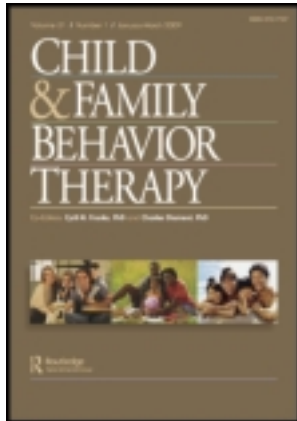


This article was downloaded by: [UQ Library]

On: 05 February 2012, At: 22:33

Publisher: Routledge

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



Child & Family Behavior Therapy

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/wcfb20>

Mother-Child Interactions and Childhood OCD: Effects of CBT on Mother and Child Observed Behaviors

Barbara Schlup PhD^a, Lara Farrell PhD^b & Paula Barrett PhD^c

^a Department of Clinical Psychology and Psychotherapy, University of Basel, Basel, Switzerland

^b Griffith Institute of Health and Medical Research, Griffith University, Gold Coast, Australia

^c School of Education, University of Queensland, Brisbane, Australia

Available online: 06 Dec 2011

To cite this article: Barbara Schlup PhD, Lara Farrell PhD & Paula Barrett PhD (2011): Mother-Child Interactions and Childhood OCD: Effects of CBT on Mother and Child Observed Behaviors, *Child & Family Behavior Therapy*, 33:4, 322-336

To link to this article: <http://dx.doi.org/10.1080/07317107.2011.623920>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.tandfonline.com/page/terms-and-conditions>

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae, and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand, or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

Mother-Child Interactions and Childhood OCD: Effects of CBT on Mother and Child Observed Behaviors

BARBARA SCHLUP, PhD

*Department of Clinical Psychology and Psychotherapy, University of Basel,
Basel, Switzerland*

LARA FARRELL, PhD

Griffith Institute of Health and Medical Research, Griffith University, Gold Coast, Australia

PAULA BARRETT, PhD

School of Education, University of Queensland, Brisbane, Australia

This waitlist-controlled study investigates the impact of a group-based cognitive-behavioral therapy with family involvement (CBT-F) on observed mother and child behaviors in children with obsessive-compulsive disorder (OCD). Forty-four children and adolescents with OCD and their mothers were observed during family discussions before and after treatment/waitlist. Participants were rated on behavioral dimensions of criticism, overinvolvement, doubt, avoidance, warmth, confidence, positive problem solving, and rewarding independence. Significant differences between treatment and waitlist condition occurred from pretreatment to posttreatment, with ratings of negative behaviors decreasing and ratings of positive behaviors increasing in the treatment group. Findings suggest that CBT-F has the potential to improve mother and child interactions in families with a child diagnosed with OCD.

KEYWORDS *childhood obsessive-compulsive disorder, cognitive-behavioral therapy, family involvement, mother-child interactions, observational methods*

Received 20 April 2009; revised 20 May 2010; accepted 24 May 2010.

Address correspondence to Lara Farrell, PhD, Griffith Institute of Health and Medical Research, School of Psychology, Griffith University, Gold Coast Campus, Queensland 4222, Australia. E-mail: l.farrell@griffith.edu.au

INTRODUCTION

Obsessive-compulsive disorder (OCD) in childhood occurs to a great extent within the home environment and interferes in not only the child's life, but also disrupts the entire family (Farrell & Barrett, 2007). Research investigating the role of familial factors associated with OCD in children and adolescents has explored family context and family interactions as possible factors associated with the maintenance of the disorder (see Farrell & Barrett, 2007; Waters & Barrett, 2000, for a review). The nature of the relationship between a child's OCD symptoms and family factors, such as parent-child interactions and family involvement and accommodation, is thought to be bidirectional from a maintenance perspective (March, 1995). On the one hand, research has found that family members of children with OCD often report elevated levels of stress, depression, anxiety, and involvement in OCD symptoms (Barrett, Rasmussen, & Healy, 2001; Barrett, Shortt, & Healy, 2002; Calvocoressi et al., 1995; Cooper, 1996). Such parental and sibling distress may result from family members' involvement in and accommodation of the child's OCD symptoms (Barrett et al., 2001; Cooper, 1996), indicating the impact of child disorder on family functioning. On the other hand, parents and siblings' behaviors, such as critical comments or rejecting attitude toward the child with OCD, as well as active accommodation to symptoms, may have a negative impact on a child's OCD symptoms (Amir, Freshman, & Foa, 2000).

Although a recent meta-analysis of 47 studies examining the impact of parenting characteristics on child anxiety (McLeod, Weisz, & Wood, 2007) provides little evidence in the way of a causal model for parenting and child anxiety, there does appear to be sufficient research suggesting that family factors may play a role in *maintaining* symptoms, and perhaps may *moderate outcome* in treatment, although the research is less extant in this area. Research in the area of adult OCD indicates that improvements in family interactions may be associated with lower rates of relapse at follow-up (e.g., Chambless & Steketee, 1999; Emmelkamp, Kloek, & Blaauw, 1992; Steketee, 1993). Similarly, a number of studies in the area of childhood OCD have proposed specific child and parent behaviors that may influence the maintenance and/or treatment of the disorder. Parents of children with OCD show higher levels of expressed emotion compared to parents of non-psychiatric controls (Hibbs, Hamburger, Kruesi, & Lenane, 1993; Hibbs et al., 1991), and high levels of expressed emotion predicted a poorer level of general functioning at 2- and 7-year follow-up in a pharmacotherapy trial (Leonard et al., 1993).

Taken together, the research suggests that family interaction patterns may be linked to the maintenance of the disorder and to long-term treatment outcome. As such, further exploration of family interactions, and in particular

the effect of evidence-based treatment on the way families interact with each other, is warranted. It seems apparent that treatments including the family have the potential to improve interactions and thus may contribute to maintaining treatment gains in the long-term. The majority of treatment trials conducted to date for childhood OCD have included families, or at least parents (Barrett, Healy-Farrell, & March, 2004; Franklin et al., 1998; Knox, Albano, & Barlow, 1996; Livingston-Van Noppen, Rasmussen, Eisen, & McCartney, 1990; March & Mulle, 1998; Piacentini, Gitow, Jaffer, Graae, & Whitaker, 1994; Storch et al., 2007; Thienemann, Martin, Cregger, Thompson, & Dyer-Freidman, 2001); however, we do not know yet how these interventions might affect parent-child interactions in families with a child suffering from OCD. To the authors' best knowledge, no study has examined the impact of a CBT treatment including family involvement for childhood OCD on observed family interactions following treatment.

The primary goal of the present study was to investigate changes in observed mother and child behaviors during family discussions from pre-treatment to posttreatment. This study is extending the observational work of Barrett and colleagues (2002) who reported that parent-child interactions in families with OCD children were different to other clinic (i.e., other anxiety disorders and externalizing disorders) and nonclinic groups. Based on these findings, the present study using the same macrocoding approach, investigates the impact of a cognitive-behavioral treatment with family involvement (CBT-F) for childhood OCD on observed interactions between mothers and children, compared to a waitlist control condition.

The treatment used in the current study is arguably a family-enhanced approach to CBT; such that the protocol includes a structured and manualized weekly parent training component, involvement of siblings in psycho-education, and structured family reviews of the treatment at the end of each session. Observed behavioral dimensions included criticism, overinvolvement, doubt, avoidance, warmth, confidence, positive problem solving, and rewarding independence. It was hypothesized that the treatment condition involving CBT-F, compared to the waitlist condition, would produce significant reductions in observed negative behaviors, and significant increases in observed positive behaviors for both children and mothers. Secondary to the effect of treatment on behavioral interaction variables, this study also examined the *process of change*; by looking specifically at the relationship between change on a measure of OCD symptomatology and change observed across behavioral dimensions following treatment. It was hypothesized that there would be a significant correlation between symptom change and change on mother and child behavioral observations, such that, greater improvements in OCD would be associated with improvements on behavioral dimensions.

The second goal of this study was more exploratory in nature and involved an examination of age on treatment outcome. Although previous

studies in the area of childhood OCD have not found any differences in treatment response between younger children and adolescents (e.g., Barrett et al., 2004; Piacentini, Bergman, Jacobs, McCracken, & Kretchman, 2002), it was hypothesized that there may be age-related differences in mother-child behaviors during interactions, and change in such as a result of therapy, due to the child's developmental age.

Treatment outcome is not reported here, as these data have been previously published by Barrett and colleagues (2004), demonstrating efficacy of CBT-F compared to a waitlist condition, and durability of outcomes up to 18-months follow-up (Barrett, Farrell, Dadds, & Boulter, 2005).

METHOD

Participants

Forty-four children and adolescents aged 7 to 17 years ($M = 12.05$, $SD = 2.84$) and their mothers consented and participated in this study, as part of their involvement in a large controlled treatment trial of CBT for pediatric OCD (see Barrett et al., 2004). Children were recruited through referrals from community mental health agencies, general practitioners, child mental health specialists, and via parental interest following media announcements. Children and adolescents were selected into this study on the basis of a *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV*; American Psychiatric Association, 1994) primary diagnosis of OCD. Exclusionary criteria included primary major depression or another primary anxiety disorder, primary externalizing disorder (including attention deficit/hyperactivity disorder, oppositional defiant disorder, or conduct disorder), Tourette's syndrome, autistic spectrum disorder, schizophrenia, organic mental disorder, or mental retardation. All participating children were required to have an IQ suspected to be within the normal range, and at least one parent willing to attend weekly sessions.

Children who met *DSM-IV* (1994) criteria for OCD based on initial interviews were randomly assigned either to group CBT treatment condition or a waitlist control, ethically bound to a 4- to 6-week period based on the severity of distress typically associated with OCD. Subjects were assigned to group intervention in a randomized block design that accounted for child's age and timing of referral to this study. Whenever three or more children in the same age bracket (i.e., children = 7–12 years; adolescents = 13–17 years) were referred within a 2-week period, these children were entered into the group condition. This procedure ensured participants were not waiting long intervals for sufficient numbers to run the group intervention. Children meeting exclusionary criteria for participation in this research, based on these initial interviews, were referred to appropriate community agencies as required.

The final cohort for this study consisted of 25 participants in the group CBT-F condition (i.e., six groups ranging in number of participants from 3 to 6 subjects per group), and 19 participants in the waitlist control condition. The majority (80%, $n = 35$) of participants met criteria for a secondary comorbid disorder, most commonly Generalized Anxiety Disorder (GAD; 34%, $n = 15$), Separation Anxiety Disorder (SAD; 16%, $n = 7$), Social Phobia (14%, $n = 6$), Specific Phobia (9%, $n = 4$), Major Depression (5%, $n = 2$), and Dysthymia (2%, $n = 1$). Fifty-seven percent ($n = 25$) of participants had a third diagnosis including GAD ($n = 12$), Specific Phobia ($n = 9$), Social Phobia ($n = 2$), Major Depression ($n = 1$), and Dysthymia ($n = 1$).

Measures

CHILDREN'S YALE-BROWN OBSESSIVE-COMPULSIVE SCALE (CY-BOCS)

The CY-BOCS (Goodman et al., 1989) is a widely used, clinician-rated, semi-structured interview, assessing severity of OCD symptomatology. The CY-BOCS rates severity of obsessions and compulsions across five scales: (a) time occupied by symptoms; (b) interference; (c) distress; (d) resistance; and (e) degree of control over symptoms, and also provides a total severity score. Cut-offs generally used in evaluating the CY-BOCS total score are: (a) mild (10–18; distress but not necessarily functional impairment), (b) moderate (19–29; distress and functional impairment), and (c) severe (30 or above; severe distress and serious impairment; March & Mulle, 1998). The CY-BOCS shows reasonable reliability and validity, with good to excellent interrater agreement and high internal consistency for total score (Scahill, Riddle, McSwiggin-Hardin, & Ort, 1997). This measure has been included in the present study to examine OCD symptom change, in regard to exploring the relationship between OCD symptomatic change and change in observed mother and child behaviors.

FAMILY INTERACTION TASK

The family interaction task consisted of a 5-minute problem focused family discussion developed by Barrett et al. (2002). Participants were instructed to discuss either a child or a parent problem (“hot topic”) they had noticed in the family (i.e., issue or conflict/concern; e.g., fighting with siblings, getting ready for school) and come up with possible solutions. It was emphasized that the mother could help the child in developing a solution; however, the final decision was to be made by the child.

CODING PROCEDURE

Family discussions were videotaped and coded based on a Revised Version of the Macrocoding Schedule for Parent and Child Behaviors (MPCB; Barrett,

Shortt, Healy & Hartmann, 2000). Behavioral dimensions that were coded are displayed in Table 1. The coders were two postgraduate students trained in the use of the coding procedure and blind to the group membership of participants or treatment status (pretreatment versus posttreatment). The coders stopped the videotape after each minute of the family discussion, and then rated observed mother and child behaviors on a 6-point Likert scale (0 = *absent* to 5 = *very high*). A mean score was then obtained for each dimension.

Interrater reliability on the MPCB ratings of behavioral dimensions was conducted on a random sample of 25% of the videotapes at both pretreatment and posttreatment, by an independent assessor blind to participants treatment condition, treatment status (i.e., pretreatment or posttreatment),

TABLE 1 Behavioral Dimensions on the Macrocoding Schedule for Parent and Child Behaviors (MPCB), Revised Version

Dimension	Description
Criticism (mother only)	Expression of disapproval. Negative and personalized verbal comments; e.g., "You are bad/naughty," "You can never do anything right." Nonverbal disapproval; e.g., frowning, finger-pointing.
Overinvolvement (mother only)	Constraining child's individuality by not allowing individual thinking. Not including child in decision making, answering for the child, and/or interrupting. High proximity, loud overpowering voice.
Doubt	Questioning own and/or others' ability to successfully complete task. Verbalized doubt; e.g., "Are you sure?", "I don't know," "Is this really what you think?", "Would this be true?". Shrugging/looking confused.
Avoidance	Displaying poor motivation to complete the task; e.g., not talking, sitting in silence. Distraction from task; e.g., running around, redirecting conversation to other issues. Disinterested body language; e.g., leaning away, doing something other than task. Verbal statements such as "How should I know," "I'm tired of this," "I don't want to do this."
Warmth	Responsive and engaged in conversation; e.g., listening, laughing, pleasant tone of voice. Open body language; e.g., maintaining eye contact, high proximity, leaning over, positive touching, hugging, stroking, holding hands.
Confidence	Expressed belief that one can solve the problem or achieve a result: statements such as "I can do this," "You can do this," "You have done this very well before." Nonverbal confidence including straight posture, direct eye contact, firm tone of voice.
Positive problem solving	Encouragement to complete the task; e.g., "Come on, let's come up with some solutions," brainstorming and developing a plan together as a family, expressions of opinion, reflecting back ideas, summarizing.
Rewarding independence (mother only)	Modeling and encouraging independent thinking about how to solve the problem; e.g., "What else do you think could we do?", "Remember when you did . . ." Open-ended questions to facilitate child's opinion.

TABLE 2 Kappa Reports on Ratings of Behavioral Dimensions for Mother and Child Behaviors, Before and After Treatment/Waitlist (Tx/WL)

Behavioral dimension	Mother		Child	
	Pre-	Post-	Pre-	Post-
	Tx/WL		Tx/WL	
Criticism	.98****	.54**	–	–
Overinvolvement	.50**	.81****	.67***	.96****
Doubt	.40*	.72***	.65***	.81****
Avoidance	.79***	.89****	.53**	.98****
Warmth	.87****	.96****	.91****	.86****
Confidence	.79***	.95****	.93****	.98****
Positive problem solving	.43**	.84****	–	–
Rewarding independence	.59**	.44**		

Note. *denotes fair agreement, **denotes moderate agreement, ***denotes substantial agreement, and ****denotes almost perfect agreement (Landis & Koch, 1977).

and the original coding. Table 2 displays interrater reliability kappas for each mean score of a behavioral dimension of mother and child behaviors at pre-treatment and posttreatment. The interrater reliability estimates indicate that 73% of coded dimensions (across mother and child, and pretreatment and posttreatment) were rated as at least *substantial agreement between raters* or higher. Only one variable was rated as *fair agreement between raters*, which was the lowest reliability rating (for mother doubt at pretreatment), based on Landis and Koch (1977).

TREATMENT PROTOCOL

The CBT treatment protocol (Barrett et al., 2004) involved 14 weekly 90-minutes group sessions. Each session included group CBT with the children (50 minutes), parent skills training (30 minutes), and a family review of progress (10 minutes). The child sessions focused on psychoeducation, cognitive training, anxiety management training, graded exposure and response prevention, and relapse prevention. Parent sessions were conducted by the same therapist following the child session and focused on psychoeducation, problem-solving skills, strategies to reduce parental involvement in the child's symptoms, and encouraging family support of home-based exposure and response prevention. Siblings were also involved in the protocol, attending brief sibling psycho-education components (30 minutes) at three different times throughout the protocol.

Data Analysis

Separate mixed-factorial repeated measure multivariate analysis of variance was performed for treatment outcome with the following dependent

variables: (a) ratings of observed mother behaviors, and (b) ratings of observed child behaviors. We were particularly interested in the time \times treatment condition \times age interaction, to examine whether there were age-related changes in response to treatment across time.

To control for error rates across the multiple outcome variables, p values obtained from the analyses were corrected using the Holm-modified Bonferroni correction. This procedure is more powerful than the traditional Bonferroni-based approach, with this leading to less inflated experimentwise error rates across the multiple tests. The p values were corrected for both sets of analyses (ratings of mother behaviors; ratings of child behaviors) separately. For a detailed description of the Holm-modified Bonferroni correction, see Jaccard & Guilamo-Ramos (2002).

RESULTS

Primary Analyses

Table 3 presents means and standard deviations across all dependent variables, for treatment and waitlist condition, at pretreatment and posttreatment, for both children and adolescents. Prior to examining the treatment condition and time interaction across the dependent variables, pretreatment analyses were conducted to examine differences across the two treatment conditions (group CBT-F, waitlist), to determine group equivalence across demographic and dependent variables at pretreatment. There was no significant difference across the treatment conditions on age, gender, presence of comorbidity, or on any mother or child behavioral variable. There was a significant group difference on OCD severity at pre-treatment, however, $F_1 = 5.38$; $p < .05$; with children in the treatment condition significantly less severe at pretreatment ($M = 20.80$; $SD = 4.48$) compared to children in the waitlist condition ($M = 24.84$; $SD = 7.05$). For all further analyses, pretreatment OCD severity (CY-BOCS scores) is entered into analyses as a covariate.

OBSERVED MOTHER BEHAVIORS

A multivariate mixed-factorial repeated measures analysis of variance was conducted to examine the multivariate time \times treatment condition \times age interaction (covarying pretreatment CY-BOCS ratings) on ratings of observed mother behaviors. Following examination of the multivariate interaction, examination of univariate analyses were conducted across the eight mother behavioral interaction variables including mother criticism, overinvolvement, doubt, avoidance, warmth, confidence, positive problem solving, and rewarding independence.

There was no significant multivariate effect of time \times treatment condition \times age interaction on the mother behavioral interaction variables. There

TABLE 3 Means and Standard Deviations Across Treatment Groups and Age at Pretreatment and Posttreatment/Waitlist

	Treatment Mean (SD) N = 25						Waitlist Mean (SD) N = 19					
	Pre-		Post-		Pre-		Post-		Pre-		Post-	
	Child	Adol	Child	Adol	Child	Adol	Child	Adol	Child	Adol	Child	Adol
Observed mother behaviors												
Criticism***	1.89 (1.36)	3.11 (1.41)	1.46 (0.79)	0.81 (0.94)	1.82 (1.45)	3.00 (1.42)	1.78 (1.53)	2.86 (1.42)	1.82 (1.45)	3.00 (1.42)	1.78 (1.53)	2.86 (1.42)
Overinvolvement***	3.15 (0.81)	3.07 (1.01)	1.61 (1.02)	0.98 (0.51)	3.24 (1.17)	3.38 (1.46)	3.07 (1.12)	3.24 (1.22)	3.24 (1.17)	3.38 (1.46)	3.07 (1.12)	3.24 (1.22)
Doubt***	0.66 (0.48)	2.18 (1.21)	0.25 (0.30)	0.68 (0.83)	1.33 (1.44)	2.18 (1.40)	1.33 (1.44)	2.18 (1.42)	1.33 (1.44)	2.18 (1.40)	1.33 (1.44)	2.18 (1.42)
Avoidance	0.78 (0.78)	1.05 (1.30)	0.48 (0.51)	0.52 (0.95)	0.98 (1.25)	1.20 (1.50)	0.90 (1.10)	0.98 (1.23)	0.98 (1.25)	1.20 (1.50)	0.90 (1.10)	0.98 (1.23)
Warmth*	2.84 (1.25)	1.76 (1.13)	3.10 (1.00)	3.28 (1.22)	2.04 (1.00)	1.42 (0.72)	2.24 (1.02)	1.66 (0.77)	2.04 (1.00)	1.42 (0.72)	2.24 (1.02)	1.66 (0.77)
Confidence**	2.53 (0.80)	1.40 (0.39)	3.20 (0.76)	2.75 (0.82)	2.17 (0.91)	1.76 (0.82)	2.16 (1.06)	1.60 (1.04)	2.17 (0.91)	1.76 (0.82)	2.16 (1.06)	1.60 (1.04)
Positive problem solving*	3.07 (0.80)	1.40 (1.01)	3.87 (0.90)	3.18 (1.05)	1.90 (1.30)	1.36 (1.18)	2.09 (1.36)	1.26 (1.02)	1.90 (1.30)	1.36 (1.18)	2.09 (1.36)	1.26 (1.02)
Rewarding independence***	3.15 (0.84)	0.86 (0.93)	3.96 (0.57)	2.73 (1.27)	1.83 (1.47)	0.78 (1.06)	1.86 (1.47)	0.86 (0.98)	1.83 (1.47)	0.78 (1.06)	1.86 (1.47)	0.86 (0.98)
Observed child behaviors												
Doubt	0.66 (0.56)	2.35 (1.45)	0.85 (0.92)	0.56 (0.97)	1.51 (1.55)	1.62 (1.37)	1.73 (1.12)	1.78 (1.39)	1.51 (1.55)	1.62 (1.37)	1.73 (1.12)	1.78 (1.39)
Avoidance***	2.55 (1.02)	2.66 (1.34)	1.66 (1.13)	0.51 (0.67)	1.15 (1.06)	2.98 (1.34)	1.35 (0.86)	2.56 (1.13)	1.15 (1.06)	2.98 (1.34)	1.35 (0.86)	2.56 (1.13)
Warmth*	2.74 (1.08)	1.63 (0.52)	3.43 (0.74)	2.71 (1.37)	2.33 (0.74)	0.86 (0.81)	2.28 (1.34)	1.02 (0.75)	2.33 (0.74)	0.86 (0.81)	2.28 (1.34)	1.02 (0.75)
Confidence***	2.87 (1.38)	1.58 (0.81)	3.76 (0.98)	3.35 (1.06)	2.44 (1.04)	0.92 (0.82)	2.06 (1.00)	1.02 (0.75)	2.44 (1.04)	0.92 (0.82)	2.06 (1.00)	1.02 (0.75)
Positive problem solving**	1.70 (1.05)	0.53 (0.39)	2.89 (0.98)	3.03 (1.07)	1.93 (1.15)	0.78 (0.72)	1.84 (1.12)	2.84 (0.65)	1.93 (1.15)	0.78 (0.72)	1.84 (1.12)	2.84 (0.65)

Note. Significant time \times group interactions are denoted by asterisks beside the variable name: * $p < .01$, ** $p < .005$, *** $p < .001$.

was, however, a significant multivariate time \times treatment condition interaction, $F_{8, 31} = 9.60$; $p < .001$. Examination of univariate tests revealed significant time \times treatment condition interactions for mother criticism ($F_1 = 15.47$, $p < .001$), overinvolvement ($F_1 = 26.39$, $p < .001$), doubt ($F_1 = 17.83$, $p < .001$), warmth ($F_1 = 8.16$, $p < .01$), confidence ($F_1 = 14.34$, $p < .005$), positive problem solving ($F_1 = 8.38$, $p < .01$), and rewarding independence ($F_1 = 18.60$, $p < .001$). No significant time \times group interaction was found for ratings of mother avoidance. Reductions in ratings of negative behaviors such as criticism, overinvolvement, and doubt were greater in the treatment condition than in the waitlist group. Improvements in ratings of positive behaviors such as warmth, confidence, positive problem solving, and rewarding independence were significantly greater in the treatment than in the waitlist group.

OBSERVED CHILD BEHAVIORS

A multivariate mixed-factorial repeated measures analysis of variance was conducted to examine the multivariate time \times treatment condition \times age interaction (covarying pretreatment CY-BOCS ratings) on ratings of observed child behaviors. Following examination of the multivariate interaction, examination of univariate analyses were conducted across the five child behavioral interaction variables including child doubt, child avoidance, child warmth, child confidence, and child positive problem solving.

There was no significant multivariate effect of time \times treatment condition \times age interaction on the child behavioral interaction variables. There was however, a significant multivariate time \times treatment condition interaction, $F_{5, 35} = 8.13$; $p < .001$. Examination of univariate tests revealed significant time \times treatment condition interactions for child avoidance ($F_1 = 11.44$, $p < .001$), warmth ($F_1 = 6.95$, $p < .01$), confidence ($F_1 = 23.06$, $p < .001$), and positive problem solving ($F_1 = 25.61$, $p < .001$). There was no significant time \times group interaction found for ratings of child doubt. Reductions in ratings of negative behaviors (avoidance) and improvements in positive behaviors (warmth, confidence, positive problem solving) were significantly greater following treatment than after the waitlist period.

Secondary Analyses

Secondary analyses were conducted to examine the relationship between OCD symptom change (CY-BOCS) following treatment, and change on mother and child behavioral variables from pretreatment to posttreatment. Change scores for the treatment condition were computed for child CY-BOCS ratings, and for all of the mother and child behavioral dimensions from pretreatment to posttreatment. Pearson correlations were conducted to examine the relationship between change variables. The results of these

analyses indicated there was no significant correlation between child CYBOCS change scores from pretreatment to posttreatment, and change on the mother and child observed behaviors across time.

DISCUSSION

With treatment efficacy already being established (Barrett et al., 2004) on child OC symptoms and diagnosis, the primary aim of this study was to investigate the impact of the CBT treatment with family involvement on observed mother-child behaviors during interactions in a problem-solving discussion. A standardized coding system for behavioral observations of mother and child behaviors was used, which was already established in Barrett and colleagues (2002).

The results of the present study demonstrated that both mother and child observed behaviors during the problem-solving discussion were generally more positive (except on dimensions of child doubt and mother avoidance) following CBT with family involvement, compared to the waitlist. This finding suggests that CBT with family involvement may help to improve mother-child behavioral interactions in families with a child suffering from OCD. An alternative hypothesis is that interactions may be improved as a result of the general improvement in OC symptomatology. Interestingly, this study examined the correlations between symptom change (child CY-BOCS change ratings) and change on mother and child behavioral interaction variables and found no significant relationship. This unexpected finding suggests that change in interactions might be an effect of psychotherapy process rather than OCD symptom change. Clearly, studies including CBT-F compared to control conditions without any family involvement are warranted to draw more definite conclusions about the specific effectiveness of different treatment components (e.g., introducing problem-solving strategies and communication skills in the family) in the treatment of childhood OCD. Furthermore, studies identifying possible mechanisms of change during treatment of childhood OCD could clarify the association between family-focused interventions and treatment outcome.

Analyses investigating the effects of age on mother and child behavioral interaction following CBT-F were in line with previous studies which have not found any age-related differences in treatment response. This study found no difference in outcomes for families who had a child with OCD versus families who had an adolescent with OCD.

A number of limitations need to be addressed. First, the relatively small sample size limits the findings and generalizability of this study. Second, only mothers were involved in the family interaction task. Due to the lack of fathers and siblings in the assessment task, it is difficult to generalize

the results to the entire family unit. The lack of ecological validity is another limitation of the present study, with all observations made in the clinic and with participants aware of the videotaping procedure. Future research could implement all observations in a more naturalistic setting, such as the home environment. Furthermore, the nature of the problem-solving task may not be adequate to provide a realistic reflection of the true family process. Framing the scenario as a conversation about a current problem with less emphasis on solving it might provide more valuable information about family interactions in daily life. Also of note and central to the findings of the current study, is the reduced kappa values in reliability estimates of some of the behavioral dimensions being coded (i.e., mother positive problem solving = .43), calling into question reliability of the observational variables. The reliability of the coding system is paramount in observational research, and naturally one of the most difficult aspects of this kind of study. Overall, however, the reliability ratings were very acceptable, so while some variables suggest questionable reliability of the constructs, overall this study did an adequate job in reliably capturing the variables in question. Future research could benefit from using multimodal approaches to measure the behavioral constructs, such as parent and child self-report and idiographic ratings. In addition, future observational studies should strive toward improving the reliability of the coding procedure; for example, by initially training coders to a minimum reliability threshold, or retraining coders when they fall below a set threshold, or by implementing a consensus procedure for addressing potential disagreements.

CONCLUSION

These findings suggest that CBT with family involvement may have the potential to improve mother and child behaviors during interactions, and possibly intervene in any maintaining role that family interactions may play in childhood OCD. Future studies comparing CBT involving the family, with other forms of treatment (e.g., family therapy, child-focused treatment, or medication management) are needed to examine whether changes in mother and child behaviors are due to family involvement in CBT, a response to psychotherapy more generally, or rather a consequence of the child's general improvement in diagnostic status and OCD symptom severity. Addressing family interaction processes more directly in the treatment of childhood OCD may also further improve the quality of family relationships, which may in turn lead to lower risk of relapse and to stabilization of long-term treatment success. Investigating family processes and family approaches to improving treatments for pediatric OCD presents an important next step in the treatment literature and will likely improve outcomes for both children and families living with OCD.

REFERENCES

- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- Amir, N., Freshman, M., & Foa, E. B. (2000). Family distress and involvement in relatives of obsessive-compulsive disorder patients. *Journal of Anxiety Disorders, 14*, 209–217.
- Barrett, P., Farrell, L., Dadds, M., & Boulter, N. (2005). Cognitive-behavioral family treatment of childhood obsessive-compulsive disorder: Long-term follow-up and predictors of outcome. *Journal of the American Academy of Child and Adolescent Psychiatry, 44*, 1005–1014.
- Barrett, P. M., Healy-Farrell, L., & March, J. (2004). Cognitive-behavioural family treatment for childhood obsessive-compulsive disorder: A controlled trial. *Journal of the American Academy of Child and Adolescent Psychiatry, 43*, 46–62.
- Barrett, P. M., Rasmussen, P. J., & Healy, L. (2001). The effect of obsessive-compulsive disorder on sibling relationships in late childhood and early adolescence: Preliminary findings. *The Australian Educational and Developmental Psychologist, 17*, 82–102.
- Barrett, P. M., Shortt, A., & Healy, L. J. (2002). Do parent and child behaviours differentiate families whose children have obsessive-compulsive disorder from other clinic and non-clinic children? *Journal of Child Psychology and Psychiatry, 43*, 597–607.
- Barrett, P. M., Shortt, A. L., Healy, L., & Hartmann, P. (2000). *Macrocoding schedule for parent and child behaviour*. Unpublished coding manual, Griffith University, Queensland, Australia. Available from authors.
- Calvocoressi, L., Lewis, B., Harris, M., Trufan, S. J., Goodman, W. K., McDougle, C. J., & Price, L. H. (1995). Family accommodation of obsessive-compulsive disorder. *American Journal of Psychiatry, 152*, 441–443.
- Chambless, D. L., & Steketee, G. (1999). Expressed emotion and behaviour therapy outcome: A prospective study with obsessive-compulsive and agoraphobic outpatients. *Journal of Consulting and Clinical Psychology, 67*, 658–665.
- Cooper, M. (1996). Obsessive-compulsive disorder: Effects on family members. *American Journal of Orthopsychiatry, 66*, 296–304.
- Emmelkamp, P. M. G., Kloek, J., & Blaauw, E. (1992). Obsessive-compulsive disorder in principles of relapse prevention. In P. H. Wilson (Ed.), *Principles and practices of relapse prevention* (pp. 213–234). New York, NY: Guilford Press.
- Farrell, L. J., & Barrett, P. M. (2007). The function of the family in childhood obsessive-compulsive disorder: Family interactions and accommodation. In T. Murphy, & E. Storch (Eds.), *Handbook of child and adolescent obsessive-compulsive disorder* (pp. 313–332). Mahwah, NJ: Lawrence Erlbaum Associates.
- Franklin, M., Kozac, M., Cashman, L., Coles, M., Rheingold, A., & Foa, E. (1998). Cognitive-behavioural treatment of pediatric obsessive-compulsive disorder: An open clinical trial. *Journal of the American Academy of Child and Adolescent Psychiatry, 37*, 412–419.

- Goodman, W., Price, L., Rasmussen, S., Mazure, C., Fleischmann, R. L., Hill, C. L., ... Charney, D. S. (1989). The Yale-Brown Obsessive-Compulsive Scale. I. Development, use and reliability. *Archives of General Psychiatry*, *46*, 1006–1011.
- Hibbs, E. D., Hamburger, S. D., Kruesi, M., & Lenane, M. (1993). Factors affecting expressed emotion in parents of ill and normal children. *American Journal of Orthopsychiatry*, *63*, 103–112.
- Hibbs, E. D., Hamburger, S. D., Lenane, M., Rapoport, J. L., Kruesi, M. J. P., Keysor, C. S., & Goldstein, M. J. (1991). Determinants of expressed emotion in families of disturbed and normal children. *Journal of Child Psychology and Psychiatry*, *32*, 757–770.
- Jaccard, J., & Guilamo-Ramos, V. (2002). Analysis of variance frameworks in clinical child and adolescent psychology: Advanced issues and recommendations. *Journal of Clinical Child and Adolescent Psychology*, *31*, 278–294.
- Knox, L. S., Albano, A. M., & Barlow, D. H. (1996). Parental involvement in the treatment of childhood obsessive compulsive disorder: A multiple-baseline examination incorporating parents. *Behaviour Therapy*, *27*, 93–115.
- Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics*, *33*, 159–174.
- Leonard, H., Swedo, S., Lenane, M., Rettew, D., Hamburger, S., Bardko, J., & Rapoport, J. L. (1993). A 2- to 7-year follow-up study of 54 obsessive-compulsive children and adolescents. *Archives of General Psychiatry*, *50*, 429–439.
- Livingston-Van Noppen, B., Rasmussen, S. I., Eisen, J., & McCartney, L. (1990). Family function and treatment in obsessive-compulsive disorder. In M. A. Jenike, W. E. Baer, & W. E. Minichiello (Eds.), *Obsessive-compulsive disorders: Theory and management* (pp. 118–131). Littleton, MA: Year Book Medical Publishers.
- March, J. (1995). Cognitive behavioral psychotherapy for children and adolescents with OCD: A review and recommendations for treatment. *Journal of the American Academy of Child and Adolescent Psychiatry*, *34*, 7–18.
- March, J., & Mulle, K. (1998). *OCD in children and adolescents: A cognitive-behavioural treatment manual*. New York, NY: Guilford.
- McLeod, B. D., Weisz, J. R., & Wood, J. J. (2007). Examining the association between parenting and childhood depression: A meta-analysis. *Clinical Psychology Review*, *27*, 986–1003.
- Piacentini, J., Bergman, R. L., Jacobs, C., McCracken, J. T., & Kretchman, J. (2002). Open trial of cognitive-behaviour therapy for childhood obsessive-compulsive disorder. *Journal of Anxiety Disorders*, *16*, 207–219.
- Piacentini, J., Gitow, A., Jaffer, M., Graae, F., & Whitaker, A. (1994). Outpatient behavioural treatment of child and adolescent obsessive compulsive disorder. *Journal of Anxiety Disorders*, *8*, 277–289.
- Scahill, L., Riddle, M. A., McSwiggin-Hardin, M., & Ort, S. I. (1997). Children's Yale-Brown Obsessive-Compulsive Scale: Reliability and validity. *Journal of the American Academy of Child and Adolescent Psychiatry*, *36*, 844–852.
- Steketee, G. (1993). Social support and treatment outcome of obsessive-compulsive disorder at 9-month follow-up. *Behavioural Psychotherapy*, *21*, 81–95.

- Storch, E. A., Geffken, G. R., Merlo, L. J., Mann, G., Duke, D., Munson, M., . . . Goodman, W. K. (2007). Family-based cognitive-behavioral therapy for pediatric obsessive-compulsive disorder: Comparison of intensive and weekly approaches. *Journal of the American Academy of Child and Adolescent Psychiatry*, *46*, 469–478.
- Thienemann, M., Martin, J., Cregger, B., Thompson, H., & Dyer-Freidman, J. (2001). Manual driven group cognitive-behavioural therapy for adolescents with obsessive-compulsive disorder: A pilot study. *Journal of the American Academy of Child and Adolescent Psychiatry*, *40*, 1254–1260.
- Waters, T. L., & Barrett, P. M. (2000). The role of the family in childhood obsessive-compulsive disorder. *Clinical Child and Family Psychology Review*, *3*, 173–184.