

PERFECTIONISM AND INTOLERANCE OF UNCERTAINTY ARE PREDICTORS OF OCD SYMPTOMS
IN CHILDREN AND EARLY ADOLESCENTS:
A PROSPECTIVE, COHORT, ONE-YEAR, FOLLOW-UP STUDY¹

Andrea Pozza, Umberto Albert, Davide Dèttore

Abstract

Objective: Cognitive models of Obsessive–Compulsive Disorder (OCD) identified four types of beliefs, which would develop during childhood and play a role in the aetiology and maintenance of OCD: Inflated Responsibility, Threat Overestimation, Importance/Control of Thoughts, Perfectionism/Intolerance of Uncertainty. Whereas research produced consistent evidence in adults that these beliefs constitute vulnerability factors for OCD, no study examined whether the obsessive beliefs prospectively predict OCD symptoms over time in youth. The current study investigated the role of the obsessive beliefs as predictors of OCD symptoms after one year in a large cohort sample of community children and early adolescents prospectively followed-up.

Method: Seven hundred and fifty-four children and early adolescents recruited from the community (mean age=10.87 years, 51.46% females) completed the Obsessive Belief Questionnaire-Child Version (OBQ-CV) as a measure of obsessive beliefs, the Obsessive-Compulsive Inventory-Child Version (OCI-CV) as a measure of OCD symptoms, the Children's Depression Inventory for depression (CDI) at baseline (t0) and at one-year follow-up (t1). A multiple linear regression analysis was run entering the scores on the OBQ-CV and the CDI as predictors and the scores on the OCI-CV at t1 as dimensional outcome.

Results: More intense Perfectionism/Intolerance of Uncertainty at t0 ($\beta=0.17$, $t=4.33$, $p<0.001$) and to a lesser extent more intense Threat Overestimation at t0 ($\beta=0.08$, $t=1.97$, $p<0.05$) predicted more severe OCD symptoms at t1 controlling for the effects of depression at t0 ($\beta=0.19$, $t=5.53$, $p<0.001$). Evidence of the predictive effects of the other cognitions at t0 on OCD symptoms at t1 was not found.

Conclusions: Perfectionism/Intolerance for Uncertainty and to a lesser Threat Overestimation may be early predictors of OCD symptoms in youth. Early detection and prevention of OCD in children and adolescents could focus on these cognitive vulnerability factors. The current findings appear to raise some doubts about the role of Inflated Responsibility and Importance/Control of Thoughts as cognitive vulnerability factors specific to OCD among youth. Future studies should use clinical interviews to assess the presence of an OCD diagnosis.

Key words: perfectionism, intolerance of uncertainty, children, adolescents, cognitions, early identification

Declaration of interest: none

Andrea Pozza^a, Umberto Albert^b, Davide Dèttore^a

^a Department of Health Sciences, University of Florence, Italy

^b Department of Biomedical and Neuromotor Sciences, Alma Mater Studiorum University of Bologna, Italy

Corresponding author

Andrea Pozza

Department of Health Sciences, University of Florence, Italy

Via di San Salvi 12, building 26, 50135 Florence, Italy

Phone: +39 055 2755067. fax: +39 055 2751093

E-mail: andrea.pozza@unifi.it

Introduction

Childhood and adolescence are critical stages for the development of Obsessive-Compulsive Disorder (OCD); indeed, it presents a bimodal incidence distribution with a peak in childhood and a second one during early adulthood (Krebs and Heyman 2015). OCD in youth is currently highlighted as an emerging serious condition: a recent increase in incidence rates in the prepubertal age is documented (e.g., Alvarenga et al. 2015). If it is not recognized and timely treated, OCD in childhood and adolescence can become a chronic illness, causing strong impairment in a variety of domains of functioning,

including family life, interpersonal relations, and school performance (Coluccia et al. 2015, 2017; Pozza et al. 2018). A recent review summarised the evidence reported in the literature on the prevalence of OCD in children and adolescents across different countries; prevalence rates vary from 0.38% in Poland to 4.1% in Denmark, in Europe, and 2.9% in the USA (Jaisooriya et al. 2015).

The development of strategies for early identification and, potentially, prevention, is drawing the attention of policy-makers because one of the peculiar characteristics of help-seeking behaviour in patients with OCD is that they get in contact with medical services after an average of 10 years (Marques et al. 2010). Early identification

¹ Paper presented at the Sixth EABCT Meeting on Obsessive-Compulsive Disorder (May, 17-20 2018) (European Association for Behavioural and Cognitive Therapies)

and intervention are also supported by the data showing that 30 to 50% of adult patients report the first onset of OCD during childhood (Weidle et al. 2014). To develop tailored early approaches, a key element is the knowledge of early predictors of obsessive-compulsive symptoms in the community of children and adolescents (Brakoulias et al. 2017).

To provide an explanation of the pathogenetic process leading to full-blown OCD, cognitive models proposed that symptoms arise from dysfunctional beliefs, specific to OCD, which would act as vulnerability and maintenance factors of the disorder (e.g., Salkovskis 1985). Distinct but intercorrelated cognitive domains were identified by the Obsessive Compulsive Cognitions Working Group (2003), including Perfectionism and Intolerance of Uncertainty (the inability to tolerate mistakes or imperfection associated with the difficulty tolerating uncertainty or ambiguity), Inflated Responsibility (the belief of being personally responsible for the content of one's thoughts as well as any possible negative outcomes that might arise from such thoughts), Threat Overestimation (the exaggerated belief about the probability and cost of aversive events), Importance and Control of Thoughts (the belief that the mere presence of the thoughts makes those thoughts meaningful and that complete control over them is both possible and necessary). To provide a deeper insight of the pathogenetic mechanisms leading to OCD, Salkovskis (1999) created a model of childhood experiences that contribute to the development of obsessional beliefs, and specifically to Inflated Responsibility. This model assumed five pathways: (1) Heightened responsibility as a child, (2) Rigid codes of conduct as a child, (3) Overprotective and critical parenting leading to lack of experience with responsibility as a child, (4) Incidents in which one's actions/inactions caused a serious misfortune, (5) Incidents in which it seems that one's actions/inactions/thoughts influenced a serious misfortune when in reality the events are only coincidental (Salkovskis 1999).

Although a large amount of observational and experimental research in both clinical and non-clinical adult samples demonstrated the association between obsessive beliefs and OCD (e.g., Albert et al. 2015, Collins and Coles 2018), not all the studies supported this relation (Pozza and Dèttore 2014). Moreover, some of the so-called obsessive beliefs may be non-specific, that is are associated with other psychiatric disorders, including anxiety or depressive disorders, and some dysfunctional beliefs are more strongly associated with OCD than others (Belloch et al. 2010, Pozza and Dèttore 2014, Tolin et al. 2006).

A relatively smaller body of research focused on the role of obsessive beliefs in children or adolescents with OCD and the data appear inconsistent (Coles et al. 2010, Wolters et al. 2011). In a small clinical sample of children and adolescents, Coles and colleagues (2010) reported that obsessive compulsive (OC) symptoms had low associations with Perfectionism and Intolerance of Uncertainty and moderate associations with the other obsessive beliefs. In a community sample and an OCD sample of children and adolescents, Wolters and colleagues (2011) showed that all the obsessive beliefs differentiated patients with OCD from community controls, but the associations between all the obsessive beliefs and OCD symptoms were comparable to those between the obsessive beliefs and symptoms of anxiety or depression. Arjona and colleagues (2012) reported that all the obsessive beliefs were related to OCD symptoms in a comparable manner as to symptoms of anxiety in a community sample, raising again doubts about the specificity of the obsessional beliefs (or some of the

obsessional beliefs) in children and adolescents.

Pozza and Dèttore (2014) investigated the specificity of Inflated Responsibility beliefs to OCD by conducting a meta-analysis on 58 studies (n = 15678), including 9 studies in children or adolescents. The results showed a medium effect size of this association, although there was a significant difference between effect sizes obtained in adult versus children-adolescent samples: Inflated Responsibility beliefs appeared more strongly endorsed by adult samples than by youths (Pozza and Dèttore 2014). Inflated Responsibility was more strongly associated with OCD than with depression but equally associated with anxiety disorders (Pozza and Dèttore 2014). More recent primary studies in large community or clinical samples of adolescents (Huan et al. 2008, Noorian et al. 2015, Soreni et al. 2014) supported the cross-sectional association between Perfectionism and Intolerance of Uncertainty and OCD even when controlling for anxiety and depressive symptoms. Other studies found a specific relation of Perfectionism and Intolerance of Uncertainty with symmetry and ordering symptoms (Coles et al. 2014). In a group of adolescents with OCD, finally, Borda and colleagues (2017) showed very strong correlations between overvalued ideation, a cognitive domain similar to Importance of Thoughts, and OCD severity.

Rationale and objectives of the current study

Obsessive beliefs might be hypothesized to be cognitive vulnerability factors leading to OCD in children and early adolescents. The number of cross-sectional studies conducted in children and adolescents is limited and produced mixed findings; moreover, the majority of previous research used only correlation analyses to investigate the association of the obsessive beliefs with OCD symptoms and symptoms of other disorders, such as anxiety or depression, and did not test simultaneously the contribution of specific obsessive beliefs. Longitudinal studies investigating vulnerability factors prospectively associated with OCD in developmental age are missing (Krebs and Heyman 2015); in particular, no study examined whether obsessive beliefs (or specific obsessive beliefs) longitudinally predict OCD (or more severe OC symptoms) in children or early adolescents.

The investigation of the role of the obsessive beliefs in youths from the community has potential strong implications for practice. First, it can improve our understanding of the development process leading to OCD by providing empirical data to test cognitive models (e.g., Salkovskis 1999). In addition, it can inform psychotherapeutic practice with children and adolescents orienting the clinician towards a focus on specific beliefs as targets of the intervention according to a tailored treatment frame (Gillet et al. 2018). Finally, it can help the development of early screening or even preventive strategies for OCD, which are yet underestimated in OCD research (Brakoulias et al. 2017).

Therefore, the current study aimed at investigating, in a large group of community children and early adolescents, (1) the cross-sectional association between obsessive beliefs and OCD symptoms (or subtypes), controlling for depressive symptoms, (2) whether and which specific obsessive beliefs do predict OCD after a one-year follow-up, controlling for depressive symptoms, (3) which obsessive beliefs do predict which subtypes of OCD after a one-year follow-up, controlling for depressive symptoms.

Method

Participants

A non-random sample of convenience of 754 children and early adolescents. Mean age was 10.87 years old (SD= 1.24, range= 8 - 14); 51.46% were females. Inclusion criteria were age of 8-14 years old and written informed consent provided by both the parents. Exclusion criteria consisted of (a) learning disability, (b) mental retardation, (c) neurological diseases, (d) diagnosis of autism, (e) schizophrenia or bipolar disorder. Exit criteria included withdrawal of informed consent during the follow-up.

Measures

Participants completed a series of self-report measures. The Obsessive Belief Questionnaire-Child Version (OBQ-CV; Coles et al. 2010) is a 44-item questionnaire, originally developed to measure three obsessive cognitive domains through three scales: Responsibility/Threat Estimation, Perfectionism/Uncertainty, and Importance/Control of Thoughts. Further investigations supported the existence of four factors: Responsibility, Threat Overestimation, Perfectionism/Intolerance of Uncertainty, Importance/Control of Thoughts (Wolters et al. 2011). Answers are scored on a 5-point scale (disagree very much = 1, agree very much = 5). Higher scores indicate more obsessive beliefs. The four scales obtained good to excellent internal consistency in community and clinical samples (range of Cronbach's alpha = 0.82 – 0.95) (Wolters et al. 2011). The Italian version showed good internal consistency in all the four scales (Bendinelli et al. 2014).

The Obsessive-Compulsive Inventory-Child Version (OCI-CV; Foa et al. 2010) is a 21-item questionnaire which assesses obsessive symptoms in children and adolescents between 7 and 17 years old. It was developed following the six-factor structure of the adult version of the Obsessive-Compulsive Inventory-Revised (OCI-R; Foa et al. 2002). The OCI-CV classifies symptoms of OCD in six subtypes: Doubting/checking, Pure obsessing, Hoarding, Washing, Ordering, and Neutralising. Items are scored on a 3-point Likert scale (0 = never to 2 = always). In the original study by Foa and colleagues (2010), the OCI-CV has shown moderate to high internal consistency (Cronbach's alpha = 0.85 for the total score; a range from 0.81 to 0.88 for the subscales). The Italian version confirmed a six correlated factor structure and acceptable to excellent reliability (range of Cronbach's alpha = 0.73 - 0.94) across the scales (Pozza et al. 2017_a, 2017_b).

The Children's Depression Inventory (CDI; Kovacs 1985) is a questionnaire which consists of 27 items measuring the severity of depressive symptoms in children and adolescents (11-17 years old). Respondents are required to mark one of three statements best describing their feelings within the previous two weeks. Total scores range from 0 to 54: higher scores indicate more severe symptoms. The CDI showed good internal consistency (Cronbach's alpha= 0.86) and adequate concurrent and discriminant validity (Kovacs 1985). The Italian version of the CDI showed good internal consistency (Cronbach's alpha= 0.80) (Frigerio et al. 2001). For the current sample, internal consistency was good (Cronbach's alpha= 0.89).

Procedure

A prospective cohort design with a one-year follow-

up was adopted: participants completed the OBQ-CV, the OCI-CV, and the CDI when they entered the study at baseline (t_0) and completed again the OCI-CV at one-year follow-up (t_1). Data were collected at six elementary or mid-schools in three cities of Central Italy (Florence, Prato, Pistoia) over one year from May 2014 to May 2015. Participants completed the paper and pencil measures during regular class hours. Administration of the self-report questionnaires was assisted by a team of psychologists in class-rooms and lasted approximately 30 minutes. In conformity with Italian law, all the minor participants' parents gave written informed consent to participate in the study, after having received a written description about its general purposes. Participants were assured that participation was optional and gave informed consent.

Statistical analysis

To examine the cross-sectional association between obsessive beliefs and general symptoms of OCD and subtypes, a series of multiple linear regression analyses were performed where scores on the OBQ-CV scales and scores on the CDI at t_0 were entered as predictors through the stepwise procedure and total and subscales scores on the OCI-CV at t_0 as outcomes. To investigate the predictive effects of the obsessive beliefs at t_0 on general OCD symptoms and on the subtypes of OCD at t_1 , a series of multiple linear regression analyses were performed where scores on the OBQ-CV scales and scores on the CDI at t_0 were entered as predictors through the stepwise procedure and total and subscales scores on the OCI-CV at t_1 as outcomes. Intention to Treat Analysis based on the LOCF technique was used to manage missing data at t_1 : scores collected at t_0 were considered as last observations. Statistical significance was set at $p < 0.05$. The statistical analysis was performed by using the SPSS software version 25.00.

Results

Prevalence of OCD symptoms at t_0 and t_1

Eleven participants (1.5%) reported a score on the OCI-CV one standard deviation higher than the normative mean (Pozza et al. 2017_a), showing clinically significant general symptoms of OCD at t_0 . Nine participants (1.2%) reported clinically significant general symptoms of OCD at t_1 as suggested by a score higher than 1 standard deviation than the normative mean on the OCI-CV Total (Pozza et al. 2017_a).

Predictive effects of obsessive beliefs at t_0 on general OCD symptoms and subtypes of OCD at t_0

Higher t_0 scores on the OBQ-CV Threat Overestimation, on the CDI Total, on the OBQ-CV Perfectionism / Intolerance of Uncertainty, on the Importance / Control of Thoughts predicted higher t_0 scores on the OCI-CV Total. The regression model explained 34% of the total variance.

Higher t_0 scores on the OBQ-CV Perfectionism / Intolerance of Uncertainty, on the CDI Total, on the Threat Overestimation, on the OBQ-CV Importance / Control of Thoughts predicted higher t_0 scores on the OCI-CV Doubting / Checking. The regression model

explained 25% of the total variance.

Higher t_0 scores on the CDI Total and on the OBQ-CV Threat Overestimation predicted higher t_0 scores on the OCI-CV Pure obsessing. The regression model explained 16% of the total variance.

Higher t_0 scores on the CDI Total, on the OBQ-CV Importance / Control of Thoughts and on the OBQ-CV Inflated Responsibility predicted higher scores on the OCI-CV Hoarding. The regression model explained 6% of the total variance.

Higher t_0 scores on the OBQ-CV Threat Overestimation, on the OBQ-CV Perfectionism / Intolerance of Uncertainty predicted higher t_0 scores on the OCI-CV Washing. The regression model explained 10% of the total variance.

Higher t_0 scores on the OBQ-CV Perfectionism / Intolerance of Uncertainty, on the CDI Total, and on the OBQ-CV Threat Overestimation predicted higher t_0 scores on the OCI-CV Ordering. The regression model explained 11% of the total variance.

Higher t_0 scores on the OBQ-CV Threat Overestimation, on the CDI Total, on the OBQ-CV Perfectionism / Intolerance of Uncertainty, and lower scores on the OBQ-CV Inflated Responsibility predicted higher t_0 scores on the OCI-CV Neutralising. The regression model explained 14% of the total variance. The coefficients of all the multiple linear regression analyses are presented in **table 1**.

Predictive effects of obsessive beliefs at t_0 on general symptoms of OCD or OCD subtypes at t_1

Higher scores at t_0 on the OBQ-CV Perfectionism and Intolerance of Uncertainty, higher scores at t_0 on the OBQ-CV Threat Overestimation and higher scores at t_0 on the CDI predicted significantly higher scores at t_1 on the OCI-CV. The regression model explained 11% of the total variance. Scores at t_0 on the OBQ-CV Inflated Responsibility and on the OBQ-CV Importance/Control of Thoughts were not significant predictors. The coefficients of the multiple linear regression analysis are presented in **table 2**.

Higher scores at t_0 on the OBQ-CV Perfectionism/Intolerance of Uncertainty, higher scores on the CDI Total at t_0 and higher scores on the OBQ-CV Threat Overestimation at t_0 predicted higher scores on the OCI-CV Ordering scale. The regression model explained 11% of the total variance.

Higher scores on the OBQ-CV Threat Overestimation at t_0 and higher scores on the OBQ-CV Perfectionism/Intolerance of Uncertainty at t_0 predicted higher scores on the OCI-CV Washing scale at t_1 . The regression model explained 10% of the total variance.

Higher scores at t_0 on the OBQ-CV Perfectionism/Intolerance of Uncertainty, higher scores on the CDI Total, higher scores on the OBQ-CV Threat Overestimation, and higher scores on the OBQ-CV Importance/Control of Thoughts predicted higher scores on the OCI-CV

Table 1. Regression of the t_0 OCI-CV Total and scale scores on the t_0 OBQ-CV and CDI scores ($n = 754$)

Outcome: OCI-CV Total at t_0	β	t	p value	R² change	Total R²
OBQ-CV Threat Overestimation at t_0	0.24	6.51	< 0.001	0.21	
CDI Total at t_0	0.28	9.26	< 0.001	0.09	0.34
OBQ-CV Perfectionism / Intolerance of Uncertainty at t_0	0.19	5.51	< 0.001	0.03	
OBQ-CV Importance / Control of Thoughts at t_0	0.09	2.60	< 0.05	0.01	
Outcome: OCI-CV Doubting / Checking at t_0	β	t	p value	R² change	Total R²
OBQ-CV Perfectionism / Intolerance of Uncertainty at t_0	0.21	5.63	< 0.001	0.15	
CDI Total at t_0	0.23	6.98	< 0.001	0.06	Total
OBQ-CV Threat Overestimation at t_0	0.17	4.28	< 0.001	0.03	0.25
OBQ-CV Importance / Control of Thoughts at t_0	0.09	2.62	< 0.01	0.01	
Outcome: OCI-CV Pure obsessing at t_0	β	t	p value	R² change	Total R²
CDI Total at t_0	0.26	7.53	< 0.001	0.10	
OBQ-CV Threat Overestimation at t_0	0.24	7.17	< 0.001	0.06	0.16
Outcome: OCI-CV Hoarding at t_0	β	t	p value	R² change	Total R²
CDI Total at t_0	0.17	4.76	< 0.001	0.04	
OBQ-CV Importance / Control of Thoughts at t_0	0.11	2.74	< 0.01	0.02	0.06
OBQ-CV Inflated Responsibility at t_0	0.09	2.41	< 0.05	0.01	
Outcome: OCI-CV Washing at t_0	β	t	p value	R² change	Total R²
OBQ-CV Threat Overestimation at t_0	0.19	4.74	< 0.001	0.08	
OBQ-CV Perfectionism / Intolerance of Uncertainty at t_0	0.17	4.18	< 0.001	0.02	0.10
Outcome: OCI-CV Ordering at t_0	β	t	p value	R² change	Total R²
OBQ-CV Perfectionism / Intolerance of Uncertainty at t_0	0.19	4.69	< 0.001	0.08	
CDI Total at t_0	0.13	3.66	< 0.001	0.02	0.11
OBQ-CV Threat Overestimation at t_0	0.13	3.31	< 0.05	0.01	
Outcome: OCI-CV Neutralising at t_0	β	t	p value	R² change	Total R²
OBQ-CV Threat Overestimation at t_0	0.21	4.93	< 0.001	0.08	
CDI Total at t_0	0.18	5.35	< 0.001	0.03	
OBQ-CV Perfectionism / Intolerance of Uncertainty at t_0	0.14	3.67	< 0.001	0.01	0.14
OBQ-CV Inflated Responsibility at t_0	-0.10	-2.50	< 0.05	0.01	

Note. CDI = Children's Depression Inventory, OBQ-CV = Obsessive Beliefs Questionnaire-Child Version, OCI-CV = Obsessive Compulsive Inventory-Child Version.

Doubting/Checking at t_1 . The regression model explained 25% of the total variance.

Higher scores at t_0 on the OBQ-CV Threat Overestimation, on the CDI Total, on the OBQ-CV Perfectionism/ Intolerance of Uncertainty, higher scores on the OBQ-CV Inflated Responsibility predicted higher scores on the OCI-CV Neutralising at t_1 . The regression model explained 14% of the total variance.

Higher scores at t_0 on the CDI Total, on the OBQ-CV Importance/Control of Thoughts, on the OBQ-CV

Inflated Responsibility predicted higher scores on the OCI-CV Hoarding at t_1 . The regression model explained 6% of the total variance.

Higher scores at t_0 on the CDI Total, on the OBQ-CV Threat Overestimation predicted higher scores on the OCI-CV Pure obsessing at t_1 . The regression model explained 16% of the total variance. The coefficients of the multiple linear regression analysis are presented in **table 3**.

Table 2. Regression analysis of the OCI-CV total t_1 scores on the OBQ-CV and CDI t_0 scores ($n = 754$)

Outcome: OCI-CV Total at t_1	β	t	p value	R ² change	R ²
OBQ-CV Perfectionism/ Intolerance of Uncertainty at t_0	0.17	4.33	< 0.001	0.07	
CDI Total at t_0	0.19	5.53	< 0.001	0.04	0.11
OBQ-CV Threat Overestimation at t_0	0.08	1.97	< 0.05	0.01	

Note. CDI = Children's Depression Inventory, OBQ-CV = Obsessive Belief Questionnaire-Child Version, OCI-CV = Obsessive Compulsive Inventory-Child Version. t_0 = baseline, t_1 = one-year follow-up.

Table 3. Regression analysis of the OCI-CV scale t_1 scores on the OBQ-CV and CDI t_0 scores ($n = 754$)

Outcome: OCI-CV Ordering at t_1	β	t	p value	R ² change	R ²
OBQ-CV Perfectionism/Intolerance of Uncertainty at t_0	0.19	4.69	< 0.001	0.08	
CDI Total at t_0	0.13	3.66	< 0.001	0.02	0.11
OBQ-CV Threat Overestimation at t_0	0.13	3.31	< 0.001	0.01	
Outcome: OCI-CV Washing at t_1	β	t	p value	R ² change	R ²
OBQ-CV Threat Overestimation at t_0	0.19	4.74	< 0.001	0.08	0.10
OBQ-CV Perfectionism/Intolerance of Uncertainty at t_0	0.17	0.18	< 0.001	0.02	
Outcome: OCI-CV Doubting/Checking at t_1	β	t	p value	R ² change	R ²
OBQ-CV Perfectionism/Intolerance of Uncertainty at t_0	0.21	5.63	< 0.001	0.16	
CDI Total at t_0	0.22	6.98	< 0.001	0.07	0.25
OBQ-CV Threat Overestimation at t_0	0.17	4.28	< 0.001	0.03	
OBQ-CV Importance/Control of Thoughts at t_0	0.09	2.62	< 0.01	0.01	
Outcome: OCI-CV Neutralising at t_1	β	t	p value	R ² change	R ²
OBQ-CV Threat Overestimation at t_0	0.21	4.93	< 0.001	0.08	
CDI Total at t_0	0.18	5.35	< 0.001	0.04	0.14
OBQ-CV Perfectionism/Intolerance of Uncertainty at t_0	0.14	3.67	< 0.001	0.01	
OBQ-CV Inflated Responsibility at t_0	0.09	2.50	< 0.05	0.01	
Outcome: OCI-CV Hoarding at t_1	β	t	p value	R ² change	R ²
CDI Total at t_0	0.17	4.76	< 0.001	0.04	
OBQ-CV Importance/Control of Thoughts at t_0	0.10	2.74	< 0.001	0.02	0.06
OBQ-CV Inflated Responsibility at t_0	0.09	2.41	< 0.05	0.01	
Outcome: OCI-CV Pure obsessing at t_1	β	t	p value	R ² change	R ²
CDI Total at t_0	0.26	7.53	< 0.001	0.10	0.16
OBQ-CV Threat Overestimation at t_0	0.24	7.17	< 0.001	0.06	

Note. CDI = Children Depression Inventory, OBQ-CV = Obsessive Belief Questionnaire-Child Version, OCI-CV = Obsessive Compulsive Inventory-Child Version. t_0 = baseline, t_1 = one-year follow-up.

Discussion

Early identification and prevention of full-blown OCD are under-recognised topics of the research in the field (Brakoulias et al. 2017). Cognitive models, originally developed for adult OCD, may provide insights into the pathogenetic mechanisms leading to the development of the disorder but received little attention by researchers interested in child or adolescent OCD and few empirical data are available. Moreover, no prospective studies are available in youth to confirm whether obsessive beliefs are vulnerability factors for the development of the disorder.

Our is the first study investigating whether obsessive beliefs can predict prospectively OCD symptoms and subtypes in community children and early adolescents. We first examined in a non-clinical community sample of children and early adolescents the current prevalence of OCD: 1.5% of the participants reported clinically significant OCD symptoms as measured by a score on the OCI-CV one standard deviation higher than the normative mean. This result appeared consistent with prevalence rates of OCD in children and adolescents in Western countries obtained through diagnostic instruments (with prevalence rates varying from 0.25% to 4%) (Heyman et al. 2001, Jaisooriya et al. 2015). The current prevalence rate, moreover, appeared comparable to that of 2% of full-blown OCD in an 18-year old male population in a previous Italian study (Maina et al. 1999); however, the current data was substantially lower than the prevalence value of subthreshold symptoms of OCD in the same Italian study (Maina et al. 1999). The use of a score higher than one standard deviation than the normative mean on the OCI-CV should be highlighted as a limitation, as described further; the current prevalence of OCD symptoms should be considered as prevalence of subthreshold symptoms and not of the diagnosis of OCD.

Cross-sectional associations between obsessive beliefs and OCD (and specific OCD subtypes) in youth (t_0)

When examining the cross-sectional association in youths between obsessive beliefs and OCD/OC symptoms, we found that Threat Overestimation, Perfectionism and Intolerance of Uncertainty, and Importance/Control of Thoughts, together with depressive symptoms at t_0 predicted more intense general OCD symptoms at t_0 , explaining a relevant proportion of the total variance.

The predictive effects of Perfectionism and Intolerance of Uncertainty on general OCD symptoms appeared consistent with previous researches in youths, which highlighted the unique cross-sectional contribution of these beliefs even when controlling for comorbid anxiety and depressive symptoms (Noorian et al. 2015, Soreni et al. 2014). It has to be stated, however, that our result is in contrast with findings of Coles and colleagues (2010), where Perfectionism and Intolerance of Uncertainty had low correlations with general OCD symptoms. It should be noted that the study of Coles and colleagues (2010) used a small clinical group with OCD including also older adolescents aged up to 18 years old; in addition, a potential difference is the use of the Children-Yale Brown Obsessive Compulsive Scale (CY-BOCS; Scahill et al. 1997) in the study by Coles and colleagues (2010), which covers also impairment, interference, distress and uncontrollability of symptoms, different from the OCI-CV which only

assesses frequency and intensity of symptoms. The role of Importance and Control of Thoughts is in line with the data reported in a group of adolescents with OCD (Borda et al. 2017) showing very strong correlations between overvalued ideation, a cognitive domain similar to Importance of Thoughts, and general OCD severity. The cross-sectional association between depressive symptoms and general OCD symptoms confirms the evidence widely found in the literature on both adults and children/adolescents with OCD about the role of negative mood as a correlate of OCD symptoms (Abramowitz et al. 2007, Pozza et al. 2013, Wolters et al. 2011).

Unlike what has been hypothesized by Salkovskis (1985), Inflated Responsibility at t_0 was not associated with general OCD symptoms at t_0 , but only with the specific subtypes of Neutralising and Hoarding. Our results do not support the specificity of the Inflated Responsibility cognitive domain and appeared consistent with results of a meta-analysis of studies performed both in adults and children/adolescents, showing that Inflated Responsibility was associated with OCD to a similar degree as with symptoms of anxiety disorders (Pozza and Dettore 2014). In addition, in a study conducted on a clinical group of children and adolescents with OCD (Coles et al. 2010), a moderate correlation was found between general OCD severity and Inflated Responsibility. The use of a clinical group in that study (Coles et al. 2010) might explain the difference in the results about Responsibility.

Threat Overestimation was the cognitive domain associated to the highest number of OCD subtypes, including Doubting / Checking, Washing, Ordering, Neutralising, and Pure obsessing. This result is in line with the cross-sectional evidence reported about Threat Overestimation in all the OCD subtypes measured by the OCI-R in adult populations of OCD (e.g., Tolin et al. 2003). This lack of specificity of the Threat Overestimation belief across the subtypes might also suggest that this set of cognitions is an indicator of general distress common to several psychological conditions, as hypothesized by some authors (Coradeschi et al. 2012). Perfectionism and Intolerance of Uncertainty at t_0 predicted Doubting / Checking, Washing, Ordering, and Neutralising subtypes. The relation with Neutralising and with Doubting / Checking symptoms was in line with previous evidence in adults (Julien et al. 2006, Tolin et al. 2003). The association between Perfectionism and Intolerance of Uncertainty and Ordering was consistent with the evidence of a cross-sectional study in a community group of adolescents (Coles et al. 2014), where this cognitive domain had unique associations only with this subtype. Maybe the use of older adolescents in that study can explain the difference in the outcome as compared with the current study.

Interestingly, Importance/Control of Thoughts was associated with both Hoarding and Doubting/Checking symptoms. This result may be viewed as consistent with previous evidence on university students showing that both beliefs about the need to control thoughts, the beliefs about uncontrollability of thoughts and the beliefs about cognitive confidence predicted Checking and Hoarding tendencies (Timpano et al. 2014).

The lack of a significant association between depressive symptoms at t_0 and all the OCD subtypes appeared in line with the evidence reported by Arjona and colleagues (2012), where depressive symptoms showed only low bivariate correlations with all the subtypes. However, in the current group depressive symptoms were significantly related to Ordering symptoms.

Prospective associations between obsessive beliefs at t_0 and OCD (and specific OCD subtypes) in youths (t_1)

Perfectionism, Intolerance of Uncertainty, and Threat Overestimation at t_0 resulted the only significant cognitive predictors of more intense general OCD symptoms after one year, suggesting that they might be more specific to OCD than Inflated Responsibility and Importance and Control of Thoughts. Perfectionism and Intolerance of Uncertainty predicted the largest proportion of the total variance of general OCD symptoms at t_1 , suggesting that this cognitive domain might be the most specific one to OCD in youths. The predictive effect of Threat Overestimation is in line with the data reported in previous prospective studies in community adults (Taylor et al. 2010). It may be hypothesized that Perfectionism, Intolerance of Uncertainty and Threat Overestimation are early precursors of full-blown or subthreshold OCD, or cognitive vulnerability factors leading to later OCD; as such, they should be monitored over time in youths with the aim of detecting and, potentially preventing the onset of full-blown OCD.

The predictive role of depressive symptoms should be further investigated; as we did not measure depressive symptoms at t_1 , it is possible that they would predict obsessive-compulsive symptoms *comorbid with* depressive symptoms at follow-up more than just OC symptoms. Several processes might be hypothesized playing as moderators of the connection between low mood and subthreshold OCD symptoms, such as isolation from peers, feelings of shame or guilt, difficulties concentrating and rumination, and poor self-esteem due to the perceived uncontrollability of thoughts, which all can represent a bridge between depressive symptoms and OCD symptoms (Jones et al. 2018). The lack of measures of other psychological conditions as outcomes does not allow concluding that these cognitions are specific only to OCD.

The fact that only some of the obsessive cognitions proposed by the cognitive models (Obsessive Compulsive Cognitions Working Group 2003) were prospectively associated with more intense OCD symptoms over time might be explained by the evidence reported in adult samples, which showed that there is a subgroup of individuals with OCD tendencies who have high levels of OCD symptoms but do not endorse obsessive beliefs (Calamari et al. 2006). The lack of a significant predictive effect of all the obsessive beliefs is also in contrast with some longitudinal data in adults: for example, Abramowitz and colleagues (2006) found that at an average follow-up of eight months all the cognitive domains were significant predictors of OCD symptoms. Controversies in the literature may be explained by assuming that obsessive beliefs should be viewed as some among other vulnerability factors leading to the development of OCD; this is also in line with our (among others) result that specific obsessive beliefs are more closely associated with the later development of obsessive-compulsive symptoms.

The cognitive domains of Inflated Responsibility and Importance/Control of Thoughts did not seem significant predictors of more intense obsessive-compulsive symptoms over time. An explanation might be that moral competence and metacognitive maturity, necessary to the activation of these cognitions, are not completely developed during this early developmental phase (Garber et al. 2016). These two cognitive domains may become vulnerability factors later in life.

Perfectionism, Intolerance of Uncertainty and Threat Overestimation, on the contrary, were significant predictors of almost all the subtypes of OCD at the 1-year follow-up, including Ordering, Doubting/Checking, Neutralising, Washing, Pure obsessing. The role of Perfectionism might be viewed in line with some recent research on children with OCD demonstrating that Perfectionism is associated with more severe symptoms of OCD, more impaired peer relations and negative mood (Huan et al. 2008). As suggested by these authors (Huan et al. 2008), the specific dimension of perfectionistic sensitivity to mistakes might be related to OCD symptoms. The role of Threat Overestimation might be considered as less specific to OCD and as a sign of general distress and anxiety (Garnefski and Kraij 2016), if we consider that the unique contribution of this cognition on the total variance of the model for all the subtypes was relatively limited.

Importance and Control of Thoughts predicted more intense symptoms of Doubting / Checking and Hoarding after one year. The first prospective association may be explained considering that when a young individual attributes undue importance to thoughts, he/she may develop more repetitive doubts. Unexpectedly, Importance / Control of Thoughts did not predict Neutralizing and Pure obsessing. The predictive effect of Importance and Control of Thoughts on Hoarding symptoms after one year appeared in line with the observation made by Frost and colleagues (2012) who outlined the distinction between hoarding in OCD and Hoarding Disorder. One prominent difference is in the cognitive process related to hoarding: while thoughts about hoarding are generally distressing within the context of OCD, they are neither distressing nor repetitive in Hoarding Disorder (Albert et al. 2015). This distinction might explain the relation found in the current study between the Importance/Control of thoughts domain and hoarding after one year.

Limitations and conclusions

Some limitations should be pointed out. First, the study used a community group of children/adolescents drawn from the general population. Future research should replicate these findings in a clinical group with OCD. In addition, the study used self-report measures of OCD symptoms: the lack of a clinician-administered diagnostic instrument to ascertain the diagnosis of OCD does not allow drawing conclusions about the association of obsessive beliefs with the disorder.

Another limitation concerned the upper limit of age set at 14 years: future research should include late adolescents to provide an insight about the role of obsessive beliefs also in late adolescents. A more comprehensive investigation might divide the analysis as a function of the generational cohort by comparing children (8-11 years old) with adolescents. Another limitation concerned the limited proportion of variance explained by the predictors of some of the subtypes, ranging from 6% to 16%. This implies that these cognitive vulnerability factors interact with other potential demographic, environmental and clinical variables (such as gender and/or stressful life events) in determining the onset of the disorder (Rosso et al. 2012); future investigations should prospectively evaluate the interaction of several potential vulnerability factors, among which cognitive ones. Another limitation is that we did not control for the effect of general anxiety and OCD symptoms at t_0 in the regression models. Finally, a future study could include a longer time window (more

than 1 year of follow-up) to test the predictive effect of the obsessive beliefs on the development of OCD at follow-up, and the use of measures of psychological symptoms other than obsessive-compulsive ones (such as generalised anxiety or eating disorders) as outcome variables, to test more closely the specificity of the so-called *obsessive* beliefs as cognitive vulnerability factors for OCD.

Notwithstanding these limitations, our study is the first contribution investigating the predictive role of the obsessive beliefs on the intensity of OCD symptoms and subtypes over time in children and early adolescents of the community. Perfectionism, Intolerance of Uncertainty, Threat Overestimation together with depressive symptoms predicted the later development of obsessive-compulsive symptoms in youths, and may be viewed both as vulnerability factors and as early precursors of full-blown OCD; as such, they might be used in the future as specific targets for early detection and prevention programs to be developed in school contexts. The psychotherapeutic intervention and a careful monitoring by the clinicians treating children and adolescents with OCD might focus on these cognitive domains.

References

- Abramowitz JS, Khandker M, Nelson CA, Deacon BJ, Rygwall R (2006). The role of cognitive factors in the pathogenesis of obsessive-compulsive symptoms: a prospective study. *Behaviour Research and Therapy* 44, 9, 1361-1374.
- Abramowitz JS, Storch EA, Keeley M, Cordell E (2007). Obsessive-compulsive disorder with comorbid major depression: what is the role of cognitive factors?. *Behaviour Research and Therapy* 45, 10, 2257-2267.
- Albert U, Barcaccia B, Aguglia A, Barbaro F, De Cori D, Brunatto C, Bogetto F, Maina G (2015). Obsessive beliefs in first-degree relatives of probands with Obsessive-Compulsive Disorder: Is the cognitive vulnerability in relatives specific to OCD?. *Personality and Individual Differences* 87, 4, 141-146.
- Albert U, De Cori D, Barbaro F, Fernandez de la Cruz L, Nordsletten AE, Mataix-Cols D. Hoarding disorder: a new obsessive-compulsive related disorder in DSM-5. (2015). *Journal of Psychopathology* 21, 4, 354-364.
- Alvarenga PG, Cesar RC, Leckman JF, Moriyama TS, Torres AR, Bloch MH, Coughlin CG, Hoexter GMQ, Manfro GG, Polanczyk GV, Miguel EC, do Rosario MC (2015). Obsessive-compulsive symptom dimensions in a population-based, cross-sectional sample of school-aged children. *Journal of Psychiatric Research* 62, 3, 108-114.
- Arjona RN, Sanchíz PR, Lázaro AG, Alvarez MPC (2012). Propiedades psicométricas de la versión española del Obsessive Belief Questionnaire-Children Version (OBQ-CV) en una muestra no clínica. *Psicothema* 24, 4, 674-679
- Belloch A, Morillo C, Luciano JV, García-Soriano G, Cabedo E, Carrió C (2010). Dysfunctional belief domains related to obsessive-compulsive disorder: A further examination of their dimensionality and specificity. *The Spanish Journal of Psychology* 13, 1, 376-388.
- Bendinelli S, Galardi A, Pozza A, Fazzi L, Cenerelli AM, Dèttore D (2014). Preliminary psychometric evaluation of the Italian Obsessive Beliefs Questionnaire-Child Version (OBQ-CV): factor structure, reliability, and validity in a non-clinical sample of children and adolescents. Poster presented at the 8th conference of the International Association for Cognitive Psychotherapy (ICCP), Hong Kong.
- Borda T, Neziroglu, F, Taboas W, McKay D, Frenkiel L (2017). Overvalued ideation in adolescents with obsessive-compulsive disorder. *Psychiatry Research* 255, 9, 66-71.
- Brakoulias V, Perkes IE, Tsalamaniotis E. (2017). A call for prevention and early intervention in obsessive-compulsive disorder. *Early Intervention in Psychiatry* 12, 4, 572-577.
- Calamari JE, Cohen RJ, Rector NA, Szacum-Shimizu K, Riemann BC, Norberg MM (2006). Dysfunctional belief-based obsessive-compulsive disorder subgroups. *Behaviour Research and Therapy* 44, 9, 1347-1360.
- Coles ME, Ravid A, Franklin ME, Storch EA, Khanna M (2014). Obsessive-compulsive symptoms and beliefs in adolescents: A cross-sectional examination of cognitive models. *Journal of Cognitive Psychotherapy* 28, 4, 251-263.
- Coles ME, Schofield CA, Nota JA (2015). Initial data on recollections of pathways to inflated responsibility beliefs in patients with obsessive-compulsive disorder. *Behavioural and Cognitive Psychotherapy* 43, 4, 385-395.
- Coles ME, Wolters LH, Sochting I, De Haan E, Pietrefesa AS, Whiteside SP (2010). Development and initial validation of the obsessive belief questionnaire-child version (OBQ-CV). *Depression and Anxiety* 27, 10, 982-991.
- Collins LM, Coles ME (2018). A Preliminary Investigation of Pathways to Inflated Responsibility Beliefs in Children with Obsessive Compulsive Disorder. *Behavioural and Cognitive Psychotherapy* 46, 3, 374-379.
- Coluccia A, Fagiolini A, Ferretti F, Pozza A, Goracci A (2015). Obsessive-Compulsive Disorder and quality of life outcomes: protocol for a systematic review and meta-analysis of cross-sectional case-control studies. *Epidemiology, Biostatistics and Public Health*, 12, 2.
- Coluccia A, Ferretti F, Fagiolini A, Pozza A (2017). Quality of life in children and adolescents with obsessive-compulsive disorder: a systematic review and meta-analysis. *Neuropsychiatric Disease and Treatment* 13, 597-608.
- Coradeschi D, Pozza A, Mannelli E, Mengoli G, Rotundo L, Neri T, Dèttore D (2012). Obsessive belief changes in patients with resistant OCD treated daily with prolonged exposure and response prevention. *Psicoterapia Cognitiva e Comportamentale* 18, 3, 23-37.
- Foa EB, Coles M, Huppert JD, Pasupuleti RV, Franklin ME, March J (2010). Development and validation of a child version of the obsessive compulsive inventory. *Behavior Therapy* 41, 1, 121-132.
- Foa EB, Huppert JD, Leiberg S, Langner R, Kichic R, Hajcak G, Salkovskis PM (2002). The Obsessive-Compulsive Inventory: development and validation of a short version. *Psychological Assessment* 14, 4, 485-496.
- Frigerio A, Pesenti S, Molteni M, Snider J, Battaglia M (2001). Depressive symptoms as measured by the CDI in a population of northern Italian children. *European Psychiatry* 16, 1, 33-37.
- Frost RO, Steketee G, Tolin DF (2012). Diagnosis and assessment of hoarding disorder. *Annual Review of Clinical Psychology* 8, 219-242.
- Garber J, Frankel SA, Herrington CG (2016). Developmental demands of cognitive behavioral therapy for depression in children and adolescents: cognitive, social, and emotional processes. *Annual Review of Clinical Psychology* 12, 181-216.
- Garnefski N, Kraaij V (2016). Specificity of relations between adolescents' cognitive emotion regulation strategies and symptoms of depression and anxiety. *Cognition and Emotion* 28, 5, 619-631.
- Gillett CB, Bilek EL, Hanna GL, Fitzgerald KD (2018). Intolerance of uncertainty in youth with obsessive-compulsive disorder and generalized anxiety disorder: A transdiagnostic construct with implications for phenomenology and treatment. *Clinical Psychology Review* 60, 3, 100-108.
- Heyman I, Fombonne E, Simmons H, Ford T, Meltzer H, Goodman R (2001). Prevalence of obsessive-compulsive

- disorder in the British nationwide survey of child mental health. *The British Journal of Psychiatry* 179, 4, 324-329.
- Jaisooriya TS, Reddy YJ, Thennarasu K, Beena KV, Beena M, Jose DC (2015). An epidemiological study of obsessive compulsive disorder in adolescents from India. *Comprehensive Psychiatry* 61, 106-114.
- Jones PJ, Mair P, Riemann BC, Mugno BL, McNally RJ (2018). A network perspective on comorbid depression in adolescents with obsessive-compulsive disorder. *Journal of Anxiety Disorders* 53, 1, 1-8.
- Julien D, O'Connor KP, Aardema F, Todorov C (2006). The specificity of belief domains in obsessive-compulsive symptom subtypes. *Personality and Individual Differences* 41, 7, 1205-1216.
- Kovacs M (1985). The children's depression inventory (CDI). *Psychopharmacology Bulletin* 21, 995-998.
- Krebs G, Heyman I (2015). Obsessive-compulsive disorder in children and adolescents. *Archives of Disease in Childhood* 100, 5, 495-499.
- Maina G, Albert U, Bogetto F, Ravizza L (1999). Obsessive-compulsive syndromes in older adolescents. *Acta Psychiatrica Scandinavica* 100, 6, 447-450.
- Marques L, LeBlanc NJ, Weingarden HM, Timpano KR, Jenike M, Wilhelm S (2010). Barriers to treatment and service utilization in an internet sample of individuals with obsessive-compulsive symptoms. *Depression and Anxiety* 27, 5, 470-475.
- Noorian Z, Deu AF, Romero K, Ferreira E, Domenèch-Llaberia E (2015). The Contribution of Dysfunctional Obsessive Beliefs in Obsessive-Compulsive Symptoms Among Adolescents. *International Journal of Cognitive Therapy* 8, 3, 271-286.
- Obsessive Compulsive Cognitions Working Group (2003). Psychometric validation of the obsessive beliefs questionnaire and the interpretation of intrusions inventory: Part I. *Behaviour Research and Therapy* 41, 8, 863-878.
- Pozza A, Barcaccia B, Dèttore D (2017). The Obsessive Compulsive Inventory-Child Version (OCI-CV): Further Evidence on Confirmatory Factor Analytic Structure, Incremental and Criterion Validity in Italian Community Children and Adolescents. *Archives of Psychiatric Nursing* 31, 3, 291-295.
- Pozza A, Berardi D, Fazzi L, Bendinelli S, Cenerelli AM, Sterpone R, Dèttore D (2017). I sottotipi di Disturbo Ossessivo Compulsivo in età evolutiva: adattamento della versione italiana di Obsessive Compulsive Inventory-Child Version (OCI-CV) e studio preliminare delle proprietà psicometriche in campioni non-clinici di 8-11 anni. *Psicoterapia Cognitiva e Comportamentale* 23, 1, 41-72.
- Pozza A, Coradeschi D, Dèttore D (2013). Do dysfunctional beliefs moderate the negative influence of comorbid severe depression on outcome of residential treatment for refractory OCD? A pilot study. *Clinical Neuropsychiatry* 10, 3, 72-83.
- Pozza A, Dèttore D (2014). Are inflated responsibility beliefs specific to OCD? meta-analysis of the relations of responsibility to OCD, anxiety disorders, and depression symptoms. *Clinical Neuropsychiatry* 11, 6, 170-181.
- Pozza A, Lochner C, Ferretti F, Cuomo A, Coluccia A (2018). Does higher severity really correlate with a worse quality of life in obsessive-compulsive disorder? A meta-regression. *Neuropsychiatric Disease and Treatment* 14, 1013.
- Rosso G, Albert U, Asinari GF, Bogetto F, Maina G (2012). Stressful life events and obsessive-compulsive disorder: clinical features and symptom dimensions. *Psychiatry Research* 197, 3, 259-264.
- Salkovskis PM (1985). A cognitive-behavioral model of obsessive-compulsive-disorder. *Behaviour Research and Therapy* 23, 5, 571-583.
- Salkovskis PM (1999). Understanding and treating obsessive-compulsive disorder. *Behaviour Research and Therapy* 37, S29-S52.
- Scahill L, Riddle MA, McSwiggin-Hardin M, Ort SI, King RA, Goodman WK, Cicchetti D, Leckman JF (1997). Children's Yale-Brown obsessive compulsive scale: reliability and validity. *Journal of the American Academy of Child & Adolescent Psychiatry* 36, 6, 844-852.
- Soreni N, Streiner D, McCabe R, Bullard C, Swinson R, Greco A, Pires P, Szatmari P. (2014). Dimensions of perfectionism in children and adolescents with obsessive-compulsive disorder. *Journal of the Canadian Academy of Child and Adolescent Psychiatry* 23, 2, 136-143.
- Salkovskis PM, Shafran R, Rachman S, Freeston MH (1999). Multiple pathways to inflated responsibility beliefs in obsessional problems: possible origins and implications for therapy and research. *Behaviour Research and Therapy* 37, 11, 1055-1072.
- Taylor S, Coles ME, Abramowitz JS, Wu KD, Olatunji BO, Timpano KR, McKay D, King S, Carmin C, Tolin DF (2010). How are dysfunctional beliefs related to obsessive-compulsive symptoms?. *Journal of Cognitive Psychotherapy: An International Quarterly* 24, 3, 165-176.
- Timpano KR, Rasmussen JL, Exner C, Rief W, Wilhelm S (2014). The association between metacognitions, the obsessive compulsive symptom dimensions and hoarding: A focus on specificity. *Journal of Obsessive-Compulsive and Related Disorders* 3, 2, 188-194.
- Tolin DF, Woods CM, Abramowitz JS (2003). Relationship between obsessive beliefs and obsessive-compulsive symptoms. *Cognitive Therapy and Research* 27, 6, 657-669.
- Tolin DF, Worhunsky P, Maltby N (2006). Are "obsessive" beliefs specific to OCD?: A comparison across anxiety disorders. *Behaviour Research and Therapy* 44, 4, 469-480.
- Weidle B, Ivarsson T, Thomsen PH, Lydersen S, Jozefiak T (2015). Quality of life in children with OCD before and after treatment. *European Child & Adolescent Psychiatry* 24, 9, 1061-1074.
- Wolters LH, Hogendoorn SH, Koolstrac T, Leentje V, Boera F, Prins PJM, de Haan E. (2011). Psychometric properties of a Dutch version of the Obsessive Beliefs Questionnaire—Child Version (OBQ-CV). *Journal of Anxiety Disorders* 25, 5, 714-721.