Cognitive Versus Behavior Therapy in the Group Treatment of Obsessive–Compulsive Disorder

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This study examined the effects of cognitive–behavior therapy (CBT) compared with traditional behavior therapy (exposure and response prevention [ERP]) in the group treatment of obsessive–compulsive disorder. Of the 76 participants who started treatment, 38 were wait-listed for 3 months before treatment to assess possible course effects. Both treatments were superior to the control condition in symptom reduction, with ERP being marginally more effective than CBT by end of treatment and again at 3-month follow-up. In terms of clinically significant improvement, treatment groups were equivalent on the conclusion of treatment, but 3 months later significantly more ERP participants met criteria for recovered status. Only 1 of 7 belief measures changed with treatment improvement, and the extent of this cognitive change was similar between CBT and ERP groups. Discussion includes consideration of optimal formats for the delivery of different types of treatment.

Historically considered resistant to psychological interventions, obsessive–compulsive disorder (OCD) is a common mental disorder that often causes considerable distress and functional impairment. Meyer (1966) was the first to report OCD treatment success using exposure and response prevention. Subsequent researchers' experimental work clarified the nature of OCD (e.g., Foa & Kozak, 1986; Rachman & Hodgson, 1980) and gave further direction to a succession of controlled clinical trials (see Steketee, 1993, for review) that used behavioral therapy. These trials returned encouraging results and established exposure and response prevention (ERP) as the psychological treatment of choice for OCD. Van Balkom et al. (1994) reported an average effect size for behavior therapy of 1.46, which was significantly more therapeutic than placebo conditions in both self- and assessor-rated measures. Despite immediate results in the range of a 70% average decline in symptoms for those who completed this form of behavioral therapy (Foa, Steketee, & Ozarow, 1985), a minority of participants did not improve with treatment and others declined treatment or dropped out, largely because of the requirements of treatment (i.e., exposure and ritual prevention). Considering treatment refusers, dropouts, and those who do not benefit immediately from treatment or who subsequently relapse, researchers have estimated the proportion of OCD participants who can be considered successfully treated by behavioral therapy through to long-term follow-up to drop to about 55% (Stanley & Turner, 1995). In addition, behavioral therapy has proved to be relatively ineffectual in treating obsessions with covert compulsions (Rachman, 1997).

A number of cognitive theorists have proposed that OCD can be conceptualized and treated cognitively. Specifically, because intrusive and distressing thoughts, along with associated beliefs and assumptions, play such a prominent role in the manifestation of OCD, it is felt that targeting dysfunctional cognitions will provide a more comprehensive treatment than ERP. Salkovskis (1985, 1998) detailed a cognitive theory of OCD proposing that intrusive thoughts, images, or impulses are misinterpreted in characteristic ways that foster attempts to suppress the intrusive thoughts and the urge to neutralize the distressing effects of the thoughts through cognitive or behavioral compulsions. Central in Salkovskis’s cognitive model is the faulty appraisal that promotes the notion of exaggerated personal responsibility for events that will bring harm to oneself or, more typically, to others. Faulty appraisals are thought to derive from maladaptive assumptions learned over the life course. Other researchers in the field have identified appraisals that may be distinct from inflated responsibility. For example, Rachman (1997) and Freeston, Rheaume, and Ladouceur (1996) have elucidated faulty appraisals characteristic of obsessions with covert compulsions, and the international Obsessive Compulsive Cognitions Working Group (1997) has identified a limited list of
faulty appraisals for field testing in the development of a cognitive-assessment measure.

By addressing the appraisals and beliefs associated with OCD, therapists suggest it is possible that clinical outcomes will improve, as such beliefs are directly engaged in treatment. OCD sufferers who refuse or drop out of ERP treatments may also find cognitive treatments more acceptable, thus also enhancing clinical outcomes.

Several controlled trials have been conducted that compared various forms of cognitive therapy and ERP interventions, alone or in combination (Emmelkamp & Beens, 1991; Emmelkamp, van der Helm, van Zanten, & Plochg, 1980; Emmelkamp, Visser, & Hoekstra, 1988; Freeston et al., 1997; van Oppen et al., 1995). Generally, these behavioral and cognitive treatments for OCD have been found to be comparable in efficacy, but various design limitations restrict conclusions. Most of these studies had small sample sizes, and all but two (Freeston et al., 1997; van Oppen et al., 1995) used early cognitive treatments that did not address the faulty appraisals thought to be particularly relevant to OCD. Although Freeston et al.'s (1997) study was the only one to use comprehensive cognitive measures to assess OCD-related beliefs, it did not include a behavioral comparison group and was restricted to participants with covert rituals. The studies delivered treatment on an individual basis. Recently, Himle (2000) reported effective group treatment results with behavior therapy that indicated the economy of scale available with group treatment may be transferable to this population.

There are three objectives to the present study: (a) to compare the treatment efficacy of contemporary cognitive–behavioral therapy (CBT) with ERP in the group treatment of OCD; (b) to investigate the degree to which CBT, relative to ERP, is effective in inducing cognitive change in OCD participants, specifically beliefs considered salient to key cognitive distortions in OCD; and (c) to identify predictors of treatment outcome in both treatments.

Method

Participants

Participants were recruited through physician referral, newspaper advertisements, and other media features. Inclusionary criteria consisted of a primary OCD diagnosis, according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 1994); participants had to exhibit a minimum symptom duration of 1 year, be between 18 and 65 years of age, be fluent in written and spoken English, and express a willingness and commitment to complete the treatment and required assessments. Exclusion criteria included active thought disorder, mental retardation or organic mental disorder, commencement or change in psychotropic medication in the 3 months prior to assessment, any physical condition that would prevent completion of treatment, and concurrent psychological treatment for any Axis I or II disorder, aside from marital therapy and supportive therapy for depression.

Design

A 2 (treatment type: CBT or ERP) X 2 (time: immediate or delayed) blocked random assignment design was used. All participants were assessed pretreatment, posttreatment, and at 3-month follow-up. Participants in the delayed condition completed two pretreatment assessments, one at the beginning of the 3-month waiting period and one at the end, immediately before beginning treatment. During follow-up, participants were discouraged but not prohibited from obtaining further treatment.

Procedure

Prior to diagnostic assessment, potential participants were screened on the telephone. Those participants who passed the phone screen were assessed with two clinician administered assessment devices. The Structured Clinical Interview for DSM-IV (SCID; First, Spitzer, Gibbon, & Williams, 1996) was used to establish the presence or absence of Axis I diagnoses, and the Yale–Brown Obsessive–Compulsive Scale (Y-BOCS; Goodman et al., 1989) was used to determine the severity of OCD symptoms. Assessment interviews were audiotoaped, and 20% were selected at random and independently scored to determine interrater reliability. With regard to the presence or absence of OCD, there was high agreement between raters (k = .95). There was disagreement on 1 case out of 19, which was an atypical OCD presentation. This participant subsequently refused treatment. The correlation between the two raters on Y-BOCS total score was .85.

Participants who passed the diagnostic assessment completed a second individual assessment with a clinician who would be one of their two group therapists. The purpose of these second assessments was twofold: (a) to develop a case-based formulation and (b) to introduce the model and rationale for treatment and develop an initial treatment plan. The treatment plan in the ERP condition included developing exposure hierarchies, whereas the CBT condition included identifying appraisals and designing possible behavioral experiments. The duration of the second assessment sessions was typically between 2 and 3 hr.

In between the first and second assessment, participants were given their pretreatment packet of questionnaires (or, pretreatment, one for participants in the delayed condition). These questionnaires and the SCID and Y-BOCS assessments were completed at the end of treatment and again 3 months after treatment was completed. Prior to each of their therapy sessions, participants completed a self-report Y-BOCS (Baer, Brown, Beasley, Sorce, & Henriques, 1993). After the second treatment session, participants completed the Reaction to Treatment Questionnaire (Borkovec & Nau, 1972) to assess treatment-outcome expectations.

Measures

Thought Action Fusion Scale (TAF; Shafran, Thordarson, & Rachman, 1996). The TAF Scale is a 19-item questionnaire designed to assess the extent to which participants equate thought and action. Items are rated from 0 (strongly disagree) to 4 (strongly agree). Three subscales have been found to be factorially distinct: (a) having a thought about yourself makes it more likely to happen (Likelihood for Self TAF); (b) having a thought about yourself makes it more likely to happen (Likelihood for Others TAF); and (c) to identify predictors of treatment outcome in both treatments.

Inventory of Beliefs Related to Obsessions (IBRO; Freeston, Ladouceur, Gagnon, & Thibodeau, 1993). The IBRO is a 20-item scale rated from 1 (I believe strongly that this statement is false) to 6 (I believe strongly that this statement is true). It is designed to measure strength of belief and meaning of unwanted intrusive thoughts. The IBRO yields three factorially distinct subscales: inflated responsibility, overestimation of threat, and intolerance of uncertainty. The IBRO has adequate validity and reliability.

Responsibility Attitude Scale (R-Scale; Saltkvik et al., 2000). The early version of the R-Scale we used in this study was a 30-item questionnaire designed to assess beliefs about responsibility characteristic of people with OCD. The final version of the R-Scale has been shown to have good reliability and validity (convergent and known groups). Items are rated from 0 (totally disagree) to 5 (totally agree). Beck Depression Inventory (BDI; Beck & Steer, 1987). The BDI is a 21-item questionnaire designed to assess depressive symptoms. Items are
Y-BOCS. A semistructured interview that yields symptom-severity scores separately for obsessions and compulsions, the 10-item Y-BOCS has good psychometric properties (Taylor, 1998) and is commonly used to assess treatment response. Rosenfeld, Dar, Anderson, Kobak, and Greist (1992) developed a self-report version of the Y-BOCS that produces results that correspond to the interview version (Steketee, Frost, & Bogart, 1996).

Therapists

The lead therapists for this study were licensed clinical psychologists, all with experience in cognitive–behavioral treatment of anxiety disorders, including OCD. Cotherapists were licensed clinical psychologists or psychology interns. Therapy sessions were audiorecorded and rated by a peer reviewer for adherence to the treatment manual. Ratings were made on a scale of 0 to 10, with each rating corresponding to preestablished guidelines. Feedback was given to the group therapists by the peer reviewer prior to each session. Average adherence to both protocols was 8.1; the range of mean adherence scores for the groups was 6.1–9.58. Mean adherence to the CBT protocol was 8.5; mean adherence to the ERP protocol was 7.7. This difference was not significant. These numbers indicate that treatment sessions corresponded well to the manual, with minor exceptions (e.g., a portion of treatment [i.e., homework review] taking too long, assigning and not collaboratively agreeing on homework, within the CBT condition a group member who did not engage in cognitive challenging during the session, or a vague mention of the cognitive–behavioral model).

Treatments

Both treatments were conducted in groups of 6–8 participants with two therapists. Treatment was 12 consecutive weeks in duration, 2.5 hr per session.

ERP. The manual for the ERP condition was adapted from VanNoppen, Steketee, and Pato (1994), which was used in a recent pilot study (VanNoppen, Steketee, McCorkle, & Pato, 1997). The first session included education about and definition of OCD, in-depth presentation of the model and rationale for treatment, an ERP demonstration by one group member that allowed therapists to explain proper use of the self-monitoring forms, and an initial assignment of home-based ERP. Subsequent sessions began with a review of the behavioral model for OCD, review of homework, in-session graduated ERP according to prearranged-hierarchy steps, and assigning home-based ERP. When success was achieved, participants were asked to use the behavioral model to account for their improvement (i.e., repeatedly tolerating the anxiety and preventing the typical compulsive response produced habituation). Non- or partial completion of homework was addressed at each session, with the assistance of other group members to testify to the importance of home-based ERP. The final session included relapse prevention, a review of skills learned during treatment, and a plan was made to confront any outstanding hierarchy step(s) that were unaddressed during treatment.

CBT. The manual for the CBT condition was based on the writings of cognitively oriented OCD researchers (e.g., Freeston et al., 1996; Salkovskis, 1996; van Oppen & Aritz, 1994). Similar to the ERP condition, the first CBT session involved education about and definition of OCD, presentation of the model and rationale for treatment. The model is adapted from Salkovskis (1996) and begins with a trigger leading to an intrusive thought, followed by an appraisal. Appraisal is followed by two events that are hypothesized to occur simultaneously: distress and the urge to neutralize or engage in compulsive behavior. From the literature, six types of faulty appraisals were identified and discussed during treatment: (a) overimportance of thoughts, (b) overestimation of danger, (c) inflation of responsibility, (d) overestimation of the consequences of danger, (e) overestimation of the consequences of responsibility, and (f) need for certainty–control–perfectionism. Beginning with Session 2, 1–2 of these faulty appraisals were discussed and methods to challenge them were introduced. A group member provided an example that demonstrated how to challenge a particular faulty appraisal. Cognitive challenging resulted in the derivation of an alternative appraisal. Evidence for and against the alternative appraisal was achieved by completing behavioral experiments and other challenge techniques. Participants were encouraged to be objective when doing behavioral experiments: to behave like a scientist and not assume that the original OCD appraisal is correct without the supporting evidence. Behavioral experiments had similar features to ERP; however, the function was different. In ERP, the purpose of repeated exposure was habituation. Behavioral experiments that were completed in the CBT condition were always done to test an appraisal. The recognition of alternative more adaptive appraisals was the goal and not habituation of anxiety. Once each of the faulty appraisals had been introduced and participants were comfortable in challenging appraisals and conducting experiments, challenging beliefs were introduced. Beliefs (e.g., “I must always be in control of my thoughts and emotions”) were conceptualized as leading to appraisals. Once identified, similarities between group members were discussed, descriptors were listed (e.g., rigid or unattainable), impact on daily functioning was discussed, and challenges were introduced. The final session was similar to the ERP condition: relapse prevention, review of skills learned to date, and development of a treatment plan for participants to act as their own therapist in future.

Normalization occurred throughout treatment and began with an explanation of the universality of intrusions independent of OCD diagnosis (i.e., more than 90% of the population has experienced an intrusive thought; Rachman & De Silva, 1978). In addition to normalization, other strategies we used to change appraisal included surveys, information from an expert (when a knowledge deficit existed), and behavioral experiments. Appraisal change exercises were demonstrated during treatment sessions and were assigned weekly as homework. For a more detailed review of the CBT treatment refer to Whittal and McLean (1999).

Results

Preliminary Analyses

Attrition. Participant attrition as well as outcome is presented in Table 1. At the beginning of the study, 93 participants met study criteria, were offered treatment, and accepted treatment, at least tentatively. Three participants were excluded from the study prior to beginning treatment: 2 changed their medications during the waiting list period and 1 was considered inappropriate for group treatment because of very poor social skills and impulse control problems. Fourteen participants who had initially accepted treatment refused to participate before treatment began: 12 in the CBT condition (3 in immediate groups, 9 in delayed) and 2 in the ERP condition (both in the delayed group). Compared with the immediate groups, significantly more participants in the delayed groups refused treatment, \( \chi^2(1, N = 90) = 5.85, p = .016 \). In addition, significantly more participants in the CBT condition refused treatment compared with the ERP condition, \( \chi^2(1, N = 90) = 7.94, p = .005 \). This finding is surprising because there was little difference between the two conditions before the first treatment session. Collapsing groups, there was no significant difference in pretreatment Y-BOCS scores, belief measures, depression, age, gender, or disability status between refusers and nonrefusers ( \( ps > .05 \)). Participants who refused treatment at this stage were less likely to be using medication than were nonrefusers, \( \chi^2(1, N = 90) = 6.98, p = .008 \). Within the CBT condition, refusers were less likely to be using medication, less depressed according to BDI.
To meet criteria for recovered status, participants had to show reliable exclusion from the study during treatment (1 in the CBT condition and 42 in the ERP condition. Three participants were excluded prior to treatment (ps < 0.05). Most of the patients who refused likelihood of recovery was of the patients (ps < 0.05). The most common reasons for dropping out of treatment were difficulty getting off work to come to sessions, serious illness, and family conflicts. A total of 63 participants completed treatment, 30 (48%) were currently using medication for their OCD. Six participants were using multiple medications (3 selective serotonin reuptake inhibitors (SSRI) plus benzodiazepine, 1 tricyclic plus benzodiazepine plusloxapine, 1 SSRI plus augmenting medications, 1 tricyclic plus SSRI), 13 participants were using an SSRI alone, 5 tricyclic antidepressants alone, 4 benzodiazepines alone, and 2 were using other types of medication (1 lithium, 1 valproic acid). There were no differences at pretreatment between participants who used and who did not use medication on age, gender, disability status, duration of OCD symptoms, or Y-BOCS scores. Unfortunately, the distribution of medication use was not equal between the groups, with nearly twice as many medication users in the ERP condition than in the CBT condition, a difference that approached statistical significance, \( \chi^2(1, N = 63) = 3.60, p = .058 \). However, in the analysis of group differences in outcome, there was no interaction between medication use and type of treatment received.

Waiting list period. A paired-samples Hotelling \( T^2 \) analysis comparing first- and second-baseline measures on Y-BOCS total scores (obsessions plus compulsions), Y-BOCS avoidance, BDI, the 3 TAF subscales, the 3 IBRO subscales, and the R-Scale was not significant \( (F < 1) \). Correlation coefficients between the two baselines for these dependent variables ranged from .64 to .92. Thus, the scores of the 33 participants in the waiting-list control condition remained stable over the delay period. We also compared the postwaiting-list scores of the delayed participants with the pretreatment scores of the immediately treated participants on the 10 variables listed above using a multivariate analysis of variance and found no difference between the groups \( (F < 1) \).

Because participants in the waiting-list condition were randomly assigned to receive treatment (ERP or CBT) after the delay period, and the participants’ scores remained consistent over the delay period, we pooled delayed participants with the immediately treated participants to increase power for comparisons between ERP and CBT treatments.

Similarity between CBT and ERP samples. For treatment completers \( (n = 63) \), there were no differences between participants in the CBT and ERP conditions on demographic variables of gender, age, marital status, education level, employment status, or ethnicity. As mentioned, more participants in the ERP condition were using medication (63%) compared with the CBT group (36%). We compared the pretreatment scores of the two groups on the outcome variables Y-BOCS total, Y-BOCS avoidance, BDI, the 3 TAF subscales, the 3 IBRO subscales, and the R-Scale. The pretreatment and posttreatment means and standard deviations are presented in Table 2. A between-groups (CBT vs. ERP) Hotelling \( T^2 \) on the pretreatment scores for these 10 variables was not significant \( (F < 1) \). The ERP and CBT samples appeared to be well-balanced, aside from the differing frequency of medication use. At the beginning of the second session, the two groups completed a short measure of treatment credibility. There was no difference between the groups on this measure (30.0 for CBT, 30.6 for ERP) or on the mean number of treatment sessions attended (10.6 out of 12 for CBT, 10.2 for ERP). Comorbidity rates between the two treatment groups were equivalent, with 50% of ERP and 51% of CBT group participants having at least one other Axis I disorder.

### Table 1
Participant Attrition and Outcome

<table>
<thead>
<tr>
<th>Participant</th>
<th>Total</th>
<th>CBT</th>
<th>ERP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offered treatment and accepted</td>
<td>93</td>
<td>49</td>
<td>44</td>
</tr>
<tr>
<td>Excluded prior to treatment beginning</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Dropped out prior to treatment beginning</td>
<td>14</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Started treatment</td>
<td>76</td>
<td>34</td>
<td>42</td>
</tr>
<tr>
<td>Excluded during treatment</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Dropped out during treatment</td>
<td>10</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Completed treatment</td>
<td>63</td>
<td>31</td>
<td>32</td>
</tr>
<tr>
<td>Met criteria for recovered status posttreatment</td>
<td>17</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>Not recovered at posttreatment</td>
<td>46</td>
<td>26</td>
<td>20</td>
</tr>
<tr>
<td>Available at follow-up</td>
<td>61</td>
<td>30</td>
<td>31</td>
</tr>
<tr>
<td>Maintained recovered status posttreatment to follow-up</td>
<td>14</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Remained not recovered posttreatment to follow-up</td>
<td>40</td>
<td>24</td>
<td>16</td>
</tr>
<tr>
<td>Improved from posttreatment to follow-up</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Recovered posttreatment but not at follow-up</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Recovered at follow-up</td>
<td>18</td>
<td>4</td>
<td>14</td>
</tr>
</tbody>
</table>

Note. CBT = cognitive-behavior therapy; ERP = exposure and response prevention.

**A total of 76 participants began treatment, 34 in the CBT condition and 42 in the ERP condition.** Three participants were excluded from the study during treatment (1 in the CBT condition, 2 in the ERP condition): 2 participants stopped taking their medication and 1 was found to have a primary delusional disorder. In addition, 10 participants dropped out of treatment, 2 in the CBT condition and 8 in the ERP condition, but this difference was not statistically significant, \( \chi^2(1, N = 73) = 2.97, p = .085 \). Participants were considered to have completed treatment if they attended at least seven sessions and completed the posttreatment interview assessment. Compared with participants who completed treatment, those who dropped out did not differ significantly in age, gender, disability status, or medication use, but the dropouts had higher pretreatment Y-BOCS scores, \( t(71) = 3.56, p = .001 \), indicating that participants who dropped out of treatment tended to have more severe OCD symptoms. Reasons for dropping out of treatment included difficulty getting off work to come to sessions, serious illness, and family conflicts. A total of 63 participants completed treatment, 31 in the CBT condition and 32 in the ERP condition.

**Demographics of treatment completers \( (n = 63) \).** Participants (33 men, 30 women) had an average age of 35 years (range = 18–56). As a group, they were relatively well educated: 3 (5%) had some high school education, 14 (22%) had graduated from high school, 19 (30%) had some postsecondary education, 9 (14%) had graduated from a 2-year postsecondary program, and 18 (29%) had graduated from a 4-year postsecondary program. The sample was predominantly European Canadian (49, or 78%), with 11 Asian (17%), 1 First Nations (2%), and 2 participants with other ethnic backgrounds (3%).

**Psychotropic medications.** Of the 63 participants who completed treatment, 30 (48%) were currently using medication for their OCD. Six participants were using multiple medications (3 selective serotonin reuptake inhibitors (SSRI) plus benzodiazepine, 1 tricyclic plus benzodiazepine plusloxapine, 1 SSRI plus augmenting medications, 1 tricyclic plus SSRI), 13 participants were using an SSRI alone, 5 tricyclic antidepressants alone, 4 benzodiazepines alone, and 2 were using other types of medication (1 lithium, 1 valproic acid). There were no differences at pretreatment between participants who used and who did not use medication on age, gender, disability status, duration of OCD symptoms, or Y-BOCS scores. Unfortunately, the distribution of medication use was not equal between the groups, with nearly twice as many medication users in the ERP condition than in the CBT condition, a difference that approached statistical significance, \( \chi^2(1, N = 63) = 3.60, p = .058 \). However, in the analysis of group differences in outcome, there was no interaction between medication use and type of treatment received.
### Descriptive Statistics and Between-Groups Effect Sizes for Outcome Variables at Pretreatment, Posttreatment, and Follow-Up for Participants Who Completed Treatment

<table>
<thead>
<tr>
<th>Pretreatment</th>
<th>Posttreatment</th>
<th>Effect size (CBT vs. ERP)</th>
<th>Follow-up</th>
<th>Effect size (CBT vs. ERP)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CBT (n = 31)</td>
<td>ERP (n = 32)</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Y-BOCS Total</td>
<td></td>
<td></td>
<td>21.9</td>
<td>5.8</td>
</tr>
<tr>
<td>Y-BOCS Obsessions</td>
<td></td>
<td></td>
<td>11.5</td>
<td>2.8</td>
</tr>
<tr>
<td>Y-BOCS Compulsions</td>
<td></td>
<td></td>
<td>10.5</td>
<td>4.1</td>
</tr>
<tr>
<td>BDI</td>
<td></td>
<td></td>
<td>18.7</td>
<td>10.7</td>
</tr>
<tr>
<td>TAF—Moral</td>
<td></td>
<td></td>
<td>20.1</td>
<td>14.2</td>
</tr>
<tr>
<td>TAF—Likelihood for Others</td>
<td></td>
<td></td>
<td>3.2</td>
<td>4.5</td>
</tr>
<tr>
<td>TAF—Likelihood for Self</td>
<td></td>
<td></td>
<td>3.1</td>
<td>3.4</td>
</tr>
<tr>
<td>IBRO—Inflated responsibility</td>
<td></td>
<td></td>
<td>42.3</td>
<td>10.2</td>
</tr>
<tr>
<td>IBRO—Overestimation of threat</td>
<td></td>
<td></td>
<td>19.5</td>
<td>5.5</td>
</tr>
<tr>
<td>IBRO—Intolerance of uncertainty</td>
<td></td>
<td></td>
<td>23.3</td>
<td>4.8</td>
</tr>
<tr>
<td>R-Scale</td>
<td></td>
<td></td>
<td>81.1</td>
<td>32.5</td>
</tr>
</tbody>
</table>

Note: $\eta^2$ is an index of effect size, representing the proportion of variability in the dependent variable (posttreatment scores) that is accounted for by the independent variable (treatment type: ERP vs. CBT). A value of 0 indicates no effect. Because of missing data on some self-report measures, some of the means are based on ns less than indicated above. CBT = cognitive-behavior therapy; ERP = exposure and response prevention; Y-BOCS = Yale-Brown Obsessive-Compulsive Scale (interview format); BDI = Beck Depression Inventory; TAF = Thought Action Fusion Scale; IBRO = Inventory of Beliefs Related to Obsessions; R-Scale = Responsibility Attitude Scale.

1. Effect sizes were calculated using unadjusted means to enhance comparability with other studies; particularly existing meta-analyses of treatment outcome. The analysis used $\eta^2$, which typically do not report effect sizes for covariate-adjusted means. When medication use was used, there were no significantly different groups. The two groups were not significantly different as a covariate. The analysis was repeated when medication use was added, with both variables were conducted within each condition.

### Treatment Outcome: CBT Versus ERP

To examine the efficacy of treatments, we compared the two treatment groups at posttreatment with a one-way ANCOVA of Y-BOCS total scores, with pretreatment Y-BOCS total scores as a covariate. The groups consisted of 46 patients: 42 conducted two ERP groups and four CBT groups, with 24 participants in the control condition, 22 in the ERP condition, and 22 in the CBT condition. The groups consisted of 24 participants in the control condition, 22 in the ERP condition, and 22 in the CBT condition. The groups consisted of 24 participants in the control condition, 22 in the ERP condition, and 22 in the CBT condition. The groups consisted of 24 participants in the control condition, 22 in the ERP condition, and 22 in the CBT condition. The groups consisted of 24 participants in the control condition, 22 in the ERP condition, and 22 in the CBT condition. The groups consisted of 24 participants in the control condition, 22 in the ERP condition, and 22 in the CBT condition.
Table 3
Descriptive Statistics and Effect Sizes for Treatment Versus Waiting-List Control: Yale-Brown Obsessive-Compulsive Scale (Interview Format)

<table>
<thead>
<tr>
<th>Participant</th>
<th>M</th>
<th>SD</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waiting-list control (delayed; n = 33)</td>
<td>23.24</td>
<td>5.58</td>
<td></td>
</tr>
<tr>
<td>Postwaitlist</td>
<td>22.42</td>
<td>5.45</td>
<td></td>
</tr>
<tr>
<td>CBT (immediate treatment; n = 18)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretreatment</td>
<td>21.94</td>
<td>6.11</td>
<td></td>
</tr>
<tr>
<td>Posttreatment</td>
<td>16.94</td>
<td>5.80</td>
<td>0.98</td>
</tr>
<tr>
<td>ERP (immediate treatment; n = 16)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretreatment</td>
<td>22.25</td>
<td>5.13</td>
<td></td>
</tr>
<tr>
<td>Posttreatment</td>
<td>12.56</td>
<td>7.30</td>
<td>1.62</td>
</tr>
</tbody>
</table>

Note. Waiting-list condition includes all participants who completed the waiting-list condition, even if they later dropped out of treatment. Cohen’s d calculated as \((M_{\text{postwaitlist}} - M_{\text{posttreatment}})/SD_{pool}\) for each treatment condition, cognitive-behavior therapy (CBT) and exposure and response prevention (ERP).

was no significant interaction between treatment type and medication use \((F < 1)\), and the main effect of medication use was also nonsignificant \((F < 1)\). However, the additional within-groups variation explained by medication use was sufficient to make the main effect of treatment type significant at \(\alpha = .05\), \(F(1, 58) = 4.06, p = .049\), in favor of ERP (adjusted posttreatment \(M = 13.16\)) over CBT (adjusted posttreatment \(M = 16.27\)).

Y-BOCS self-report. The Y-BOCS self-report measure, which participants completed at each treatment session, enables us to make the main effect of treatment type significant at a = .05. The adjusted posttreatment mean for ERP was 12.83, compared with 17.24 for CBT.

Follow-Up

Of the original 63 treatment completers, 61 (97%) were available for follow-up assessment at 3 months. We compared treatment type at follow-up using a one-way ANCOVA of follow-up Y-BOCS total scores (interview format) with pretreatment scores as a covariate. At follow-up, there was still a significant advantage for ERP over CBT, \(F(1, 58) = 6.87, p < .05\). The adjusted posttreatment mean Y-BOCS total score for ERP was 12.83, compared with 17.24 for CBT.

Clinical Significance

We evaluated clinically significant change using the suggested criteria of Jacobson and Truax (1991). They suggested defining as “recovered” any participant whose score on a measure of symptom severity (a) has reduced by a reliable amount (the reliable change index) and (b) is in the nondysfunctional range. We used the interview Y-BOCS total score to determine recovered status. Consistent with the established literature, we used the same criteria as van Oppen et al. (1995) for both the reliable change index and the cutoff score for nondysfunctional range to enhance comparisons between our study and theirs. To be considered to have recovered, a participant’s Y-BOCS total score had to decrease by at least 6 points from pretreatment to posttreatment, and his or her final Y-BOCS total score had to be less than 12.

The numbers of participants who were considered recovered by the above criteria in each treatment condition are presented in Table 1. Of the 63 participants who completed treatment, 16% of the CBT group and 38% of the ERP group recovered. This difference was not significant using Fisher’s exact test \((p = .09)\). From posttreatment to follow-up, 1 additional participant in the CBT group attained recovered status, but 2 participants no longer met the criteria; 3 additional participants in the ERP group attained recovered status, but 1 no longer met the criteria. At the 3-month follow-up, 13% of the CBT group and 45% of the ERP group were recovered, a significant difference found by conducting Fisher’s exact test \((p = .01)\). An alternative method of assessing clinical significance involves normative comparisons, wherein the posttreatment status of a clinical sample is tested for equivalency to a normative sample on the same measure (Kendall, Marrs-García, Nath, & Sheldrick, 1999). However, the Y-BOCS interview lacks norms based on representative nonclinical samples, which preclude such a comparison.

The different rates of treatment refusal and dropout between the two treatment groups (ERP having a marginally higher drop-out rate; CBT a higher refusal rate) may complicate interpretation of our finding that more treatment completers in the ERP condition had recovered. However, if we assume that no treatment dropouts were overrepresented in the ERP condition, the ERP condition resulted in significantly more improvement in self-reported Y-BOCS scores, \(F(1, 70) = 4.04, p < .05\), compared with the CBT group. The adjusted posttreatment mean for ERP was 15.19 compared with 18.43 for CBT.
or refusers attained our criteria for recovered status, we can use the information provided in Table 1 to assess proportions of patients who were recovered at follow-up, including dropouts and refusers. As a proportion of patients offered treatment, 4/49 (8%) of patients in the CBT condition and 14/44 (32%) of patients in the ERP condition had recovered at follow-up; as a proportion of patients starting treatment, the figures are 4/34 (12%) for the CBT group and 14/42 (33%) for ERP condition; as a proportion of patients completing treatment, the figures are 4/31 (13%) for CBT and 14/32 (44%) for ERP. Thus ERP tends to be superior to CBT even when different rates of drop-out and treatment refusal are controlled.

**Depression.** There was no significant difference between responders and nonresponders on pretreatment depression as measured by the BDI (M = 18.8 for responders vs. M = 16.2 for nonresponders). However, at posttreatment the BDI scores of treatment responders were less than those of nonresponders (M = 9.28 for responders vs. M = 12.99 for nonresponders). An ANCOVA conducted of pretreatment BDI scores (with pretreatment BDI scores as covariate) indicated that treatment responders had significantly lower BDI scores at posttreatment than did nonresponders, F(1, 54) = 10.46, p < .01. This effect was even more pronounced at follow-up, M = 6.94 for responders versus M = 16.00 for nonresponders; F(1, 51) = 23.32, p < .001.

**OCD subtypes.** To examine whether there was differential outcome across domains of OCD symptoms, participants were classified according to which domain of OCD symptoms was reported as their primary theme by the Y-BOCS interviewer. The categories were washing–cleaning, checking, harm–blasphemous–sexual obsessions, and miscellaneous (e.g., ordering, hoarding, counting, repeating, mental rituals—none of which had enough participants to constitute a separate category). Of the 63 participants who completed treatment, 23 were classified as washers; 18 as checkers; 10 as having harm, sexual, or blasphemous obsessions; and 12 as having other kinds of symptoms as their primary theme. Relatively few washers (2 out of 23, or 9%) met recovered criteria compared with obsessive participants (2 out of 10, 20%), checkers (6 out of 18, 33%), and miscellaneous (7 out of 12, 58%). There was a significant relationship between primary OCD symptoms type and recovered status, \( \chi^2(3, N = 63) = 10.51, p < .05 \).

We then examined the relationship between treatment type and outcome for the two largest groups of participants, washers and checkers. For both groups, more ERP participants improved than CBT participants; however, significance tests were not conducted owing to the small ns. For washers, 0 of the 13 in CBT recovered (0%), compared with 2 out of 10 in ERP (20%). For checkers, 2 out of 7 in CBT recovered (29%), compared with 4 out of 11 in ERP (36%).

**Belief Change**

Three measures of beliefs thought to be associated with OCD were investigated to determine (a) whether cognitive change occurs with treatment, compared with waiting-list control, and (b) whether the different treatments result in different amounts of cognitive change. The measures included were the three subscales of TAF (TAF—Moral, TAF—Likelihood for Others, TAF—Likelihood for Self), the three subscales of IBRO (IBRO Inflated Responsibility, IBRO Overestimation of Threat, IBRO Intolerance for Uncertainty), and the R-Scale (see Table 2 for Ms and SDs). We compared the three groups (waiting-list control, immediately treated CBT, immediately treated ERP) using univariate ANCOVAs of posttest scores (postwaiting list or posttreatment) with pretest scores (prewaiting list or pretreatment) as a covariate. To control for inflation of familywise error rate, each ANCOVA was evaluated at a Bonferroni-adjusted alpha level of .014 (seven ANOVAs with familywise error set at .10). At this alpha level, the only belief variable that showed significant difference among the groups was the R-Scale, \( F(2, 55) = 5.35, p = .008 \). Simple contrasts between each treatment group (ERP and CBT) and the control group showed that both treatments produced more reduction in R-Scale than occurred in the waiting-list condition (ps < .01).

We used a similar strategy to investigate differences in beliefs at posttreatment and follow-up between the two treatment groups, including delayed participants in the analysis. Participants’ posttreatment scores on the cognitive variables were compared between the two groups (CBT vs. ERP) with ANCOVAs conducted using pretreatment scores as a covariate, at a Bonferroni-adjusted alpha level of .014. No significant between-groups differences in posttreatment beliefs were found. Results were the same for pre-treatment to follow-up belief measures.

**Predictors and Coeffects of Treatment Outcome**

We investigated whether any pretreatment variables could predict improvement on Y-BOCS scores across both groups using multiple regression analyses. In the first analysis, pretreatment Y-BOCS scores were entered on the first step, followed by simultaneous entry of the demographic variables of age, gender, education level, disability status, medication use, age of onset, duration of OCD symptoms, and the number of sessions attended. Pretreatment Y-BOCS scores significantly predicted posttreatment Y-BOCS scores, \( R^2 = .29, R^2_{adj} = .27, F(1, 60) = 24.08, p < .001 \), but the prediction was not improved by adding the second set of variables, as shown by the trivial improvement in variance accounted for (for complete model, \( R^2 = .31, R^2_{adj} = .19 \)). In addition, none of the individual predictors were significant. In the second analysis, pretreatment Y-BOCS scores were again entered as the first step, followed by simultaneous entry of other pretreatment variables (BDI, TAF subscales, IBRO subscales, and R-Scale). Again, there was no improvement in the model by the addition of the second set of pretreatment variables (for complete model, \( R^2 = .33, R^2_{adj} = .17 \)), and none of the individual predictors were significant. In summary, it appeared that once pretreatment

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1 This appears to be a reasonable assumption based on the available self-report Y-BOCS data for dropouts. Only 1 participant who dropped out had a Y-BOCS score that changed enough to meet the criteria for recovered status; this participant attempted to quit her compulsions all at once after the first session and was so overwhelmed by anxiety that she dropped out after the second session. It is unlikely she was able to maintain this level of improvement in her symptoms.

2 This analysis was chosen over a multivariate analysis of covariance strategy to avoid difficulties in interpretation that would result from the simultaneous use of seven covariates.
Y-BOCS scores were accounted for, there were no pretreatment variables that could predict treatment outcome across the groups. The regression analyses were repeated within each treatment type to see if there were differential predictors between CBT and ERP. The results were similar, in that no predictors beyond pretreatment Y-BOCS were found. We repeated this analysis using follow-up scores as the dependent variable. Again, no significant between-groups differences were found.

Discussion

In this study, both treatments demonstrated statistically significant improvement relative to wait-list control. The effect size for ERP versus wait-list control of 1.62 is relatively large compared with the average effect size of 1.18 for ERP versus relaxation reported in Abramowitz’s (1997) review of treatment efficacy for OCD. The magnitude of the ERP treatment effect size in our study may be enhanced by the contrast to a wait-list control condition, whereas the presence of nonspecific treatment effects in the ERP contrast with relaxation in Abramowitz’s review would serve to reduce the magnitude of the effect, because relaxation was a treatment with attendant nonspecific effects. The van Oppen et al. (1995) study’s findings allow pre- and posttreatment contrasts with the present study on the basis of clinician-rated Y-BOCS scores as follows: in van Oppen et al.’s study, Y-BOCS scores of 25.4 versus 17.3 for ERP and 24.1 versus 13.3 for cognitive therapy; in the present study, Y-BOCS scores of 21.8 versus 13.2 for ERP and 21.9 versus 16.1 for CBT. Both treatments in both studies were efficacious, but in our study the relative magnitude of the therapeutic effect was reversed. We found a consistent pattern of mild to moderate superiority of ERP compared with CBT in treatment effects, that depended on the assessment period (posttreatment or follow-up), the measure used, and the participants involved (e.g., the inclusion of treatment dropouts in an intent-to-treat analysis). This pattern was evident in self-assessment and clinician symptom measures, as well as in estimates of end-state functioning. It is our view that the differences between the two studies may be accounted for by modality of treatment. Treatment in the van Oppen et al. study was on an individual basis, whereas ours was delivered in group format. Modeling and social pressure are strong features of group treatment, which would advantage ERP group treatment. The relative complexity and idiosyncratic nature of cognitive appraisals and their discussion in CBT may lend itself better to individual treatment where more attention can be afforded to the individual patient. We are currently conducting an evaluation of the efficacy of CBT and ERP for OCD when provided in either individual or group formats to address this issue. The drop-out rate for ERP was identical, at 19%, for both the van Oppen et al. study (i.e., individual treatment) and the present study (i.e., group treatment). This demonstrates that efficiencies can be gained in treating OCD with ERP group therapy.

Several issues that could affect treatment results require attention. Table 1 documents the flow of client attrition over the course of this study. We are at a loss to explain the differential drop out between treatments on the part of 14 participants (12 in CBT and 2 in ERP) after accepting but before starting treatment, because there was no basis to distinguish refusers from nonrefusers on pretreatment variables such as symptom severity. Before beginning treatment, the only difference between the two treatment conditions was that participants were given a rationale and individualized case conceptualization on the basis of their treatment condition. It is possible that more participants found the CBT rationale and case conceptualization confusing or otherwise insufficiently compelling, leading to increased drop out in the CBT group. However, the very similar treatment credibility ratings, taken after Session 2, suggest that participants tended to find the treatments equally credible. Therefore, we assume pretreatment group attrition differences to be due to chance and to be neutral in favoring either treatment group. Of those participants who started treatment, 85% completed it. Treatment dropouts were similar to those who completed, except that their pretreatment Y-BOCS scores were more severe, which may have prompted their withdrawal from treatment. Almost half of our treatment sample was using the psychotropic medications they were stabilized on, for at least 3 months before treatment, during the treatment period of this study. Although most of these participants were in the ERP condition, there was no interaction between type of psychological treatment received and use of medication, and so we considered it an unlikely additive treatment effect that advantaged the ERP participants. In keeping with general findings in the OCD literature, symptom severity ratings during the wait-list control period remained stable over the 3-month treatment delay period. Therefore, these participants were randomly reassigned to the two treatment conditions. The enlarged ERP and CBT groups were compared for possible pretreatment differences on salient demographic, symptom, and treatment credibility factors. None were found.

Of the seven belief measures, only the R-Scale discriminated between treatment and non-treatment conditions, and it did not differ between treatments. This is somewhat surprising, as more moderate beliefs could be expected to accompany symptom reduction, particularly in the CBT condition where faulty beliefs were targeted by treatment. There is little information about the sensitivity of these measures to change, and it may be that they assess relatively enduring elements of beliefs. The more concise and comprehensive measure of OCD beliefs under development by the Obsessive Compulsive Cognitions Working Group (1997) should prove to be more sensitive to potential shifts in cognitive beliefs brought about by treatment. In terms of more normative interpretations of responsibility as measured by the R-Scale, the mechanism by which cognitive change occurred remains unclear and was not addressed by this study. It may be, for example, that participants in ERP treatment achieve self-directed cognitive change by virtue of interpreting their exposure-based experiences as more benign than expected. Alternatively, belief change may not be essential for symptom reduction in OCD.

From a practical point of view, a number of conclusions can be drawn. Both CBT and ERP are effective group treatments for OCD. Although ERP was generally more effective than CBT in this study, ERP sustained more treatment dropouts than CBT. It is our impression that ERP may be more suitable for group treatment of OCD because it can better take advantage of the modeling and group pressure inherent in group treatment for purposes of gaining compliance with exposure requirements and because it is easier to train therapists in ERP than CBT methods. The complexity of CBT likely favors individual treatment. A guideline for treatment selection might be, for example, strong aversion to exposure and the presence of significant belief distortions, in which case, CBT
would be indicated. Approximately half of the participants who entered this study were already stabilized on psychotropic medications. Although no therapeutic effects attributable to the medications could be detected, because there were relatively more participants on medications in the ERP condition, caution in the interpretation of results is warranted. A practical limitation of this study is that the two treatments were separated procedurally, as much as possible, to reflect theoretical differences. A more blended treatment, which is typical in clinical practice, may improve treatment efficacy.

References


Correction to Moore and Florsheim (2001)

In the article "Interpersonal Processes and Psychopathology Among Expectant and Nonexpectant Adolescent Couples," by David R. Moore and Paul Florsheim (Journal of Consulting and Clinical Psychology, 2001, Vol. 69, No. 1, pp. 101-113), the caption for Figure 2 (p. 103) was printed without the complete permission line. Figure 2 appears below with the complete copyright line.

**Figure 2.** Structural analysis of Social Behavior combined quadrant and cluster model. From “Use of the SASB Dimensional Model to Develop Treatment Plans for Personality Disorders, 1: Narcissism,” by L. S. Benjamin, 1987, Journal of Personality Disorders, 1, p. 53. Copyright 1987 by Guilford Press. Adapted with permission.