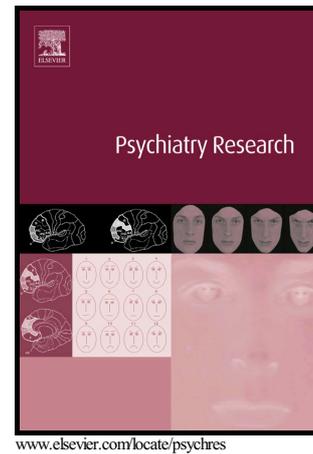


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Group Family-Based Cognitive Behavioral Therapy for Pediatric Obsessive Compulsive Disorder: Global Outcomes and Predictors of Improvement

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Abstract

This open, uncontrolled study examined the efficacy of a group family-based cognitive behavioral therapy (GF-CBT) protocol in treating pediatric obsessive-compulsive disorder (OCD) and explored predictors of symptom improvement. Eighty-five OCD-affected youth aged 8-18 years ($M = 13.9$ years, $SD = 2.49$; 46% male) and their parent(s) participated in a weekly, 12-session GF-CBT program. Data from multiple perspectives were gathered at the beginning and end of treatment, as well as at one-month follow-up. A broad range of assessment measures were utilized to capture clinically-relevant domains and a number of potential predictor variables were explored. Paired t -tests indicated that treatment was associated with significant reductions in clinician- and parent-rated OCD severity ($d = 1.47, 1.32$), youth and parent-rated functional impairment ($d = 0.87, 0.67$), coercive/disruptive behaviors ($d = 0.75$), and family accommodation ($d = 1.02$), as well as improvements in youth-, mother-, and father-rated family functioning ($d = 1.05, 0.50, 0.88$). Paired t -tests also indicated that youth remained improved at one-month follow-up. Step-wise regression identified greater homework success as a significant predictor of symptom improvement. This study provides evidence that GF-CBT significantly improves a wide range of domains for youth/families that extends beyond OCD symptom severity and supports homework as a core treatment component.

Keywords: Treatment; Open Trial; Parent Involvement; Homework; Coercive/Disruptive Behaviors; Family Accommodation; Family Functioning

1. Introduction

1.1 Cognitive behavioral therapy for pediatric obsessive-compulsive disorder

Mounting evidence supports the efficacy of cognitive behavioral therapy (CBT) featuring exposure and response prevention (ERP) as a first line treatment for pediatric obsessive-compulsive disorder (OCD) (Freeman et al., 2014a; Watson and Rees, 2008). Despite this, specific implementation of CBT can vary significantly and evidence is less clear regarding which specific approaches and factors are most likely to lead to success. In addition, access to this effective treatment remains a concern (Blanco et al., 2006; Goetter et al., 2014). Group-based CBT may help address some limitations associated with treatment accessibility by increasing the patient-to-provider ratio. This allows more patients to be seen in less provider time, reducing per patient treatment cost (Anderson and Rees, 2007; Fals-Stewart et al., 1993). While a group approach may limit individualization, it affords unique benefits over individual approaches, including symptom normalization, peer modeling and support, group motivation, and cross-participation in exposure completion (Himle et al., 2003). Group approaches have generally demonstrated comparable efficacy to individual approaches (Jonsson and Hougaard, 2009; Jonsson et al., 2011) and therefore represent a meaningful, alternative delivery method that may improve availability and accessibility of CBT.

1.2 Family inclusion in treatment

The inclusion of family members in CBT has been suggested as an important component of effective pediatric OCD treatment. Specifically, family inclusion allows clinicians to address common family-level barriers to symptom reduction (e.g., accommodation, dynamics) and utilize parents as support for children's homework completion. As a result, family inclusion to individual treatment has been well supported (Barrett et al., 2004; Freeman et al., 2014b; Lewin et al., 2014; Merlo et al., 2009; Piacentini et al., 2011; Storch et al., 2007; Storch et al., 2016). Despite these benefits, family involvement has been understudied in conjunction with group-based treatment approaches (Freeman et al., 2014a). Thus far, two open trials (Farrell et al., 2012; Farrell et al., 2010) have found positive results in examining group family-based CBT (GF-CBT) protocols for youth with OCD, and one randomized controlled trial (Barrett et al., 2004) found that GF-CBT had equivalent outcomes to individual family-based CBT. While encouraging, these GF-CBT studies included relatively minor parental involvement compared to what is typically observed in studies of individual family-based CBT. Given the potential benefits, expanding the extent of parental/family involvement in GF-CBT is warranted. Mendlowitz et al. (Mendlowitz et al., 1999) found

that when anxious children and parents participated in simultaneous treatment groups, reductions in severity were superior to group treatment for children or parents alone. To date, only one 14-participant study examined a group treatment for pediatric OCD that placed equal emphasis on youth and parents (Jacqueline and Margo, 2005). The results indicated generally positive outcomes and supported further research to explore the overall benefits associated with this approach.

1.3 Building evidence for treatment effectiveness

As discussed above, well-controlled trials have established that CBT is an efficacious treatment for reducing the severity of OCD symptoms in youth (Freeman et al., 2014a). However, continued efforts are needed to better establish the effectiveness of CBT in treating this population, which includes building evidence of treatment benefit under more naturalistic conditions (e.g., open/flexible inclusion/exclusion criteria) and establishing benefits that reach beyond symptom reduction to include broader functional improvements. Examining treatments in this light allow for greater generalizability of outcomes as well as a better understanding of the full scope of treatment benefit, which will increase our ability to compare the full impact of variations in CBT delivery. For example, research is lacking with respect to treatment impacts on coercive and disruptive behaviors, which are common in youth with OCD and contribute to overall severity (Lebowitz et al., 2015). A better understanding of global outcomes can speak to the meaningfulness of treatment, guide decisions regarding primary treatment targets, and advocate for psychosocial treatments as first-line approaches.

1.4 Need to identify predictors

Despite strong empirical support for CBT, improvements in outcomes are still necessary, as many OCD-affected youth do not respond to CBT and the majority of youth complete treatment with at least some remaining symptoms (Pallanti and Quercioli, 2006). Identifying factors associated with response represents a first step towards developing and testing modifications that may improve the efficacy of treatment. Preliminary evidence suggests that a number of factors, such as symptom severity, family accommodation, comorbid externalizing disorders such as attention deficit-hyperactivity disorder (ADHD) and oppositional defiant disorder (ODD), and homework success, may impact treatment outcomes (Barrett et al., 2005; Garcia et al., 2010; Keeley et al., 2008; Merlo et al., 2009; Park et al., 2014; Storch et al., 2008); however, predictors have not yet been examined in the context of comprehensive GF-CBT.

1.5 Present study

In light of these gaps in the literature, the current study examined a GF-CBT protocol featuring extensive parental involvement, evaluating its efficacy across a wide range of outcome measures and exploring factors associated with improvement. Specifically, the following aims and hypotheses were set:

1.5.1 Aim 1. To examine the efficacy of GF-CBT in reducing OCD symptom severity as well as in improving the overall lives of youth and families as reflected by functional impairment, coercive/disruptive symptoms, family accommodation, and family functioning. We hypothesized that GF-CBT would be associated with large improvements across these outcomes from baseline to post-treatment.

1.5.2 Aim 2. To examine the short-term maintenance of GF-CBT outcomes across domains. We hypothesized that youth outcomes would not significantly differ between post-treatment and one-month follow-up.

1.5.3 Aim 3. To explore potential predictors of symptom improvement following GF-CBT. Based on prior literature, it was hypothesized that reduced treatment improvement would be associated with greater baseline OCD severity and family accommodation (Barrett et al., 2005; Garcia et al., 2010; Piacentini et al., 2002), the presence of comorbid ADHD and ODD ((Garcia et al., 2010; Storch et al., 2008)), and lower homework success (Mausbach et al., 2010; Park et al., 2014), while gender and age were not expected to be associated with treatment improvement (Garcia et al., 2010; Piacentini et al., 2002).

2. Methods

2.1 Participants and procedures

The present study was approved by the BLINDED UNIVERSITY Research Ethics Board. The present study was a 12-week, open trial examining GF-CBT for OCD-affected youth recruited from patients referred to the BLINDED PROGRAM, a hospital-based outpatient specialty program for the assessment and treatment of youth with OCD, between 2011 and 2016. Youth screened at the BLINDED PROGRAM (age range 7–18 years), who had a primary diagnosis of OCD and were suitable for the group (e.g., able to cognitively, developmentally, and behaviorally engage in group materials; did not present a high-risk for increasing suicidal or para-suicidal behaviors upon treatment initiation; had at least one parent willing to participate), were invited to participate in the GF-CBT treatment program. Once enrolled, group participants were approached for parental consent and child assent to use their de-identified information collected during standard clinical assessments for research purposes. Participants who were rated below 16/40 on the Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS) (Scahill et al., 1997) were excluded from data analysis. Over the four-year period, 104 youth completed the group treatment;

however, 85 participants were included in the final sample, as 13 youth declined research involvement and six youth scored below 16 on the CY-BOCS. Participants were assessed by treating clinicians and completed self- and parent-report forms at three time points: treatment start (session 1), treatment end (session 12), and one-month follow-up.

2.2 Measures

2.2.1 Screening measures. Initial patient assessment/screening was conducted by PhD-level psychologists and child and adolescent psychiatrists. The primary diagnostic tool was the Anxiety Disorders Interview Schedule for DSM IV: Parent Version (ADIS-P) (Silverman and Albano, 1996), a psychometrically-supported (Silverman et al., 2001), semi-structured interview assessing anxiety disorders and other psychiatric conditions common to youth.

2.2.2 Outcome measures. The CY-BOCS (Scahill et al., 1997), a psychometrically supported (Lewin and Piacentini, 2010) clinician-administered, semi-structured questionnaire of symptoms and severity of OCD, was included in the screening process for all youth and was completed at all subsequent time points. To obtain a conjunctive parent-perspective, the CY-BOCS – parent-report (CY-BOCS-PR) (Storch et al., 2006), which also has demonstrated adequate psychometric properties, was also employed. Family accommodation was assessed using the 12-item Family Accommodation Scale (FAS) (Calvocoressi et al., 1995) which was designed as a clinician-rated scale, but was rated by parents in the present study. Child functioning was examined using self- and parent-report on the Child OCD Impact Scale – Revised (COIS-R) (Piacentini et al., 2007), a 33-item questionnaire with strong psychometric support that examines OCD-related impacts on a child's psychosocial functioning in home, social, and academic settings. Above and beyond functional-impairment specific to the affected child, the family-wide impact of OCD was examined using Part I of the OCD Family Functioning Scale (OFF) (Stewart et al., 2016; Stewart et al., 2011), a psychometrically supported, self- and parent-report measure, designed to assess OCD-related impairment in routine, socio-occupational/school, and family emotional functioning. Also included was the Coercive Disruptive Behavior Scale for Pediatric OCD (CD-POC) (Lebowitz et al., 2011), an 18-item parent-report measure with good psychometric properties (Lebowitz et al., 2011; Lebowitz et al., 2015), which evaluates coercive behaviors common in OCD. Finally, perspectives of global treatment improvement were measured using the Clinical Global Impression – Improvement Scale (CGI-I) (Guy, 1976) with clinicians and the similarly worded Patient Global Impression of Improvement Scale (PGI-I) (Yalcin and Bump, 2003) with parents.

2.2.3 Additional predictor variables. Parents and clinicians rated the children's success with homework (i.e., "was the homework completed?") each week on single items ranging from 1 (none) to 4 (good), and a mean score of both ratings across all weeks of treatment was used in analyses.

2.3 Treatment description

The GF-CBT protocol, entitled "OCD is Not the Boss of Me" (McKenney and Simpson, 2011), is a manualized treatment program developed and facilitated by Drs. McKenney and Simpson, with co-facilitation from a rotation of clinic psychiatrists, psychologists, social workers, and psychology trainees. The protocol includes written materials for 12 weeks of 1.5 hour sessions. In order to address developmental differences across youth age, the program provided separate materials and was delivered separately but concurrently to children (8–12/13 years old), adolescents (13–18 years old), and parents of the youth. Sessions were structured to begin with a review of the interim period and homework completion. Following this, the bulk of the sessions were spent covering a range of didactic materials, specific exercises, and completion of in-session ERPs. For the final portion of the session (approximately 15-30 minutes), the age-divided and parent-separate groups would end and individual families would develop specific exposure homework and problem-solving around any treatment-interfering behaviors with facilitator guidance. Similar to other CBT programs for OCD, the program included information/instruction on psychoeducation, symptom monitoring/identification, hierarchy building, ERP tasks (e.g., in vivo exposures, imaginal exposures), symptom externalization and positive self-talk, cognitive restructuring, anxiety-management strategies, and relapse prevention. Parent materials covered the information/skills learned by children each week (e.g., psychoeducation, ERP), but also focused on parent-specific domains, such as decreasing family accommodation of OCD, building reward systems, and parental self-care. In addition, the parent group provided an opportunity for peer modeling and support, similar to that in the child and youth groups.

2.4 Analytic plan

A relatively large amount of data points were observed as missing; however, missingness was not a reflection of attrition, but rather can be attributed to the naturalistic nature of the study, and in particular, inconsistent completion of measures by raters over time (e.g., the follow-up assessment did not initially include parent or self-reports; some parents neglected to complete the online survey at post-treatment; if a child was ill for the final session, the post-treatment CY-BOCS score was not obtained). Given this, data imputation methods (e.g., last observation carried forward approach) were deemed inappropriate, as they may artificially reduce treatment

effects (e.g., patient's baseline score is used as post-treatment score despite having completed treatment and having shown improvement on other measures) or artificially confirm treatment maintenance (e.g., patient's post-treatment score is used for follow-up and therefore reflects no change). Thus, mean imputation was used for all measures if 10% or fewer raw values were missing. If greater than 10% of values were missing, listwise deletion was used. As a result, for each measure, only participants who had data at baseline and post-treatment were included in the outcomes analyses, and only participants who had data at baseline, post-treatment, and follow-up were included in the maintenance analyses.

Paired *t*-tests were used to examine treatment outcomes (baseline to post-treatment) and maintenance (post-treatment to follow-up), as variations in available data prohibited a more collective analytic approach (e.g., multivariate analysis of variance). For the predictor analyses, variables of interest were examined using chi-square (categorical variables) or independent samples *t*-tests (continuous variables) for relationships with treatment response and treatment remission. Response and remission were defined using recommended CY-BOCS cutoffs (i.e., 35% reduction indicating treatment response; and 55% reduction, or total score < 11 indicating symptom remission (Skarphedinsson et al., 2016)), and variables that were associated with either response status or remission status at $p < .05$ were considered as potential predictors. These variables were then entered step-wise into a regression model to examine their ability to predict the extent of change in CY-BOCS score across treatment.

3. Results

3.1 Participant characteristics

Participant characteristics are reported in Table 1. The present study included 85 youth aged 8–18 years ($M = 13.9$, $SD = 2.49$); 46% were male ($n = 39$), and 79.8% were Caucasian ($n = 67$). Mothers of 75 (88%) participants and fathers of 29 (34%) participants completed the questionnaires. Average CY-BOCS symptom severity at baseline was in the high moderate range (23.36; $SD = 4.98$).

3.2 Treatment outcomes

Paired *t*-tests indicated that youth who completed treatment demonstrated significant reductions in symptom severity as rated via both the CY-BOCS and CY-BOCS-PR (see Table 2 and Figure 1). Using recommended CY-BOCS cut-offs, 56.1% of the 82 youth ($n = 46$) were considered treatment responders, while 37.8% of youth ($n = 31$) demonstrated remission. Of those who demonstrated remission, 77.4% ($n = 24$) met the

percent change criteria (>55% symptom reduction) while 93.5% ($n = 29$) met the cut-score criteria (total score < 11). Paired t -tests also demonstrated significant decreases between baseline and post-treatment with respect to the following: youth- and parent-rated functional impairment; youth-, mother-, and father-rated family functioning; family accommodation; and coercive/disruptive behaviors (see Table 2; Figures 1 and 2). Global improvement ratings reflected these findings, with clinicians rating 80.0% ($n = 48$) of the sample as much or very much improved on the CGI-I ($n = 60$) and parents rating 70.7% ($n = 41$) of the sample as much or very much improved on the PGI-I ($n = 58$).

3.3 Maintenance

Regarding severity, post-treatment CY-BOCS and CY-BOCS-PR ratings were not significantly different than ratings at one-month follow-up (see Table 3). In regard to additional clinical domains, the only demonstrated significant difference between post-treatment and follow-up was in parent-rated impairment (COIS-R-PR), with results indicating further improvement (see Table 3; Figures 1 and 2).

3.4 Predictors of Symptom Improvement

Table 4 presents the results of the preliminary analysis for predictors. Positive response status was associated with higher ratings of homework success. Conversely, treatment response status was not significantly associated with gender, age, number of comorbid disorders, comorbid ADHD, baseline CY-BOCS, or baseline FAS ratings. Positive remission status was associated with younger age and lower baseline CY-BOCS ratings. In contrast, treatment remission status was not associated with gender, number of comorbid disorders, comorbid ADHD or ODD, baseline FAS ratings, or homework success.

Based on these results, only age, comorbid ODD, baseline CY-BOCS, and homework success had sufficient associations with response or remission to be included in the model. These variables were entered in a step-wise fashion as potential predictors of percent change in CY-BOCS score. The step-wise regression identified homework success as a significant predictor ($\beta = 0.34$, $p = 0.01$), accounting for 11% of the variance in the change in CY-BOCS score ($R^2 = .114$; $F(1, 55) = 7.07$, $p = 0.01$), while age, comorbid ODD, and baseline CY-BOCS were excluded from the model.

4. Discussion

The results of the present study provide further evidence for the effectiveness of CBT in treating pediatric OCD including when treatment is delivered via a group family-based approach. While the present study cannot

establish why a group-based treatment remains effective despite a shift from individual focus, results are consistent with growing literature suggesting that less direct interventions, such as group treatment (Farrell et al., 2012; Freeman et al., 2014a), online or telehealth delivery (Andersson et al., 2012; Goetter et al., 2014; Turner et al., 2014), and stepped-care models (Gilliam et al., 2010; Tolin et al., 2011), can produce meaningful symptom improvement for a large portion of youth at a reduced burden to clinicians. Though the follow-up period was brief (i.e., one-month), results are consistent with prior research supporting the maintenance of treatment gains associated with CBT for pediatric OCD in that youth continued to experience benefits (Barrett et al., 2005; Rufer et al., 2005; Storch et al., 2007).

The benefits of GF-CBT extended significantly beyond symptom reduction, including reductions in functional impairment, family accommodation, and coercive/disruptive behaviors, as well as improvements in family functioning. Improvements in these areas emphasize the practical meaningfulness of treatment for youth and their families. These global benefits also support prioritizing treatment of OCD symptoms and suggest that delaying treatment due to issues in other areas (e.g., oppositional behaviors interfering with exposure) may be unnecessary. While the study's results are positive in regard to global improvement, the effect sizes of reductions in secondary domains were generally not as robust as reductions in OCD severity, suggesting that additional modifications to treatment may be warranted to produce greater improvements in these areas (e.g., incorporating behavior management techniques). Continued emphasis on both assessing and working to improve the full scope of OCD's impact on childhood and family functioning will be important in informing further individualization and enhancement of CBT for pediatric OCD.

Regarding predictors, initial evidence suggested that younger age and lower baseline OCD severity were associated with a greater likelihood of remission. These associations may reflect more symptom plasticity and potential for change. Perhaps this is due to a shorter and less chronic symptom course when compared to older and/or more severe youth. The strong emphasis on parent involvement in treatment may also have contributed to the relationship with age, as parent techniques may have been more easily applied with younger, less-independent youth. In regard to lower baseline scores, it also seems likely that it is simply easier for these youth to achieve the specifications of remission, as they require smaller changes in CY-BOCS scores to fall below an 11 or to achieve a 55% symptom reduction. For example, remission would be met by only a 5-point reduction for a youth with a baseline CY-BOCS of 16, while it would require an 18-point reduction for a youth with a baseline CY-BOCS of 32.

Comorbid ODD was also initially related to a reduced likelihood of treatment response. This is consistent with prior research which has found youth with ODD and/or greater externalizing behaviors may demonstrate less response to treatment (Garcia et al., 2010; Storch et al., 2008); however, as only two youth in the sample had ODD diagnoses, results should be interpreted with caution. In addition, as these variables were not retained by the regression model as predicting percent symptom change, firm conclusions about their relationship with treatment outcome cannot be drawn. Regardless, younger age, comorbid ODD, and lower baseline OCD severity should continue to be considered in future examinations of treatment predictors.

In contrast, the regression model did identify homework success as a significant predictor of symptom improvement. Given that between-session implementation of ERP was the primary homework task, it is likely that greater success on homework tasks led youth to experience a greater “dose” of the primary treatment ingredient. However, homework success could be a reflection of greater patient willingness and motivation, which also likely contribute to better outcomes. Another factor that may also contribute to homework success is sufficient parent encouragement/enforcement, as youth without parent involvement may be more likely to avoid/forget homework. In addition, appropriate exposure selection (e.g., level of difficulty, relationship to core fears) may also impact success, as poorly selected exposures may be too challenging or unappealing to complete or may not appropriately elicit anxiety. In light of this, homework planning and exposure development likely represent important in-session activities, and youth with poor compliance/success may require additional problem solving around motivation, parent involvement, reduced difficulty, additional practice, and/or revised conceptualization of homework tasks. While homework success ratings were intended to capture the child’s completion of ERP tasks as assigned, it is possible that youth who demonstrated improvement over the week (e.g., exposure was significantly easier by end of week) may have been rated as more successful. Thus, the predictive value of homework may be artificially inflated by clinician observations of symptom improvement.

We hypothesize that family inclusion in the treatment was an important contributor to improvements in global domains beyond OCD severity. For example, parents in the present study received instruction in limiting accommodation, managing rage, and parental self-care; such skills, while likely related to OCD severity, would be expected to have a more particular benefit in reducing family accommodation, coercive/disruptive behaviors, and improving family functioning. In addition, compared to individual family-based approaches, parent involvement in a group format provided opportunities for parents to share and discuss their experiences with one another.

Anecdotally, parents reported benefiting from group processes such as symptom normalization, peer modeling and support, and group motivation, which quantitatively might be expected to contribute to further improvements in their ratings of the family's functioning. However, when comparing the present study to past intervention studies, the outcomes do not suggest the group family-based protocol outperformed individual, individual-family, or child-focused group treatments. As the present study did not directly measure the contribution and/or influence of family-involvement variables, we cannot directly establish that family involvement in treatment was responsible for the benefits in these domains. For example, recent research has suggested that these global/family domains may be impacted even when only the child is involved in treatment (Gorenstein et al., 2015). Therefore, while we continue to believe family involvement was a highly beneficial aspect of the treatment provided, future studies are needed to further compare individual and family approaches, especially in regard to these more global domains. Inclusion of more direct measurements of parent behavior in treatment (e.g., parent homework completion, parent engagement) and parent-relevant variables (e.g., parent gender, parent psychopathology, parent tolerance of child distress) will also be valuable in order to determine the direct contribution of family involvement and to predict when family involvement is more and/or less beneficial. Ideally, these lines of research will help identify an optimal treatment approach for each youth, such as child-only, standard family involvement, or an expanded family intervention that includes individualized intervention components. In the last example, individualized components could be catered to domains that most directly impair families or impede their treatment, which would then be expected to enhance treatment outcomes. As examples: a family demonstrating significant conflict above and beyond OCD symptoms may warrant the integration of more traditional family therapy components; a child demonstrating comorbid ODD and significant coercive/disruptive behaviors may benefit more when parents receive instructions in parent-management strategies; and a family in which the parent struggles to tolerate the child's distress may benefit from learning mindfulness skills to better support the child during exposures (Bleakley et al., June 18, 2015; Peris and Piacentini, 2013; Selles et al., 2017).

Limitations should be noted. The present study was conducted as an open and naturalistic trial that did not include a control group, randomized assignment, strict inclusion/exclusion criteria, or the use of blind raters. Therefore, the design of the experiment prevents drawing any specific conclusions regarding the benefits of GF-CBT compared to alternatives. Similarly, while the additional benefit of parent involvement is assumed, all families received the same level of intervention, and we did not include any direct assessment of parental compliance (e.g.,

reductions in family accommodations, encouragement/enforcement of child behaviors). Therefore, we cannot be sure of the specific degree or type of influence that family involvement may have had on our outcomes. As clinicians were not blind to treatment conditions, the influence of experimenter/clinician bias may have inflated results; however, the consistency of ratings across clinicians, parents, and youth suggest that this is not a significant factor in the results. While these limitations negatively impact the ability to make specific attributions or comparisons, the open and naturalistic nature of the study increases the generalizability of findings in speaking to the benefits that community clinicians may expect if implementing this treatment approach.

5. Conclusions

Overall, the results of the present study corroborate the effectiveness for CBT as an empirically supported treatment for youth with OCD and provide specific evidence that a group family-based version of CBT is globally beneficial for youth with OCD and their families. Despite the strength of this evidence, continued efforts are needed to ensure that youth have the highest chance of improvement and long-term success. As the field continues to move forward, the results described here suggest that continued efforts should be made to evaluate the benefit of family involvement and to explore strategies to maximize such benefit. In addition, emphasis on global rather than symptom-specific improvement will be important in differentiating the comparative benefit of variations in treatment delivery. Finally, regular evaluation of predictor models is needed to replicate sample-specific findings and to establish a consensus regarding important intervention variables.

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Table 1

Demographics and characteristics of pediatric OCD 12-week CBT group sample (n=85)

Child Characteristics	<i>M/%</i>	<i>SD/n</i>
Age at treatment (in years)	13.9	2.49
Age of OCD onset (in years)	9.2	3.59
Duration of OCD until treatment (in years)	4.5	3.69
OCD Severity (CY-BOCS)	23.4	4.98
Sex, % male	45.9	(n=39)
Ethnicity		
% Caucasian	79.8	(n=67)
% South and Southeast Asian	10.7	(n=9)
% Chinese	8.3	(n=7)
% Aboriginal	1.2	(n=1)
Treatment history		
Previous medications for OCD, % ^a	44.7	(n=21)
CBT with ERP, % ^b	24.1	(n=7)
Current comorbidity^c		
Generalized Anxiety Disorder	28.4	(n=21)
Any Tic Disorder	17.6	(n=13)
Attention-Deficit/Hyperactivity Disorder	16.2	(n=12)
Social Anxiety	16.2	(n=12)
Specific Phobia	5.4	(n=4)
Separation Anxiety	5.4	(n=4)
Oppositional Defiant Disorder	2.7	(n=2)
Depression	1.4	(n=1)
Family Characteristics		
Family, % Intact family	78.8	(n=67)
Mother education, % Bachelor degree or greater	66.2	(n=37)
Father education, % Bachelor degree or greater	63.4	(n=33)
Family History of OCD		
Diagnosed in mother, % ^b	3.4	(n=1)
Diagnosed in father, % ^b	3.4	(n=1)
Diagnosed in sibling(s), % ^b	0.0	(n=0)
Diagnosed in extended family, % ^b	20.4	(n=6)

^a Data were only available for n=47. ^b Data were only available for n=29. ^c Data were only available for n=74.

Note. Reported percentages are the percentage of sample excluding missing values

Table 2

Comparison of outcomes from Baseline to Post-Treatment

Measure	Outcome	N	Baseline		Post-Treatment		t	d
			M	SD	M	SD		
CY-BOCS	Symptom Severity (Clinician)	82	23.48	5.04	14.63	6.89	13.05**	1.47
CY-BOCS-PR	Symptom Severity (Parent)	60	22.13	5.67	13.45	7.38	10.35**	1.32
COIS-R	Impairment (Child)	43	28.65	14.52	16.67	12.91	4.96**	0.87
COIS-R-PR	Impairment (Parent)	62	32.06	19.22	20.12	16.35	5.39**	0.67
OFF-SR	Family Functioning (Child)	49	27.00	11.00	16.28	9.44	6.40**	1.05
OFF-PR	Family Functioning (Mother)	45	25.20	12.48	18.79	13.15	3.31*	0.50
OFF-PR	Family Functioning (Father)	25	27.85	12.98	17.79	9.73	4.15**	0.88
FAS-PR	Family Accommodation	60	17.02	10.29	7.55	8.13	7.95**	1.02
CD-POC	Coercive/Disruptive Behaviors	64	17.33	12.35	9.24	8.82	6.80**	0.75

* $p = .002$. ** $p < .001$ Note: CY-BOCS = Children's Yale – Brown Obsessive Compulsive Scale; CY-BOCS-PR = CY-BOCS – Parent Report; COIS-R = Children's Obsessive Compulsive Impact Scale – Revised; COIS-R-PR = COIS-R – Parent Report; OFF-SR = OCD Family Functioning Scale – Self Report; OFF-PR = OFF – Parent Report; FAS-PR = Family Accommodation Scale – Parent Report; CD-POC = Coercive/Disruptive Behavior Scale for Pediatric OCD

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Table 3

Comparison of outcomes from Post-Treatment to 1-Month Follow-Up

Measure	Outcome	N	Post-Treatment		Follow-Up		t	d
			M	SD	M	SD		
CY-BOCS	Symptom Severity (Clinician)	77	14.56	6.55	13.78	7.90	1.24	0.11
CY-BOCS-PR	Symptom Severity (Parent)	45	12.71	7.60	11.58	7.32	1.72	0.15
COIS-R	Impairment (Child)	32	15.51	12.10	15.72	11.77	-0.12	-0.02
COIS-R-PR	Impairment (Parent)	45	18.71	16.07	14.96	14.33	2.61*	0.25
OFF-SR	Family Functioning (Child)	29	15.57	9.52	14.14	8.75	1.11	0.16
OFF-PR	Family Functioning (Mother)	28	12.99	9.34	14.19	8.33	-0.87	-0.14
OFF-PR	Family Functioning (Father)	16	17.11	10.60	18.06	11.86	-0.61	-0.08
FAS-PR	Family Accommodation	46	6.37	6.67	5.83	6.39	0.76	0.08
CD-POC	Coercive/Disruptive Behaviors	45	8.12	8.11	7.99	7.50	0.02	0.02

* $p < .05$ Note: CY-BOCS = Children's Yale – Brown Obsessive Compulsive Scale; COIS-R = Children's Obsessive Compulsive Impact Scale – Revised; OFF = OCD Family Functioning Scale; FAS = Family Accommodation Scale; CD-POC = Coercive/Disruptive Behavior Scale for Pediatric OCD; PR = parent report; SR = self report

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Table 4

Variables associated with response and remission

	N	Response		X^2/t	p	d
		No	Yes			
Gender (% male)	82	53% (n = 19)	39% (n = 18)	1.52	0.22	0.26
Age	82	14.29 (2.60)	13.58 (2.46)	1.26	0.21	0.28
Comorbid ADHD (% yes)	74	26% (n = 5)	13% (n = 5)	1.52	0.22	0.29
Comorbid ODD (% yes)	74	10% (n = 2)	0% (n = 0)	5.19	0.02	0.55
Symptom Severity (CY-BOCS)	82	23.69 (5.85)	23.30 (4.36)	0.35	0.73	0.08
Family Accommodation (FAS-PR)	72	17.00 (11.47)	17.25 (10.26)	-0.10	0.92	-0.02
Homework Success	55	2.73 (0.55)	3.08 (0.56)	-2.24	0.03	-0.63

	N	Remission		X^2/t	p	d
		No	Yes			
Gender (% male)	82	45% (n = 26)	46% (n = 11)	0.20	0.65	0.05
Age	82	14.54 (2.49)	12.82 (2.24)	3.14	0.002	0.73
Symptom Severity (CY-BOCS)	82	24.41 (5.24)	21.94 (4.35)	2.21	0.05	0.51
Comorbid ADHD (% yes)	74	21% (n = 8)	11% (n = 2)	0.75	0.39	0.20
Comorbid ODD (% yes)	74	4% (n = 2)	0% (n = 0)	1.11	0.29	0.25
Family Accommodation (FAS-PR)	72	18.41 (11.09)	15.04 (9.86)	1.30	0.20	0.32
Homework Success	55	2.83 (0.60)	3.08 (0.54)	-1.63	0.11	-0.44

Note: CY-BOCS = Children's Yale – Brown Obsessive Compulsive Scale; ADHD = Attention Deficit – Hyperactivity Disorder; ODD = Oppositional Defiant Disorder; FAS-PR = Family Accommodation Scale – Parent Report

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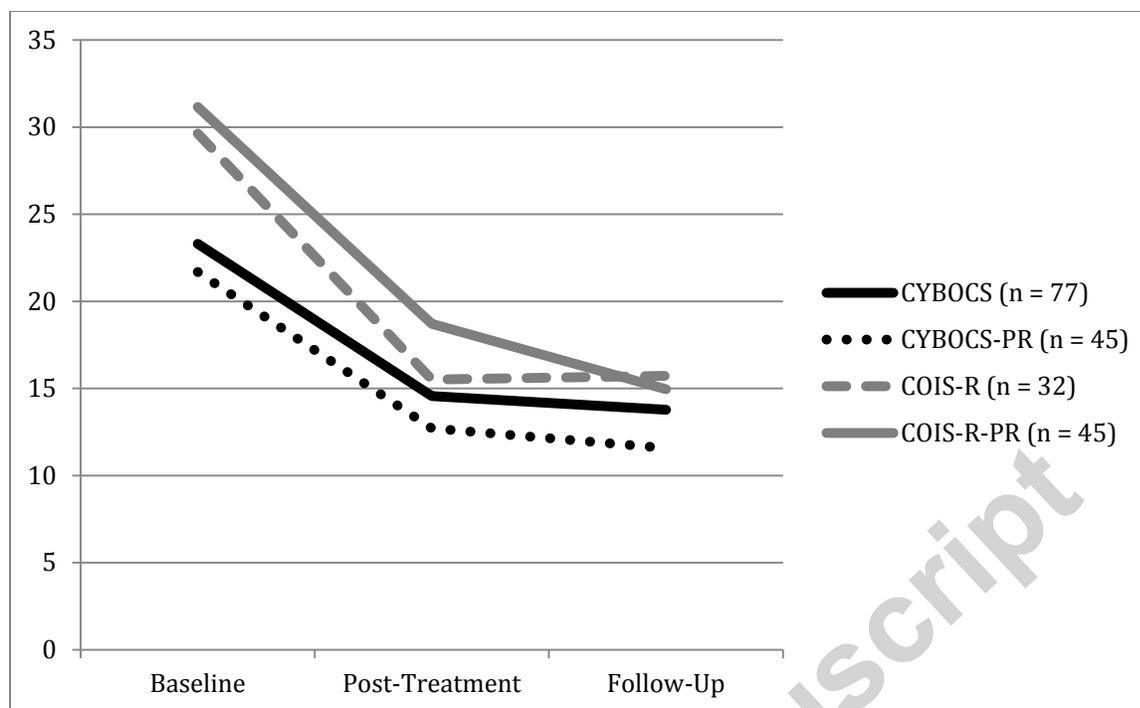


Figure 1. Changes in OCD severity and impairment across treatment. CYBOCS = Children's Yale-Brown Obsessive Compulsive Scale; COIS-R = Child OCD Impact Scale – Revised; PR = parent-report.

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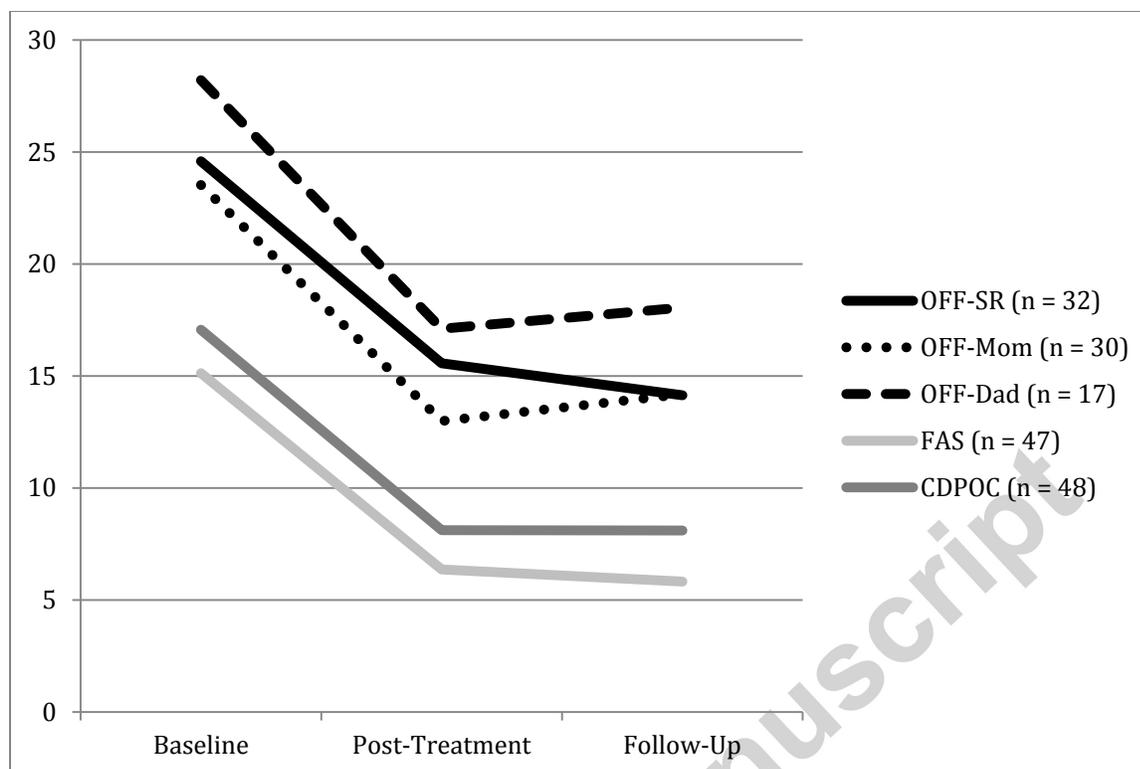


Figure 2. Changes in additional OCD-related domains across treatment. OFF = OCD Family Functioning Scale; SR = youth self-report; Mom = mother report; Dad = father report; FAS = Family Accommodation Scale; CDPOC = Coercive Disruptive Behavior Scale for Pediatric OCD.

Highlights:

- 85 youth with OCD completed group, family-based, cognitive behavioral treatment
- Treatment was associated with large improvements in OCD severity and impairment
- Coercive/disruptive behaviors and family domains also improved with treatment
- Homework success was a significant predictor of treatment improvement