Cognitive-Behavioral Family Treatment of Childhood Obsessive-Compulsive Disorder: Long-Term Follow-up and Predictors of Outcome

PAULA BARRETT, PH.D., LARA FARRELL, PH.D., MARK DADDS, PH.D., AND NATALIE BOULTER, M.C.P.

ABSTRACT

Objective: The aims were to (1) evaluate the long-term durability of individual and group cognitive-behavioral family therapy for childhood obsessive-compulsive disorder and (2) investigate pretreatment predictors of long-term outcome. **Method:** Undertaken at a university-based clinic, this study involved 48 participants (8–19 years old) who had received individual or group cognitive-behavioral family therapy. Participants and parents were assessed at 12 and 18 months following treatment with standardized assessments, including diagnostic and symptom severity interviews, child self-report measures of anxiety and depression, and parental self-report of distress. Pretreatment data were used for the prediction of long-term outcome. **Results:** Analyses indicated treatment gains were maintained, with a total of 70% of participants in individual therapy and 84% in group therapy diagnosis free at follow-up. There were no significant differences between the individual or group conditions across measures. Results indicated that higher pretreatment severity and higher family dysfunction predicted worse long-term outcome. **Conclusions:** The results suggest that cognitive-behavioral family therapy for obsessive-compulsive disorder provides long-term relief that it is equally effective in individual and group-based therapy. Focusing on family dysfunction may improve long-term prognosis. *J. Am. Acad. Child Adolesc. Psychiatry,* 2005;44(10): 1005–1014. **Key Words:** child/adolescent obsessive-compulsive disorder, anxiety disorders, cognitive-behavioral treatment, long-term treatment outcome, predictors of outcome.

Childhood obsessive-compulsive disorder (OCD) often interferes with family functioning and is associated with high stress levels and poor functioning within the family (Barrett et al., 2001; Calvocoressi et al., 1995). It has been established with moderate support during the past decade that OCD in childhood and adolescence can be effectively treated with the use of cognitive-behavioral therapy (CBT) and pharmacological interventions (Barrett et al., 2004; March, 1995; Piacentini et al., 1999). Although there remains considerable debate about which of these treatments is the most useful approach, current research tends to suggest that medications do not provide a uniformly effective treatment response, typically produce only partial symptom reduction, and can lead to negative side effects for some children (Freeman et al., 2003).

Barrett and colleagues (2004) aimed to design the first randomized-controlled trial for CBT with children and adolescents with OCD. Conducted during the past 5 years, this randomized, controlled trial evaluated the efficacy of CBT with a family component (cognitive-behavioral family therapy [CBFT]) and sought to assess the utility of individual CBFT and group CBFT, with the inclusion of a waitlist control condition. The family component included standardized parent and sibling sessions in which therapists would meet with parents and siblings in isolation to the treatment participants (not family therapy per se), to teach psychoeducation, problem-solving skills, and strategies to support

Accepted March 17, 2005.

Drs. Barrett and Farrell and Ms. Boulter are with the School of Applied Psychology, Griffith University, Australia; Dr. Dadds is with the University of New South Wales.

This study was supported by a National Health and Medical Research Council grant.

Reprint requests to Dr. Paula Barrett, School of Applied Psychology, Griffith University, Mount Gravatt Campus, Brisbane, Queensland, 4111, Australia; e-mail: p.barrett@griffith.edu.au.

0890-8567/05/4410–1005©2005 by the American Academy of Child and Adolescent Psychiatry.

DOI: 10.1097/01.chi.0000172555.26349.94

treatment progress at home (see Barrett et al., 2004 for additional details regarding treatment protocol).

A total of 77 children and adolescents were included in the study, with the treatment protocol being a 14-week package of CBT. In contrast to the waitlist condition, both active treatment conditions produced significant reductions in diagnostic status and symptom severity ratings. At post-treatment, mean reductions in Children's Yale-Brown Obsessive-Compulsive Scale (CY-BOCS) ratings were 65% for individual therapy and 61% for group therapy (Barrett et al., 2004). In addition, 88% of children involved in the individual condition were diagnosis free at the completion of treatment, as were 76% of participants in the group condition (Barrett et al., 2004). There were no significant differences between treatment conditions, indicating that individual and group-based treatments were equally effective in providing positive outcomes. These results were also maintained at 3- and 6-month follow-up assessment and are particularly significant in suggesting that group CBT can be as effective as individual CBT.

Overall, the current research evidence indicates that CBT is effective in treating OCD during childhood and adolescence, but how effective are these interventions for improving long-term prognosis and the quality of life for children and adolescents with OCD? Preliminary evidence indicates that positive treatment gains can be maintained for a number of months post-treatment (9 months [Franklin et al., 1998], 3 months [Scahill et al., 1996], 6 months [Waters et al., 2001]), but a number of methodological flaws in the undertaking of follow-up assessments raises questions about the validity of the findings. The majority was open trials, relied on haphazard follow-up with variation in follow-up times, included small sample sizes, and used limited assessment measures. As a result, there is still a great need to continue assessing durability effects.

Additional assessment of durability effects for children and adolescents may allow researchers and clinicians to modify and improve treatment strategies to promote more effective outcomes for sufferers that have lasting effects. It may be possible to establish the length of active treatment required to promote long-term change or, alternatively, assess the degree of need for booster sessions or the continuation of active treatment. Because of the severe and chronic nature of OCD during childhood and considering that recent research indicates a worsening course of the condition from childhood to adulthood (Healy-Farrell et al., in press), long-term durability of effects is critical to assure clinicians and patients that the deteriorating course of OCD can be halted with appropriate treatment strategies.

In addition, analysis of factors that predict response to treatment or likelihood of relapse is valuable in developing an understanding of how to improve treatment techniques and identify children who are less likely to respond to CBT. Piacentini and colleagues (1994) have reported that children with better social functioning and lower family conflict were more likely to respond well to CBT. Results from pharmacological trials have additionally indicated that poorer response to medication is related to oppositional and aggressive behavior (Wever and Rey, 1996), along with history of tic disorder and parental history of a psychiatric disorder (Leonard et al., 1993). Medication status before the commencement of CBT has also been examined, and this was not related to treatment outcome (Barrett et al., 2004; Franklin et al., 1998).

The adult OCD literature provides additional possible predictors for treatment outcome, with preliminary evidence that comorbid depression and generalized anxiety disorder reduce responsiveness to treatment (Abramowitz and Foa, 2000; Abramowitz et al., 2000; Steketee et al., 2001). Poor outcome has also been associated with more severe pretreatment OCD severity (based on Y-BOCS scores) and higher self-reported depression (DeVeaugh-Geiss et al., 1992). Other variables that have been found to predict poor treatment outcome include lower social functioning, poor insight, greater anxious reactivity, and a critical family system (Steketee, 1993). Finally, particular symptom clusters, especially related to sexual or religious obsessions, tend to lead to less effective outcomes following CBT in adulthood (Mataix-Cols et al., 2002). Additional investigations of variables that predict response to CBT during childhood will enable clinicians to make more appropriate treatment decisions for children with OCD and may in turn improve treatment response.

The present study aimed to investigate the long-term durability of a CBFT for childhood OCD along with variables that predict long-term outcome and illness severity. Long-term follow-up assessments were conducted with children and adolescents who underwent treatment in the randomized, controlled trial of CBFT of Barrett and colleagues (2004). Treatment durability was measured via assessments with children and parents

at 12 and 18 months post-treatment. These assessments measured three broad domains: (1) child diagnostic status and symptom severity, (2) self-reported levels of distress, and (3) parental distress and family functioning. Predictor variables were selected from the relevant pretreatment data and included measures of outcome across three domains: (1) OCD severity, (2) self-reported distress, and (3) family functioning.

Based on the results of the original treatment outcome study, it was hypothesized that the gains made during CBFT would be maintained at 18-month follow-up. Specifically, it was hypothesized that measures of OCD diagnostic status and severity, self-report and parent-report distress, and family functioning would remain constant from post-treatment to 12- and 18-month follow-up. It is further hypothesized that there would be no difference in long-term outcome for individual and group-based treatment conditions. Based on previous research with child and adult samples, it was also hypothesized that higher pretreatment severity, more severe obsessions and compulsions, higher levels of anxiety, and depression and family dysfunction would predict poorer response to treatment in the long-term.

METHOD

Participants

A total of 77 white children and adolescents (7–17 years old), diagnosed with OCD were involved in the original treatment study and the 3- to 6-month follow-up (Barrett et al., 2004). The sample was diverse in terms of socioeconomic background, with combined parental incomes ranging from <$21, 000 to >$91,000 (mean = $41,000–$51,000). The original sample comprised 24 participants who received individual CBFT, 29 participants who received group CBFT, and a final 24 involved in the waitlist control condition (refer to Barrett et al., 2004 for more details of the original sample). The sample was on average within the moderate range of severity for OCD at pretreatment, based on CY-BOCS scores (Goodman et al., 1989), and 79% of this sample presented with a secondary comorbid disorder (most frequently generalized anxiety disorder, followed by specific phobia and social phobia).

Of the 53 participants who were involved in active treatment (group or individual), 90% were followed-up at 12 and 18 months after completing treatment. Two participants contact details were no longer valid, one participant had moved overseas, another adolescent participant refused to take part in additional follow-up, and another had been diagnosed as having schizophrenia.

The final sample was a total of 48 children and adolescents ages 8 to 19 (mean = 13.85; SD = 2.57). Twenty-two of the participants were originally treated as part of the individual CBFT condition (mean age = 12.91, SD = 2.60; 16 children ages 8–12, six adolescents ages 13–19) and 26 participants took part in the group-based treatment (mean age = 14.65; SD = 2.30; 13 children ages 8–12, 13 adolescents ages 13–19). Of the final sample, 47.9% were boys and 52.1% girls (individual = 50% boys, 50% girls; group = 46.15% boys, 53.85% girls). Participants who were involved in the original study as part of the waitlist condition were not followed-up long-term because these children were offered treatment after the waitlist period.

Measures

Diagnostic and Symptom Severity Measures. The Anxiety Disorders Interview Schedule for Children-Parent Version (Silverman and Albano, 1996) is a structured clinical instrument designed to diagnose anxiety disorders in childhood and to differentiate these from other internalizing and externalizing disorders (Silverman and Eisen, 1992). It has demonstrated the best psychometric properties for the diagnostic assessment of childhood anxiety disorders of the available measures (Piacentini and Bergman, 2000) and has shown good interrater reliability (Silverman and Eisen, 1992; Silverman and Nelles, 1988). The CY-BOCS (Goodman et al., 1989) is a 10-item, clinician-rated, semistructured interview used to assess the severity of OCD symptomatology experienced during a 1-week period. The instrument rates the severity of both obsessions and compulsions across five scales: (1) time occupied by symptoms, (2) interference caused by symptoms, (3) distress related to symptoms, (4) resistance of symptoms, and (5) degree of control over symptoms. The CY-BOCS also provides a total severity score. The cutoffs used in evaluating the CY-BOCS are mild (10–18, distress but not necessarily functional impairment), moderate (18–29, distress and functional impairment), and severe (30 or above, severe distress and serious impairment; March and Mulle, 1998). The CY-BOCS has demonstrated robust psychometric properties, with a high level of internal consistency reported among the 10 items and the CY-BOCS total score (Scahill et al., 1997), and convincing convergent and divergent validity have been established (Scahill et al., 1997).

The National Institute of Mental Health Global Obsessive-Compulsive Scale (NIMH-GOCS; Insel et al., 1983) is a clinician-rated scale consisting of a single item measuring illness severity rated from 1 (minimal symptoms) through 15 (very severe symptoms). Severity levels are clustered into five categories, including normal (1–3), subclinical (4–6), clinical OCD (7–9), severe (10–12), and very severe (13–15). The GOCS also provides a scale of global improvement, ranging from 1 (very much improved) to 7 (very much worse). It has demonstrated good retest reliability during a 2-week period (Kim et al., 1992, 1993), moderate convergent validity and good correlations with the CY-BOCS (Taylor, 1998), and good sensitivity to treatment effects (Piacentini et al., 2002; Waters et al., 2001).

Self-Report Measures

The Multidimensional Anxiety Scale for Children (MASC; March, 1997) is a 39-item self-report measure that asks children to record their responses on a 4-point Likert scale, ranging from 0 (not at all) to 3 (often). All of the items represent various dimensions of anxiety symptoms including cognitive, emotional, behavioral, and physiological, with four subfactors that include physical symptoms, harm avoidance, social anxiety, and separation anxiety. The factor structure has been cross-validated in clinical and population samples (March et al., 1999) and internal reliability coefficients for all domains of the MASC have been reported at acceptable levels (March et al., 1997). Good convergent validity has also been demonstrated through comparison with the total score of the

RCMAS (March et al., 1997). The Multidimensional Anxiety Scale–Obsessive Compulsive Screen (MASC–OC; March, 1997) is a 20-item self-report inventory for assessing obsessive-compulsive symptoms in children and adolescents. The questions are scored on a 4-point Likert scale and the test derives a total score between 0 and 60. Lower scores are indicative of lower levels of obsessive-compulsive symptoms. There is no information regarding the validity and reliability of the MASC–OC, and its use has not been reported in any clinical literature. The Children's Depression Inventory (CDI; Kovacs, 1985) is a widely used, 27-item self-report inventory for assessing depressive symptoms in children (Beck et al., 1996). The child indicates which of three descriptions best fits how he or she has been feeling during the past 2 weeks, with responses scored on a scale from 0 to 2, with 2 being the more severe. Raw scores range from 0 to 54, with a score of 16 often considered the threshold for depression (Smucker et al., 1986). The CDI has demonstrated good psychometric properties (Charman and Pervova, 2001). The Child Behavior Checklist 4–18 (CBCL 4–18) (Achenbach, 1991) is a 118-item questionnaire parent report form that assesses a child's internalizing and externalizing symptoms. It has consistently shown moderate to good reliability and validity and test-retest reliability has been reported at 0.89 (Achenbach and Edelbrock, 1983). The Depression Anxiety Stress Scale-21 (DASS-21; Lovibond and Lovibond, 1995b) is a shorter version of the original DASS self-report questionnaire and assesses the severity and frequency of negative emotional symptoms across three distinctive scales: depression, anxiety, and stress. Responses are rated on a 4-point Likert scale ranging from 0 (did not apply to me at all) to 3 (applied to me very much). The DASS has been normed for clinical and nonclinical populations, and a number of studies have reported a strong three-factor structure (Lovibond and Lovibond, 1995a). Convergent and divergent validity has also been established when compared to the Beck Depression Inventory and the Beck Anxiety Inventory (Lovibond and Lovibond, 1995a). The McMaster Family Assessment Device (FAD; Epstein et al., 1983) is a 53-item self-report questionnaire designed to assess family functioning across six dimensions: problem solving, communication, roles, affective responsiveness, affective involvement, and behavioral control. In addition to these scales, a total summary score of general family functioning is also provided. The FAD items are scored on a 4-point rating scale, ranging from strongly agree to strongly disagree. The measure has demonstrated adequate test-retest reliability, moderate correlations with other self-report measures of family functioning, and significant differentiation between clinic-rated healthy and unhealthy families (Epstein et al., 1983; Miller et al., 1985). For the purpose of this study, the general functioning subscale was used to measure overall family functioning at post- and follow-up assessments.

Procedure

All of the participants who were followed up in this study had completed a manual-based 14-week CBFT program based on the original work of March and colleagues' individual CBT program (March et al., 1994; March and Mulle, 1998). The FOCUS program (Freedom from Obsessions and Compulsions Using Cognitive-Behavioural Strategies [Barrett and Farrell, in press]) involves 14 weekly sessions with the addition of two booster sessions 1 and 3 months after the completion of active treatment. Participants were assessed via clinician-rated diagnostic interviews and self-report questionnaires at pre- and post-treatment and also at 3- and 6-month follow-up. For more information regarding treatment protocol, postassessment, follow-up assessment/ and pre–post-treatment outcome, refer to Barrett et al. (2004).

Long-term follow-up dates were standardized across all participants to take place 12 and 18 months after the completion of treatment. At 12- and 18-month follow-ups, participants were contacted by telephone and 30-minute diagnostic assessments were completed by a clinical psychologist trained in the use of diagnostic interviews. Assessments were standardized from post-treatment to follow-up and involved interviewing parents using the OCD section of the Anxiety Disorders Interview Schedule for Children-Parent Version only and interviewing children using the CY-BOCS. Based on the feedback received during both of these interviews, clinicians rated the severity of OCD on the NIMH-GOCS. During the diagnostic telephone interview, parents were also asked to provide information regarding any additional treatment received during the follow-up period, including additional psychotherapy and pharmacology. In addition, a package of self-report forms (MASC, MASC–OC, CDI, CBCL, FAD, and DASS-21) was mailed to all participants to be returned within 2 weeks.

Data Analysis

Repeated-measures analysis of variance (ANOVA) and χ^2 tests were conducted to determine differences between the groups, and logistic regression was performed to determine treatment condition differences. Mixed factorial ANOVAs were performed to evaluate long-term outcome on diagnostic measures and two simple multiple regression analyses with simultaneous entry of predictor variables performed to identify those factors that had a significant effect on long-term treatment outcome.

RESULTS

Because of the wide age range of participants involved in this study (i.e., 8–19 years), initial analyses were conducted using a 2 (treatment condition: individual, group) $\times$ 2 (age group: children, adolescents) $\times$ 3 (time: post, 12-month, 18-month) repeated-measures design. Results of these analyses indicated that there were no significant group $\times$ age $\times$ time interactions, and as such, results related to age are not reported here. Also, because of the large number of analyses undertaken in the repeated-measures design, the Holm modified Bonferroni correction method (Jaccard and Guilamo-Ramos, 2002) was used to control for inflation of experiment-wise error.

The majority of participants (83%) did not receive any other treatment (e.g., psychotherapy/medication) during the interval between completing the CBFT protocol and follow-up. This included participants who were stabilized on medication from pretreatment to follow-up or those who reduced their medication levels during the follow-up period. The remaining 17% of participants (three in individual CBT, four in group CBT) began using medication during the follow-up

period. Preliminary analyses were conducted with participants who did receive additional treatment removed from the data, with no differences in results found. In addition, a 2 (treatment condition: individual, group) × 2 (additional treatment: yes, no) × 3 (time: post, 12-month, 18-month) repeated-measures ANOVA was completed. There were no significant time × group × additional treatment interactions. Controlling for additional treatment, χ^2 tests revealed no differences between individual or group-based conditions for additional treatment.

Long-Term Treatment Outcome

At 12 months, 78% of participants were diagnosis-free, with 70% responding in the individual condition and 84% responding in the group condition. At 18 months, the results were identical to those of the 12-month follow-up. Two logistic regressions were conducted to examine whether there were treatment condition differences in (1) diagnostic status at 12-month follow-up, controlling for diagnostic status at post-treatment, and (2) whether there were differences in diagnostic status at 18-month follow-up, controlling for diagnostic status at 12 months. There were no significant differences between the two treatment conditions at both 12 months (χ^2 [1] = 1.39, not significant) and 18 months (χ^2 [1] = 0.12, not significant). Treatment conditions were collapsed for a non-parametric analysis using the Friedman test to examine whether diagnostic status remained stable during 12 and 18 months of follow-up. Results from the Friedman analyses indicated that there were no significant changes over time (χ^2 [2, N = 45] = 1.33, not significant), suggesting that those who were diagnosis-free post-treatment remained diagnosis-free during the period of 18 months.

Based on diagnostic data, participants were allocated to one of four groups: those who (1) maintained treatment gains (64.6%), (2) improved from post-treatment to follow-up (14.6%), (3) relapsed at long-term follow-up (16.7%), and (4) failed to respond to treatment at post-treatment or follow-up (4.2%). Chi-square analyses were used to test differences across response rates in individual and group conditions, revealing no significant differences.

To evaluate long-term outcome on diagnostic measures, two repeated-measures, mixed factorial ANOVAs were completed with time a within-subjects factor and group condition a between-subjects factor. Results indicated no significant time × group interactions on the NIMH-GOCS measure of OCD severity, and no significant time × group interactions on the CY-BOCS total score. Means and SDs for the NIMH-GOCS and CY-BOCS total score for individual and group conditions across follow-up are presented in Table 1.

To evaluate long-term outcome on self-report measures of distress for children and parents, 11 repeated-measures, mixed factorial ANOVAs were completed with time a within-subjects factor and group condition a between-subjects factor. Dependent variables were total scores for the MASC; MASC–OC screen; CDI; CBCL mother; CBCL father; mother depression, anxiety, and stress (DASS-21); and father depression, anxiety, and stress (DASS-21). There were no significant time × group interactions for child self-report anxiety as measured by the MASC, OCD symptoms as measured by the MASC–OC, or CDI measures of depression. In addition, there were no significant time × group interactions on mother or father report on the CBCL. On family variables, no significant time × group interactions were found. These variables included mother and father self-report of depression, anxiety, and stress as measured by the DASS-21. Last, no time × group interactions were found for family functioning variables as measured by mother and father report on the FAD.

Means and SDs for all of the self-report measures are also presented in Table 1.

Preliminary Exploration of Predictors of Long-Term Treatment Outcome

To explore possible predictors of treatment outcome, variables were selected based on relevant adult literature and research from child treatment studies. Potential predictors covered three broad domains of pretreatment characteristics: (1) OCD severity, (2) self-report depression and anxiety, and (3) parent-report family functioning. More specifically, variables included NIMH-GOCS rating, CY-BOCS obsessions and compulsions subscales, MASC total, and CDI total and mother/father reports on the FAD. These variables were entered into two simple multiple regression analyses with simultaneous entry of predictor variables to identify those factors that had a significant effect on long-term treatment outcome.

Two simple multiple regression analyses were conducted using two different dependent variables. These variables were chosen to predict both clinical change across time and long-term illness severity. Long-term

TABLE 1
Means and SDs for Post-treatment and 12- and 18-Month Follow-up: Diagnostic and Self-report Information

	Post-Treatment		12-Mo Follow-up		18-Mo Follow-up	
Measure	Individual	Group	Individual	Group	Individual	Group
NIMH-GOCS						
Mean	3.50	3.31	3.10	2.96	3.53	2.92
SD	2.30	2.16	2.02	1.71	2.21	1.60
CY-BOCS						
Mean	8.36	8.28	8.84	7.42	9.70	7.00
SD	7.33	7.33	6.67	7.37	7.66	6.93
MASC						
M	50.37	39.09	46.18	30.21	45.52	31.43
SD	15.31	18.00	14.27	13.96	20.42	14.4
MASC-OC						
Mean	20.55	16.58	17.5	12.39	18	12.1
SD	10.17	12.61	8.29	11.02	10.67	11.11
CDI						
Mean	6.26	3.35	3.59	2.56	3.66	2.30
SD	6.59	4.82	3.17	4.71	3.47	4.42
CBCL Mother						
Mean	44.77	42.26	26.75	27.61	25.62	26.14
SD	20.33	30.67	15.97	19.60	16.41	16.51
CBCL Father						
M	45.31	33.6	33.85	33.87	26.04	31.11
SD	23.16	23.5	18.05	15.36	19.20	13.84
Mother FAD						
Mean	2.16	2.16	1.90	1.91	1.85	1.83
SD	0.30	0.39	0.26	0.48	0.27	0.34
Father FAD						
Mean	2.12	2.13	2.06	1.89	1.9	1.85
SD	0.37	0.45	0.28	0.25	0.34	0.12
Mother Depression						
M	4.44	5.33	3.61	7.36	3.68	6.1
SD	6.12	7.23	3.33	6.15	4.24	5.04
Mother Anxiety						
Mean	2.83	4.3	2.5	4.35	1.26	3.2
SD	4.20	7.10	3.46	6.56	1.65	4.74
Mother Stress						
M	10.06	8.85	7.75	9.9	4.73	11.3
SD	7.67	9.00	4.65	6.86	4.37	7.44
Father Depression						
Mean	5.55	3.14	8.23	2.6	7	5.75
SD	6.77	4.94	5.63	1.5	6.71	2.67
Father Anxiety						
Mean	4.82	3.36	5.87	5.8	4.33	2.25
SD	7.44	4.36	3.42	3.01	7.19	1.19
Father Stress						
Mean	11.64	7.43	13	10.8	8.56	10.25
SD	9.83	6.77	5.41	5.81	4.78	2.79

Note: NIMH-GOCS = National Institute of Mental Health Global Obsessive-Compulsive Scale (Insel et al., 1983); CY-BOCS = Child Yale-Brown Obsessive-Compulsive Scale (Goodman et al., 1989); MASC = Multidimensional Anxiety Scale for Children (March, 1997); MASC-OS = Multidimensional Anxiety Scale for Children Obsessive-Compulsive Disorder Screen (March, 1997); CDI = Children's Depression Index (Kovacs, 1985); CBCL = Child Behavior Checklist (Achenbach, 1991); FAD = Family Adjustment Device (Epstein et al., 1983).

treatment outcome was therefore based on both percentage of change on the NIMH-GOCS from pretreatment to 18-month follow-up (model 1) and long-term symptom severity measured by the NIMH-GOCS (model 2).

The regression equation based on percentage of change on these variables predicted 69% of the variance in long-term treatment outcome, whereas they predicted 59% of long-term illness severity. Four variables emerged from both of the regression analyses as significant independent predictors of poorer long-term treatment outcome, including more severe obsessions, more severe compulsions, and a higher level of family dysfunction reported by mothers and fathers as measured by the FAD (Table 2).

DISCUSSION

Treatment condition (individual versus group therapy) did not predict whether participants were more or less likely to meet diagnostic criteria at 12- and 18-month follow-up, suggesting that individual and group treatment delivery was equally effective long-term. Investigation of additional treatments commenced during the follow-up period indicated that the large majority of participants had not received or begun any additional therapy or medication since the completion of active treatment. This suggests that the results reported regarding the long-term efficacy of CBFT based on diagnostic and symptom severity data are likely representative of the actual long-term durability of the treatment and do not measure the impact of additional treatments. Taken together, these results suggest that CBFT was successful in providing either complete remission of symptoms or, alternatively, leading to markedly reduced number and severity of symptoms up to 18 months post-treatment.

Of those participants who maintained their gains from post-treatment to follow-up or continued to improve post-treatment, a larger percentage was from the group-based condition. Although both treatment conditions produced one participant who failed to respond to treatment at post-treatment or in the long-term, a slightly higher number of participants who relapsed took part in the individual condition. Also of note is the timing at which relapse or improvement typically occurred. All participants who relapsed or improved during the long-term follow-up period had done so by the 12-month assessment, with no participants changing status after this assessment point. This is an interesting finding and suggests the possibility that if treatment gains can be maintained for 1 year after treatment, sufferers are likely to maintain those gains further into the future. The pattern of results indicate that although some participants are likely to relapse after treatment, the large majority of children who received CBFT

TABLE 2
Pretreatment Predictors of Treatment Outcome

Variable	*B*	SE	β	*T*	*p*
Model 1: percentage of change					
Pre-FAD father	–6.02	5.28	–1.13	–3.01	.010
Pre-FAD mother	–4.22	1.79	–1.07	–2.91	.012
Pre-CY-BOCS compulsions scale	–5.13	1.76	–.550	–2.90	.012
Pre-CY-BOCS obsessions scale	–3.09	1.23	–.500	–2.49	.027
Pre-CDI total	–1.16	.059	.355	–1.93	.075
Pre-MASC total	2.49	.251	.019	.096	.925
Pre-NIMH-GOCS rating	7.00	5.18	.228	1.35	.200
Model 2: severity rating					
Pre-FAD father	–3.59	1.19	–1.11	–3.00	.009
Pre-FAD mother	–3.65	1.08	–1.23	–3.36	.005
Pre-CY-BOCS compulsions scale	–.291	.105	–.597	–2.77	.015
Pre-CY-BOCS obsessions scale	–.511	.161	–.667	–3.16	.007
Pre-CDI total	–6.43	.054	–.209	–1.18	.257
Pre-MASC total	1.73	.021	.163	.840	.415
Pre-NIMH-GOCS rating	–.597	.471	–.242	–1.26	.225

Note: Model 1, $F7,31 = 3.25$, $p < .05$; Model $R^2 = 0.69$. Model 2; $F7,31 = 3.85$, $p < .05$; Model $R^2 = 0.59$.

are able to maintain their gains over the long-term, with some participants even continuing to improve after the completion of active treatment.

The outcome of this study supports the results reported in the original CBFT controlled trial of Barrett and colleagues (2004). The results of both diagnostic status and self-report information are generally consistent with previous research assessing CBT approaches for childhood OCD. The few open trials to include an evaluation of the long-term outcome of CBT have typically reported that gains made during treatment can be maintained from 12 to 21 months post-treatment (March et al., 1994; Piacentini et al., 1994; Wever and Rey, 1996). The current outcomes drawn from a randomized sample provide the strongest support to date regarding the utility of individual CBT long-term. In comparison to a number of studies that suggest group-based treatment produces less success when compared with individual strategies (Fischer et al., 1998; Thienemann et al., 2001), this study provides the first evidence to indicate that group-based approaches may be equally as effective as individual strategies in providing long-term positive outcomes.

In addition to the maintenance of gains for both individual and group treatments, this study also provides initial information regarding factors that may contribute to long-term treatment outcome for childhood OCD. Analyses of predictors of long-term treatment indicated that children and adolescents who experience more severe obsessions and compulsions and live in a family environment characterized by dysfunction are less likely to respond as well to CBFT as others may long-term. The outcomes of these analyses are strengthened by the fact that two different variables produced the same pattern of results. That is, these four variables predict lower long-term OCD severity (NIMH-GOCS) in addition to a lower percentage of positive treatment change in the long term. These results offer additional support of preliminary findings in the adult literature that sufferers with more severe OCD symptoms do not respond as well to CBT interventions (Mataix-Cols et al., 2002) and supports findings that childhood OCD treatment may be impaired by family dysfunction (Piacentini et al., 2002). In consideration of these results, the effectiveness of this treatment protocol needs to be examined within a community trial, with "real clients" in the "real world." This is important to address the issue of severity in terms of treatment outcome. Participants in this study were within the moderate range of severity based on averaged pretreatment CY-BOCS scores and, furthermore, did not present with the comorbid conditions of Tourette syndrome, autistic spectrum disorders, attention-deficit/hyperactivity disorder, or oppositional defiant disorder, which do frequently co-occur with OCD and may present a more severe sample of children and youths. Clinicians should conduct thorough assessments to detect those children with severe OCD symptoms; this will assist clinicians in determining which clients may benefit from the addition of medication and/or more intensive interventions (i.e., more sessions, more frequent sessions). Evaluation of variation in intensity of treatment delivery (e.g., weekly versus daily sessions, 14 versus 20 sessions) may provide insight into how best to match our treatment to the needs/severity of individual clients. Furthermore, taking a "family therapy" approach to treatment—that is, including parents and siblings together during sessions—may allow for more of a focus on family dynamics, which may improve family functioning and lead to better treatment outcomes. Previous research has demonstrated that families with a child who has OCD tend to be less positive in their behavioral interactions than are other families (Barrett et al., 1996). The current treatment may be improved for families with higher family dysfunction by involving an adjunct component addressing family relationships and interactional patterns.

Limitations

A drawback of the long-term diagnostic data collection process was that reliability data on diagnostic interviews were difficult to obtain. Because of the diagnostic interviews being conducted via telephone, frequently on weekends, and after hours, it was virtually impossible to make two psychologists available to complete reliability checks. Although this is a limitation, all psychologists involved in collecting long-term data were clinically trained master's-degree students with extensive experience in conducting diagnostic interviews. Interrater reliability data on diagnoses at pre- and post-treatment using the same structured interview were high, with a κ agreement of 1.00 for OCD diagnoses, 1.00 for secondary diagnoses, and 0.86 for third diagnoses (see Barrett et al., 2004). Because of the already large burden placed on families to complete four additional

assessments following post-evaluation, this study did not involve complete Anxiety Disorders Interview Schedule for Children-Parent Version interviews at follow-up assessments. This limits our understanding regarding patterns of comorbidity at follow-up.

Obviously, the results reported by Barrett et al. (2004) in addition to this study provide evidence that CBFT is effective for the management of OCD; however, this study does not provide evidence of the relative efficacy of the treatment compared with medications or other psychotherapeutic approaches. Important for the future will be the undertaking of extensive randomized, controlled trials including CBFT, medication, other therapy, and combination conditions.

In addition, although this treatment study is the largest study to date published for child OCD, the results are compromised by the lack of statistical power associated with the sample size. The lack of power may account for the lack of differences found across groups; hence, larger studies need to be conducted to attempt to replicate findings reported here. Furthermore, this study was limited to examining only a select number of factors because of the relatively small sample size and regression assumptions, which suggest at least 10 participants per predictor. This study has provided support for four specific variables that may play an important role in predicting treatment success or failure, although other variables of interest that should be examined include comorbid conditions, sibling distress, and parental psychopathology. Numerous other factors that were not measured may also be associated with predicting long-term treatment outcome. Finally, it should be noted that the sample consisted solely of white participants, which may limit generalizability of the results.

Clinical Implications

Given the above results, it appears that CBFT is an effective long-term treatment approach for the management of childhood OCD, but clinicians should be aware that in assessing children for OCD, there may also be a number of important variables that may affect treatment outcome. These include negative family interactions and initial severity of the condition.

In summary, childhood OCD is a complex condition that causes significant distress for children and adolescents and their families. The dissemination of evidence-based protocols such as the FOCUS manual into the community will provide significant relief for many OCD sufferers and their families, along with providing clinicians with the confidence to manage the condition and provide clients with positive long-term relief.

Disclosure: The FOCUS treatment manuals will be published by Australian Academic Press in 2005. Once published, royalties will be returned to Drs. Barrett and Farrell. The other authors have no financial relationships to disclose.

REFERENCES

Abramowitz JS, Foa EB (2000), Does comorbid major depressive disorder influence outcome of exposure and response prevention for OCD. *Behav Ther* 31:795–800

Abramowitz JS, Franklin ME, Street GP, Kozak MJ, Foa EB (2000), Effects of comorbid depression on response to treatment for obsessive-compulsive disorder. *Behav Ther* 31:517–528

Achenbach TM (1991), *Manual for the Child Behaviour Checklist/4-18 and 1991 Profile*. Burlington: University of Vermont Department of Psychiatry

Achenbach TM, Edelbrock CS (1983), *Manual for the Child Behaviour Checklist and Revised Child Behavior Profile*. Burlington: University Associates in Psychiatry

Barrett PM, Dadds MR, Rapee RM (1996), Family treatment of childhood anxiety: a controlled trial. *J Consult Clin Psychol* 64:333–342

Barrett PM, Farrell LJ (in press), FOCUS: Freedom from Obsessions and Compulsions Using Cognitive-Behavioural Strategies. *Australian Academic Press*

Barrett PM, Healy LJ, March JS (2004), Cognitive-behavioural family treatment for childhood obsessive-compulsive disorder: a controlled trial. *J Am Acad Child Adolesc Psychiatry* 43:46–62

Barrett PM, Rasmussen PJ, Healy L (2001), The effect of obsessive-compulsive disorder on sibling relationships in late childhood and early adolescence: preliminary findings. *Aust Educ Dev Psychologist* 17:82–102

Beck AT, Steer RA, Brown GK (1996), *BDI-II Manual*. San Antonio, TX: The Psychological Corporation

Calvocoressi L, Lewis B, Harris M et al. (1995), Family accommodation of obsessive-compulsive disorder. *Am J Psychiatry* 152:441–443

Charman T, Pervova I (2001), The internal structure of the Child Depression Inventory in Russian and UK school children. *J Youth Adolesc* 30:41–51

DeVeaugh-Geiss J, Moroz G, Biederman J et al. (1992), Clomipramine hydrochloride in childhood and adolescent obsessive-compulsive disorder–a multicenter trial. *J Am Acad Child Adolesc Psychiatry* 31: 45–49

Epstein NB, Baldwin LM, Bishop DS (1983), The McMaster Family Assessment Device. *J Marital Fam Ther* 9:171–180

Fischer DJ, Himle JA, Hanna GL (1998), Group behavioural therapy for adolescents with obsessive-compulsive disorder: preliminary outcomes. *Res Soc Work Pract* 8:629–636

Franklin ME, Kozac MJ, Cashman LA, Coles ME, Rheingold AA, Foa EB (1998), Cognitive-behavioral treatment of pediatric obsessive-compulsive disorder: an open trial. *J Am Acad Child Adolesc Psychiatry* 37: 412–419

Freeman JB, Garcia AM, Fucci C, Karitani MK, Miller L, Leonard HL (2003), Family-based treatment of early-onset obsessive-compulsive disorder. *J Child Adolesc Psychopharmacol* 13:71–80

Goodman WK, Price LH, Rasmussen SA et al. (1989), The Yale-Brown Obsessive-Compulsive Scale: development, use and reliability. *Arch Gen Psychiatry* 46:1006–1011

Healy-Farrell LJ, Barrett PM, Piacentini J (in press), Obsessive-compulsive disorder across the developmental trajectory: clinical correlates in children, adolescents and adults. *Clinical Child Psychology and Psychiatry*.

Insel TR, Hoover C, Murphy DL (1983), Parents of patients with obsessive-compulsive disorder. *Psychol Med* 13:807–811

Jaccard J, Guilamo-Ramos V (2002), Analysis of variance in clinical child and adolescent psychology: issues and recommendations. *J Clin Child Adolesc Psychol* 31:130–146

Kim SW, Dysken MW, Kuskowski N (1992), The Symptom Checklist-90 Obsessive-Compulsive subscale: a reliability and validity study. *Psychiatry Res* 41:37–44

Kim SW, Dysken MW, Kuskowski N, Hoover KM (1993), The Yale-Brown Obsessive-Compulsive Scale and the NIMH Global Obsessive-Compulsive Scale (GOCS): a reliability and validity study. *Int J Methods Psychiatry Res* 3:37–44

Kovacs M (1985), *Children's Depression Inventory (CDI)*. Tonawanda, NY: Multi-Health Systems

Leonard HL, Swedo SE, Lenane MC et al. (1993), A 2–7 year follow up of 54 obsessive-compulsive children and adolescents. *Arch Gen Psychiatry* 50:429–439

Lovibond PF, Lovibond SH (1995a), The structure of negative emotional states: comparison of the Depression Anxiety Stress Scale (DASS) with the Beck Depression and Anxiety Inventories. *Behav Res Ther* 33:335–343

Lovibond SH, Lovibond PF (1995b), *Manual for the Depression Anxiety Stress Scale*. Sydney: The Psychological Foundation of Australia

March JS (1995), Cognitive behavioral psychotherapy for children and adolescents with OCD: a review and recommendations for treatment. *J Am Acad Child Adolesc Psychiatry* 34:7–18

March JS (1997), *Manual for the Multidimensional Anxiety Scale for Children (MASC)*. North Tonawanda, NY: Multi-Health Systems

March JS, Mulle K (1998), *OCD in Children and Adolescents: A Cognitive-Behavioural Treatment Manual*. New York: Guildford

March JS, Mulle K, Herbel B (1994), Behavioural psychotherapy for children and adolescents with obsessive-compulsive disorder: an open-trial of a new protocol-driven treatment package. *J Am Acad Child Adolesc Psychiatry* 33:333–341

March JS, Parker JDA, Sullivan K, Stallings P, Conners CK (1997), The Multidimensional Anxiety Scale for Children (MASC): factor structure, reliability, and validity. *J Am Acad Child Adolesc Psychiatry* 36:554–565

March JS, Sullivan K, Parker J (1999), Test-retest reliability of the Multidimensional Anxiety Scale for Children. *J Anxiety Disord* 13:349–358

Mataix-Cols D, Marks IM, Greist JH, Kobak KA, Baer L (2002), Obsessive-compulsive symptom dimensions as predictors of compliance with and response to behaviour therapy: results from a controlled trial. *Psychother Psychosom* 71:255–262

Miller I, Epstein N, Bishop D, Keitner G (1985), The McMaster Family Assessment Device: reliability and validity. *J Marital Fam Ther* 11:345–356

Piacentini J, Bergman RL (2000), Obsessive-compulsive disorder in children. *Psychiatr Clin North Am* 23:519–533

Piacentini J, Bergman RL, Jacobs C, McCracken JT, Kretchman J (2002), Open trial of cognitive behaviour therapy for childhood obsessive-compulsive disorder. *J Anxiety Disord* 16:207–219

Piacentini J, Gitow A, Jaffar M, Graae F, Whitaker A (1994), Outpatient behavioural treatment of child and adolescent obsessive compulsive disorder. *J Anxiety Disord* 8:277–289

Piacentini J, Gitow A, Jaffar M, Graae F, Whitaker A (1999), Outpatient treatment of child and adolescent obsessive-compulsive disorder. *J Anxiety Disord* 8:277–289

Scahill L, Riddle MA, McSwiggin-Hardin M et al. (1997), Children's Yale-Brown Obsessive-Compulsive Scale: reliability and validity. *J Am Acad Child Adolesc Psychiatry* 36:844–862

Scahill L, Vitulano LA, Brenner EM, Lynch KA, King RA (1996), Behavioral therapy in children and adolescents with obsessive-compulsive disorder: a pilot study. *J Child Adolesc Psychopharmacol* 6:191–202

Silverman WK, Albano AM (1996), *Anxiety Disorders Interview Schedule for DSM-IV: Parent Version*. San Antonio, TX: Graywing

Silverman WK, Eisen A (1992), Age differences in the reliability of parent and child reports of child anxious symptomatology using a structured interview. *Journal of Child and Adolescent Psychiatry* 31:117–124

Silverman WK, Nelles WB (1988), The Anxiety Disorders Interview for Children. *J Am Acad Child Adolesc Psychiatry* 27:772–778

Smucker MR, Craighead WE, Craighead LW, Green BJ (1986), Normative and reliability data for the Children's Depression Inventory. *J Abnorm Psychol* 14:235–238

Steketee G (1993), *Treatment of Obsessive-Compulsive Disorder*. New York: The Guilford Press

Steketee G, Chambless DL, Tran GQ (2001), Effects of Axis I and II comorbidity on behaviour therapy outcome for obsessive-compulsive disorder and agoraphobia. *Compr Psychiatry* 42:76–86

Taylor S (1998), Assessment of obsessive-compulsive disorder. In: *Obsessive-Compulsive Disorder: Theory, Research and Treatment*, Swinson RP, Antony MM, eds. New York: The Guilford Press, pp 229–257

Thienemann M, Martin J, Cregger B, Thomsen H, Dyer-Friedman J (2001), Manual-driven group cognitive-behavioral therapy for adolescents with obsessive-compulsive disorder: a pilot study. *J Am Acad Child Adolesc Psychiatry* 10:1254–1260

Waters T, Barrett P, March J (2001), Cognitive-behavioral family treatment of childhood obsessive-compulsive disorder: an open clinical trial. *Am J Psychother* 55:372–387

Wever C, Rey JM (1996), Juvenile obsessive-compulsive disorder. *Aust N Z J Psychiatry* 31:105–113