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Moderators of Impairment Agreement among Parent-Child Dyads in Pediatric Obsessive-Compulsive Disorder

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Abstract

Inter-rater agreement for symptom impairment associated with obsessive-compulsive disorder (OCD) varies between parents and children. However, extraneous variables that may influence these agreement differences have scarcely been examined. Therefore, the purpose of this paper was to examine moderators of parent and child agreement on ratings of overall OCD-related impairment and impairment across three domains (i.e., school, social, home) as measured by the Children's OCD Impact Scale – Child and Parent versions (COIS-C/P). One hundred sixty-six children with OCD and their parents completed ratings of symptom severity, impairment, and demographics, among other measures, prior to psychosocial treatment initiation. Overall parent-child agreement of impairment was in the moderate range. Age, OCD symptom severity, resistance and control, obsession and compulsion severity, and insight emerged as moderator variables, with the direction of moderation varying by domain. Results, implications, and study limitations are discussed.

Keywords

Obsessive-compulsive disorder; Impairment; Agreement; Children; Assessment

Obsessive-compulsive disorder (OCD) is an impairing (Piacentini, Bergman, Keller, & McCracken, 2003; Steketee, 1997) neuropsychiatric disorder affecting about 1–2% of youth (Geller, 2006; Rapoport et al., 2000; Zohar, 1999) that runs a chronic and disabling course if left untreated (Keeley, Storch, Dhungana, & Geffken, 2007). The primary features of OCD are intrusive, recurrent, and distressing thoughts, images, or impulses (obsessions) usually occurring with overt or mental behaviors (compulsions) that an individual performs in an

attempt to reduce obsessional distress (American Psychiatric Association, 2013). Not surprisingly, OCD has been linked to significant impairment in youth, affecting areas such as social, academic, and family functioning (Piacentini et al., 2003; Piacentini, Peris, Bergman, Chang, & Jaffer, 2007).

Although the relationship between OCD and functional impairment is well documented for affected children (Piacentini et al., 2003; Storch et al., 2010; Valderhaug & Ivarsson, 2005), parents and children with OCD often disagree about symptoms and their impact on functioning (Lack et al., 2009; Rapoport et al., 2000). On the one hand, youth may hide their OCD symptoms, causing parents to underestimate the presence of OCD symptomology (Rapoport et al., 2000). Alternatively, parents have also reported lower quality of life when compared to youth reports, and depending on the age of the youth and domain of functioning (e.g., social, school), there can be disagreements about the youth's level of functioning, as demonstrated by non-significant correlations (Lack et al., 2009). Consequently, clinicians are left in a conundrum about how to understand the child's presentation.

In assessing anxiety and obsessive-compulsive symptomology in children, a multi-informant approach represents the gold standard (Crozier, Gillihan, & Powers, 2011; Kendall, Chu, Pimental, & Choudhury, 2000; Lewin & Piacentini, 2010); however, the extent to which children with OCD and their parents consistently identify impairment has rarely been examined, with agreement results being fair at best (Kramer et al., 2004; Valderhaug & Ivarsson, 2005). While some may interpret lack of agreement as a consequence of measurement error, it is important to note that discrepant reports from different informants can elucidate valuable information (De Los Reyes, Thomas, Goodman, & Kundey, 2013). Indeed, pertinent data regarding the clinical presentation and generalizability of symptoms across varying contexts can be meaningfully extracted from diverging reports. Theoretically, there are several factors that are proposed to systematically influence agreement between informant reports (De Los Reyes et al., 2013). First, the informant's beliefs as to why the behaviors are occurring can influence reports. Additionally, the informant's criteria for what designates a behavior as "problematic" and needing clinical intervention may vary across reporters. Lastly, the contexts in which the symptoms are assessed and observed are posited to influence reports of the behaviors. Indeed, multi-informant reports from varying contexts are believed to capture the most comprehensive clinical picture, as reports are likely to vary across different conditions (Kraemer et al., 2003).

Lack of agreement has significant implications on treatment planning and applied practice. With regards to treatment planning, the extent to which parents and children agree on domains of impairment would influence how the clinician tailors the intervention approach. Should agreement be generally poor, the clinician would be advised to consider the individual that is inferred to be the more valid reporter in determining treatment targets. Based on the extant literature, clinicians generally tend to align more with parent reports when assessing anxiety symptomology in youth (De Los Reyes, Alfano, & Beidel, 2011; Grills & Ollendick, 2003). However, it is important to note that each informant (i.e., parent and youth) offers unique clinical information in their respective reports, highlighting the importance of multi-informant approach (Brown-Jacobsen, Wallace, & Whiteside, 2011).

Although parent-child dyads expect to have higher agreement between their reports (Kramer et al., 2004), they commonly demonstrate poor agreement across symptomology, behaviors, and related impairment (DiBartolo, Albano, Barlow, & Heimberg, 1998; Grills & Ollendick, 2003). Indeed, more than 75% of families reportedly commenced treatment before reaching a consensus across the clinician, parent, and youth about a target problem (Hawley & Weisz, 2003). This can be particularly problematic, as a disagreement about target problems can lead to disagreements about ultimate treatment goals to achieve, leading to dissatisfaction with progress in treatment and attenuated motivation from the neglected informant. Furthermore, variables such as demographic characteristics (e.g., age, gender) and OCD clinical characteristics (e.g., insight, severity, resistance and control) may influence the amount of agreement present; however, such variable influence has yet to be examined. Should certain clinical features moderate agreement, the clinician could potentially recognize which respondent's reports to weigh more heavily in the context of symptom assessment and/or which clinical features to prioritize in treatment.

In addition to non-specific confounds that influence parent-child agreement (e.g., the ability of parents to report on child internalizing symptoms, issues with over- or under-reporting; Kendall & Flannery-Schroeder, 1998), several specific factors may influence agreement in impairment experienced among youth with OCD and their parents. First, symptom insight, defined as the child's ability to understand the degree to which her/his symptoms make sense and are consistent with reality (Kozak & Foa, 1994; Storch, Milsom, et al., 2008), may impact agreement in that youth with poor insight do not recognize the extent to which OCD symptoms impact their functioning. Alternatively, youth with poor insight may not provide valid or accurate reports of impairment; as such, if insight were to moderate inter-rater agreement, it would elucidate potential methodological reasons for discrepant reports (i.e., unreliable reports). Second, OCD severity may influence agreement with better agreement expected in the instance of youth exhibiting more severe symptoms by virtue of more overt symptomology and associated impairment. Third, symptom resistance and control may be associated with agreement such that agreement would be lower in those who engage in less effort to resist and control symptoms. Theoretically, symptom resistance/control may be associated with more limited insight, and our experiences suggest a reduced willingness to report symptoms and engage in the assessment process (Storch, Merlo, et al., 2008). Ultimately, if OCD symptom severity and resistance/control were to moderate inter-rater agreement, the results would provide meaningful information related to the clinical portrait and how OCD symptoms are presenting across domains. Finally, age and gender have previously been suggested to moderate informant agreement in areas other than symptom impairment. Among samples of children with non-OCD anxiety disorders, older age was associated with improved agreement for certain diagnoses (Choudhury, Pimentel, & Kendall, 2003; Rapee, Barrett, Dadds, & Evans, 1994). Gender differences have been inconsistently found in the literature as well; some evidence demonstrated better agreement for females with social phobia (Choudhury et al., 2003), while others observed better agreement for males with social phobia and/or separation anxiety disorder (Grills & Ollendick, 2003), yet other studies have found no difference (Rapee et al., 1994). Indeed, mixed evidence has been found for the moderating role of age and gender, necessitating further investigations.

The present study aims to determine the strength of the relationship between child- and parent-ratings of children's OCD-related functional impairment, as well as factors that moderate agreement among parent-child dyads. Understanding agreement and factors that may impinge upon it is an important component in obtaining a complete clinical picture, which is necessary for establishing proper care and providing effective treatment. For example, should certain variables moderate agreement, the clinician would be well advised to appropriately weigh the validity of specific respondent answers. If the clinician does not account for the potential of agreement mismatch, s/he may obtain an inaccurate clinical picture and inappropriately adjust the intensity of the intervention. As such, this study sought to determine overall agreement between children and their parents on the degree of OCD-related impairment as assessed using intraclass correlation coefficients (ICC), and to examine moderating variables of inter-respondent agreement. Specifically, this study addressed the influence of: (a) age, (b) gender, (c) OCD severity, (d) insight into OCD symptoms, and (e) ability to resist and control OCD symptoms. Based on previous research, it is predicted that inter-rater agreement will be fair to moderate between parent-child dyads for the overall sample. It is also predicted that agreement would be higher for older versus younger children. No hypothesis was generated for gender, given the mixed findings in the extant literature and lack of theoretical rationale. Additionally, it was hypothesized that greater OCD symptom severity and more symptom resistance would be associated with the presence of more conspicuous behavioral responses, thereby positively influencing the strength of inter-rater agreement. It was also expected that youth with low insight would exhibit lower levels of agreement with parents, relative to children with good insight. Regarding domain-specific agreement, inter-rater agreement for home is hypothesized to be the strongest, followed by the school and social domains. Based on the aforementioned theoretical factors, convergence of reports will be influenced by the context and situation. As such, the home domain places both informants in a shared context, increasing agreement, while the school and social domains are considered to be contexts that are relatively "unshared." Information regarding school functioning can still be communicated to the parents through teachers, so moderate agreement between the informants may arise. However, the social domain is more private, which will likely result in poor agreement, consistent with previous literature (Kramer et al., 2004).

Method

Participants

As part of a clinical sample of 211 participants who presented for treatment at a university-based clinic, 166 children and their parents (including following missing data procedures; see below) completed an assessment battery described below. The sample consisted of youth ages 6 to 17 years ($M = 12.74$, $SD = 2.85$), with 58.4% being male and the ethnic/racial distribution as follows: 86.1% Caucasian, 4.2% African American, 1.2% Asian, 4.8% Hispanic, and 3.6% Biracial/Other. The age range was similar to the spectrum seen by the recruitment clinic (ages 4 to 18 years), with no specific parameters/exclusions being set for potential inclusion in the study. See Table 1 for descriptive statistics. Diagnoses were made based on results of a structured measure (e.g., Anxiety Disorders Interview Schedule for Children) and a clinical interview, or through a clinical consensus process in which

consensus between multiple clinicians regarding diagnoses were obtained. In the latter instance, all available information was used to make diagnoses including data from a clinical interview with an experienced psychiatrist or psychologist conducted, a review of participants' completed measures, and review of available prior clinical records. Complete agreement that OCD was the primary diagnosis was required for either diagnostic approach.

Measures

Demographic Questionnaire—A brief demographic questionnaire gathering participant information about gender, age, race, ethnicity, family income, living situation, and psychiatric medications at the time of the assessment was completed by participants' parents.

Children's OCD Impact Scale – Child and Parent versions (COIS-C/P; Piacentini & Jaffer, 1999)—The original version of the COIS-C/P (58 items) was utilized for the purposes of this study. The questionnaire consists of 52 items, rated on a Likert scale from “Not at all” – 0 to “Very much” – 4, addressing psychosocial impairment due to OCD across three domains: school, social, and home. The COIS also yields a total score (summation of the three listed domains), 2 open-ended response option items for impairment, and a global score (4 separate items concerning global life impairment). The COIS has previously demonstrated adequate psychometric properties (Valderhaug & Ivarsson, 2005); however, previous ratings of parent/child agreement for the measure have been fair to poor (Kramer et al., 2004; Valderhaug & Ivarsson, 2005). For the current sample, internal consistency for the total scale was excellent for children (Cronbach's $\alpha = .96$) and parents (Cronbach's $\alpha = .96$). Inter-rater agreement is discussed in depth in the Results section.

Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS; Scahill et al., 1997)—The CY-BOCS is a 19-item semi-structured clinician administered interview that assesses the presence and severity of obsessions and compulsions among youth. Symptom severity is rated across five dimensions (time occupied, interference, distress, resistance, degree of control) on a scale from 0 – 4 for obsessions and compulsions, respectively. The CY-BOCS demonstrates good psychometric properties (Scahill et al., 1997) and is the gold standard of assessment for OCD symptomology (Merlo, Storch, Adkins, Murphy, & Geffken, 2007; Silverman & Ollendick, 2005). For the purposes of this study, the total severity score (i.e., sum of items #1–10), insight score (item #11), and resistance and control score (average of items #s 4, 5, 9, and 10) were examined as moderator variables. Total score as well as individual items (e.g., insight) and additive items (e.g., resistance and control) have been examined previously in such fashion (see Kugler et al., 2012; Storch et al., 2006; Wu et al., 2013). Internal consistency for the total severity score for this sample was good (Cronbach's $\alpha = .83$). The CY-BOCS also includes a clinician-rated global severity rating, the CGI-Severity scale rated from 0 – 6 (item #17). The CGI-Severity scale is not included in the additive total score or directly related to the insight and/or resistance and control items, so it was chosen as a relevant and appropriate variable for hot deck imputation (see missing data procedures below).

Procedure

Potential participants and their families completed the measures and clinical interviews noted above (as well as other measures not relevant to this study) as part of a larger assessment battery examining OCD symptomology and impairment, anxiety, family factors, and broad psychopathology. Participants' parents provided written informed consent for their child's participation and children provided written assent prior to completing the assessment battery, which was conducted immediately prior to treatment initiation for OCD symptoms and/or other forms of psychopathology at a university-based clinic.

Data Analytic Plan

Participants with >10% missing data on any of the relevant measures utilized for analyses (listed above) were excluded from study inclusion (Roth, 1994) with the final sample consisting of 166 participants. Missing data for the remaining participants was considered to be at random. Therefore, missing data procedures were conducted for the remaining participants using hot deck imputation (Myers, 2011), with the adjustment variable for imputation being the CGI-Severity scale score split into low (3) and high (4) categories. The CGI-Severity scale embedded within the CY-BOCS (i.e., CY-BOCS #17) is a clinician-rated item of OCD symptom severity that is not calculated as part of the CY-BOCS total severity score and does not correspond directly with other individual CY-BOCS items (e.g., insight, resistance, control).

The degree of agreement between parents and children on the amount of impairment present (total impairment and domain-specific impairment as measured by the COIS-C and COIS-P) was evaluated using an intraclass correlation coefficient (ICC). The use of ICC was chosen as the analysis takes into account both differences for individual segments and correlation between raters, and can be used for non-nominal data, an improvement in agreement assessment over Pearson's R, Kappa or similar statistics. The ICC was calculated using a single-measure, two-way random effects model with absolute agreement, with values less than 0.20 indicating poor agreement, 0.20 – 0.40 indicating fair agreement, 0.40 – 0.60 indicating moderate agreement, 0.60 – 0.80 indicating good agreement, and above 0.80 indicating excellent agreement (McGraw & Wong, 1996). The ICC was first calculated for the entire sample ($N = 166$) for parent and child ratings on the COIS total impairment score (i.e., a sum of the three domain scores), the three COIS domain-specific scores (school, social, and home), and the COIS global impairment score.

The moderating influence of the following variables on inter-rater agreement was then measured by splitting the sample into two groups for each potential moderator variable: age, gender, OCD severity as measured by the CY-BOCS total score, obsession severity scale score, compulsion severity scale score, insight into OCD symptoms as measured by the CY-BOCS insight item, and ability to resist and control OCD symptoms as measured by the 4 CY-BOCS resistance and control items. Age was split at the median (i.e., 13 years), resulting in a group of younger children (ages 6–12 years; $n = 77$) and a group of older children (ages 13–17 years; $n = 89$). For gender, the two groups consisted of 69 females and 97 males. To evaluate the moderator of OCD symptom severity, the CY-BOCS total score was split at the median (24) resulting in a less severe group ($n = 24$; $n = 91$) and a more severe

group ($n = 25$; $n = 75$). Further, the CY-BOCS obsession severity scale score was split at the median (12) resulting in a lower obsessions group ($n = 11$; $n = 83$) and a higher obsessions group ($n = 12$; $n = 83$). The CY-BOCS compulsion severity scale score was split at the median (13) resulting in a lower compulsions group ($n = 12$; $n = 79$) and a higher compulsions group ($n = 13$; $n = 87$). To examine the moderator of insight, participants were split into two groups based on CY-BOCS item 11 ratings (0 = excellent insight, 1 = good insight, 2 = fair insight, 3 = poor insight, 4 = absent insight) resulting in a good to excellent insight group (ratings of 0 and 1; $n = 118$) and a fair to absent insight group (ratings of 2, 3, or 4; $n = 48$). To evaluate the moderator of resistance and control, participants were split into two groups based on the average ratings of CY-BOCS items #4, 5, 9, and 10 (the greater the average, the less the ability to resist and control obsessions and compulsions) resulting in a group of children with greater ability to resist and control obsessions and compulsions (average < 3 ; $n = 128$) and a group of children with less ability to resist and control obsessions and compulsions (average ≥ 3 ; $n = 38$). To determine whether parent and child agreement was significantly different between levels of each moderator, the ICC for one group (e.g., females) was compared to the confidence interval for the reference group (e.g., males), and if the single measures coefficient was not contained within the confidence interval of the reference group, a statistically significant difference in agreement was determined to exist between levels of the moderator variable.

Preliminary analyses (e.g., independent samples t-tests and chi square as appropriate) were conducted to determine the presence of significant differences in demographic variables (e.g., age, gender) for each moderator variable. No notable significant differences emerged, with the exception of the insight moderator variable. The mean age for the good to excellent insight group ($M = 13.18$, $SD = 2.9$) was significantly greater than for the fair to absent insight group ($M = 11.67$, $SD = 2.4$) [$t(106.27) = 3.47$, $p < .05$ – equal variances not assumed]. See Table 1 for means and standard deviations of moderator variables by group. These analyses were conducted in accordance with previous literature examining similar topics (e.g., Kugler et al., 2013). All analyses were conducted using SPSS version 21.0.

Results

Overall Sample

Mean parent ratings of impairment were higher than mean child ratings for the total COIS score, as well as each COIS domain (school, social, home) and the COIS global impairment score; however, the magnitude of the ratings was similar for each mean score. Inter-rater agreement between parents and children was moderate for each domain score and the global impairment score, with good agreement between parents and children for the total impairment score. The ICC for the COIS total score for the entire sample was 0.67, 95% CI [0.57, 0.75], with the ICC for the global impairment score being 0.63, 95% CI [0.49, 0.73] and each of the domains as follows: school = 0.57, 95% CI [0.45, 0.66], social = 0.54 95% CI [0.43, 0.64], and home = 0.56 95% CI [0.41, 0.67]. See Table 2 for details.

Moderators of Agreement

The inter-rater agreement between children and parents for the COIS total score, each COIS domain (school, social, home), and the COIS global impairment score considering the hypothesized moderators is presented in Table 3.

Age—Child/parent agreement on impairment was generally somewhat higher for older children with all scores being in the moderate to good agreement range for both groups (which is consistent with the overall sample), with two exceptions. The agreement coefficient was significantly different for the COIS school domain and the COIS home domain, with younger children demonstrating significantly less agreement with their parents (low range). For the COIS school domain, the ICC for younger children (0.34) was not contained in the confidence interval for older children 95% CI [0.47, 0.73]. Similarly, for the home domain, the ICC for younger children (0.39) was also not contained in the confidence interval for older children 95% CI [0.49, 0.75]. Age did not moderate any other domain score, global score, or the total impairment score.

Gender—Consistent with the overall sample, all child/parent agreement coefficients were in the moderate to good range for both males and females when examined separately. Gender did not moderate child/parent agreement for any domain score, the global score, or the total impairment score.

OCD Symptom Severity—Overall, inter-rater agreement of impairment for children who demonstrated greater OCD symptom severity was in the moderate to good range, whereas impairment agreement for children who demonstrated less symptom severity was in the low to moderate range. OCD symptom severity moderated child/parent agreement (i.e., the agreement coefficients were significantly different) for the COIS total score, the COIS global score, and each domain (except the school domain), with children in the more severe group demonstrating significantly better agreement. The ICCs for the more severe group for the COIS total score (0.69; good range), the COIS global score (0.66; good range), the COIS social domain (0.54; moderate range), and the COIS home domain (0.66; good range) were not contained within the confidence intervals for the less severe group, COIS total score 95% CI [0.29, 0.61], COIS global score 95% CI [0.27, 0.61], COIS social domain 95% CI [0.16, 0.52], and COIS home domain 95% CI [0.09, 0.46], respectively. Parent/child agreement of school impairment was not moderated by OCD symptom severity with both groups (more severe and less severe), demonstrating moderate agreement for the COIS school domain.

When examining obsession severity only as a moderator, inter-rater agreement of impairment for children who demonstrated greater obsession severity was in the moderate to good range, whereas impairment agreement for children who demonstrated lower obsession severity was in the low to moderate range. Obsession severity moderated child/parent agreement (i.e., the agreement coefficients were significantly different) for the COIS total score, the COIS global score, and the home and school impairment domains, with children in the more severe group demonstrating significantly better agreement. The ICCs for the more severe group for the COIS total score (0.73; good range), the COIS global score (0.66;

good range), the COIS school domain (0.59; moderate range), and the COIS home domain (0.71; good range) were not contained within the confidence intervals for the less severe group, COIS total score 95% CI [0.25, 0.60], COIS global score 95% CI [0.24, 0.63], COIS school domain 95% CI [0.12, 0.47], and COIS home domain 95% CI [0.08, 0.47], respectively. Parent/child agreement of social impairment was not moderated by obsession severity with both groups (more severe and less severe), demonstrating moderate agreement for the COIS social domain.

When examining compulsion severity only as a moderator, inter-rater agreement of impairment for children who demonstrated greater compulsion severity was in the moderate to good range, whereas impairment agreement for children who demonstrated lower compulsion severity was in the low to moderate range. Compulsion severity moderated child/parent agreement (i.e., the agreement coefficients were significantly different) for the COIS total score, the COIS global score, and the home impairment domains, with children in the more severe group demonstrating significantly better agreement. The ICCs for the more severe group for the COIS total score (0.67; good range), the COIS global score (0.66; good range), and the COIS home domain (0.65; good range) were not contained within the confidence intervals for the less severe group, COIS total score 95% CI [0.34, 0.66], COIS global score 95% CI [0.26, 0.64], and COIS home domain 95% CI [0.09, 0.49], respectively. Parent/child agreement of social impairment and school impairment were not moderated by compulsion severity for both groups (more severe and less severe), demonstrating moderate agreement for the COIS social and school domains.

Resistance and Control—Similar to results concerning OCD symptom severity, children who demonstrated less ability to resist and control OCD symptoms yielded good agreement of impairment across domains, whereas children who demonstrated greater ability to resist and control OCD symptoms yielded moderate parent/child agreement of impairment. Ability to resist and control OCD symptoms moderated child/parent impairment agreement (i.e., the agreement coefficients were significantly different) for the COIS total score and each domain, with children who endorsed less ability to resist and control OCD symptoms demonstrating greater parent/child agreement on impairment. The ICCs for the group who demonstrated less resistance and control for the COIS total score (0.79; good range), the COIS school domain (0.69; good range), the COIS social domain (0.61; good range), and the COIS home domain (0.65; good range) were not contained within the confidence intervals for the group who demonstrated greater resistance and control, COIS total score 95% CI [0.44, 0.68], COIS school domain 95% CI [0.33, 0.60], COIS social domain 95% CI [0.34, 0.60], and COIS home domain 95% CI [0.30, 0.60], respectively. Resistance and control did not moderate parent/child agreement for the COIS global score.

Insight—Inter-rater agreement for both the good to excellent insight group and the fair to absent insight group was in the moderate to good range, with one exception. Children with less insight demonstrated significantly worse agreement on the amount of impairment present at home (i.e., home life, family functioning), given that the fair to absent insight group agreement coefficient (ICC = 0.38; low range) for the COIS home domain was not

contained within the confidence interval for the good to excellent insight group CI 95% [0.46, 0.77]. Insight did not moderate any other parent/child agreement score.

Discussion

Given the impairing nature of pediatric OCD (Piacentini et al., 2003), a careful assessment of factors that relate to accurate report of such interference is pertinent to effective, targeted treatment. As such, the present study investigated the level of inter-rater agreement among parent and child reports of OCD-related impairment across several domains. Overall, parents tended to report higher impairment than their children across all ratings; however, impairment agreement among parent and child dyads were generally moderate (for global impairment and across all three domains), with agreement regarding total impairment being good. Based on these results, clinicians are generally able to take each report into account without large discrepancies across informants, with the consideration that parents tend to rate their child's OCD as more impairing than their children. We were unable to assess which reporter was most accurate, which remains an empirical question to be addressed.

To obtain a more nuanced understanding regarding the amount of agreement between parent and child reports of OCD-related impairment, several factors were investigated as potential moderators of agreement. Age moderated agreement regarding school impairment and home impairment, with older youth having better agreement with their parents about the amount of impairment present, consistent with previous findings of age effects on agreement for non-OCD anxiety (Choudhury et al., 2003; Rapee et al., 1994). Relative to younger children, older children may possess greater awareness into the impact of OCD on their schooling and familial relationships, and are developmentally more able to articulate the difficulties being experienced in the respective domains. As such, parents may have a better medium that allows them to understand the extent of the interference, thus resulting in higher agreement. Indeed, when investigating potential demographic differences in moderator variables, age differences only emerged on the insight variable, with the higher insight group primarily composed of older youth when compared to the lower insight group. This is consistent with previous findings that indicate poorer insight is associated with younger youth (Lewin et al., 2010; Selles, Storch, & Lewin, 2014). Gender did not moderate agreement across any rating, which was not surprising given the mixed results found in previous studies (Choudhury et al., 2003; Grills & Ollendick, 2003; Rapee et al., 1994).

Other factors associated with OCD symptom severity were investigated as potential moderators of inter-rater agreement. Specifically, youth with more severe OCD symptoms generally had greater agreement with their parents regarding impairment. This is consistent with our hypothesis, as youth with greater OCD symptoms likely display more salient OCD-related behaviors, causing the symptoms and consequent impairment to be more observable across respondents, speaking to the influential role of contexts and situations in which the symptoms are observed (De Los Reyes et al., 2013; Kraemer et al., 2003). This may also contribute to why agreement was not moderated by obsessive-compulsive symptom severity in school, as parents are not able to observe classroom behaviors firsthand and provide reports of symptoms and impairment from direct observation (regardless of symptom severity). Levels of obsessionality also emerged as a moderator of inter-rater agreement

across all domains except for the social domain. Youth experiencing less severe obsessions in the context of school may be impaired in ways that are more noticeable to the youth but are not always readily apparent to the parents. For instance, youth struggling with milder obsessions may have some difficulty concentrating in class, but academic tasks may ultimately still be completed with no tangible drop in grades that can be witnessed by the parents, causing discrepancies in agreement. Alternatively, youth with more severe obsessions may have more observable consequences at school (e.g., inability to finish tasks, late assignments), causing higher agreement in impairment. Those with more severe obsessions may also be engaging in various ritualistic behaviors that involve parents such as questioning and reassurance seeking that improves agreement at home. As parents are the primary source of symptom accommodation (Caporino et al., 2012; Storch et al., 2007), this moderating relationship would not be expected to hold with peers, particularly if they are embarrassed by their symptomology. Lastly, levels of compulsions emerged as a moderator of inter-rater agreement across the total, global, and home domain of functioning. Similarly, due to the overt nature of compulsions, parents and children with higher levels of compulsions are able to correspond closely on their reports of OCD-related impairment, particularly at home. On the other hand, parent-child agreement on impairment within contexts where parents are not always present (i.e., school, social) was not moderated by severity of compulsions, which was likely a consequence of parents not being able to observe the compulsive behaviors firsthand and may be relying on secondhand reports from the child. Similarly, youth displaying less resistance and control may allow for a more overt and conspicuous display of OCD-related behavior and consequent impairment. Conversely, youth who demonstrate greater ability for resistance and control may also experience more covert or hidden impairment (e.g., during attempts to resist compulsions) that is not readily evident to observers. Either case likely contributes to higher levels of agreement across parents and children for those youth who demonstrate less resistance and control. Collectively, these findings elucidate valuable information about the clinical presentation of OCD and the influence of contexts in the manifestation of symptoms.

It is also possible that lower levels of resistance and control may be linked to lower levels of insight, contributing to a lower level of motivation to engage in treatment and/or resist symptoms, resulting in compounded impairment (Storch et al., 2010). Interestingly, insight only moderated agreement regarding impairment at home; youth with greater insight had better agreement with their parents concerning familial impact. Youth with lower levels of insight may struggle with recognizing the impact of their OCD symptoms and/or do not possess enough awareness to provide accurate reports of their symptomology. Further, inter-rater agreement may be particularly sensitive to change in the home environment due to the level of family accommodation. That is, youth with less insight may have difficulty recognizing the accommodations put in place at home due to their obsessive-compulsive symptoms, while youth with greater insight would be more aware of the modifications, thus realizing the impact of their symptoms on the family and providing reports that concur with the parental ratings. Ultimately, the relative lack of significant findings for the moderating role of insight has several implications. Should insight have been a significant moderator for inter-rater agreement regarding OCD-related impairment across various domains, the informant discrepancies would have been attributed to an aspect of the measurement process

(i.e., unreliable reports from the youth based on levels of insight). However, these results indicate that poor reporting from youth is likely not the case, as insight was only found to be a significant moderator in one domain of functioning and the internal consistency was equivocal across parents and youth. As such, the differences in inter-rater agreement are best explained by meaningful variations in the clinical presentation of OCD across varying contexts, as influenced by OCD symptom severity and resistance/control of symptoms.

There are several study limitations to be considered. First, the participants were part of a treatment-seeking sample that was predominantly Caucasian, which could potentially limit the generalizability of the results. Second, it is possible that limited moderating effects were found for insight because it was assessed by a single item on the CY-BOCS that had an uneven distribution. As such, future studies should investigate this relationship using more comprehensive assessments of insight, such as the Brown Assessment of Beliefs Scale (BABS; Eisen et al., 1998) or the Child Assessment of Beliefs Scale (CABS; Storch et al., 2013). Lastly, there may be other potential moderating factors that influence inter-rater agreement that were beyond the scope of the present study, such as the level of family accommodation or presence of comorbidities. Future studies may benefit from examining the role of other factors on multi-informant reports. Additionally, the use of continuous versus categorical variables when examining moderators may yield different results, so future studies should seek to analyze the moderators as continuous variables to investigate potential differences in outcome.

Within these limitations, the present study has implications for the assessment and implementation of targeted treatments for OCD-related impairment. In order to effectively target obsessive-compulsive symptoms, it is imperative to build (and adapt) a treatment plan off of an accurate assessment. It is especially important to consider inter-rater agreement when assessing youth, as multi-informant reports are recommended when assessing their symptomology (Crozier et al., 2011; Kendall et al., 2000; Lewin & Piacentini, 2010). However, the extent to which parents and children agree regarding OCD-related impairment has been largely lacking in the extant literature. With the results of this study, researchers and clinicians can make more informed decisions by considering the domain of impairment and various moderating factors.

Conclusion

Overall, agreement regarding impairment for the present study was moderate, denoting that there generally is not a large discrepancy between parent and child reports of impairment. However, school and home impairment were moderated by the age of the youth respondent, garnering better agreement between the parent-child dyads containing older youth. Gender did not moderate inter-rater agreement, so ratings from males or females should be taken into consideration with equal weights. However, youth with more severe OCD symptoms and less resistance and control tend to exhibit better agreement with their parents regarding the amount of impairment present. Furthermore, when assessing home impairment, insight should be taken into consideration, as youth with greater insight have better agreement with their parents than youth who have less insight. As such, clinicians should exercise care when working with youth of a younger age, lower OCD symptom severity, more resistance and

control over OCD symptoms, and less insight, as those factors are associated with significantly lower levels of parent-child agreement of the presence of impairment. Collectively, these findings allow for a more informed and nuanced assessment of OCD-related impairment, which is the crux of formulating an effective intervention for treating youth with OCD.

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Table 1

Sample Demographics

Variable	<i>N</i>	%	<i>M</i>	<i>SD</i>
<i>Age</i>			12.74	2.85
Older Children (13–17 years)	89	53.6	15.01	1.29
Younger Children (6–12 years)	77	46.4	10.12	1.62
<i>Gender</i>				
Males	97	58.4		
Females	69	41.6		
<i>Ethnicity</i>				
Caucasian	143	86.1		
African-American	7	4.2		
Hispanic	8	4.8		
Asian	2	1.2		
Biracial/Other	6	3.6		
<i>OCD Symptom Severity</i>				
Less Severe (CY-BOCS total 24)	91	54.8	19.98	3.67
More Severe (CY-BOCS total 25)	75	45.2	28.09	2.46
<i>OCD Resistance and Control</i>				
More resistance and control (CY-BOCS R&C average < 3)	128	77.1	2.27	0.43
Less resistance and control (CY-BOCS R&C average 3)	38	32.9	3.16	0.27
<i>OCD Insight</i>				
Good to excellent Insight (CY-BOCS insight 1)	118	71.1	0.32	0.47
Poor to absent insight (CY-BOCS insight 2)	48	28.9	2.44	0.58

Table 2**COIS-C/P Scores and Inter-Rater Agreement**

COIS-C/P scales	COIS-P <i>M (SD)</i>	COIS-C <i>M (SD)</i>	ICC	95% CI
<i>Total</i>				
Total Impairment	41.13 (29.60)	35.86 (28.72)	0.67	[0.57, 0.75]
<i>Domains</i>				
School Impairment	13.23 (11.35)	12.22 (10.10)	0.57	[0.45, 0.66]
Social Impairment	12.46 (11.79)	11.75 (11.49)	0.54	[0.43, 0.64]
Home Impairment	15.44 (11.18)	11.89 (10.47)	0.56	[0.41, 0.67]
<i>Global Scale</i>				
Global Impairment	5.81 (3.01)	4.84 (3.14)	0.49	[0.49, 0.73]

Note: COIS-C/P, Children's OCD Impact Scale Child and Parent versions; ICC = Intraclass Correlation Coefficient; CI = Confidence Interval

Table 3

Moderator Analysis of COIS-C/P Inter-rater Agreement (ICC)

COIS-C/P Scales	Age		Gender		OCD Symptom Severity		OCD Obsession Severity		OCD Compulsion Severity		OCD Resistance and Control		OCD Insight	
	6-12	13-17	Females	Males	More Severe	Less Severe	More Severe	Less Severe	More Severe	Less Severe	More R & C	Less R & C	Greater Insight	Less Insight
Total														
Total Impairment	0.58	0.66	0.68	0.67	0.69	0.47	0.73	0.44	0.67	0.52	0.57	0.79	0.67	0.68
Domains														
School Impairment	0.34	0.62	0.49	0.61	0.57	0.43	0.59	0.30	0.53	0.49	0.47	0.69	0.56	0.58
Social Impairment	0.42	0.54	0.60	0.49	0.54	0.35	0.54	0.37	0.53	0.41	0.48	0.61	0.52	0.63
Home Impairment	0.39	0.64	0.55	0.56	0.66	0.29	0.71	0.28	0.65	0.30	0.46	0.65	0.63	0.38
Global Scales														
Global Impairment	0.67	0.63	0.69	0.59	0.66	0.45	0.66	0.46	0.66	0.47	0.60	0.68	0.66	0.53

Note: COIS-C/P, Children's OCD Impact Scale Child and Parent versions; ICC = Intraclass Correlation Coefficient; Items in bold indicate significant differences, $p < .05$