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RESEARCH PAPER

Obsessive-compulsive symptoms and dimensional models of psychopathology: The contribution of “not just right experiences”

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Abstract

Dimensional models provide a framework for characterizing psychopathology and personality disorders based on lower-order maladaptive traits, typically organized into five overarching domains: Negative Affect or Internalizing, Detachment, Antagonism, Disinhibition, and Psychoticism or Thought Disorder. Within the context of these dimensional models, the classification of Obsessive-Compulsive (OC) symptoms has raised questions, as they are often placed within the Negative Affect/Internalizing or Psychoticism/Thought Disorder domains. The discrepancy in their categorization may be attributed to the diversity in how these symptoms manifest. An alternative perspective involves the adoption of a measure associated with a vulnerability factor for OCD, which may transcend the specific symptoms of the disorder. In this study, our objective was to explore the association between ‘Not Just Right Experiences’ (NJREs) and the dimensions specified in the DSM-5 Alternative Model of Personality Disorders (AMPD). We utilized two distinct samples, one consisting of 978 participants and the other comprising 1004, all of whom were non-clinical individuals. Through a series of exploratory factor analyses conducted on the initial sample, we uncovered a hierarchical structure of general psychopathology. Within this structure, NJREs were situated within the AMPD’s Psychoticism domain. Furthermore, the Psychoticism domain exhibited a strong and unique association with all OC symptoms, surpassing the influence of other AMPD components. A structural equation

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model applied to the second sample validated these findings, indicating that both the Psychoticism and Negative Affect played significant roles in explaining a substantial portion of the variance observed in NJRE measures. These outcomes have pertinent clinical implications, particularly in the context of Cognitive-Behavioral Therapy for individuals with OCD.

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Introduction

Categorical models of obsessive–compulsive disorders (OCD) are limited by heterogeneity of symptom presentation, since OCD phenotype can vary both within and across patients over time (e.g., Abramowitz & Jacoby, 2015). This is one of the reasons why the shift from DSM-IV-TR to DSM-5 which separated OCD from the “Anxiety Disorders” category and placed it into its own section (“Obsessive-Compulsive and Related Disorders”) has been object of debate (Stein et al., 2010; Storch, Abramowitz & Goodman, 2008). Such debate has also important clinical implications: if anxiety is not the central mechanism involved in OCD, it raises questions about how cognitive-behavioral techniques, such as exposure and response prevention, are theoretically grounded in addressing the condition (Foa, Abramowitz, Franklin, & Kozak, 1999).

A different approach consists in conceptualizing OCD pathology in terms of dimensions. Since obsessions and compulsions are experienced by most of the population and vary greatly in severity and frequency (Clark et al., 2014; Radomsky et al., 2014), it seems logical to conceptualize them as a continuum spanning the normative to maladaptive range (see Cooper et al., 2022 for a thorough discussion).

Dimension classification and OCD

Individual differences in psychopathology and personality can be conceptualized through a set of basic dimensions (e.g., Markon, Krueger & Watson, 2005). For instance, the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5; American Psychiatric Association, 2013) now includes the Alternative Model of Personality Disorders (AMPD), which represents variations in pathological personality manifestation through a multidimensional trait system. The AMPD (Section III of DSM-5), characterizes personality disorders in terms of lower-order maladaptive traits organized in five domains (Negative Affect, Detachment, Antagonism, Disinhibition, and Psychoticism). Importantly, these domains are related to almost all forms of psychopathology (e.g., Al-Dajani, Gralnick & Bagby, 2016; Oltmanns, Smith, Oltmanns & Widiger, 2018) and lower-order facets (i.e., maladaptive traits) are useful for a better understanding of mental disorders (Kotov, Gamez, Schmidt & Watson, 2010). To illustrate, a very recent study found that AMPD lower order facets demonstrated significant unique relations with depression, establishing the relevance of the AMPD components to this condition (Vittengl, Jarrett, Ro, & Clark, 2023).

Another multidimensional model of general psychopathology is the Hierarchical Taxonomy of Psychopathology (HiTOP; Kotov et al., 2017) which organizes mental disorders within an empirically derived hierarchical structure: the broadest level in the hierarchy is the general factor, or p-factor, followed by super-spectra, spectra, subfactors, syndromes, and symptoms. There is a substantial agreement among scholars that super-spectra represent the broad Internalizing and Externalizing components of general psychopathology. The six spectra of the HiTOP model are constructs that describe the major forms of psychopathology (i.e., the same level of description of the AMPD domains): Internalizing, Disinhibition, Antagonism, Detachment, Thought Disorder, and Somatoform (for other details, see Kotov et al., 2017).

Dimensional models originally identified OCD under the Negative Affect (i.e., the AMPD domain) or Internalizing spectrum (i.e., the HiTOP dimension; for a review see Watson et al., 2022) in line with empirical studies of general psychopathology which frequently place OCD under a dimension mainly characterized by anxiety and distress (Lahey et al., 2008; Slade & Watson, 2006). However, other studies have found that OCD loaded also on Psychoticism (i.e., the AMPD domain) or Thought Disorder (i.e., the HiTOP spectrum). For instance, Sellbom and colleagues (2020) regressed manifest OC symptoms on the AMPD domains: OC symptoms both loaded on Negative Affect and Psychoticism, even though loadings were stronger for Negative Affect, rather than Psychoticism. Likewise, Faure and Forbes (2021) found that OC symptoms cross-loaded on HiTOP Internalizing and Thought Disorder spectra. Lastly, Cooper et al. (2022), reported that a global measure of OC symptoms again loaded both on Negative Affect and Psychoticism, and on the low end of Disinhibition.

The above results are not totally surprising since the facets that strongly load on the Psychoticism trait inside the AMPD model – Unusual Beliefs/Experiences, Perceptual Dysregulation, and Eccentricity – all may relate to the unusual or bizarre content of some obsessions and compulsions (e.g., Chmielewski & Watson, 2008). More in general, there are evidence that OCD and psychotic disorders may co-occur (e.g., Mawn et al., 2020): they both run in family (e.g., Pauls, 2010) and often takes a chronic course with rare spontaneous remissions (e.g., Lally et al., 2017).

However, three limitations characterize the current research. First, the existing studies used only a selection of domains/spectra described either by the AMPD or the HiTOP models. In addition, is not clear whether the lower-order maladaptive traits of the AMPD were reliably measured, since the domains were operationalized either with a brief form (Sellbom et al., 2020) or through various mea-

asures with different psychometric characteristics (Faure & Forbes, 2021).

Second, the extant studies relied almost exclusively on a confirmatory analytic approach (with the exclusion of the study by Cooper and colleagues, 2022),¹ whereas it would be interesting to take in consideration exploratory strategy too, given the uncertain nosological status of OCD. For instance, Faure and Forbes (2021) performed 21 confirmatory factor analyses (CFA), testing different combinations of association between specific clusters of OC symptoms and specific spectra of the HiTOP. Interestingly, despite the relevant number of CFAs, Faure and Forbes (2021) also employed two exploratory models to better inquiry into the results of confirmatory analyses.

Third, the various OC symptom dimensions may differently load on domains/spectra because of their heterogeneous content. For instance, obsessing and neutralizing symptoms appear more as "thought" phenomena (i.e., "I feel the need to pray to get rid of bad thoughts or images"), symmetry/ordering as a sort of perfectionistic/superstitious manifestation ("I feel the need for things around me to be placed in a certain order"), whereas washing could be more linked to fear or disgust concerns.

The current study sought to overcome the above limitations through an exploratory-confirmatory design in which all the lower order AMPD traits were considered along with a measure of "Not Just Right Experiences" (NJREs), a putative OCD vulnerability factor. By reducing the heterogeneity of the clinical picture of OC symptoms and favoring the emergence of a structure without imposing *a priori* constraints, we seek to provide clearer evidence about the placement of OCD in a dimensional framework.

Furthermore, we sought to strengthen the evidence for the results obtained in the exploratory analysis through a confirmatory approach.

NJREs: Its role in OCD

The concept of NJREs was first introduced by Janet (1908). He described the experience of NJREs as follows: "they feel that actions that they perform are incompletely achieved or that they do not produce the sought-for satisfaction" (Pitman 1987, p. 226). Based on his pioneering clinical observations, Janet proposed that NJREs play an important role in OC symptoms. Importantly, Janet regarded NJREs as something that cannot be simply reduced to a failure to achieve personal standards defined by one's perfectionistic beliefs.

Janet's definition of NJREs was broad, encompassing concepts that would be known today as alexithymia, depersonalization, derealization, and impaired psychological mindedness. In line with this, now a few scholars consider some manifestation of OCD as an altered self-experience during or just before/after a compulsive act (Ecker, Kupfer & Gönner, 2013).

Other contemporary investigators (Coles, Frost, Heimberg, & Rhéaume, 2003; Rasmussen & Eisen, 1989),

¹ In this study only a global score of OC symptoms were used in an exploratory factor analysis. The regression analyses conducted with the 25 PID-5 lower-order as predictors on each OC dimension need to be interpreted cautiously due to possible type-1 errors.

on the other side, define more narrowly NJREs: a sense or feeling that one's actions, intentions, or experiences have not been properly achieved; that is, the experience that something is not "just right." Such authors have proposed that NJREs is not simply the by-product of perfectionistic beliefs (i.e., a cognitive phenomenon or a personality trait): NJREs appears to be a "perceptually tinged" phenomenon. In this narrow sense, NJREs seem to reflect the sensory dysregulation problem that several scholars consider at the heart of OCD psychopathology (i.e., McGovern and Sheth, 2017; Riesel, Endrass, Auerbach, & Kathmann, 2015; see also Fradkin et al., 2020).²

Many studies have confirmed the role of NJREs in OC and OCD symptoms (e.g., Belloch et al., 2016; Ferrão et al., 2012; Ghisi et al., 2010; Lewin et al., 2015; Pascual-Vera et al., 2021; Sica et al., 2012, 2013, 2016; Taylor et al., 2014; Yang et al., 2023).

A very recent meta-analysis including 22 studies (N = 6267) confirmed the strong association between sensory phenomena and OC symptoms (Horncastle, Ludlow & Gutierrez, 2022). Moreover, such relation was similar in clinical and non-clinical groups.

Of relevance, NJREs appears significantly more strongly correlated with OC symptoms than other clinical phenomena such as perfectionism, social anxiety, worry, depression, disgust, gambling, eating disorders, autistic traits (Cameron et al., 2019; Coles, Heimberg, Frost & Steketee, 2005; Ecker & Gönner, 2008; Ghisi et al., 2010; Hellriegel et al., 2017; Sica et al., 2015, 2019; Taylor, 2012). On the other side, it has been postulated by Kloosterman, Summerfeldt, Parker, and Holden (2013) that NJREs may serve as a potential endophenotype shared among various disorders characterized by impaired inhibitory control systems (Eddy & Cavanna, 2014; Fergus, 2014; Sica et al., 2015).

Lastly, in some studies NJREs were associated with all the OC symptoms dimensions (washing, checking, ordering, obsessing, and mental neutralization; Sica et al., 2015; Sica, Caudek et al., 2019) and a recent study demonstrated that NJREs are not themselves an OC symptom (Sica, Bottesi et al., 2019).

In summary, NJREs could be conceived an underlying vulnerability factor that may cut across OC symptoms.

The current study

Based on studies of both the clinical phenomenology and personality correlates of OCD, as well as structural analyses of OC symptoms in relation to a joint hierarchical framework for general psychopathology, (i.e., the AMPD or HiTOP

² In a parallel vein, Summerfeldt (2004) presented a concept akin to NJREs, termed "feeling of incompleteness." This construct delineates a profound perception of inadequacy or unresolved tension, frequently compelling individuals to partake in compulsive actions as a means of mitigating this distress. Nonetheless, a subtle differentiation emerges, as NJREs center on the subjective experience of things being "not just right," rather than encompassing the broader notion of incompleteness.

models; Faure & Forbes, 2021; Sellbom et al., 2020), we hypothesized that NJREs would load onto the broad internalizing component (as opposed to externalizing) at the top-most level of the hierarchy; at the lowest level of hierarchy NJREs was expected to operate as an indicator of a component mainly reflecting either the AMPD Negative Affect or Psychoticism domains. We were unable to formulate a clearer hypothesis due to the lack of previous studies with OCD vulnerability factors; therefore, we based our prediction upon studies including OC symptoms measures.

Crucially, we investigated whether the hypothesized relationships between NJREs and AMPD traits would replicate when integrated into a structural equation model using a distinct sample.

Methods

Participants and procedure

A first sample of participants was composed by 987 individuals from the nation of Italy (52.3% undergraduate students, 47.7% from community); nine individuals did not respond to the questionnaires of interest (see below), leaving a final sample of 978 participants. The mean age was 30.9 years ($SD = 14.1$), and 74.5% were female. The mean education level was 14.5 years ($SD = 3.3$). Regarding relationship status, 69.6% were single, 26.9% were married or cohabitating, and 3.1% were separated or divorced.

A second sample was composed by 1149 Italian individuals (45.5% undergraduate students, 54.5% from community); 145 individuals did not respond to the questionnaires, leaving a final sample of 1004 participants. The mean age was 30.9 years ($SD = 14.7$), and 46.1% were female. The mean education level was 13.9 years ($SD = 2.8$). Regarding relationship status, 71.1% were single, 25.4% were married or cohabitating, and 2.8% were separated or divorced.

Both samples completed an online battery of questionnaires; NJREs and OCD measures were included in large batteries of questionnaires about a generic "survey on personality characteristics".

Ethical approval for the current analytic work was obtained from the Institutional Review Board (IRB) of the (masked for review) in conformity with the principles of the Declaration of Helsinki. All participants were advised of the study's aims and provided informed consent before completing the study measures.

Measures

Personality Inventory for DSM-5 Personality Disorders (PID-5)

The PID-5 (Krueger et al., 2012) consists of 220 items rated on a 4-point Likert scale assessing 25 facet traits that load onto 5 higher-order dimensions: Antagonism, Detachment, Disinhibition, Negative Affect, and Psychoticism. The Italian version of the PID-5 shows psychometric properties as demonstrated for the original English version (Fossati et al., 2013; for measure reliability and other details, see Supplementary Material).

Not Just Right Experiences-Questionnaire-Revised (NJRE-Q-R)

The NJRE-Q-R (Coles et al., 2005) has 19 items. This measure yields two overall indices: the *NJRE-Q-R-total* (i.e., the number of NJREs experienced) and the *NJRE-Q-R severity scale* (i.e., the sum ratings of several form of distress caused by the NJREs). The Italian version of the NJRE-Q-R demonstrated good psychometric properties in several studies (e.g., Ghisi et al., 2010; for measure reliability and other details, see Supplementary Material).

Obsessive Compulsive Inventory-Revised (OCI-R)

The OCI-R (Foa et al., 2002) is a widely used 18-item self-report questionnaire assessing the severity of OC symptoms on 5-point Likert scale. Items are grouped into six subscales (washing, checking, ordering, obsessing, hoarding, and mental neutralizing). The Italian version of OCI-R indicated good psychometric properties (Sica et al., 2009; for measure reliability and other details, see Supplementary Material).

Data analysis

In the first sample, the 25 PID-5 facets and the two NJRE-Q-R scales were considered simultaneously in a series of principal components analyses (PCAs) with orthogonal rotation. Consistent with previous studies employing this approach (e.g., Goldberg, 2006), a series of PCAs was performed in a sequential manner, first extracting one principal component from all items to represent the first level of the hierarchy, followed by two principal components, then three, and so on – with the number of components at the final level determined via parallel analysis, Cattell's *scree test* and factor interpretability.

A hierarchical structure was delineated using the correlations among factors between levels as path estimates between each subsequent level of the hierarchy and the preceding level. Finally, scores were computed for components at different levels of the hierarchy using regression estimation, and these scores were examined for associations with the OC symptoms (i.e., Pearson's product-moment correlations were computed to explore the associations between the components at each level of the hierarchy and OC symptoms).

A structural equation modeling (SEM) on data collected on the second sample was employed to validate the findings of the previous analysis (see Supplementary material for further details).

Results

Exploratory analyses on the first sample

Parallel analysis, Cattell's *scree test* and factor interpretability indicated that a four-factor solution best fit the data.³ For each component at each level of the hierarchy, the anchor scales (i.e., the strongest contributing

³ Of note, when the two NJRE-Q-R scales were removed from the analysis, the expected AMPD five factor model emerged from data. See Supplementary material, Table S6.

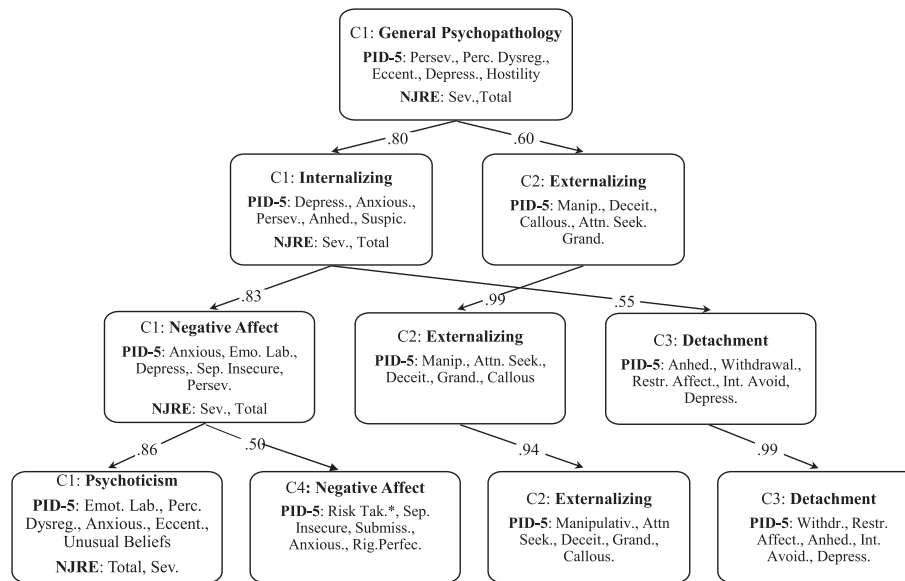


Fig. 1 Hierarchical Structure of Personality Pathology including NJREs Dimensions. *Note.* Only the first five dimensions of PID-5 and the two NJREs scores are shown. *= with negative sign

scales) were identified to assist in interpretation and labeling of each component (Fig. 1).

The overarching *General Psychopathology* component was characterized by general dysfunction. The second level represented broad *Internalizing* and *Externalizing* dimensions consistent with the larger literature (e.g., Rosenström et al., 2019) and described also in the HiTOP model as super-spectra. At this level, NJREs dimensions loaded uniquely onto the broad *Internalizing* dimension. At the third level, the *Internalizing* bifurcated into *Negative Affect* and *Detachment* components and *Externalizing* component remained unchanged. At this level, the two NJREs scores contributed to *Negative Affect*. Lastly, at the fourth level, *Negative Affect* parted into two distinctive components, such that emotional lability, perceptual dysregulation, anxiousness, eccentricity, and unusual beliefs typified *Psychoticism* whereas *Negative Affect* comprised a negative association with risk taking, and positive associations with separation insecurity, submissiveness, anxiousness, and rigid perfectionism. At this final level, the two NJREs scales robustly and uniquely contributed to *Psychoticism* component. Two facets of *Detachment* domain (Suspiciousness and Depressivity) also loaded highly on this component (see supplementary data: Tables S2–55).

Correlations of components at each level of the hierarchy with OC symptoms

Table 1 shows that OC symptoms were positively associated with the broad *Internalizing* domain at level 2 and were of medium–high size. At level 3 OC symptoms were robustly associated with the *Negative Affect* dimension (including the two NJREs scores), barely related with *Externalizing* component and virtually no associated with *Detachment*. At the final level of the hierarchy, all OC symptoms were associated with *Psychoticism*: OCI-R total score and obsess-

ing at a large size, all the other symptoms type at medium size. OC symptoms also exhibited relations with *Negative Affect*, albeit of small size (Table 2).

Structural equation model on data from the second sample

Two distinct models with six dimensions were employed: either NJRE total or severity scales (identified by their respective items) and the five domains of PID-5 identified by the three most representative facet scores included under each domain (APA, 2014).⁴

The fit of both models was barely acceptable (Table 3). Inspection of modification indices indicated that a few adjustments were possible. In particular, the facet of emotional lability was added as indicator in psychoticism domain (consistently with what emerged in the PCA on the first sample) along with a few correlated-error terms between indicators belonging to the same latent variables (see supplementary material for further details). With these modifications the two models showed a more than acceptable fit (Table 3).

Psychoticism, Negative Affect and – negatively – Detachment, were significantly correlated with NJRE total score ($\zeta = 0.45$, $z = 5.3$, $p < .01$; $\zeta = 0.27$, $z = 5.1$, $p < .01$; $\zeta = -0.13$, $z = 5.1$, $p < .05$ respectively; see Fig. 2). The path from Psychoticism to NJRE total score was significantly greater than the path for the Negative Affect counterpart ($\chi^2_{(2)} = 73.9$, $p < .001$). In turn, Psychoticism and Negative

⁴ The three most representative facet scores included under each domain are: Emotional lability, Anxiousness, Separation insecurity (Negative Affectivity); Withdrawal, Anhedonia, Intimacy Avoidance (Detachment); Manipulativeness, Deceitfulness, Grandiosity (Antagonism); Irresponsibility, Impulsivity, Distractibility (Disinhibition); Cognitive/Perceptual Dysregulation, Eccentricity, Unusual Beliefs/Experiences (Psychoticism).

Table 1 Loadings at the four-component level.

	Psychoticism	Externalizing	Detachment	Negative Affect
PID-5				
Anhedonia	0.26	0.00	0.74	0.36
Anxiousness	0.58	0.12	0.16	0.59
Attention Seeking	0.17	0.78	-0.10	0.18
Callousness	0.05	0.57	<i>0.57</i>	-0.11
Deceitfulness	0.08	0.75	0.29	0.20
Depressivity	0.50	0.02	0.53	0.40
Distractibility	0.40	0.25	0.49	0.13
Eccentricity	0.64	0.31	0.38	-0.09
Emotional Lability	0.69	0.12	0.00	0.29
Grandiosity	0.02	0.72	0.04	0.06
Hostility	0.43	0.47	0.29	0.08
Impulsivity	0.38	0.48	0.23	-0.21
Intimacy Avoidance	-0.09	0.02	0.70	0.08
Irresponsibility	0.21	0.47	0.47	0.05
Manipulativeness	0.08	0.81	0.04	0.04
Perceptual Dysregulation	0.67	0.33	0.37	0.01
Perseveration	<i>0.54</i>	0.28	0.45	0.30
Restricted Affectivity	0.07	0.17	0.74	-0.06
Rigid Perfectionism	0.40	0.12	0.00	0.42
Risk-taking	0.27	0.39	0.03	-0.61
Separation Insecurity	0.38	0.29	0.10	0.59
Submissiveness	0.08	0.22	0.24	0.59
Suspiciousness	0.48	0.22	0.35	0.31
Unusual Beliefs	0.57	0.41	0.15	-0.11
Withdrawal	0.13	0.00	0.78	0.09
NJRE-Q-R				
Total	0.68	-0.01	-0.03	0.04
Severity	0.65	0.00	0.01	0.08

Note: PID-5 = Personality Inventory for DSM-5 Personality Disorders; NJRE-Q-R = Not Just Right Experiences-Questionnaire-Revised. Figures for the top five Personality Inventory of the DSM-5 facets and two NJREs measures are in **boldface**. Factor loadings $>|0.50|$ that are not within the top five highest factor loadings are *italicized*.

Affect were significantly correlated with NJRE severity score ($\zeta = 0.24$, $z = 3.2$, $p < .01$; $\zeta = 0.28$, $z = 5.6$) with no differences between the two paths (Fig. 3).

Discussion

In the exploratory factor analysis NJREs loaded on the Psychoticism factor along with emotional lability, eccentricity, perceptual dysregulation, anxiousness and unusual beliefs. In turn, such component was strongly associated with all OC symptoms over and above the other components. These results are relevant since they indicate that (1) NJREs is an important dimension related to all OC symptoms and (2) vulnerability for OCD appears a feature also linked to unusual or odd experiences, beliefs, and perceptions.

The strong loadings of emotional lability and anxiousness – two facets of Negative Affect (0.69 and 0.58, respectively) – in the Psychoticism dimension does not contradict the previous conclusion: in fact, anxiousness exhibited almost the same loading onto the Negative Affect component (0.59), whereas emotional lability may well represent

the emotional dysregulation (e.g., “my emotions are unpredictable”) linked to a Psychoticism continuum.⁵

Notwithstanding, the Negative Affect component did correlate with the OC symptoms, even though at a smaller magnitude. The relation between negative affectivity and OC manifestations might be linked to a general distress caused by symptoms (e.g., the well-known associations between OCD and anxious-depressive symptoms) or by the presence of perfectionist traits.

Interestingly, the SEM applied on the second sample replicated results from the previous studies which found that OCD phenomena related with both Psychoticism and Negative Affect (e.g., Faure and Forbes, 2021). However, consistently with our exploratory analysis, the Psychoticism component still explained an important amount of variance in NJRE measures.

⁵ There was also a high loading of perseveration (0.50; another facet of Negative Affect) on Psychoticism domain. However, both in Krueger et al. (2012) data and in the metaanalysis by Watters and Bagby (2018), perseveration exhibited a high loading also on the Psychoticism facet.

Table 2 Bivariate associations with OCD symptoms across the 2–4 four levels of the bass-ackwards hierarchy.

	Broad Internalizing (with the two NJREs scores)	Broad Externalizing		
OCI-R				
OCI-Total	0.50	0.18		
OCI-Washing	0.26	0.04		
OCI-Checking	0.33	0.08		
OCI-Ordering	0.33	0.12		
OCI-Obsessing	0.56	0.16		
OCI-R Mental Neutralizing	0.27	0.24		
	Negative Affect (With the two NJREs scores)	Externalizing	Detachment	
OCI-R				
OCI-Total	0.55	0.18	0.09	
OCI-Washing	0.32	0.05	−0.02	
OCI-Checking	0.34	0.08	0.06	
OCI-Ordering	0.42	0.14	0.00	
OCI-Obsessing	0.56	0.14	0.18	
OCI-R Mental Neutralizing	0.28	0.23	0.10	
	Psychoticism (With the two NJREs scores)	Externalizing	Detachment	Negative Affect
OCI-R				
OCI-Total	0.54	0.15	0.10	0.18
OCI-Washing	0.31	0.03	−0.01	0.10
OCI-Checking	0.33	0.07	0.05	0.16
OCI-Ordering	0.38	0.13	−0.02	0.18
OCI-Obsessing	0.54	0.11	0.18	0.20
OCI-R Mental Neutralizing	0.32	0.19	0.12	0.02

Note: values greater than 0.08 are significant at $p < .001$.

OCI-R = Obsessive Compulsive Inventory-Revised; NJRE-Q-R = Not Just Right Experiences-Questionnaire-Revised.

Table 3 Fit indices for initials and modified structural equation models comprising the five AMPD domains and, either the NJRE-Q-R total or severity score.

NJRE-Q-R (Initial models)	χ^2/DF ratio	CFI	RMSEA	SRMR
Total	5.1	0.88	0.06	0.05
Severity	8.5	0.87	0.08	0.06
NJRE-Q-R (modified models)	χ^2/DF ratio	CFI	RMSEA	SRMR
Total	4.4	0.90	0.06	0.05
Severity	5.4	0.93	0.06	0.05

So, how NJREs may be linked to a Psychoticism continuum? One possibility is that the misinterpretation of perceptual experience due to NJREs may give rise to unusual beliefs or sensations which, in turn, may provoke thought confusion (e.g., Ecker et al., 2013).

Relevant to current results, relations between OC symptoms and psychotic symptoms have been found in several studies (e.g., Achim et al., 2011; Cederlöf et al., 2015, Hagen et al., 2017). For instance, Van Dael et al. (2011) in a study on a representative population sample of 7076 participants found that OC symptoms predicted incident psychotic symptoms two years later. Similarly, psychotic symptoms predicted OC symptoms at two-year distance.

Moreover, consistent neuropsychological and neurobiological similarities between OCD and psychosis have been documented in the literature (Kahn et al., 2005; Klein Hofmeijer-Sevink et al., 2013). Both disorders exhibit various alterations in neuropsychological functioning (Berman et al., 1998) and significant modifications in neuroanatomy and neurobiology (Gross-Isseroff, Hermesh, Zohar & Weizman, 2003; also refer to Lee et al., 2019; Radonjić et al., 2021).

In sum, results from the present study are coherent with the positions which consider OCD manifestations not exclusively linked to a Negative Affect dimension of general psychopathology.

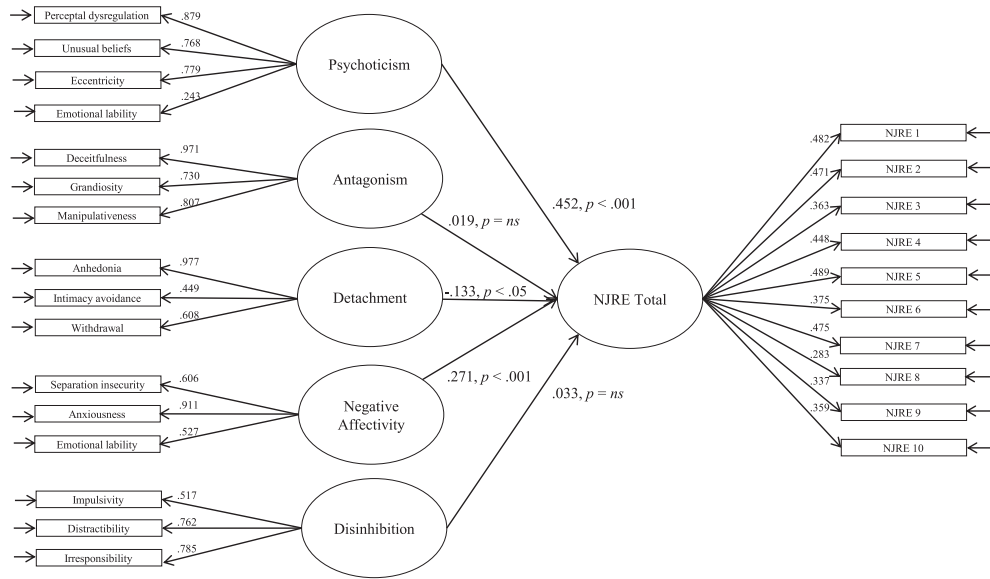


Fig. 2 Path diagram representing the SEM relating the exogeneous variables (the five AMPD domains) to the endogenous variable representing NJRE-Q-R total score. Straight arrows represent causal effects. *Note:* for sake of clarity covariances among exogenous variables and the correlated-error terms were omitted (see Supplementary material for a description).

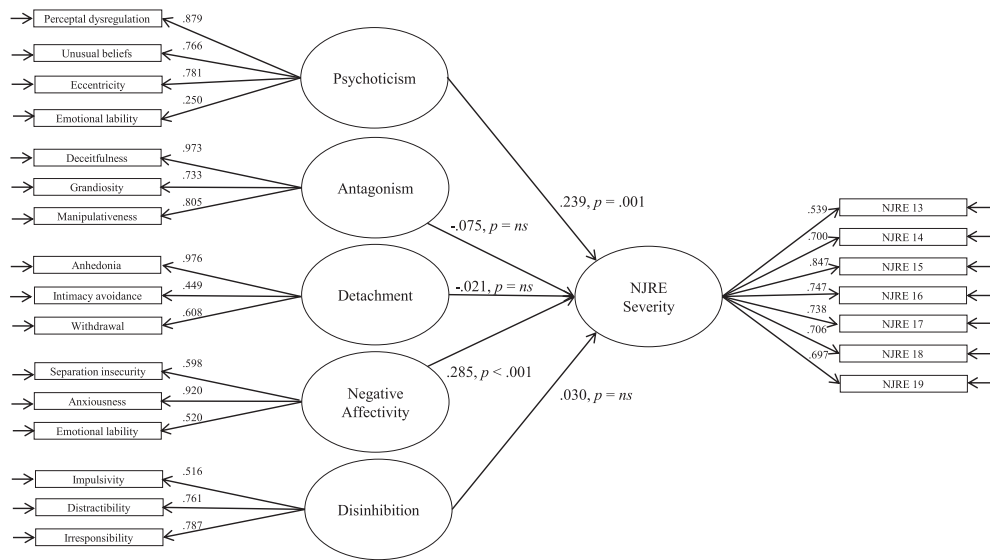


Fig. 3 Path diagram representing the SEM relating the exogeneous variables (the five AMPD domains) to the endogenous variable representing NJRE-Q-R severity score. Straight arrows represent causal effects. *Note:* for sake of clarity covariances among exogenous variables and the correlated-error terms were omitted (see Supplementary material for a description).

Clinical implications

The current results suggest that treatment options based on cognitive-behavioral models of OCD may need to be strengthened or modified, since such models are based on emotional processing of fear (e.g., Foa & Kozak, 1986) and might be less efficacious in presence of NJREs. Indeed, despite Cognitive Behavioral Therapy (CBT) with exposure and response-prevention is the most efficacious treatment in OCD, approximately 30% of patients do not respond adequately to treatment (e.g., Foa, Liebowitz, Kozak, Davies, Campeas, & Franklin, 2005; Öst, Riise, Wergeland, Hansen, & Kvale, 2016). Moreover, a meta-analytic study

reported refusal and dropout rates of 15.6% and 15.9% respectively, highlighting that over 30% of patients with OCD who are recommended CBT fail to initiate or complete treatment (Leeuwerik et al., 2019).

In particular, an expanding body of evidence suggests that implementing individualized interventions targeting NJREs may result in more substantial enhancements in individuals with OCD (Schwartz, 2018). To illustrate, exposure should be designed to elicit NJREs sensations, followed by habituation to the “not just right” feeling or sensory affective disturbance. For cognitive interventions, Summerfeldt (2007) proposes altering subjective appraisals of feelings as unbearable or causing uncontrollable discomfort,

including a focus on reframing, reattributing, and relabeling the sensations.

Lastly, acceptance- and mindfulness-based approaches may also represent conceivable interventions for OCD in presence of NJREs (e.g., Kütz et al., 2019; Philip & Cherian, 2021; see also the meta-analysis by Soondrum et al., 2022). For instance, ACT applies mindfulness to help people accepting the existence of thoughts as transient mental phenomena, thus encouraging metacognitive awareness (Hayes, Strosahl, & Wilson, 2012).

However, it is important to note that scientific support for the efficacy of these approaches is currently limited.

Limitations and conclusions

Our results should be considered at the light of certain limitations. First, to obtain data for large samples, we collected only self-report measures. Strict reliance on self-report measures can artificially inflate associations due to shared method variance, and follow-up research using criterion measures from other measurement domains (e.g., interview) is needed. Second, our results need to be replicated to other samples, more diverse in terms of demographic characteristics and severity of symptoms (i.e., nonclinical and clinical). Third, longitudinal designs are needed to confirm and extend the results of the current study.

Notwithstanding, our findings confirm that OCD is a complex phenomenon which cuts across different dimensions of psychopathology.

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CRedit authorship contribution statement

C. Sica: Conceptualization, Report writing. **C. Caudek:** Data analysis, report writing. **I. Colpizzi:** Data collection, Data analysis. **A. Malerba:** Data collection, Data preparation. **G. Bottesi:** Conceptualization, Report writing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary material

Supplementary material to this article can be found online at <https://doi.org/10.1016/j.jbct.2023.11.002>.

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