Cognitive Behavioral Treatment for Young Children With Obsessive-Compulsive Disorder

Jennifer B. Freeman, Molly L. Choate-Summers, Phoebe S. Moore, Abbe M. Garcia, Jeffrey J. Sapyta, Henrietta L. Leonard, and Martin E. Franklin

Obsessive-compulsive disorder (OCD) is a distressing and functionally impairing disorder that can emerge as early as age 4. Cognitive behavior therapy (CBT) for OCD in youth shows great promise for amelioration of symptoms and associated functional impairment. However, the empirical evidence base for the efficacy of CBT in youth has some significant limitations, particularly as related to treating the very young child with OCD. This report includes a quantitative review of existing child CBT studies to evaluate evidence for the efficacy of CBT for OCD. It identifies gaps in the literature that, when addressed, would enhance the understanding of effective treatment in pediatric OCD. Finally, it presents a proposed research agenda for addressing the unique concerns of the young child with OCD.

**Key Words:** Cognitive behavioral therapy, early childhood, pediatric OCD

Obsessive-Compulsive Disorder (OCD) is a serious and significant psychiatric disorder in childhood, affecting as many as 2%–3% of children (e.g., Mullick and Goodman 2005; Valleni-Basile et al 1995). Point prevalence estimates indicate that, at any given moment, between 5% and 1% of the pediatric population suffers from OCD (Flament et al 1988). For many children, the disorder severely impairs academic, social, and family functioning (Flament et al 1990; Leonard et al 1993; Piacentini et al 2003; Swedo et al 1989). In addition, the vast majority of children with OCD also develop additional psychiatric disorders (e.g., 75%–84% comorbidity reported by Geller et al [1996]).

OCD that emerges in early childhood (between ages 5 and 8) can be especially pernicious in its impact, disrupting functioning across many domains and compounding its negative impact over time to derail normal development (Valderhaug and Ivarsson 2005). In addition, an earlier age of onset and a longer duration of illness have both been associated with increased persistence of OCD symptoms (Stewart et al 2004). Given that early childhood coincides with the beginning of formal schooling, OCD-related difficulties during this period might have a particularly devastating effect upon the establishment of strong academic functioning and peer relationships. Early, frequent intervention is warranted to enable the child to develop coping skills to minimize the chance that the child’s anxiety will interfere with learning (Hirshfeld-Becker and Biederman 2002). However, the current pediatric OCD treatment literature has not focused on treatment of this high-risk age group.

In considering this gap in the literature, one must take into account the type of treatment that would be appropriate for young children. The Expert Consensus Guidelines (March et al 1997) and the American Academy of Child & Adolescent Psychiatry Practice Parameters (King et al 1998) for OCD both recommend starting treatment in children with cognitive behavior therapy (CBT) or CBT plus a serotonin reuptake inhibitor (SRI) medication, depending on severity and comorbidity. Although many SRI treatment studies have demonstrated improvement in OCD symptoms in children and adolescents (Abramowitz et al 2005), the Food and Drug Administration has approved few medications for children under the age of 8. The precise rates of adverse drug reactions and their relationship to treatment duration and moderator variables, such as age and gender, are poorly understood. For these reasons, it seems likely that a psychosocial treatment rather than a medication or combined medication and psychotherapy treatment would be the treatment of choice in younger child populations, and therefore this report will not review SRI-alone treatment studies.

The purpose of this article is to present a quantitative review of the existing evidence of CBT efficacy in youth with OCD, with particular focus on how this literature might inform the clinician with a very young OCD patient. First, we identify gaps in the burgeoning literature that, when addressed, will secure a better understanding of how to treat the young OCD patient. Then, in the context of the theoretical and empirical supports reviewed, a research agenda directly tailored for very young children with OCD is proposed.

**CBT for Children and Adolescents With OCD: Review of Findings**

Research on CBT and, in particular, exposure with response prevention has only recently been carefully reviewed and studied in children and adolescents (March 1995; Piacentini 1999). To identify CBT studies for the quantitative review, searches of major research literature databases relevant to OCD (i.e., Medline, PsychLit) were conducted with the key words: [OCD or obsessive compulsive disorder] AND [treatment, CBT, family CBT, intervention, or trial]. Studies were limited to clients between 5 and 17 years of age. Empirical articles and major OCD treatment reviews (e.g., Abramowitz et al 2005) that were collected with these procedures were examined for other studies that had not been identified in the online literature search. Experts in OCD were also surveyed to ensure that no studies, published or unpublished, were excluded. Studies identified for the review are listed in Table 1.

**Qualitative Review**

Upon inspecting the studies listed in Table 1, three major gaps with particular relevance for young child OCD are evident: age of participants, the role of medication in the context of CBT, and the...
use of family-based models of treatment of OCD. With regard to age, no treatment studies have examined treatment of children with OCD who are younger than 7 years old. As seen in Table 1, age, no treatment studies have examined treatment of children use of family-based models of treatment of OCD. With regard to

Table 1. Table of CBT Studies for Pediatric OCD

<table>
<thead>
<tr>
<th>Study</th>
<th>Individual CBT</th>
<th>Group CBT</th>
<th>Family CBT</th>
<th>CBT Efficacy</th>
<th>Combination CBT &amp; Meds</th>
</tr>
</thead>
<tbody>
<tr>
<td>aPiacentini et al (2002) OPEN</td>
<td>Age (avg.)</td>
<td>n</td>
<td>% on meds</td>
<td>Age (avg.)</td>
<td>n</td>
</tr>
<tr>
<td>5–17 (11.8)</td>
<td>42 52%</td>
<td>20 0%</td>
<td>53 23%</td>
<td>14 64%</td>
<td>7–17 (13.7)</td>
</tr>
<tr>
<td>bFranklin et al (1998) OPEN</td>
<td>Age (avg.)</td>
<td>n</td>
<td>% on meds</td>
<td>Age (avg.)</td>
<td>n</td>
</tr>
<tr>
<td>10–17 (14.1)</td>
<td>14 57%</td>
<td>29 31%</td>
<td>14 64%</td>
<td>10–14 (11.3)</td>
<td>8–14 (12.9)</td>
</tr>
<tr>
<td>cScallill et al (1996) OPEN</td>
<td>Age (avg.)</td>
<td>n</td>
<td>% on meds</td>
<td>Age (avg.)</td>
<td>n</td>
</tr>
<tr>
<td>10–15 (13)</td>
<td>7 71%</td>
<td>14 64%</td>
<td>7 71%</td>
<td>10–14 (11.3)</td>
<td>8–14 (12.9)</td>
</tr>
<tr>
<td>dMarch, Mulle &amp; Herbel (1994) OPEN</td>
<td>Age (avg.)</td>
<td>n</td>
<td>% on meds</td>
<td>Age (avg.)</td>
<td>n</td>
</tr>
<tr>
<td>8–18 (14.3)</td>
<td>15 93%</td>
<td>19 68.4%</td>
<td>19 68.4%</td>
<td>12–17 (14.6)</td>
<td>8–17 (14.5)</td>
</tr>
<tr>
<td>eBolton et al (1983) OPEN</td>
<td>Age (avg.)</td>
<td>n</td>
<td>% on meds</td>
<td>Age (avg.)</td>
<td>n</td>
</tr>
<tr>
<td>12–18 (14.1)</td>
<td>15 33%</td>
<td>18 83%</td>
<td>18 83%</td>
<td>13–17 (15.2)</td>
<td>12–17 (14.5)</td>
</tr>
</tbody>
</table>

Grunes et al (2001) included adults also (average age was 28), so it was excluded from this review of cognitive behavior therapy (CBT) for pediatric obsessive-compulsive disorder (OCD). Piacentini et al, Franklin et al, and Scallill et al studies reported results split into CBT with medication versus CBT without medication. Meds, medication; POTS, Pediatric OCD Treatment Study; RCT, randomized controlled trials.

Indicates cell was included in CBT effect size calculations in Abramowitz et al (2005).

Indicates cell subjects included in multiple columns (e.g., family CBT in group format).

As shown in the Table 1, studies examining a family-based treatment approach to pediatric OCD are few, and none have included young children. This situation is particularly problematic for making empirically informed decisions about the treatment of young children with OCD, because it is likely that a family component would be needed for this young age group. Early-onset OCD is influenced by a familial history of OCD (Hanna et al 2005). Families affect and are affected by OCD through their accommodation of and participation in rituals and avoidance behaviors (Lenane 1989, 1991; Pollack and Carter 1999; Steketee 1997). In addition, other family behavior patterns are likely to affect OCD symptoms in children. Parents of children with OCD show poor problem-solving skills, decreased confidence in the affected child, increased levels of expressed emotion (criticism and emotional overinvolvement) and increases in parental catastrophizing behavior (Barrett et al 2002; Leonard et al 1993; Moore et al 2004). Higher familial dysfunction...
Table 2. Description and Overall Effect of CBT Trials Included in the Meta-Analysis

<table>
<thead>
<tr>
<th>Study</th>
<th>CBT Modality</th>
<th>Primary Outcome Measure</th>
<th>n</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolton (1983)</td>
<td>Open Individual CBT</td>
<td>CY-BOCS</td>
<td>15</td>
<td>2.45</td>
</tr>
<tr>
<td>Piacentini et al (2002)</td>
<td>Open Individual CBT</td>
<td>NIMHOC1s</td>
<td>42</td>
<td>1.72</td>
</tr>
<tr>
<td>Thienemann et al (2001)</td>
<td>Open Group CBT</td>
<td>CY-BOCS</td>
<td>18</td>
<td>1.09</td>
</tr>
<tr>
<td>Martin &amp; Thienemann (2005)</td>
<td>Open Family CBT</td>
<td>CY-BOCS</td>
<td>14</td>
<td>0.98</td>
</tr>
<tr>
<td>March et al (1994)</td>
<td>Open Individual CBT</td>
<td>CY-BOCS</td>
<td>15</td>
<td>0.95</td>
</tr>
<tr>
<td>Himle et al (2003)</td>
<td>Open Group CBT</td>
<td>CY-BOCS</td>
<td>19</td>
<td>0.78</td>
</tr>
<tr>
<td>Fischer et al (1998)</td>
<td>Open Group CBT</td>
<td>CY-BOCS</td>
<td>15</td>
<td>0.54</td>
</tr>
</tbody>
</table>

Due to two family CBT arms in Barrett et al, a weighted average of effect size and n were used in computation. CY-BOCS, Children’s Yale-Brown Obsessive Compulsive Scale; other abbreviations as in Table 1.

Effect Size Calculation

Effect sizes were calculated within each one-sample CBT treatment group. Similar to the two-sample Cohen’s d, the effect size is an estimate of the true difference between pretreatment and posttreatment outcome divided by the SD (Rosenthal 1994). When possible, calculation of the effect size was done directly with means, SDs, and sample size of the treatment group. When this was not possible, the effect size was coded from data that best approximated direct computation of means and SDs, according to Lipsey and Wilson (2001). In order of priority, effect sizes were calculated by algebraically equivalent formulas (i.e., t test or F test ratios), probability value for t or F tests (i.e., “p < .05” was coded as exactly .05), mean difference scores, or approximations based on dichotomous data (e.g., percent diagnosed as depressed). Random effects models were chosen over fixed effects models for this analysis of effect sizes. Because fixed effects models have larger Type I error rates and are less generalizable than random effects models, random effects models have been recommended as the preferred strategy (Mosteller and Colditz 1996).

Effect Size Adjustments

Before formal analyses were conducted, each effect size was adjusted for small sample bias. Standardized mean difference effect size types have a consistent upward bias when based on small samples (Rosenthal 1994). Hunter and Schmidt (1994) adjustments were not implemented, because too few studies provided enough information to code sample-specific reliability and range restriction estimates. In cases where only few studies have the necessary information, some have argued that leaving them all unadjusted makes them more comparable (Lipsey and Wilson 2001).

General Effects Analyses

Effect sizes were combined as described previously to generate one effect size/study. The studies included, with their respective effect sizes, are provided in Table 2. One study (i.e., Barrett et al 2004) included more than one CBT treatment arm with no statistics available describing the overall CBT effect. For this reason, the effect size and representative n for this study was averaged in order for one effect size to represent each study. Inspection of the studies indicates that all studies were effective in reducing OCD symptoms, and randomized controlled trials generally had larger effects than open trials. All three randomized...
controlled trials (RCTs) reviewed were in the top 25% by effect size. This finding might be attributed to the ability of RCTs to control for confounding factors that might attenuate true treatment effects. In addition, effect sizes obtained from RCTs are likely more reliable than those obtained in less rigorously controlled designs (Heinsman and Shadish 1996; Shadish and Ragsdale 1996).

The general effect of CBT on OCD symptoms was determined by generating random effects models with method of moments. Establishing our null model (i.e., no moderators), the overall effect size including all 12 studies was 1.55 (95% confidence interval 1.12–1.97), indicating a large effect. Owing to the possibility of undiscovered studies biasing the estimate of treatment effect upward, Rosenthal’s file-drawer method was used to determine the number of unpublished studies it would take with an average effect size of zero for the overall Z score to no longer be significant (Rosenthal 1979). A fail-safe number of 5k + 10 is considered to provide evidence of a robust effect, where k equals the number of studies included in the meta-analysis (Rosenthal 1991). A robust effect with the number of studies included is 70. On the basis of our findings, the number of null studies it would take to lower the overall Z score to below 1.96 is 499 studies, which is well over the criteria for being considered a robust effect.

These studies were also broken down on the basis of treatment modality into: individual CBT, group CBT, and family-based CBT. This breakdown is displayed in Table 3. Studies that included a family component delivered in a group format were coded in the family-based modality. Although the paucity of studies prohibits us from comparing these sufficiently, individual and family-based CBT trials seem to be the most promising.

**Future Directions to Solidify the Empirical Base**

Although this review of the existing literature indicates great promise for CBT as a treatment for pediatric OCD, there are notable issues in the literature that could shape future research. As can be noted from the quantitative review, there is a dearth of studies examining CBT’s true effect, as opposed to CBT delivered in the context of other treatment, such as medication. Unfortunately, the majority of studies on which the supportive evidence of CBT is based might be contaminated by medication effects. Because most of the open CBT studies included some percentage of children receiving medication, it is difficult to determine the effect of medication status on CBT, and effect sizes of CBT are in some ways contaminated by the medication treatment. Only two of the open CBT studies published the mean results of their outcome data according to medication presence or absence. Conversely, allowing concurrent stable SRI treatment increases the applicability of the treatment studies by approximating more closely what some practitioners of CBT in the community might encounter.

More broadly, the role of medication in CBT is important when considering the theoretical basis for CBT versus medication treatment of OCD. The CBT models for child/adolescent OCD primarily focus on providing skills to facilitate exposure with response (ritual) prevention (EX/RP: March and Mulle 1998). The theory behind EX/RP is that, as a patient is exposed to the feared situation, prevention of the response (i.e., the ritual or avoidance behavior) results in anxiety reduction over time. The effectiveness of EX/RP is most often attributed to the concepts of habituation and extinction. Patients gradually learn that their anxious response decreases over time and that, with prolonged exposure to the stimulus, anxiety can be reduced without performing compulsions (Foa and Kozak 1986; Francis and Gragg 1996). Foa and Kozak (1986) suggest that exposure tasks disintegrate the fear structure into elements of stimulus, response, and meaning, resulting in reduced anxiety. When CBT is conducted in the context of medication treatment, it is possible that medication enhances the ability to access fear structures, “turning down the volume” of anxiety, allowing a child to participate in exposure exercises and attendance habitation. It is possible that, alternatively, medication interferes with the ability to adequately access fear structures, impacting long-term maintenance of treatment gains. Studies on the nature of learning support the latter hypothesis in the sense that the context in which the learning takes place while taking medication might be different as compared with the learning context once the medication has been discontinued (see Smits et al 2006). Generally speaking, adult studies on combined treatment for anxiety disorders have not indicated that combined treatment is associated with attenuated acute outcomes, although there is some evidence in panic disorder for an increased risk of relapse after treatment discontinuation for patients who received combined treatment as compared with CBT monotherapy (for a review see Foa et al 2002).

As noted in the Table 1, only one RCT has systematically examined the relative efficacy of medication, CBT, and their combination. In their study, the Pediatric OCD Treatment Study (POTS) team found that, although combined treatment proved superior to CBT alone or medication alone, the remission rate (defined as a Children’s Yale-Brown Obsessive Compulsive Scale score of 10 or below) for combined treatment did not differ from that of CBT alone but did differ from medication alone and from placebo (POTS 2004). Further research is required to clarify what role, if any, medication might play in the context of CBT learning. Follow-up studies of treatment gains are particularly relevant. For example, adult OCD studies of CBT combined with medication have found little to no benefit over follow-up of combined treatment to CBT alone (see Steketee and Barlow 2002, for a review).

Although the literature on the treatment of pediatric OCD is clearly expanding, only four of the published CBT intervention studies for pediatric OCD were RCTs, whereas the remaining studies were open trials. Those studies that do not have random assignment are more susceptible to threats to internal validity, thus lowering the ability to make causal inferences regarding CBT’s effect on treatment outcome. For example, selection bias, or pre-existing differences among groups, is one such threat to internal validity that is best controlled by random assignment (Larzelere et al 2004). Similarly, uncontrolled trials do not control for variables such as length of treatment or nonspecific factors such as the positive benefits associated with engaging in treatment that might account for observed treatment effects. In addition, the

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**Table 3. Effects of CBT Treatment on Pediatric OCD Both Overall and Broken Down by Modality**

<table>
<thead>
<tr>
<th>Study Type</th>
<th>Studies (Participants)</th>
<th>Mean Effect Size (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBT (ALL)</td>
<td>12 (231)</td>
<td>1.55 (1.12–1.97)</td>
</tr>
<tr>
<td>Individual CBT</td>
<td>7 (142)</td>
<td>1.77 (1.33–2.21)</td>
</tr>
<tr>
<td>Group CBT</td>
<td>3 (49)</td>
<td>.76 (0.34–1.17)</td>
</tr>
<tr>
<td>Family CBT</td>
<td>2 (40)</td>
<td>1.88 (1.15–3.63)</td>
</tr>
</tbody>
</table>

CI, confidence interval; other abbreviations as in Table 1.
Summary and Conclusions

This article has presented a critical review of the extant evidence of CBT efficacy in youth with OCD, with a specific focus on how this literature might inform the clinician with a very young OCD patient. A meta-analysis of the existing literature indicates great promise for CBT as a treatment for children and adolescents with OCD, with preliminary evidence suggesting that individual and family-based CBT trials seem to be the most promising.

There are specific gaps in the current research that must be addressed to generalize the knowledge base to the population of very young children with OCD. Family treatment, which is particularly important for young children with OCD, needs more research. In addition, most of the current studies are confounded by concomitant medications, making the findings regarding CBT less applicable to young children. Moreover, no controlled treatment research has been published with this young age group, and little research has examined age as a moderator of treatment outcome. Developmentally appropriate treatments tailored to young children's specific concerns are needed.

Future research to address these gaps in the literature is recommended. For example, it is recommended that outcome studies report treatment results that are divided into results for those children who were taking a stable dose of medication and those children who only received CBT. Presentation of results in this manner would help to clarify the role of combined medication and psychotherapy in the treatment of OCD. Additionally, although preliminary evidence suggests that a family-based, developmentally tailored CBT model is acceptable to families of young children with OCD (Freeman et al. 2003), more research is needed to test the efficacy of this treatment model. An RCT of family-based CBT for young children (ages 5–8) with OCD is needed in which the effect of CBT on symptom reduction, functional impairment, and quality of life is evaluated. Additionally, research is needed evaluating potential moderators—such as baseline characteristics of the child/family, comorbidity, parent psychopathology, and family functioning—and mediators of treatment response, such as compliance and family accommodation.

In addition, more knowledge is needed in the field of early childhood OCD. For example, the developmental variability in this age range is not well understood. Although there is both clinical and research evidence that some children as young as 5 can participate in cognitive tasks, including cognitive training (Grave and Blissett 2004), the factors that would identify these children from other young children who would have difficulty understanding the treatment model are not well understood. These factors would likely include cognitive, developmental, and environmental factors (including exposure to formal schooling and family interaction style). Further research delineating these factors would be helpful in determining the extent to which the therapist can expect children to understand the treatment model versus relying on parent training and implementation of behavioral principles consistent with the model.

Finally, when working with young children with OCD, it is possible that an early intervention model might be required rather than a treatment model. Future research could address the treatment of sub-syndromal children and application of these CBT principles to nonclinical OCD symptoms in a model of secondary prevention of the development of OCD. Because earlier age of onset and longer duration of OCD symptoms predict higher rates of persistence of full-blown OCD at follow-up (Stewart et al. 2004), early and frequent intervention is needed. Intervening early with young children offers a unique opportunity to prevent the development of longstanding problematic behaviors. Such intervention increases the probability of keeping OCD-affected youngsters on track with developmental milestones and thus might offer economic benefits of increased productivity, along with enhanced life quality, into adolescence and adulthood.


