

CHILDHOOD TRAUMA, MENTALIZATION AND OBSESSIVE COMPULSIVE SYMPTOMS IN A NON-CLINICAL SAMPLE: A MEDIATION ANALYSIS STUDY

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Abstract

Objective: Obsessive and compulsive symptoms (OCS) are cross-cutting psychopathological manifestations frequently detected in a variety of clinical and non-clinical samples. It has been suggested that impaired mentalization abilities and traumatic experiences during childhood may be relevant etiopathogenetic factors in the development of OCS. The purpose of the current study was to cross-sectionally assess these variables in a non-clinical sample, testing the mediational role of mentalization abilities in the association between childhood trauma (CT) and OCS.

Method: 667 participants (488 females; mean age = 29.76 ± 11.87 years; age range: 18-80) answered a survey including the Childhood Trauma Questionnaire, the Mentalization Questionnaire and the Obsession-Compulsion subscale of the Brief Symptom Inventory.

Results: The mediation model was significant for the total effect ($p < .001$), showing that CT was positively associated with OCS (95% CI: .006; .019) and that this association was mediated by reduced levels of mentalization capacity (95% CI: .003; .009). Such results were significant controlling for potential sociodemographic and clinical confounding variables.

Conclusions: The findings contribute to elucidate the complex relationships between CT, mentalization capacity, and OCS, supporting the possibility that mentalization impairments, arising from CT, may affect top-down control mechanisms thus contributing to the development of OCS.

Key words: obsessive-compulsive symptoms, childhood trauma, mentalization, anxiety, depression, psychopathology

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1. Introduction

Obsessive-compulsive symptoms (OCS) are core features of the obsessive-compulsive disorder (OCD; American Psychiatric Association [APA], 2022) but are also frequently detected in neuropsychiatric conditions (e.g. tic disorders and PANDAS syndrome; Isaacs et al., 2020; Moretti et al., 2008; Rothenberger et al., 2019), in mental diseases different from OCD [including psychotic, eating, anxiety and mood

disorders (American Psychiatric Association [APA], 2022; Baer et al., 2015; Citkowska-Kisielewska et al., 2020; Fforeich et al., 2016; Tezenas du Montcel et al., 2019)], and in non-clinical samples [where the estimated prevalence ranges between 3-43% (Fineberg et al., 2013; Fullana et al., 2010; Okasha et al., 2001; Skapinakis et al., 2019; Sun et al., 2014)].

Obsessions are considered recurrent and persistent intrusive thoughts, images, impulses or urges, while compulsions are defined as repetitive behaviors or

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mental acts that the individual feels compelled to perform (Stein et al., 2019). Individuals can experience disturbances related to both obsessions and compulsions; such phenomena can be causally bidirectionally related to each other (De Putter et al., 2017; Maraone et al., 2024).

The underlying psychopathological mechanisms of OCS are still not clear. However, it has been suggested that, as for several psychiatric disorders, impaired mentalization abilities may be a relevant etiopathogenetic factor (e.g. Sloover et al., 2022). The concept of mentalization refers to the process of representing and understanding one's own and others' behavior in terms of underlying psychological states [e.g., thoughts, emotions, needs, desires (Fonagy et al., 2002; Luyten et al., 2020)]. The concept of mentalization is considered to partially overlap with certain related constructs, such as theory of mind and metacognition; however, while these latter concepts share with mentalization a focus on the ability to recognize and differentiate (and reflect about) mental states, they tend to marginalize the emotional and relational facets of this process (Allen, 2006; Liljenfors et al., 2015). Mentalization, in fact, is constituted by both cognitive and affective components, encompassing emotional awareness, affect regulation, and empathy (Fonagy et al., 2002).

Mentalization skills are thought to develop since the first year of life (Fonagy et al., 2002; Harris et al., 2018; Kovács et al., 2010; Moll et al., 2008; Scott et al., 2017; Song et al., 2008), and they are suggested to be fostered by parental mirroring and synchrony with the child (Fonagy et al., 2002). Indeed, a large corpus of research links secure infant attachment to effective mentalizing in youth (Becker Razuri et al., 2017; Claussen et al., 2002; Kobak et al., 2017; Kokkinos et al., 2016; Levy et al., 2019; Mcquaid et al., 2008; Meins et al., 2008; Panfile et al., 2012; Troyer et al., 2018; Zaccagnino et al., 2015). Conversely, mentalization development is seen to be negatively influenced by early relational adversities (Dykas et al., 2011), and more specifically by childhood trauma (CT; Barlow et al., 2014; Catalana et al., 2020; Cicchetti et al., 2003; Ensink et al., 2015; Gruhn et al., 2020; Pears et al., 2005; Zhang et al., 2023).

CT is generally defined as the experience of overwhelming inescapable threats which encompass different forms of maltreatment (e.g., emotional abuse, physical abuse, sexual abuse, neglect) occurring during infancy and/or adolescence (Farina et al., 2013; Massullo et al., 2023). CT can profoundly impact psychological and emotional functioning (Massullo et al., 2023; Toof et al., 2020). In particular, studies on emotion recognition, affect regulation, and empathy, showed that these abilities are reduced with increasing severity of abuse and neglect (e.g. Gruhn et al., 2020; Zhang et al., 2023), while inconsistent results seem to emerge from research on theory of mind paradigms (Benarous et al., 2015). Also, it is well known that CT is strongly associated with adult psychopathology (Copeland et al., 2018; Massullo et al., 2023; McKay et al., 2021). More specifically, recent systematic reviews showed that exposure to CT is significantly related to OCS severity in clinical and non-clinical samples (Boger et al., 2020a; Destree et al., 2021; Mathews et al., 2008).

Previous research detected certain cognitive and psychopathological factors that may contribute to mediate this relationship, including experiential avoidance, mindfulness abilities (Kroska et al., 2018), maladaptive coping (Kadivari et al., 2023), rumination, emotion regulation difficulties, posttraumatic stress symptoms (Boger et al., 2020b), and dissociation (Boger et al., 2020b; Santoro et al., 2023).

Despite the fact that some of these mediators (e.g. emotion regulation, mindfulness) fall under the wide umbrella construct of mentalization-related phenomena (Luyten et al., 2015), to the best of our knowledge no study has investigated the relationship among CT, mentalization abilities and OCS. Understanding the relationship between these variables may have important clinical implications. As already mentioned, in fact, according to attachment-oriented developmental theories (Fonagy et al., 2002) impaired mentalizing may arise from repeated maltreatment in the context of caregiving relationships and may represent a major risk factor for psychopathology in adulthood, including OCS.

In order to test this hypothesis, we cross-sectionally explored in a non-clinical sample the relationship between CT and OCS while considering mentalization abilities as a mediator.

2. Methods

2.1 Participants

In accordance with published guidelines (Fritz et al., 2007), the analyses for a mediational model performed with the bootstrapping procedure required a minimum sample size of 558 to provide a statistical power of 0.80, assuming small effect sizes for both paths “a” and “b”.

This study included 667 individuals (488 females; mean age \pm standard deviation = 29.76 \pm 11.87 years; age range: 18-80) that answered an online survey shared by social media, mailing lists, and instant messaging applications between February 2021 and April 2022. Participants responded by opening the questionnaire web link from their preferred device (smartphone, tablet or computer). They did not receive any payment or compensation, they responded the survey spontaneously and anonymously. Inclusion criteria for the enrollment in the present study were: (i) age over 18, (ii) good written Italian comprehension, (iii) the provision of written consent to join the study, (iv) correct response to two attentional check items. The study is part of a larger research project on psychopathology in the general population, so the sample partially overlaps with the sample of another manuscript published by our research group (Bersani et al., 2024). The Institutional Board of the Department of Human Neurosciences of Sapienza University of Rome, in accordance with the principles of the Helsinki Declaration, endorsed the study procedure.

2.2 Instruments

For the present study, participants answered the following questionnaires: the *Childhood Trauma Questionnaire - Short Form* (CTQ-SF; Bernstein et al., 2003), the *Mentalization Questionnaire* (MZQ; Hausberg et al., 2012); and the Obsession-Compulsion subscale of the *Brief Symptom Inventory* (OC-BSI; Derogatis et al., 1983). Subjects were asked to fill in a form with socio-demographic and clinical data, including: age, sex, educational level, occupation, alcohol, tobacco, and other substances use (i.e. cannabis, heroin, and/or cocaine use) in the last 12 months, current use of psychiatric medications. Clinically relevant self-report anxiety or depression symptomatology was also assessed using the Depression (DEP-BSI) and Anxiety (AXN-BSI) subscales of the *BSI* (Derogatis et al., 1983). Lastly, alcohol use was assessed using the first item of the Alcohol Use Disorders Identification Test (AUDIT; Babor et al., 2001): “How often do you have a drink containing alcohol?”. Participants that answered

“never” were coded as “non-alcohol users”. Conversely, participants that answered “monthly or less”, “2 to 4 times a month”, “2 to 3 times a week” or “4 or more times a week” were coded as “alcohol users”.

The CTQ-SF (Bernstein et al., 2003) is a 28 item self-report commonly used in both clinical and non-clinical samples to assess exposure to five different types of CT (Georgieva et al., 2021; Massullo et al., 2023): emotional abuse (EA), physical abuse (PA), sexual abuse (SA), emotional neglect (EN), and physical neglect (PN). We used the Italian adaptation of the scale (Sacchi et al., 2018). The questionnaire consists of 5 subscales, one for each CT dimension, of 5 items rated on a 5-point Likert scale (ranging from 1=“never” to 5=“very often”). It also includes an additional 3-item scale about Minimization/Denial (MD), indicative of potential underreporting of maltreatment on a scale of “low”, “intermediate” and “high”. The questionnaire has demonstrated good psychometric properties (Bernstein et al., 2003; Sacchi et al., 2018). Although certain studies did not support the unidimensional factor structure of the CTQ-SF, several psychometric investigations have highlighted the research and clinical utility of the CTQ-SF total score. For example, Kongerslev et al. (2019) observed high inter-correlations amongst the five subscales as well as an excellent internal consistency of the CTQ-SF total score, suggesting that it is feasible to extract a factor representing non-specific or global CT. In our sample the Cronbach’s alpha for the total score was .88 and the correlations among the five subscales ranged from .14 to .53 ($p < .001$).

The MZQ (Hausberg et al., 2012) is a self-report scale measuring the ability of people to understand and conceptualize their own and others’ psychological states. It assesses different dimensions of mentalization: refusing self-reflection, emotional awareness, psychic equivalence mode, and regulation of affect. It consists of 15 items rated on a 5-point Likert scale (from 1=“I totally disagree” to 5=“I totally agree”), providing a total score where higher values indicate higher mentalizing abilities. We used the Italian adaptation of the scale (Raimondi et al., 2021) and the Cronbach’s α in the present sample was .85 for the total score.

The OC subscale of the BSI (Derogatis et al., 1983) is composed of 6 items and it is considered to be a reliable measure of OCS (Maraz et al., 2015; Miller, 2006; Rice et al., 2006; Woody et al., 1995). According to the authors of the scale: “the focus of this dimension is on thoughts and actions that are experienced as unremitting and irresistible by the patient but are of an ego-alien or unwanted nature” (Derogatis et al., 1983). We used a validated Italian version of the scale (De Leo et al., 1993). Subjects with clinically-relevant levels of OCS were detected using a cut-off score of 63T, as suggested by the test authors (Derogatis et al., 1983) and in accordance with previous studies (Grassi et al., 2018; Grassi et al., 2001; Grassi et al., 2000). Since anxiety and depression appear as potential confounding variables in OCS literature (e.g. See et al., 2022), we used the clinical cut-off (i.e., $\geq 63T$) of the depression and anxiety subscales of the BSI to measure the presence of significant corresponding symptomatology. To be classified as reporting clinical levels of anxiety and/or depression, subjects had to make scores above cut-off on at least one of the subscales. In our sample, the Cronbach’s alpha for the OC, DEP and AXN subscales were .84, .88, and .86, respectively.

2.3 Statistical Analysis

Statistical analyses were performed with the Statistical Package for the Social Sciences 25 (IBM, Armonk, NY, USA). In accordance with the recommendations of Kim et al. (2013) for large samples (i.e., > 300), absolute skew or kurtosis values smaller than 2 and smaller than 7, respectively, were used to determine the normality of the distribution of each variable. Since variables were normally distributed, parametric statistics were used. In particular, descriptive statistics were performed for the entire sample. Furthermore, group differences between males and females were examined using chi-square (χ^2) tests for categorical variables and independent t-tests for continuous variables. The association among variables were investigated using Pearson’s r correlation coefficients. Lastly, the mediating role of mentalization in the relationship between CT exposure and OCS was tested using the PROCESS v4.1 macro for SPSS (Hayes, 2022). In particular, we set the CTQ total score as the independent variable, the MZQ total score as the mediator and the OC-BSI score as the dependent variable in the Hayes serial model no.4 with 5000 bootstrap samples and a 95% CI. The analyses were performed controlling for potential confounding factors, including sociodemographic variables (i.e. age, sex, educational level and occupation) and clinical variables (i.e. alcohol use, tobacco use, other substances use, clinically-relevant levels of anxiety and/or depression, use of any psychiatric medication, and degree of CT minimization or denial) that are known to be associated with CT, mentalization and/or OCS (e.g. Blom et al., 2011; Imperatori et al., 2020; Laisney et al., 2013; Mathis et al., 2011; Pardini et al., 2009; Piacentino et al., 2020; Valérie et al., 2023). Confounding variables were entered in the model as covariates. We reported the mediation analysis in three separate main pathways (Baron et al., 1986). The pathway “a” is the direct effect of CTQ on MZQ; the pathway “c” is the direct effect of CTQ on OC-BSI; the pathway “c” is the total effect, as the sum of direct and indirect effects of CTQ on OC-BSI. The direct effect of MZQ on OC-BSI (pathway “b”) and the indirect effect of CTQ on OC-BSI through MZQ (pathway “ab”) are also reported.

3. Results

In our sample 91 subjects met the criteria for possible clinically relevant OCS (13.64%), 121 for possible clinically-relevant anxiety and/or depression (18.14%), 237 subjects stated to use tobacco (35.53%), 177 subjects stated to use substances (cannabis, heroin, and/or cocaine) (26.54%), and 74 subjects stated to use psychiatric medications (11.09%). Compared to females, males participants had less frequently a bachelor’s degree (46.93% vs 55.74%; $p = .043$), reported more frequent substances use (34.08% vs 23.77%; $p = .008$), but had less frequently clinically relevant anxiety and/or depression symptoms (11.73% vs 20.49%; $p = .009$) and OCS (8.94% vs 15.37%; $p = .032$), as well as lower levels of OCS ($.99 \pm .82$ vs $1.17 \pm .96$; $p = .015$). Detailed descriptive statistics are reported in **table 1**. Correlational analyses revealed that CTQ total score was negatively related to MZQ scores ($r = -.306$, $p < .001$), while it was positively related to OC-BSI scores ($r = .298$, $p < .001$). In turn, MZQ was negatively related to OC-BSI ($r = -.526$, $p < .001$). The full correlation matrix is reported in supplementary **table 1**.

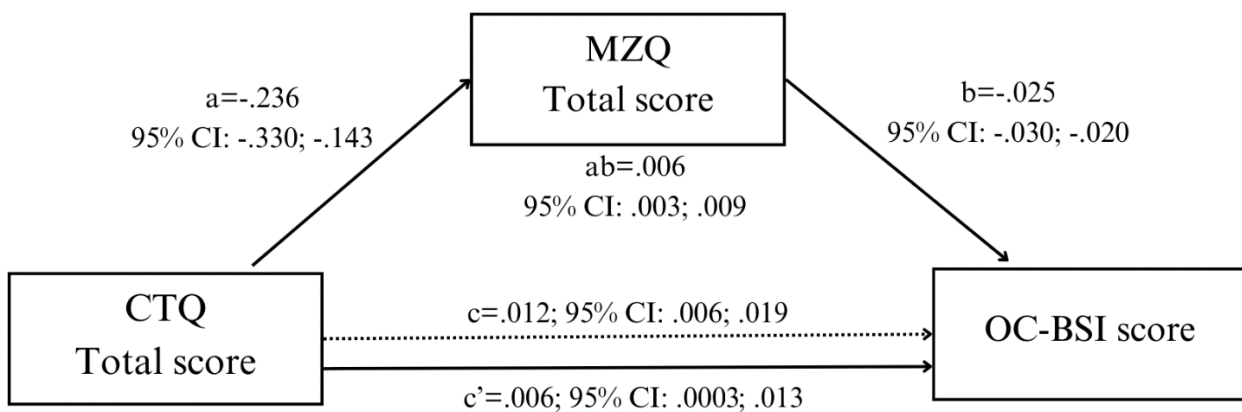
Table 1. Socio-demographic and clinical data of the sample

| Variables | Total N=667 | Males N=179 (26.84%) | Females N=488 (73.16%) | Test | p |
|--|----------------|----------------------------|------------------------------|------------------------|-------------|
| Age - M ± SD | 29.76 ± 11.87 | 30.05 ± 12.09 | 29.65 ± 11.79 | $t_{(665)}=.388$ | .698 |
| Bachelor's degree - N (%) | 356 (53.37) | 84 (46.93) | 272 (55.74) | $\chi^2=4.085$ | .043 |
| University students - N (%) | 344 (51.57) | 94 (52.51) | 250 (51.23) | $\chi^2=.087$ | .769 |
| Employed - N (%) | 294 (44.08) | 75 (41.90) | 219 (44.88) | $\chi^2=.471$ | .492 |
| Alcohol use - N (%) | 563 (84.41) | 159 (88.83) | 404 (82.79) | $\chi^2=3.630$ | .057 |
| Tobacco use - N (%) | 237 (35.53) | 60 (33.52) | 177 (36.27) | $\chi^2=.433$ | .511 |
| Substances use (cannabis, heroin, cocaine) - N (%) | 177 (26.54) | 61 (34.08) | 116 (23.77) | $\chi^2=7.138$ | .008 |
| Current psychiatric medication use - N (%) | 74 (11.09) | 20 (11.17) | 54 (11.07) | $\chi^2=.002$ | .969 |
| CTQ - M ± SD | 34.90 ± 9.88 | 34.63 ± 9.22 | 35.00 ± 10.12 | $t_{(665)}=-.433$ | .665 |
| CTQ-MD - M ± SD | .63 ± 1.00 | .60 ± .97 | .64 ± 1.01 | $t_{(665)}=-.452$ | .651 |
| MZQ - M ± SD | 49.95 ± 11.65 | 49.53 ± 11.18 | 50.11 ± 11.82 | $t_{(665)}=-.571$ | .568 |
| OC-BSI - M ± SD | 1.12 ± .93 | .99 ± .82 | 1.17 ± .96 | $t_{(370.052)}=-2.432$ | .015 |
| OC-BSI ≥ 63T - N (%) | 91 (13.64) | 16 (8.94) | 75 (15.37) | $\chi^2=4.596$ | .032 |
| DEP-BSI and/or ANX-BSI ≥63T - N (%) | 121 (18.14) | 21 (11.73) | 100 (20.49) | $\chi^2=6.767$ | .009 |

Abbreviations: ANX: Anxiety subscale; BSI: Brief Symptom Inventory; CTQ: Childhood Trauma Questionnaire; MD: Minimization/Denial subscale; DEP: Depression subscale; MZQ: Mentalization questionnaire; OC: Obsessive-compulsive subscale.

Note: Bold values indicate statistically significant p values.

Figure 1. Graphical representation of the results of the mediation model. These results were obtained controlling for potentially-confounding variables (age, sex, educational level, occupation, alcohol use, tobacco use, substance use, self-report clinical anxiety and/or depressive symptomatology, use of psychiatric medications, potential minimization/denial of childhood trauma). Abbreviations: CTQ= Childhood Trauma Questionnaire; MZQ=Mentalization Questionnaire; OC-BSI=Obsessive Compulsive subscale of the Brief Symptom Inventory



The mediation model was significant for the total effect ($R^2=.421$; $F_{12,654} = 39.693$; $p < .001$), indicating that higher scores on CTQ were associated with higher OC-BSI scores ($B=.012$; $SE=.003$; 95% CI: .006; .019). The effect of CTQ on MZQ was significant and negative ($B=-.236$; $SE=.048$; 95% CI: -.330; -.143); similarly, the effect of MZQ on OC-BSI was significant and negative ($B=-.025$; $SE=.003$; 95% CI: -.030; -.020). The indirect effect of CTQ on OC-BSI through MZQ was significant

($B=.006$; $SE=.001$; 95% CI: .003; .009), as well as the direct effect ($B=.006$; $SE=.003$; 95% CI: .0003; .013). These results are fully reported in supplementary table 2 and showed in figure 1.

4. Discussion

The main aim of the current study was to assess

the association among CT, mentalization abilities and OCS in a non-clinical sample, which were significantly correlated to each other in the expected directions (supplementary **table 1**).

The results support a pathway (**figure 1**) in which CT affect mentalization abilities which, in turn, affects OCS severity, highlighting a mediating role of mentalization deficits in the association between CT and OCS even controlling for relevant confounding variables, such as clinical levels of anxiety and/or depression, which are known to be strong confounding variables in OCS research (e.g. See et al., 2022).

Although the association between CT and OCS is well known (Boger et al., 2020a; Destree et al., 2021; Mathews et al., 2008), to the best of our knowledge no study had investigated the mediating role of mentalization in such relationship.

Our results are in line with previous research suggesting that mentalization impairment may partially explain the pervasive detrimental effects of CT on mental health, as part of a trans-diagnostic etiopathogenic mechanism for emotional and behavioral disorders (Adler et al., 2021; Belvederi Murri et al., 2017; Borghesi et al., 2022; Hopfinger et al., 2016; Huang et al., 2020; Li et al., 2020; MacIntosh, 2013; Taubner et al., 2013).

More specifically, the negative association between CT severity and mentalization abilities is widely reported in clinical samples (e.g. in patients with personality or other psychiatric disorders; Adler et al., 2021; Belvederi Murri et al., 2017; Brüne et al., 2016; Duval et al., 2018), with less evidence in the general population (Schwarzer et al., 2021). It has been suggested (Fonagy et al., 2002) that positive caregiving behavior promotes children mentalization abilities through the mirroring function of recognizing, elaborating, and adequately returning children internal states. Conversely, CT by definition is an overwhelming experience implying the failure of this caregiving function (Bateman et al., 2019; World Health Organization, 2022). Thus, when facing recurrent maltreatment, children mentalization development can be hampered with growing under-representation of internal states. Consequently, individuals may begin to rely on non-mentalizing modes of self-experience, such as the psychic equivalence mode (i.e., a state of concrete thinking where there is no difference between internal and external world; Bateman et al., 2019), and/or maladaptive cognitive emotion regulation strategies (e.g. self-blame, rumination, and catastrophizing; Doba et al., 2022).

It has been suggested that such under-representation of internal states affects top-down goal-directed control systems through the attitude to automatic behaviors (Luyten et al., 2015). Coherently, abnormal activity of brain structures and circuits involved in habit learning, inhibition of automatism and goal-driven behavior has been observed in OCD (Maraone et al., 2024). In particular, it has been suggested that a disruption in the balance between habits learning and goal-directed systems could represent an adequate model of compulsive behaviors and that these may have a primary role in this clinical picture (Gillan et al., 2011). Accordingly, psychopathological core features of OCS, such as repetitive behaviors, pathological doubting and distrust in one own sensory and memory (Cervin et al., 2020; Dar et al., 2022; Fradkin et al., 2020; Nikodijevic et al., 2015; Samuels et al., 2017), may arise from difficulties in inhibiting habitual behaviors and enhanced error-related signals (Maraone et al., 2024).

Of notice, consistent with previous studies, our regression models (i.e., supplementary **table 2** path a

and path c') also indicated that some clinical factors (i.e., clinical levels of anxiety and/or depression) and sociodemographic factors (i.e., sex, age, occupation and educational level) were associated with our main study variables.

For example, the presence of clinically relevant anxiety and/or depression was positively associated with OCS (e.g., See et al., 2022). Consistent with previous studies (Stavropoulos et al., 2017; Vivan Ade et al., 2014) we also detected that OCS were higher in females participants, indicating a possible role of sex or gender hormones in their phenomenology (Labad et al., 2008; Vivan Ade et al., 2014).

Regarding mentalization, in the present report we found a positive association between age and MZQ total score. Although previous literature reported mixed results on the issue, which may depend on sample size and characteristics (e.g., age range) or on the instruments used (e.g., Pardini et al., 2009), this observation is in agreement with findings from reports in which the MZQ was used for the assessment of mentalization abilities (e.g., Bersani et al., 2022; Imperatori et al., 2020), raising the possibility that at least some mentalization skills (e.g., self-reflection) may continue to develop even in adulthood.

Consistent with previous studies (e.g., Bly et al., 2012; Laisney et al., 2013; Siswati et al., 2017), we also detected that being employed, having a bachelor's degree, and being a student, were positively associated with mentalization scores. Since the ability to mentalize emerges during childhood and gradually improves from early adolescence through late adolescence and young adulthood (Desatnik et al., 2023), these findings suggest that adequate mentalization skills may be considered as psychological features associated with higher global psychosocial functioning (Bly et al., 2012). Accordingly, and in line with previous reports (Valérie et al., 2023), in the present study lower levels of mentalization were associated with the presence of clinically relevant anxiety and/or depression.

Our study has some potential clinical implications. For example, the current data seem to suggest that, together with the recommended psychological and pharmacological treatments for OCD (such as cognitive-behavioural therapy and certain selective serotonin reuptake inhibitors; Nezgovorova et al., 2022), individuals with OCS may benefit from mentalization-focused interventions. Consistently, interventions focusing on mentalization have shown positive results in patients with impaired top-down control associated with CT, such as individuals with borderline personality disorder and eating disorders, and can be integrated with other forms of psychotherapeutic interventions (Maldacastillo et al., 2019; Robinson et al., 2016; Volkert et al., 2019). Furthermore, mentalization-based treatments seem to be also effective in children exposed to trauma, resulting in a promising preventive therapy for high-risk psychopathology children (Oehlman Forbes et al., 2021).

Our results also remark the need to carefully assess the presence of CT in individuals with OCS. Indeed, it is known that CT may lead to enduring interpersonal difficulties that hamper the therapeutic alliance and is associated with negative treatment outcomes, requiring tailored strategies besides conventional therapies (Farina et al., 2019).

5. Conclusion

The present research has several limitations that

should be considered. Although we used validated and reliable questionnaires, self-report measures intrinsically expose to attentional, recall and social desirability bias (Althubaiti, 2016). Future studies may consider the use of structured interviews and/or cognitive tests. Secondly, the cross-sectional design of our mediation study implies that causality cannot be considered unequivocal, thus, results should be replicated by experimental or longitudinal research. Furthermore, participants were non-clinical subjects (i.e. recruited from the general population), thus further research is needed to investigate the association among CT, mentalization and OCS in patients with OCD diagnosis. Thirdly, data were collected using an on-line survey with certain groups of individuals that are more represented in the current sample (e.g. students compared to non-students, and females compared to males), affecting the generalizability of the results. Lastly, the observed rates of psychopathology may have been influenced by the fact that recruitment occurred in the period of COVID-19 pandemic, which has been a risk factor for increased mental health disturbances. Therefore, future research may ensure generalizability including a clinical sample.

Despite these limitations, our findings overall contribute to elucidate the complex relationships between CT, mentalization capacity, and OCS. More specifically, the results support the possibility that mentalization impairment arising from CT may affect top-down control mechanisms, possibly contributing to the development of OCS (e.g., to the development of distrust towards inner processes, obsessive doubts and compulsive-like behaviors).

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