootstrapping analysis on three levels of NJREQ-R-severity ( $Q_1 = 25$ ,  $Q_2 = 31$ ,  $Q_3 = 39$ ), suggesting that the mediation effect of the OBQ-IU subscale in the path from NJREQ-R-severity to OCI-R total increases as the levels of NJRE Q-R-severity increases.

4. Discussion

The main aim of this study was to test the association between NJRES and symptoms of OCD through IU. This is the first study to address this issue in a clinical sample with a primary diagnosis of OCD.

Results from the mediational analysis provided support to the role of NJRES as putative motivators of OCD symptoms, since the severity of NJRES directly predicted the severity of distress by OCD symptoms (i.e., OCI-R total score). Furthermore, results showed that dysfunctional IU beliefs mediate the path between NJRES and OCD symptoms in patients with OCD. Our findings may suggest that individuals could interpret an ambiguous and multi-modal sensory feeling by itself, such as NJRES are, as the need to achieve a sense of certain. This is in accordance with other studies that have examined the relationship between IU and symptom domains of OCD in non-clinical individuals (e.g., Bottesi et al., 2017). For example, Sarawgi, Oglesby, and Cogle (2013), using *in vivo* assessments of OC symptoms, showed that IU could be more important in

washing, checking, and ordering and arranging compulsions than in harm-related obsessions (i.e., aggressive, sexual, immoral and repugnant).

As for the moderated mediation analysis, findings indicate that the severity of NJRES moderates the mediation, showing that the mediational effect of the IU in the path from NJRE to OCD symptoms increases as the severity of NJRES increases. This result agrees with the finding reported by Fornés and Belloch (2017), who found that compulsion severity was related with the need to do something and to check after experimental induction of NJRES in patients with OCD. Our findings also suggest that the severity of these experiences may not only represent a vulnerability factor for the disorder (Nedeljkovic & Kyrios, 2007; Sica et al., 2015; Toffolo et al., 2014), but also a marker of their severity in patients with OCD.

The present study has several limitations that must be mentioned. First, the clinical sample was composed by a relatively small number of OCD patients. Although the use of bootstrap procedures is adequate, it is necessary to generalize the data obtained with bigger sample sizes. Another limitation of this study pertains of the self-report measure used to assess IU (Taylor et al., 2006). We decided to use the OBQ subscale about IU beliefs to obtain data closer to their applicability to the OCD cognitive model about dysfunctional beliefs. Even though previous studies (e.g., Sica et al., 2019) supported the relationship among the OBQ-IU subscale, NJRE and OCD symptoms, it could be that the items included into the OBQ-IU subscale are excessively OCD-biased (e.g., Gentes & Ruscio, 2011) and, therefore, do not accurately assess IU as a broader dispositional characteristic, akin to a trait, presumably

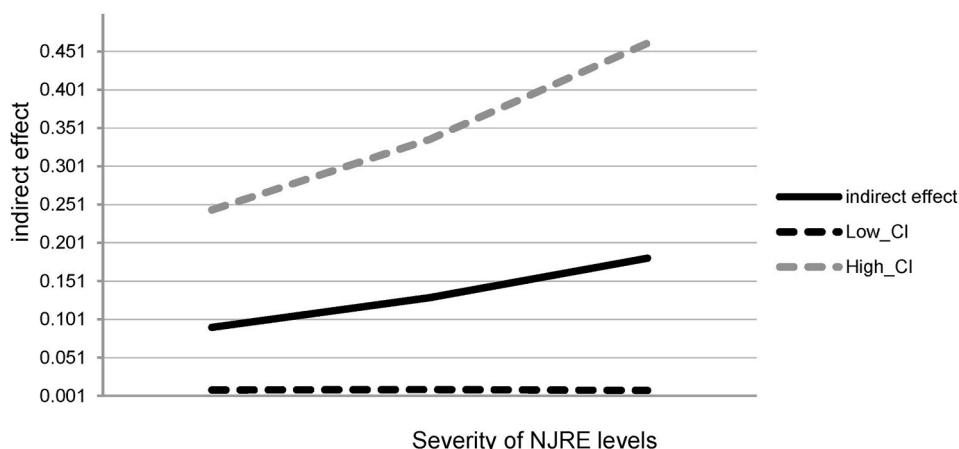


Fig. 2. Conditional indirect effect of NJREQ-R-severity on OCI-R total through the OBQ-IU subscale in OCD patients.

underlying the difficulties to manage uncertainty of the individuals with OCD.

Future studies should consider employing a measure of IU capable of capturing the core of the construct (i.e., the 12-item Intolerance of Uncertainty Scale; Bottesi, Noventa, Freeston, & Ghisi, 2019; Carleton, Norton, & Asmundson, 2007) and/or to focus specifically in assessing dysfunctional beliefs directly related to the experience of NJRE by itself. Third, patients were recruited across two different sites and different assessment procedures have been adopted. This issue may have affected results, but it is worth noting that no significant between-group differences in the measures of interest emerged. Lastly, the cross-sectional design we adopted does not allow tracing conclusions about the directionality of the observed associations; indeed, we tested only one plausible mediational model, despite strongly theoretically driven.

Summing up, the mediating role of IU in the relationship between NJREs and OCD symptoms is supported in OCD patients. Consistent with prior studies (e.g., Coles & Ravid, 2016), our findings suggest that NJREs may be a specific target of the OCD explanations and, therefore, of effective treatments. Findings also reveal specific contributions of IU beliefs in the relationship between NJREs and OCD symptoms, suggesting that dysfunctional beliefs could be also relevant in the development of this disorder in those participants that experienced highly disturbing NJREs as a part of their OCD. Further research investigating the paths from NJREs into a diverse range of OC symptoms manifestation through obsessional beliefs is needed.

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### Contributors

All authors contributed to the design of the study, collaborated in written the drafts of the manuscript, and have approved the final manuscript.

Belén Pascual-Vera and Amparo Belloch collected the Spanish OCD patient’s data, designed the statistical procedure, constructed the database and conducted statistical analyses.

Marta Ghisi and Gioia Bottesi collected the Italian OCD patient’s data, collaborated in constructing the database and in the statistical analyses.

Claudio Sica collaborated in the design of the statistical procedure and in the analyses of the obtained results.

### Declaration of competing interest

None of the authors have financial interests or conflicts of interest to disclose.

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