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ORIGINAL ARTICLE

Understudied Clinical Dimensions in Pediatric Obsessive Compulsive Disorder

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Abstract The present study aimed to assess the phenomenology and treatment sensitivity of insight, avoidance, indecisiveness, overvalued responsibility, pervasive slowness, and pathological doubting among youth with Obsessive-compulsive disorder (OCD) using the ancillary items on the Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS). These factors are believed to be relevant to the clinical presentation of youth with OCD but remain understudied. Eighty-nine youth with OCD were administered the CY-BOCS, including six subsidiary items aimed at the constructs of interest in this research. Participants also completed measures of OCD symptom clusters, depressive and anxious symptoms, externalizing/internalizing behavioral problems, and functional impairment. Associations between OCD symptom clusters and insight, avoidance, indecisiveness, overvalued responsibility, pervasive slowness, and pathological doubting are presented. Low insight, significant avoidance, indecisiveness, pervasive slowness and excessive sense of responsibility were all related to elevations in functional impairment. Clinical improvement in OCD severity was related to reductions in avoidance, doubting, and sense of responsibility. The six ancillary items of the CY-BOCS appear to be a practical and valid assessment of several constructs that are prognostically linked to cognitive-behavioral therapy outcomes in youth with OCD. Implications for clinicians are discussed.

Keywords Obsessive-compulsive disorder (OCD) · Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS) · Children · Insight · Cognitive-behavioral therapy (CBT)

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Introduction

The presence and magnitude of the characteristic features of obsessive-compulsive disorder (OCD), namely obsessive thoughts and ritualistic behaviors, are typically used as the basis for estimating syndrome severity. The Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS) [1], a clinician-administered semi-structured interview, is the most commonly used measure of the presence and severity of obsessive-compulsive symptoms among youth. Psychometric evaluations of the CY-BOCS have consistently demonstrated the instrument's validity and reliability [1–3], and treatment sensitivity across numerous clinical trials [4–7]. More specifically, symptom severity, assessed using the CY-BOCS, is based on patient endorsement of: time occupied by, interference and distress from, resistance to, and control over obsessions and compulsions.

Based on clinical observations, the developers of the CY-BOCS and its parallel version for adults (Y-BOCS; Yale Brown Obsessive Compulsive Inventory) [8] posed that the following six clinical dimensions are also relevant in the characterization of OCD: insight, avoidance, degree of indecisiveness, overvalued sense of responsibility, pervasive slowness, and pathological doubting. Each of these dimensions (e.g., pathological doubting) has been linked conceptually and anecdotally to one or more OCD symptom types (e.g., checking) and/or may be related to treatment outcomes. Although assessment of these domains provides qualitatively rich information about the clinical presentation of pediatric OCD, information regarding the nature or clinical correlates of these constructs is limited in scope. The following is a brief review of each of these "ancillary" constructs assessed via the CY-BOCS.

Insight into Obsessions and Compulsions

Insight refers to recognition of the senselessness of one's obsessions and compulsions [9]. Poor insight has been associated with increased OCD symptom severity and comorbidity [10–12]. Further, diminished insight may be related to early onset of symptoms and greater duration of illness [13]. A recent study found that youth with OCD who had poor insight exhibited diminished intellectual functioning, greater depressive symptoms, more impairments in adaptive functioning, and less perceived control over their environment than youth with OCD who had adequate insight [14]. Additionally, in adults, diminished insight has been linked to more complex presentation of OCD, increased symptom severity, greater likelihood of being prescribed atypical antipsychotics, higher likelihood of schizophrenia spectrum/schizotypal symptoms, and worse prognosis [15]. Finally, poor insight has predicted poorer responses to both pharmacological and cognitive-behavioral interventions for OCD in adults [15–20]. Moreover, while insight is a DSM-IV-TR [21] diagnostic requirement for OCD in adults, youth with OCD can be diagnosed with the qualifier of "with poor insight" (pg. 463). The CY-BOCS (item 11) offers a reliable method for assessing insight in youth with OCD [12].

Avoidance

Avoidance of stimuli or situations eliciting anxiety is a hallmark characteristic of childhood and adult OCD [22], as well as other anxiety disorders [23]. For example, harm avoidance is common among adults with OCD [24], especially in comparison to controls [25–27]. Avoidance, which some conceptualize as a compulsion in its own right, is often the target of exposure/response prevention (E/RP) treatments [28, 29]. Like active rituals,

avoidance may dispel anxiety in the short-term and is consequently maintained via negative reinforcement. However, avoidance maintains a child's anxiety over time [30] and disrupts the development of constructive strategies for mitigating fear [31]. Further, high levels of avoidance may be associated with severe functional impairment (e.g., school and peer avoidance) [32, 33] and consequently marked accommodation [34, 35] and disability. Although behavioral avoidance tasks [36, 37] and other observation-based assays of avoidance may be ideal, there has been little application of such tasks to pediatric OCD; thus, the CY-BOCS (item 12) offers an efficient alternative.

Degree of Indecisiveness

Indecisiveness, similar to avoidance, can manifest as a symptom of OCD. For example, individuals have marked anxiety in situations requiring deliberation (often including mundane, routine decision-making) [38]. In non-clinical samples of adults, indecisiveness has been highly associated with obsessive-compulsive tendencies [39, 40]. In adults [41] and children [42] with OCD, indecisiveness has been most closely linked to hoarding. Overall, this dimension remains understudied, especially in youth with OCD.

Overvalued Sense of Responsibility

Research suggests a central role of inflated responsibility among individuals with OCD [43], especially among children and adolescents [44]. An extension of this exaggerated sense of responsibility is Thought-Action Fusion (TAF) [45, 46], a process by which having an intrusive thought about a negative event is equated with wanting (or increasing the likelihood) of that event occurring. For example, individuals with OCD are more likely to believe a negative event will occur as a consequence of their negative thoughts [47] and accordingly hold an erroneous sense of responsibility. These tendencies may distinguish OCD from other anxiety disorders and are directly correlated with OCD symptom severity [48, 49], although findings are mixed [50].

Pervasive Slowness/Disturbance of Inertia

Parents of youth with OCD frequently describe their child "getting stuck" or requiring excessive amounts of time to complete simple, routine tasks. In severe cases of OCD, pervasive obsessive slowness must be distinguished from catatonia, depressive psychomotor retardation, or bradykinesia. Slowness in patients with OCD may be due to a hindrance in initiating goal-directed behavior as well as substantial consumption of neurocognitive resources by suppressing obsessive thoughts and/or engaging in ritualistic behavior [51].

Pathological Doubting

Clinically, obsessive doubt is commonplace among youth with OCD and often manifests as uncertainty regarding the completion of school assignments, completing other activities, or performing a task correctly. In more severe cases of pathological doubt, patients may question their own perceptions, senses, or memory. Qualitative clinical experiences suggest that children often attempt to mitigate anxiety associated with doubting obsessions via excessive reassurance seeking, questioning, repeating or checking. Doubting is also

understudied in children, especially as it relates to treatment response. Added emphasis on understanding internal symptoms such as obsessive doubt may be warranted given that they are more difficult to assess (and treat using E/RP) than more overt rituals [52]. Doubt is believed to be a critical element in the development and presentation of OCD [53] and has been shown to represent a relatively distinct domain in individuals with OCD [54].

Research Aims

In summary, insight, avoidance, degree of indecisiveness, overvalued sense of responsibility, pervasive slowness, and pathological doubting are hypothesized to be relevant to the phenomenology, clinical presentation, and treatment outcomes among youth with OCD. Nevertheless, the majority of these domains remain understudied, especially in children and adolescents. Accordingly, the present study provides the first empirical evaluation of these constructs (as assessed via the CY-BOCS ancillary items), their clinical correlates, and treatment sensitivity. Specifically, we will examine relations between these understudied clinical dimensions and: (a) OCD symptom dimensions (e.g., hoarding, checking, washing); (b) comorbid symptomology (e.g., depression and anxiety); (c) school, familial, daily living, and social impairment; and (d) treatment sensitivity [specifically, relations to symptom improvement following cognitive-behavioral therapy (CBT)].

Method

Participants

Participants were eighty-nine children and adolescents (37.5% females) with a primary diagnosis of OCD and their parents who presented for clinical evaluation at a southeastern United States university-based tertiary care child and adolescent psychiatry clinic specializing in OCD. Participants' mean age was 12.6 years (SD = 2.8; range = 8–17 years). The majority of participants were Caucasian (88%) followed by Hispanic American (4.5%), other races/ethnicities (4.5%), and African American (2.3%). Fifty-nine participants met criteria for at least one additional diagnosis (34% met criteria for two or more additional diagnoses). Twenty-eight percent of the participants had a comorbid non-OCD anxiety disorder; 26% had a disruptive behavior disorder, 17% had a mood disorder, 13% had a tic disorder, and 3% had trichotillomania.

All diagnoses [e.g., OCD and comorbid diagnoses, e.g., tic disorders, anxiety disorders, mood disorders, Attention Deficit Hyperactivity Disorder (ADHD)] were made by a licensed clinical psychologist or psychiatrist, according to criteria outlined in the DSM-IV-TR (American Psychiatric Association [21]). The Anxiety Disorders Interview Schedule for Children/Parents (ADIS-C/P) [55] was administered immediately prior to treatment in order to confirm diagnoses. Other clinical information (e.g., from the CY-BOCS) was also used as appropriate. Only youth for whom a primary diagnosis of OCD was made with complete certainty were included. Among participants, 31% met criteria for an anxiety disorder (17% with Generalized Anxiety Disorder), 27% met criteria for ADHD, 17% for a mood disorder, 12% for a tic disorder, and 7% with Oppositional Defiant Disorder of Disruptive Behavior Disorder Not Otherwise Specified (NOS).

Post-treatment data were collected for 57 participants. Treatment consisted of weekly CBT with exposure and response prevention using conventional procedures for youth with OCD [29, 56, 57]. Treatment data were not available for the remaining participants

because these individuals did not seek treatment at our clinic for various reasons (e.g., distance from home, seeking a second opinion only, and insurance/financial limitations). Demographic (age, gender, ethnicity) and clinical (comorbidity, OCD severity, ratings on CY-BOCS ancillary items) variables did not differ from individuals on whom treatment data were obtained.

Measures

Children's Yale-Brown Obsessive Compulsive Scale

Considered the gold-standard for assessing symptom severity [58], the CY-BOCS Severity Scale [1] consists of ten items measuring obsession and compulsion severity over a 1-week interval. The CY-BOCS is a clinician-rated semi-structured interview (with both the parent and child together) and takes 30–45 min. Separate Obsession and Compulsion Severity Scores are derived by summing the applicable five-items (distress related to obsessions/compulsions, frequency, interference, resistance, and symptom control); a Total Score is derived by summing all severity items. CY-BOCS Severity scores range from 0 to 40 for the Total severity; 0–20 on the Obsession and Compulsion severity. In addition to the Severity Scale items, six supplemental items are included to assess: insight, avoidance, indecisiveness, sense of responsibility, pervasive slowness, and pathological doubt. Scores on these items range from 0 to 4 (0 = none, 1 = mild, 2 = moderate, 3 = severe, 4 = extreme). Although the six supplemental constructs are scored as single items, the semi-structured nature of the CY-BOCS allowed the clinician to rate each item based on a series of queries. For example, for the insight item, the rater may ask, "Do you think your concerns or behaviors are unreasonable? What do you think would happen if you did not perform the compulsion? Are you convinced something would *really* happen?" Ratings are achieved similarly for the other five supplemental items. Follow-up queries are also permitted. With the exception of items focused on internal rituals and covert obsessive thoughts, parent ratings were emphasized in cases of parent-child disagreement, although the clinician-rater was given discretion.

Finally, the CY-BOCS Symptom Checklist consists of 62 relatively common obsessions and compulsions organized into seventeen distinct categories (e.g., contamination obsessions, washing/cleaning compulsions). Obsessions and compulsions are rated in a yes/no fashion according to their current presence. The CY-BOCS has demonstrated excellent psychometric properties, including internal consistency, test–retest stability, inter-rater reliability, convergent and divergent validity [1, 2], and treatment sensitivity [4–7]. Cronbach's alpha for the 10 severity items was acceptable at $\alpha = .81$ [59] based on the present sample of youth.

Anxiety Disorders Interview Schedule for DSM-IV: Child and Parent Version [55]

The ADIS-C/P is a clinician-administered semi-structured diagnostic interview that assesses major DSM-IV anxiety disorders and associated psychopathology (i.e., disruptive behavior disorders, psychotic disorders, mood disorders and eating disorders) in school-aged children and adolescents. Severity ratings are assigned using a scale that ranges from 0 to 8, with 4 indicating a clinically significant disorder. Inter-rater agreement, test–retest reliability, and treatment sensitivity have been demonstrated [58, 60, 61]. The measure was administered by trained clinicians.

Obsessive-Compulsive Inventory—Child Version (OCI-CV)

The OCI-CV [62] is a 21-item self report measure of obsessive-compulsive symptoms. Each item is rated on a 3-point Likert-type scale that yields symptom severity scores across the following domains: washing, checking, ordering, obsessing, hoarding, neutralizing, and doubting. Strong internal consistency and construct validity has been demonstrated [62]. The internal consistency of the OCI-CV in this study was acceptable ($\alpha = .84$).

Child Obsessive Compulsive Impact Scale, Revised, Child and Parent Versions (COIS-R-C/P)

The COIS-R-C/P [33] are child and parent report measures of the extent to which obsessive-compulsive symptoms cause impairment across the domains of school activities, social activities, home/family activities, and daily living skills. Respondents rate the extent to which OCD interferes with the child's functioning in each area using a 4-point scale ranging from "not at all" to "very much." The COIS-R has demonstrated good reliability [14], construct validity [33], and treatment sensitivity [6]. Estimates of the internal consistency of the COIS-R-C/P were high ($\alpha = .89$ and .92).

Child Behavior Checklist

The CBCL [63] consists of 113-items that measure how frequently a range of internalizing and externalizing symptoms have occurred over the past 6 months. Items are rated on a 3-point scale, ranging from "not true (as far as you know)" to "very true or often true." Eight subscales are embedded within the CBCL; as well, an Internalizing Problems Composite score (based on Withdrawn, Somatic Complaints, and Anxious/Depressed subscales), an Externalizing Problems Composite score (based on Delinquent Behavior, and Aggressive Behavior subscales), and a Total Score are computed. Widely used, the CBCL has demonstrated reliability and construct validity [63].

Multidimensional Anxiety Scale for Children (MASC)

The MASC [64] is a 39-item child-report measure of a range of anxiety symptoms. Responses to all items are summed to derive a total score; four subscale scores measuring physical symptoms, social anxiety, harm avoidance, and separation anxiety can also be derived. Widely used, the MASC has demonstrated strong psychometric properties [64–67]. For example, Rynn et al. [66] found strong convergence with other self-report measures of anxiety symptoms; divergence with a measure of depressive symptoms; and that the MASC subscales discriminated between anxious and depressed youth. Cronbach's α for the MASC total score was .72.

Children's Depression Inventory (CDI)

The CDI [68] is a commonly used child-report measure of the presence and severity of 27 cognitive, affective, and behavioral symptoms of depression. For each item, children select one of three statements that best indicates how they have been feeling over the past 2 weeks, with individual item scores ranging from 0 to 2, and an overall score ranging from 0 to 54. The CDI has demonstrated good internal consistency, test–retest reliability, construct validity [69–71], and treatment sensitivity [70]. Cronbach's α for the CDI total score was .74.

Procedures

All study procedures were approved by the appropriate institutional Human Subjects Review Board. The purpose of the study was explained and written parental consent and child assent was obtained by the study investigator at the time of the child's initial evaluation. Immediately after obtaining consent and assent, the CY-BOCS was administered to the child and parent jointly in a private room. Interviewers (clinical psychologists, child/adolescent psychiatrists, and postdoctoral fellows in clinical psychology) each had significant experience using the ADIS C/P and CY-BOCS and were provided with additional training (e.g., in using the ancillary items) in the form of an instructional meeting, five or more observed interviews, five interviews under direct supervision, and agreement of 90% or greater during the training sessions. Inter-rater reliability (obtained via clinician review of videotaped CY-BOCS administrations) was high for a random subset (25%) of this sample [Intraclass correlation coefficient (ICC) = .99] [72]. Following the CY-BOCS administration, instructions were provided for completing child- and parent-report measures. For the subset of youth receiving treatment, an identical battery of measures was presented following the last therapy session. Families were not provided with any tangible compensation for their participation in this study. Total time of participation was approximately 45 min (excluding consent procedures and administration of the structured diagnostic interview).

Data Analysis

Internal consistency was assessed using coefficient alpha and inter-rater reliability via ICC. Means and standard deviations were calculated for each of the six CY-BOCS ancillary items (insight, avoidance, degree of indecisiveness, overvalued sense of responsibility, pervasive slowness, and pathological doubting), allowing for descriptive comparison across gender and age (using *t*-tests and Spearman's rank order correlations). Spearman's rank-order correlations were used to examine associations between CY-BOCS ancillary domains and OCD symptom clusters from the OCI-CV. Independent *t*-tests were used to examine differences on the ancillary items based on the presence/absence of OCD symptoms reported on the CY-BOCS Symptom Checklist. Dimensional comparisons between CY-BOCS ancillary items and the MASC, CDI and CBCL were completed using Spearman's correlations; *t*-tests were used to identify categorical differences (in anxiety disorder, mood disorder, tic disorder and ADHD diagnostic status) based on CY-BOCS items. Spearman correlations were used to compare CY-BOCS ancillary constructs with domains of psychosocial functioning that were assessed via the COIS-R. Finally, a series of paired *t*-tests were used to examine pre- to post-treatment changes in CY-BOCS ancillary items and correlations were used to determine whether changes in CY-BOCS ancillary items (calculated by subtracting pre-treatment scores from post-treatment scores) were associated with changes in CY-BOCS severity scores. Given the exploratory nature of these analyses, an alpha level of .05 was employed to balance the risk between types I and II errors.

Results

Descriptive Statistics

Means and standard deviations are presented in Table 1. Also, the frequencies with which each ancillary item was rated as mild or greater (i.e., mild, moderate, severe, or extreme)

Table 1 Means and standard deviations for CY-BOCS severity scores and responses to ancillary items

CY-BOCS	Total sample	Percent of the sample rated as	
		Mild or greater	Severe-extreme
Severity scores			
Total	24.16 (5.07)	–	–
Obsession	11.66 (2.91)	–	–
Compulsion	12.51 (2.83)	–	–
Ancillary items			
Insight	1.07 (1.18)	54%	18%
Avoidance	1.37 (1.25)	65%	23.5%
Indecisiveness	1.20 (1.16)	58%	16.5%
Sense of responsibility	0.75 (1.00)	45%	6%
Pervasive slowness	1.69 (1.37)	68%	39%
Pathological doubting	1.14 (1.07)	61%	12%

CY-BOCS Children's Yale-Brown Obsessive Compulsive Scale

and as severe or extreme are reported. The majority of the sample was rated at least mild on each dimension except for inflated responsibility. Pervasive slowness was rated severe or extreme relatively frequently (39%), followed by avoidance (23.5%). CY-BOCS ancillary items did not differ as a function of gender. Insight was positively correlated with age (younger participants reporting less insight; $r = -.24$, $p < .01$).

Psychometric Properties

Briefly, psychometric properties of the ancillary CY-BOCS items were examined. Strong inter-rater reliability was obtained for each of the items (ICCs range from .87 to .99). Internal consistency ($\alpha = .81$) was acceptable for the CY-BOCS, inclusive of the ancillary items.

OCD Symptom Dimensions and CY-BOCS Ancillary Items

Table 2 displays correlations among CY-BOCS ancillary items and OCD symptom dimension scores based on the OCI-CV. Avoidance was strongly associated with obsession severity, compulsion severity, and total CY-BOCS scores. Indecisiveness and pervasive slowness were each related to total CY-BOCS scores; the former was also related to obsession severity while the latter was related to compulsion severity. With respect to OCI-CV symptom dimensions, indecisiveness was directly associated with hoarding, ordering, doubting, and neutralizing. Overvalued responsibility was related to checking, ordering, doubting, and neutralizing symptoms. Pervasive slowness was positively correlated with neutralizing and hoarding symptoms. Finally, pathological doubting was robustly associated with endorsement of checking and doubting symptom clusters.

Clinical Correlates

Associations among CY-BOCS ancillary items and comorbid clinical symptoms were examined dimensionally (e.g., depressive, anxiety, internalizing and externalizing symptoms on the CDI, MASC and CBCL respectively; see Table 3) and categorically (based on DSM-IV-TR diagnostic criteria).

Table 2 Correlations among CY-BOCS ancillary items and OCI-CV symptom dimension scores

CYBOCS	CY-BOCS severity			OCI-CV						
Ancillary items	Total	Obsessions	Compulsions	Checking	Washing	Ordering	Doubting	Neutralizing	Hoarding	Obsessing
Insight	.03	−.04	.10	−.06	−.02	.17	.16	.09	.11	−.03
Avoidance	.50***	.51***	.38***	−.06	.06	.1	−.09	.04	.18	.17
Indecisiveness	.22*	.26**	.12	.13	−.22	.30**	.29*	.37**	.27*	.03
Sense of responsibility	.19	.18	.10	.27*	.05	.30**	.28*	.38**	.09	.22
Pervasive slowness	.30**	.16	.37***	.20	−.01	.12	.1	.30**	.37**	.15
Pathological doubting	.15	.16	.09	.39***	.06	.04	.34**	.16	.21	.03

CY-BOCS Children's Yale-Brown Obsessive Compulsive Scale, *OCI-CV* obsessive compulsive inventory, child version

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 3 Correlations among CY-BOCS ancillary items and anxiety symptoms, depressive symptoms, internalizing problems, externalizing problems, and family accommodation

CY-BOCS ancillary items	Anxiety symptoms	Depressive symptoms	Internalizing problems	Externalizing problems
Insight	−.05	−.05	.15	.03
Avoidance	.03	.22	.25*	−.03
Indecisiveness	.47**	.31*	.33**	−.01
Sense of responsibility	.41**	.20	.27*	−.09
Pervasive slowness	.17	.12	.24*	.04
Pathological doubting	.18	.14	.18	−.05

CY-BOCS Children's Yale-Brown Obsessive Compulsive Scale

* $p < .05$; ** $p < .01$

Indecisiveness

Indecisiveness was positively associated with scores for anxiety symptoms ($r = .47$, $p < .01$), depressive symptoms ($r = .31$; $p < .05$), and internalizing problems ($r = .33$, $p < .01$). Similarly, youth meeting DSM-IV-TR criteria for a non-OCD anxiety disorder $t(85) = -2.0$, $p = .05$ or a mood disorder ($t[83] = -2.1$, $p = .04$) were rated has having higher levels of indecisiveness. However, youth with ADHD were rated as having less indecisiveness, $t(84) = -2.2$, $p = .04$.

Responsibility

Sense of responsibility was also related to anxiety symptoms ($r = .41$, $p < .01$) and internalizing problems ($r = .27$, $p < .05$).

Pervasive Slowness and Avoidance

Pervasive slowness and avoidance related to the presence of internalizing problems ($r = .24$ and $r = .25$, respectively; $p < .05$).

Pathological Doubt and Insight

Items assessing pathological doubting and insight were not significantly associated with depressive symptoms, anxiety symptoms, or internalizing problems. However, patients with a comorbid tic disorder diagnosis were rated as having less insight $t(83) = -4.2$, $p < .001$. There were no other differences on the CY-BOCS ancillary items on the basis of diagnostic comorbidity or symptom severity.

Functional Impairment and CY-BOCS Ancillary Items

CY-BOCS ancillary items were examined in relation to parent and child reports of impairment in several domains of functioning: Daily Living, School, Family, and Social (see Table 4). Insight was not related to parent- or child-reported functional impairment in any domain. Avoidance was strongly and positively associated with parent-rated impairment in family functioning ($r = .44$, $p < .01$) and functioning in social situations ($r = .42$, $p < .01$); correlations with child ratings showed the same pattern ($r = .30$, $p < .05$ for both domains). Indecisiveness was related to child-rated impairment in daily living

Table 4 Correlations among CY-BOCS ancillary items and parent- and child-rated functional impairment scores

CY-BOCS ancillary items	Child-rated impairment				Parent-rated impairment			
	Daily living	School	Family	Social	Daily living	School	Family	Social
Insight	−.03	−.00	−.03	−.09	−.01	.00	.01	−.09
Avoidance	.20	.07	.30*	.30*	.25*	.22	.44**	.42**
Indecisiveness	.29*	.28*	.23	.23	.12	.15	.12	.06
Sense of responsibility	.09	.20	.25*	.23*	.05	.15	.13	.12
Pervasive slowness	.46**	.35**	.30*	.27*	.52**	.42**	.30**	.16
Pathological doubting	.22	.36**	.16	.12	.18	.20	−.02	−.01

CY-BOCS Children's Yale-Brown Obsessive Compulsive Scale

* $p < .05$; ** $p < .01$

($r = .29$, $p < .05$) and school performance ($r = .28$, $p < .05$) only. Sense of responsibility was positively associated with child-rated impairment in family functioning ($r = .25$, $p < .05$) and functioning in social situations ($r = .23$, $p < .05$). With the exception of parent-rated impairment in social situations, pervasive slowness was related to all impairment scores (coefficients range from $r = .27$ to $r = .46$; $p < .05$). Pathological doubting was significantly associated with child-rated impairment in school functioning only ($r = .36$, $p < .01$).

Treatment and CY-BOCS Ancillary Items

None of the scores on the CY-BOCS ancillary items, at pretreatment, were related to CY-BOCS Severity change scores (pre-to-post treatment). However, a significant reduction in scores (from pre- to post-treatment) was found for all of the ancillary items: insight, $t(41) = 3.49$, $p < .01$; avoidance, $t(36) = 3.25$, $p < .01$; indecisiveness, $t(36) = 3.33$, $p < .01$; sense of responsibility, $t(36) = 3.29$, $p < .01$; pervasive slowness, $t(36) = 4.97$, $p < .01$; and pathological doubting, $t(36) = 4.31$, $p < .01$.

Moreover, treatment-related reductions in the CY-BOCS severity score were associated with reductions in avoidance ($r = .40$, $p = .01$), sense of responsibility ($r = .47$, $p < .01$), and pathological doubting ($r = .35$, $p < .05$). Similar patterns were observed for reductions in CY-BOCS obsessions and compulsions severity. Changes in insight, indecisiveness, or pervasive slowness did not relate significantly to changes in CY-BOCS total severity, CY-BOCS obsession severity, or CY-BOCS compulsion severity scores (Table 5).

Table 5 Correlations between change in CY-BOCS ancillary items and change in symptom severity scores

CY-BOCS ancillary items	Total score	Obsession severity	Compulsion severity
Insight	.07	.13	.01
Avoidance	.40**	.43**	.36*
Indecisiveness	.19	.19	.20
Sense of responsibility	.47**	.45**	.48**
Pervasive slowness	.23	.17	.30
Pathological doubting	.35*	.35*	.34*

CY-BOCS Children's Yale-Brown Obsessive Compulsive Scale

* $p < .05$; ** $p < .01$

Discussion

The purpose of this study was to provide a preliminary investigation of six constructs, conceptualized to be clinically relevant in pediatric OCD, as they are assessed using the CY-BOCS subsidiary items. Specifically, we examined clinical correlates and treatment sensitivity of clinician-rated insight, avoidance, degree of indecisiveness, overvalued sense of responsibility, pervasive slowness, and pathological doubting in a sample of 89 youth with OCD.

Few correlates of insight were identified in the present sample. One exception—consistent with previous findings—was that younger age was associated with reduced insight [14]. Interestingly, youth with a comorbid disorder had lower insight versus those without. A possible explanation for this is OCD symptom variability among youth with comorbid OCD and a tic disorder [73]. For example, sensory-focused obsessions (i.e., 'Tourettic OCD') [74] or 'just right' phenomena may be less likely to translate into clear insight that obsessions and compulsions are unreasonable. Contrary to findings in adults [18, 19], changes in insight were not predictive of changes in OCD symptom severity following CBT, nor did insight relate to impairment or the presence of other comorbidity symptoms (e.g., depression or anxiety). The reasons for this discrepancy are unclear. One possibility is that the majority of youth were rated has having good or excellent insight, leading to a restriction of range. Similarly, we may have lacked statistical power to detect a relationship in present sample.

Avoidance was strongly related to the severity of both obsessions and compulsions and was moderately associated with the presence of internalizing problems. More notably, the presence of avoidance was consistently linked to pervasive functional impairments across most domains, as assessed by both the child and parent. Such findings lend support to the notion of avoidance serving in a similar manner as rituals in their impact on functioning; pre-treatment assessments should attend to levels of avoidance to help determine treatment targets. Although somewhat surprising, avoidance did not correlate with externalizing behaviors (as rated by the parent on the CBCL). However, this finding suggests that avoidance is specific to the OCD and is not a sign of oppositionality or defiance. Finally, reductions in avoidance following CBT were strongly associated with changes in overall OCD severity. These data combine to suggest that reducing OCD-related avoidance behavior has significant consequences for mitigating functional impairment and for facilitating clinical improvement.

Degree of indecisiveness was associated with obsessions but not compulsions. Increased indecisiveness was linked to the degree of ordering, doubting, neutralizing, and hoarding symptoms reported. These findings make sense given that problems with decision making are inherent in the aforementioned OCD symptom clusters (e.g., "should I save this item?" or "did I do this right?"). Greater indecisiveness was also linked to the presence of anxiety and depression whereas the presence of ADHD was connected to less indecisiveness. This finding is not surprising given that impulsivity is a hallmark of ADHD whereas problems with decision making are commonly reported across mood and anxiety disorders. Moreover, indecisiveness was associated with child-related impairment in school and daily living (e.g., problems deciding on answers on assignments), perhaps due to vacillating between answers on examinations or struggling to make simple decisions posed by a parent or teacher.

Although an overvalued sense of responsibility was not linked to OCD severity, responsibility was associated with checking, neutralizing, doubting, and ordering. It stands to reason that among youth who blame themselves for matters beyond their control (and/or experience high levels of TAF), checking, neutralizing, and doubting symptoms would be

elevated in order to neutralize these fears. Not surprisingly, overvalued responsibility was strongly related to anxiety and reductions in overvalued responsibility were strongly correlated with improvements in overall OCD symptom severity. These findings are consistent with the extant literature suggesting the robustness of TAF in anxiety disorders and their sensitivity to treatment [50].

Pervasive slowness, often described as particularly frustrating to parents of youth with OCD, was associated with increased severity of compulsions (but not obsessions). This finding is also logical given that CY-BOCS assay of slowness focuses on behaviors and activities, not cognitions. Individuals who hoard are more likely to endorse excessive slowness, consistent with extant findings [42]. Not surprisingly, the presence of excessive slowness is linked to internalizing symptomatology and is the most robust correlate of functional impairment, across domains and raters (parent and child). Getting "stuck" in rituals may account for tardiness, missed assignments, problems completing tests, conflict with family, and lack of understanding by peers. Whereas obsessions can be disguised, slowness is pervasive and hard to overcome.

Pathological doubting was positively correlated with the level of checking or doubting symptoms reported. Given that youth with OCD commonly utilize checking compulsions to mitigate distress, the association between uncertainty and checking is explainable. Reduction in doubting was also associated with clinical improvements (i.e., reductions in severity in both obsessions and compulsions). This supports the use of cognitive-behavioral interventions that focus on doubting. For example, therapists often target doubting through exposures vis-à-vis exposure, for example: (a) extinction wherein the parent is instructed not to respond to rituals potentiated by doubting obsessions or (b) habituation—instructing the patient to dwell on the worry without compensatory actions [22]. In addition, thought-stopping, restructuring and other cognitive approaches have utility, especially in adolescents [75, 76].

Implications

In summary, the six ancillary items of the CY-BOCS (which typically require less than 10 min to administer), provide rich information regarding clinical constructs that many believe to be connected to, if not fundamental characteristics of, OCD. Although this is the first empirical investigation of the supplemental items of the CY-BOCS, our data suggest a pattern of symptoms that are prognostically linked to CBT. Specifically, reductions in avoidance, pathological doubting, and over-responsibility are associated with clinical improvement overall. It is possible that interventions targeting these constructs, e.g., experiential avoidance [77, 78], may facilitate response to treatment. Moreover, routine assessment of these domains may assist clinicians in determining optimal components and strategies for therapeutic approaches (e.g., balancing the order and amount of education, behavioral, and cognitive techniques based on factors such as insight, avoidance, and doubt). Finally, these data highlight associations between avoidance and impairment as well as slowness and impairment. (To a lesser extent, indecision and doubt were each associated with impairment as well.) These 'ancillary' domains might mediate the relationship between OCD severity and functional impairment, explaining why OCD symptom severity is not perfectly correlated with impairment in youth [33, 79].

Limitations and Future Directions

One limitation of the present research is that each construct was assessed via a single item. Fortunately, an increasing number of more comprehensive assessment instruments are

being validated for use with youth who have OCD [40, 80–82], e.g., the Brown Assessment of Beliefs Scale, the Overvalued Ideas Scale, and the Thought Action Fusion Scale. Our data suggest that the CY-BOCS ancillary items can be used as an initial "screening" to determine whether further assessment is warranted. Additionally, our sample size limited the ability for multivariate analysis of these data, especially with regard to diagnostic comorbidity. Consequently, replication with a larger cohort of youth and extension to more comprehensive rating scales may help improve our understanding regarding the contribution of these constructs to OCD (and to treatment success). Further, due to the exploratory nature of this research, correction for multiple comparisons was not employed. Nevertheless, it is noteworthy that despite limited statistical power and reliance on single-item inventories, the CY-BOCS ancillary items provide meaningful data on factors related to symptom severity, comorbidity, symptom topography and most notably, treatment outcome and functional impairment.

Summary

This study examined supplemental constructs assessed via the Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS): insight, avoidance, indecisiveness, overvalued responsibility, pervasive slowness, and pathological doubting. Participants were 89 children and adolescents with Obsessive-compulsive disorder (OCD) and their parents. The majority of the supplemental constructs were related to multiple OCD symptom clusters. Avoidance, indecisiveness, and pervasive slowness were each associated with the severity of obsessions, compulsions, or overall OCD symptoms. With the exception of insight and doubting, all of the constructs were related to comorbid internalizing but not externalizing problems. Most notably, each construct was significantly associated with functional impairment and decreases in avoidance, pathological doubting, and sense of responsibility were positively associated with overall symptom reductions in cognitive-behavioral therapy. Taken together, the findings suggest that routine assessment of these constructs using ancillary items of the CY-BOCS could assist with treatment planning.

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