

## **A ten-year review of the efficacy of cognitive-behavioral treatment for Obsessive-Compulsive Disorder in children and adolescents**

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*This article reviews six studies using cognitive behavioral treatment (CBT) for Obsessive-Compulsive Disorder (OCD) in children and adolescents. Four elements of research methods are considered: (1) characteristics of participants; (2) components of the CBT programs; (3) assessment measures; and (4) follow-up analysis. The studies were obtained through a computerized search of PsychINFO and MEDline. Although CBT appears to be an effective approach for treating OCD, this review found that the descriptions of participants across the studies were not adequate; the components of the CTB programs utilized a manualized protocol; some assessment measures were common across the studies; and, only two of the studies examined whether treatment gains would be maintained over time.*

### **Introduction**

Being fearful or anxious as a child is not uncommon. Research shows that nearly 76% of children are afraid of at least one stimulus, and a large majority are afraid of multiple stimuli (Muris, Merckelbach, Gadet, & Moulaert, 2000). For some children however, these fears and anxieties become exacerbated and cause serious disruptions in their lives. Anxiety disorders are among most common forms of psychopathology affecting children and adolescents (Anderson, Williams, McGee, & Silva, 1987; Kashani & Orvaschel, 1990). Importantly, it is believed that, without effective treatment, anxiety, which begins in childhood, can become chronic, staying with those children into their adult years (Keller, Lavori, Wunder, Beardslee, & Schwartz, 1992).

Obsessive-Compulsive Disorder (OCD) is one such disorder where anxieties come to rule one's life. Those inflicted with this disorder are described in the DSM-IV-TR as being marred by intrusive thoughts (obsessions) which often drive them to engage in repetitive behaviors (compulsions) with the goal of reducing their anxieties (American Psychiatric Association, 2000). It is believed that one in every 200 young

children suffer from obsessions and/or compulsions (Flament, Whitaker, Rapoport, Davies, et al., 1988; Piacentini & Langley, 2004). In school terms, this means that every elementary school could have three children with this disorder (Ollendick & March, 2004).

Cognitive-Behavioral Therapy (CBT) is consistently described in literature reviews as the “treatment of choice” for children and adolescents suffering from OCD (March, Franklin, Nelson, & Foa, 2001; March & Leonard, 1996; Piacentini & Langley, 2004). One of the reasons CBT is a popular treatment choice is because it presents a logical relationship between the conceptualization of the disorder, and strategies to improve functioning. Specifically, Salkovskis (1991) proposed a model whereby OCD can be described as a perpetuating cycle where obsessions (e.g., fear of touching plants because the germs will make one sick) drive one to engage in rituals (e.g., washing of hands). The compulsions are continually reinforced because they allow one to be relieved of his/her anxiety (washing will make one feel better because germs are no longer on his/her hands). Obsessions are also reinforced in this cycle because, by engaging in rituals, the beliefs are never disconfirmed (e.g., one had touched the plant, did not wash, and did not become ill). Following from this model, CBT aims to weaken associations between obsessions and increased anxiety as well as between compulsions and anxiety relief (March & Mule, 1998). CBT does so by helping the child internalize a strategy to resist OCD (March & Leonard, 1996) and by using models of learning (Francis & Beidel, 1995). In other words, children learn to use cognitive techniques (e.g., relaxation) to deal with anxiety, rather than engaging in rituals. They soon learn that the ritual they once engaged in is no longer necessary to reduce their anxiety (Albano & Kendall, 2002).

Specific components of CBT vary from program to program, but typically include such features as: modeling, anxiety management training, and exposure-response prevention as core elements (March, Leonard, & Swedo, 1995). As described by March et al. (1995), the exposure-response prevention component is the essential core of CBT. The exposure-response prevention (E/RP) technique has children come into contact with the feared stimulus. This exposure continues until the child becomes “bored” of the situations that had initially made him or her fearful. Simultaneously, the therapist encourages a significant delay in the rituals typically engaged in to reduce this anxiety. In time, this

process puts an end to the negative reinforcement that had been encouraging rituals as the children learn that rituals are not necessary for anxiety to dissipate. As well, when the children see that their distress about the stimulus is unwarranted, anxiety initially caused by the stimulus will be reduced, if not disappear altogether.

OCD "Expert Consensus Guidelines" recommend exposure based CBT as the first line of treatment to be sought by children and adolescents with OCD (March, Frances, Carpenter, & Kahn, 1997). However, Francis and Beidel (1995) noted that: "The treatment literature remains sparse and consists primarily of suggestions regarding strategies rather than definitive conclusions regarding treatment efficacy" (p. 321). Literature and meta-analytic reviews conducted on CBT research in the mid-nineties through 2000 continually called for further investigation of the merits of CBT when used with children and adolescents (March et al., 2001; March & Leonard, 1996). A significant number of years have passed, and now the time has arrived to assess whether the call for more research has been answered, and what has been revealed.

This paper will review empirical research conducted in the past ten years and examine the efficacy of CBT programs with samples of children and adolescents. First, this review will examine whether the studies addressed specific characteristics of their participants' obsessions and/or compulsions. Second, particular components of the CBT programs employed will be reviewed, as well as the source from which these components were obtained. Third, this review will report the nature and scope of measures each study used to assess symptom improvement. Fourth, results of the studies will be compared based on measures the articles had common. Fifth, the review will indicate whether the study included a follow-up assessment and report the findings. Lastly, the limitations of the studies will be discussed.

Articles reviewed in this paper were obtained through computerized search engines PsycINFO and MEDline. Searches were conducted using key terms: Child, Adolescent, Juvenile, Obsessive-Compulsive Disorder, Cognitive-Behavioral Therapy, CTB and Medication, and Exposure-Response Prevention. Computer searches were limited to empirical articles published from 1995 through 2005. To be included, articles had to include an examination of OCD in both children and adolescents. Case studies were not included. This search yielded six articles.

*Studies assessing CBT in isolation.*

Benazon, Ager, and Rosenberg's research (2002) included participants who had not been previously treated with pharmacotherapy or psychotherapy, and thus were deemed to be "treatment-naïve." Participants remained drug free while they engaged in CBT. Benazon et al. (2002) do not mention if their participants presented with both obsessions and compulsions, nor did they describe the form the obsessions and/or compulsions took. The protocol was derived from an integration of two published treatment manuals (March & Mulle, 1998; Schwartz, 1996). The program was composed of twelve 60 minute sessions, ranging in duration from three to four months. The protocol called for a high involvement of parents with a minimum requirement of attending four full sessions. Extensive emphasis was placed on cognitive training (teaching to recognize symptoms, how to respond adaptively, and how to apply cognitive distancing techniques).

Participants were assessed both before and after treatment with six different instruments. To effectively compare the results between this and the other study in this section, a comparison of outcome measures used in each study was done in order to find which measures the two studies had in common. This comparison revealed common use of both the Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS), and National Institute of Mental Health Global Obsessive-Compulsive Scale (NIMH Global).

Benazon et al. (2002) report that the CY-BOCS revealed a significant decrease in participants' OCD symptom severity, with ten out of sixteen participants (63%) experiencing a reduction greater than 50%. Furthermore, the NIMH Global also revealed significant results. As indicated by a score of 2 or less on this measure, seven participants (44%) were asymptomatic by post-treatment. Participants were not assessed in a follow-up to examine whether effects were maintained.

The second study to be discussed in this category was conducted by Waters, Barrett, and March in 2001. As in Benazon et al. (2002), participants remained drug free for the duration of treatment. Unlike the previous study, however, Waters et al. (2001) describe the symptoms of their sample. All participants presented with obsessions and

compulsions. Only two of the seven participants presented with only one obsession while all the other participants presented with multiple compulsions. The most common obsession was contamination (71%), and the most common compulsion was washing (71%). Like Benazon et al. (2002), the treatment program used in this study was adapted from a published treatment manual (March, Mulle, & Herbel, 1998). Treatment consisted of fourteen weekly sessions, each lasting about 90 minutes. In comparison, the treatment program in this study was more intense than the first described by Benazon et al. (2002), including more sessions, each of longer duration. This program included psycho-education, cognitive training and anxiety management, E/RP, relapse prevention, and parent skills training. All components are in common with Benazon et al. (2002) except for Waters et al.'s emphasis placed on parent skills training. Participants in this study were assessed before and after treatment as well as at follow-up three months later, a step that Benazon et al. (2002) did not take. In this study the authors also used six instruments to measure treatment outcomes. Again, not all of these measures will be discussed, rather, only those in common with Benazon et al. (2002) will be described. As measured by the CY-BOCS, six of the seven participants (86%) experienced a significant reduction in their scores from pre to post (greater than 40%). This result is comparable to that in the previous study, while it is noted that the current criteria are slightly more lenient (i.e., looked at a 40% reduction instead of a 50% reduction). Additionally, Waters et al. (2001) found that all participants maintained these results at the three-month follow-up. According to the NIMH Global Scale, as indicated as a score of 3 or less, five cases (71%) were asymptomatic or experiencing minimal symptoms at post treatment. This result proved to be a significant reduction from pretest. Again, although they use more lenient criteria than Benazon et al. (2002), who reported scores of 2 or less (i.e., asymptomatic score as opposed to asymptomatic or minimal symptoms), the result is nonetheless comparable. Disappointingly at follow-up, on this scale one of Waters et al.'s participants relapsed, bringing this success rate to 57%. Benazon et al. (2002) did not conduct follow-up analyses, so this relapse rate cannot be compared to their study.

Taken together, these two studies suggest that CBT in isolation is an effective tool in treating OCD in young children and adolescents. Both can be effectively compared as they each employed similar CBT protocol. Additionally, they found similar findings on both measurement scales

they had in common. A significant strength of these two studies is that both adapted their protocol from published treatment manuals. Both studies described in this category used only one group of participants whose scores were measured before and after treatment (and again at follow up for Waters et al., 2001). While one may imply the significant reduction of OCD symptoms are due to the effectiveness of CBT, this cannot be conclusive, as time effects could have played a role. To be certain, a comparison sample is needed to indicate that this change could not have occurred on it's own, perhaps due to elapsed time, and fluctuation of OCD symptoms in general. While these studies effectively point to the value of CBT, it is important to evaluate the treatment in relation to other available options.

*Studies assessing CBT with "non-pure" samples.*

Studies in this section aimed to examine the efficacy of CBT, but did not use a "pure sample," in that participants were not all free from medications throughout the course of treatment. In response to this, the two studies described in this section conducted exploratory post-hoc analyses in an attempt to disentangle how outcomes may differ for participants on medication.

Franklin, Kozak, Cashman, Coles, Rheingold and Foa conducted the first study in 1998. The main goal of these authors was to obtain evidence of the efficacy of CBT. However, due to the way in which some participants received their treatment, they attempted to assess the difference that intense treatment versus weekly treatment may have on subsequent OCD symptom reduction. Specifically, the participants chose whether they would like to receive intensive treatment, defined as an average of 18 sessions of 90 minutes in length over one month, or to receive the less intensive weekly treatment consisting of an average 16 sessions of one hour in length over 4 months. Therefore, intense versus weekly treatment was not a controlled variable, but rather a condition which emerged through the course of the study, as participants selected themselves into the conditions based on the convenience to them. The feature of this study, which causes it to be included in this category of the review, is that some participants in each group also happened to be receiving medication. Medications being used by these participants varied, with some using only one type, and others using a combination of medications. These medications were being taken by participants

prior to their entry into the study, and they were therefore not asked to stop using them.

Franklin et al. (1998) reported that all of their participants experienced both obsessions and compulsions. The most common obsessions were described as “miscellaneous” (e.g., unlucky numbers) as they would not fit into any other category. There were two compulsions that were tied for being most common. These were mental (e.g., reviewing actions) and repeating (e.g., routines). Most participants presented with multiple obsessions and compulsions. Both treatment programs (intense and weekly) contained identical components of CBT, with the only difference being the rate by which the sessions were delivered. The CBT program was not described as being adapted from a manualized protocol, and a clear description of the program was not provided. From what was outlined in the article, components included education about OCD for both the patients and parents, with primary emphasis throughout treatment on E/RP, along with self-monitoring exercises as well as a brief focus on relapse prevention. There was no anxiety management training with the participants in this program. The number of sessions spent on various aspects was not outlined. Parent involvement was not a required component and varied depending on the age of the child.

Severity of OCD symptoms was assessed at pre- and post-treatment, as well as at a follow up (average 9 months). To assess the outcomes in this study, Franklin et al. (1998) used two different measures. Unfortunately, upon examination of the measures used in both studies in this section, neither was found to be in common. In this study, Franklin et al. (1998) chose to use the Yale-Brown Obsessive Compulsive Scale (Y-BOCS). There was no indication of why this measure was chosen over the Children’s Yale-Brown Obsessive Compulsive Scale (CY-BOCS), which is used in both studies in the previous section. The CY-BOCS is essentially the same instrument as the Y-BOCS, but is tailored specifically toward assessing children. Nevertheless, because of lack of other common measures, the results of this study as measured by the Y-BOCS will be described here, as the results could at least be roughly compared to those of the studies in the previous section. The reader should keep in mind, however, that the treatment design is different, and the assessment tool is not identical.

Participants engaging in the CBT program (both intensive and weekly combined as one group) experienced a significant reduction in symptom

severity with a mean symptom reduction of 67%. Furthermore, this study's follow-up assessment indicates that treatment gains appeared to have been maintained over time (displayed 62% reduction from initial score at pretreatment). Therefore, CBT in this study appeared to have successfully reduced severity of OCD symptoms, and this success was maintained. These results are similar to that found in the first category of studies. Franklin et al.'s results suggest that these treatment gains can be found despite the exclusion of traditional anxiety management training and that E/RP may be the active ingredient in CBT programs driving treatment outcome.

Franklin et al. (1998) conducted exploratory analyses to inquire whether there were differences present between intensive and weekly treatment outcomes. The results obtained indicate similar efficacy of both types of intervention, as the mean symptom reductions for intensive and weekly treatment at post-test were 70% and 64% respectively on the YBOCS. These results were similar to the findings at follow-up. Further, Franklin et al. (1998) conducted an exploratory analysis to assess differences in treatment outcomes for participants receiving CBT only, versus CBT plus concurrent medication. Inspection of the means indicates that both routes appeared to have been effective with CBT alone showing a symptom reduction of 84% at post-treatment and 55% for CBT plus medication. This suggests that CBT was effective with or without concurrent pharmacotherapy, with CBT alone appearing slightly more effective.

Franklin et al.'s study is lacking a comparison group; hence, one cannot safely conclude that the significant reduction in OCD severity across all participants is the result of the CBT program. In addition to this, although a good start, one cannot draw conclusions about the efficacy of drugs in combination with CBT, nor can one draw conclusions on the differential efficacy of intense versus weekly treatment. These conditions were not controlled for, but rather emerged through the course of the study (e.g., some participants who signed up just happened to be on medication already, and some participants could conveniently come to therapy more often). Therefore any differences in effects could be from the nature of the participants selecting themselves into those groups.

Piacentini, Bergman, Jacobs, McCracken, and Kretchman published the second study in 2002. As with Franklin et al. (1998), some participants in this sample engaged in CBT while concurrently taking medications. As



with the previous study, the authors also conducted an exploratory analysis on whether the combination of CBT with drugs had a differential effect on treatment outcome. Slightly over half of the participants were receiving psychotropic medication for their OCD symptoms throughout this study. A description of the presence of specific obsessions and/or compulsions in participants was not provided, as was done by Franklin et al. (1998). Participants were assessed before and after treatment. Unlike Franklin et al. (1998), this study did not conduct follow-up analyses.

The CBT program employed by this study was adapted from a manualized treatment protocol (Piacentini, Gitow, Jaffer, Graae, & Whitaker, 1994). Participants participated in an average of 12 one-hour sessions, conducted once per week. These sessions were described as including education about OCD, significant E/RP, behavioral reward programs, as well as cognitive restructuring to help children “distance themselves” from their OCD. The treatment program used in this study is similar to Franklin et al. (1998), however, they include more cognitive components, base their program on a manualized resource, and include a much more detailed explanation of the processes in the CBT protocol

Piacentini et al. (2002) used two measures to assess change in symptoms at post-test. Unfortunately, as mentioned previously, neither of these measures could be matched to those used by Franklin et al. (1998). Instead, results obtained from the NIMH Global Scale will be reported as this measure was also used in the previous category to compare the results of those studies (i.e. Benazon and Waters’ studies). Using this instrument, the authors state that the severity of OCD in participants significantly decreased by 45% from pre- to post-treatment. In Benazon et al. (2002) and Waters et al. (2001), results were reported relative to participants’ being classified as asymptomatic or minimally symptomatic and indicated by a score of 3 or less on the scale. In the study by Piacentini et al. (2002), significant results are reported using overall percentage of improvement. Closer investigation of the scores supplied in the results section show that the final scores at post-test in the current study averaged around a score of 5. Therefore, although a significant reduction was found, it must be noted that the symptom severity of the participants in this study is not as low as those reported in the first category. Nonetheless, one can conclude that all three studies using this scale evidenced a reduction of OCD symptom severity.

Piacentini et al. (2002) embarked on further analyses to tease apart the effects of combined medication. Evidence obtained indicates that decreases in symptom severity in those who received CBT in isolation did not significantly differ from those who received CBT concurrently with medications. Although this result was obtained using a different measure, a similar conclusion was drawn from Franklin et al.'s study (1998). However, as with Franklin et al.'s study in 1998, lack of random assignment to CBT only versus CBT plus medication, means that one cannot conclude that both methods are equally effective. Additionally, no comparison group was used; hence, one cannot conclusively attribute treatment gains to the CBT program.

Taken together, these studies suggest CBT to be effective even when anxiety management is not included as a component in the protocol and whether or not CBT is administered intensively or weekly. Moreover, it seems equally effective when used alone or in conjunction with medications. Although both CBT protocols appeared to be relatively similar in nature, only one of the two studies described in this category used a replicable manualized treatment program (Piacintini et al., 2002). These studies, however, are not directly comparable, as they did not use the same instruments to assess treatment outcomes. When compared to the results of studies described in the first category, however, the outcomes seem relatively consistent. This shows that CBT has similar effects on pure CBT populations as well as with mixed populations that include some participants who are concurrently on medications. These results, however, are based on exploratory analyses. To provide conclusive evidence, the efficacy of pure CBT must be compared in a controlled and randomized way to other methods of treatment.

*Controlled Trials of CBT compared to Pharmacotherapy.*

In 1998, De Haan, Hoogduin, Buitelaar, & Keijsers conducted a study in which participants were randomly assigned to either a behavior therapy only condition, or a medication only condition. Once these conditions were carried through for 12 weeks, participants who had not responded significantly to treatment were then put into an extension trial and given a combined therapy program involving both of the above to assess whether the combined program could further reduce OCD symptoms. Participants in each condition were "pure" in that they only received that

therapy to which they were assigned; no concurrent treatment was given. De Haan et al. (1998) did not describe the OCD characteristics of the sample, so it is not known whether they all presented with similar obsessions and compulsions. Participants in this study were assessed pre- and post-treatment, with exception of children in the extension trial, who were assessed after the combined therapy.

Participants in the behavior therapy condition attended 12 weekly sessions of treatment. The therapy program in this study is described as "behavior therapy" as opposed to CBT. Upon investigation of the elements in the program, the protocol employed here is roughly equivalent to all others included in this review. Specifically, it includes elements of patient and child education about OCD, and well as emphasis on E/RP. The cognitive components of the program were adapted from the manualized program (March et al., 1994), however the overall protocol was not manualized. The authors of this paper do not describe their therapy protocol in great detail aside from mentioning that the above were present. Nonetheless, as cognitive components were adapted from a manualized CBT protocol, the program can be considered somewhat comparable to others included in this review. Children assigned to the drug therapy condition were administered clomipramine (a Serotonin Reuptake Inhibitor) over the same period of 12 weeks that behavioral therapy was given to the first group.

De Haan et al. (1998) used four measures to assess treatment outcomes. The only measure in common with the next study in this section is the CY-BOCS so the results of that measure will be discussed here. The CY-BOCS scores for participants at post test revealed a significant interaction indicating behavior therapy was more effective than clomipramine in reducing symptom severity. The mean improvement (i.e., symptom reduction) by children in behavior therapy was 60% (with CY-BOCS scores of 22 at pretreatment and 9 at post-treatment), whereas the improvement in the clomipramine condition was 33% (with CY-BOCS scores of 23 at pre-treatment and 18 at post-treatment). This response in the behavior therapy condition is comparable to the improvement scores on this scale in the prior two categories. In this regard, Benazon et al. (2002) evidenced that 63% of their participants experienced a significant reduction in symptoms; Waters et al. (2001) described 86% of their participants as experiencing a significant reduction on the similar Y-BOCS scale; Franklin et al. (1998) described that their participants

experienced an overall 67% reduction in symptoms. In De Hann et al.'s (1998) study, non-responders from each group (i.e., those who did not improve by at least 30%) were given combined treatment with both behavioral therapies in addition to clomipramine for an additional block of 12 weeks. The mean CY-BOCS scores of these five patients showed an additional 30% improvement compared with their scores at the initial post-treatment. However, it cannot be conclusively stated the effects of this treatment were due to the combined nature of the two studies, or if the additional 12 weeks of therapy drove the change. Moreover, this study did not include a placebo condition as a control to the drug therapy condition, nor did it include a wait-list control for the behavioral therapy conditions.

The second article included in this category is also most recent to be found in this review (2004). This study was conducted by the Pediatric OCD Treatment Study Team (POTST) and includes the most highly controlled study of any described in this review paper thus far. One hundred and twelve participants were randomly assigned to one of four conditions: CBT alone, sertraline alone (Serotonin Reuptake Inhibitor), combined CBT with sertraline, or pill placebo. All four conditions in this study ran for a period of 12 weeks. Participants in each condition received only the treatment for which they were assigned; concurrent medications were not permitted. The specific characteristics of the OCD symptoms the participants presented with were not included. Participants in each condition were assessed before and after their respective 12 weeks of treatment, with no follow-up analyses.

Participants who were treated with CBT engaged in a program adapted from a manualized protocol (March & Mulle, 1998). This manual is the same one from which Benazon et al. (2002) adapted their protocol (in the first section of this review). This program included 14 visits over 12 weeks. With the exception of two visits per week for the first two weeks, the program was administered on a weekly basis, of approximately one hour each visit (Franklin, Foa, & March, 2003). The components involved psycho-education, cognitive training, as well as E/RP. Parents were encouraged to attend many of the sessions. Participants in the medication only condition, or the placebo pill condition, were seen weekly for medication adjustments, with each visit lasting approximately 30 minutes. Those who engaged in the combined treatment group received CBT and medication in a time linked manner

over 12 weeks so that both CBT and medication were administered in each visit.

POTST used only the CY-BOCS to assess treatment outcome. Scores on this measure indicated that combined treatment of CBT plus medication proved to be superior to CBT alone, to sertraline alone, and to placebo. CBT alone and sertraline alone did not differ significantly from one another, but both proved statistically superior to placebo. However, it was noted that the CBT alone group (CY-BOCS score reduction of 12 points from pre to post) did have a slightly larger effect size than that of sertraline alone (CY-BOCS score reduction of 7 points pre to post). Overall this study concludes that CBT is highly effective either alone or in combination with medication. An investigation of these CY-BOCS score changes is comparable to the changes found in De Haan et al.'s study (1998) using clomipramine. De Haan's CYBOCS reduction from CBT alone was 13 points compared to the current POTST reduction of 12. In the medications condition, although different brands of SRIs were used, de Haan's reduction was 5 points compared to the current reduction of 7 points on the scale. Thus these two studies taken together indicate that CBT is an effective alternative to medications.

### Summary

Descriptions of whether participants were experiencing obsessions, compulsions, or both were not common among all studies. Only two of the six studies gave this information. For a research study to be beneficial to the general public, it is important to know exactly for what type of participants the treatment was proven to be effective. Five of the six studies based components of their CBT programs on manualized protocol. All studies spanned their treatment between 12 to 14 sessions, although some stretched this across a longer period of time. Most programs contained the same elements, all placing heavy emphasis on E/RP. Across all six studies, a total of 16 different measurement instruments were used to assess treatment outcomes. The most commonly used instrument was the CY-BOCS, which was used by 4 of the 6 studies. The Y-BOCS (adult version of the CY-BOCS) was used in one of the remaining studies.

Although different instruments were used across the studies, comparisons could be made based on results on common measures described above. In the first category, results of both studies were

compared on both the CY-BOCS and the NIMH Global. Benazon et al. (2002) found that 63% of their participants achieved a greater than 50% reduction in symptom severity according to the CY-BOCS. Comparatively, Waters et al. (2001) found that 86% of their participants experienced a greater than 40% reduction in their symptom severity on this measure. In reference to findings based on the NIMH Global Scale, Benazon et al (2002) found 44% of their sample to be asymptomatic at post-test, where Waters et al. (2001) found 71% of their sample to be either asymptomatic, or presenting with minimal symptoms. Waters et al. (2001) used more lenient reporting than Benazon et al. (2002), nonetheless, the results are comparable, and overall speak to the efficacy of CBT.

The second category of studies did not have instruments that could be compared to one another. Therefore, results of studies in this section are compared to the results of the studies in the first category using the same measures. Franklin et al. (1998) used the adult version of the CY-BOCS (the Y-BOCS) to assess treatment outcome. On this measure they found an overall 67% symptom reduction in their sample. This result is reported slightly differently from the above category, which reported that 63% and 86% of their participants reported a 40% or greater reduction in symptom severity (Benazon et al., 2002; Waters et al., 2001 respectively). Franklin et al. (1998) did not report any significant differences in effectiveness of CBT when administered intensively or weekly. They also did not find any advantage of the combination of CBT with medications. The study by Piacentini et al. (2002) utilized the NIMH Global Scale. Using this instrument they found that overall symptom severity of their sample decreased by 45%. As with Franklin et al. (1998), these results are reported differently from those in the first category. The results in the first category were reported according to a scaled score representing whether participants were asymptomatic or minimally symptomatic. In this regard, it was found that participants in the study by Piacentini et al. (2002), averaged a post-test score of around 5, compared to an average score in Benazon et al. (2002) of 2, and Waters et al. (2001), of 3 or lower.

In the final category of studies, both de Haan et al. (1998) and POTST (2004) reported results based on CYBOCS scores. De Haan et al. (1998) found a reduction of 13 points on symptom severity in the CBT alone group compared to POTST (2004) reduction of 12 points. In their

respective medication conditions, de Haan et al. (1998) found a reduction of 5 points on this scale, whereas POTST et al. (2004) identified a 7-point reduction.

Of the six studies included in this review, only two examined whether treatment gains would be maintained over time. In this regard, treatment gains were maintained on CY-BOCS and Y-BOCS instruments (Benazon et al., 2002; Franklin et al., 1998 respectively). Both these scales assess severity of OCD symptoms. However treatment gains were not maintained on the NIMH Global scale in the Waters et al. (2001) study.

The treatment design of studies in category one which assessed CBT in “pure samples” (Benazon et al., 2002; Waters et al., 2001) did not include comparison groups. Although they each found CBT to be successful overall, one must keep in mind these results could possibly be due to, for example, time effects or fluctuations in the course of OCD.

Studies in the second category were designed to assess CBT, however; they used “non-pure” samples where some participants were on concurrent medications (Franklin et al., 1998; Piacentini et al., 2002). The overall limitation of the design in this category is the general lack of controls. There was no random assignment in Franklin et al. (1998) to intense or weekly treatment. Instead participants selected themselves into which treatment was more convenient for them. In both studies in this section, participants who were already on medications prior to the study were not asked to stop taking them.

Finally, the De Haan (1998) and POTST (2004) studies were much better at controlling their conditions. Nonetheless, De Haan (1998) did not include a placebo group or wait list control group for which to compare the medication condition and CBT condition. However, POTST (2004) did include a placebo group to ensure that the effects of the SRI were due to the medication, and not the result of a placebo effect.

### Conclusion

The general conclusion from this review is that CBT appears to be an effective approach in treating children and adolescents with OCD. As was outlined by the De Haan et al. (1998) and POTST (2004) studies, CBT seems to be as effective as medication. It appears that Expert Consensus Treatment guidelines are generally well founded in their recommendation that CBT should be a first line of treatment for children with obsessive-compulsive disorder (March et al., 1997).

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