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Group and Individual Treatment of Obsessive-Compulsive Disorder Using Cognitive Therapy and Exposure Plus Response Prevention: A 2-Year Follow-Up of Two Randomized Trials

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Relatively little is known about the long-term durability of group treatments for obsessive-compulsive disorder (OCD) and contemporary cognitive treatments. The current study investigated the 2-year follow-up results for participants who completed randomized trials of group or individual treatment and received either cognitive therapy (CT) or exposure plus response prevention (ERP). Yale–Brown Obsessive Compulsive Scale (YBOCS) scores for individual ERP and CT were not significantly different over 2 years. However, YBOCS scores were consistently lower over time for group ERP participants than for group CT participants. With a single exception in the group treatment study, secondary cognitive and depression scores were stable, indicating that gains achieved during acute treatment were maintained over 2 years. Less than 10% of treatment completers relapsed in each of the treatment trials. Approximately 50% of the completer sample was rated as recovered at 2 years. Additionally, a tentative cross-study comparison suggests that CT was better tolerated and resulted in less dropout than did ERP. Despite the overall positive results, efficacy of OCD treatments has reached a plateau and may require a fresh perspective to move forward.

Keywords: obsessive-compulsive disorder, long-term follow-up, cognitive treatment, exposure and response prevention

Exposure and response prevention (ERP) is a firmly established psychosocial treatment for obsessive-compulsive disorder (OCD; Foa, Franklin, & Kozak, 1998; March, Frances, Carpenter, & Kahn, 1997). Recent meta-analyses of treatment outcome trials that included an ERP condition have indicated the average decline in severity of symptoms as measured by the Yale–Brown Obsessive Compulsive Scale (YBOCS; Goodman et al., 1989) is 43.5% (Abramowitz, Franklin, & Foa, 2002), with a reported effect size of $d = 1.50$. More recent cognitively focused treatments also have established efficacy (e.g., McLean et al., 2001; van Oppen et al., 1995; Whittal, Thordarson, & McLean, 2005) and appear to be as effective as behavioral strategies in acute outcomes and in short-term follow-ups. Abramowitz et al. (2002) reported a mean effect size of $d = 1.19$ for cognitive therapy/cognitive behavior therapy (CT/CBT) studies compared with wait-list controls. Direct comparisons of CT/CBT and ERP in 5 studies produced an aggregate effect size of $d = 0.07$ (Abramowitz et al., 2002).

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Contemporary cognitive treatments began with the work of Salkovskis (1985), although other cognitively focused controlled trials (e.g., Emmelkamp & Beens, 1991; Emmelkamp, Visser, & Hoekstra, 1988) demonstrated promise. Given the recency of cognitive interventions in OCD, little is known about their durability over the long term. In fact, in a recent meta-analysis, Eddy, Dutra, Bradley, and Westen (2004) contended that calculation of an aggregate effect size is not possible, due to the lack of studies with follow-up of 1 year or longer and statistical problems involved with use of the method of last observation carried forward.

Likewise, the efficacy of OCD group treatments is not well established, particularly in the long term. Fals-Stewart, Marks, and Schafer (1993) published the first controlled trial that compared group and individual behavioral treatment for OCD. The results of that trial suggested that results of acute treatment are similar to those obtained in individual treatment. Later studies provided additional evidence regarding the utility of group treatment (Anderson and Rees, 2007; Cordioli et al., 2003; van Noppen, Steketee, McCorkle, & Pato, 1997). However, with one exception (Braga, Cordioli, Niederauer, & Manfro, 2005), little is known about how gains achieved during group treatment are maintained over time; this makes it difficult to draw conclusions regarding the utility of this form of treatment. Our purpose in the current study is to add to the existing literature regarding the durability of cognitive and behavioral treatments delivered individually and in a group format. In the subsequent paragraphs, we summarize acute treatment results of two studies (McLean et al., 2001; Whittal et al., 2005) and set them in context of the most recent group and contemporary CT randomized trials.

Using a group treatment format, McLean et al. (2001) found that ERP was marginally more effective at posttreatment in comparison with CT (posttreatment YBOCS mean of 13.2 for ERP and of 16.1 for CT). This difference was retained at a 3-month follow-up. McLean et al. speculated that the idiographic nature of CT might be better suited to individual than to group treatment. Accordingly, using the same protocol, Whittal et al. (2005) completed an individual treatment trial and reported no significant difference between CT and ERP groups at posttreatment or at 3-month follow-up. In addition, when the effect sizes for the Whittal et al. and McLean et al. studies were compared, the effect size for ERP conducted individually ($d = 1.85$) was the same as that for ERP conducted in group ($d = 1.84$). However, CT conducted individually resulted in an effect size of $d = 2.90$ compared with one of $d = 0.97$ for group CT (Whittal et al., 2005). These data suggest that group CT is less effective than either individual CT or exposure treatment (irrespective of treatment format).

In a study that used blended cognitive and behavioral treatment, Anderson and Rees (2007) reported that following 10 weeks of group (2 hr each session) or individual treatment (1 hr), there was no significant difference on YBOCS scores at posttreatment or 1-month follow-up. However, the posttreatment YBOCS scores of the individual treatment group ($M = 16.7$, $SD = 6.8$) were higher than the scores from other recent individual CBT trials, and the participants experienced a smaller degree of change (30.42% decline from pretreatment). For example, Whittal et al. (2005) reported a posttreatment YBOCS mean of 10.3 (56% change from pretreatment) in the CT condition and of 10.4 (52% change from pretreatment) in the ERP condition after 12 consecutive weeks of individual treatment. Foa et al. (2005) reported a posttreatment YBOCS mean of 11.0 (55% change from pretreatment) following intensive ERP (daily for 3 weeks and with 8 maintenance sessions of 45 min). It may be that the differences in treatment length and format were responsible for the varying treatment outcomes. Regardless of the reason, as the Anderson and Rees (2007) treatment protocol was perhaps less effective than were treatments in other centers, the lack of difference between individual and group treatment for OCD awaits replication.

Cordioli et al. (2003) conducted a randomized group trial using a combination of cognitive and behavioral strategies. Following twelve 2-hr sessions over 12 weeks, 23 participants who received group CBT had significantly lower YBOCS scores than did waitlist participants. Moreover, the posttreatment YBOCS mean of 15.1 (43.4% decrease from pretreatment) and effect size of $d = 1.33$ were improvements over results for McLean et al.'s group CT condition (26.5% change from pretreatment) and were similar to results for the ERP group (39.4% change from pretreatment). Addition of exposure elements to an existing cognitive protocol may therefore improve immediate outcome more than would addition of treatments that emphasize identification and challenging of appraisals associated with unwanted intrusive thoughts, but it may not be more efficacious than existing ERP protocols that do not include cognitive components. To date, a randomized study has yet to determine if group and individual CT and ERP are indeed differentially effective. Braga et al. (2005) reported 1-year follow-up results from the Cordioli et al. (2003) study. Of the 44 participants who completed treatment, 42 (95%) completed a follow-up evaluation indicating that overall treatment response was maintained during the follow-up period (YBOCS mean of 11.6 at 12-month follow-up). Eleven (35.5%) participants relapsed during the follow-up. Of note, those participants who achieved greater declines in YBOCS scores during treatment appeared less likely to relapse than did participants who reported smaller initial changes.

Van Oppen, van Balkom, de Haan, and van Dyck (2005) reported 5-year follow-up results from two independent randomized trials that compared either CT or ERP alone or in combination with fluvoxamine. Of the original 122 participants, 102 (84%) agreed to participate, including 20 individuals who had dropped out from the original treatment trials. Treatment gains were sustained in the CT and ERP groups during the follow-up, and 62.5% of the CT group and 46.7% of the ERP group no longer met diagnostic criteria for OCD. Recovery, determined in accordance with the Jacobson and Truax (1991) criteria, was 53.1% for the CT group and 40% for the ERP group. Despite these encouraging results, 53% of the CT group (17 participants) and 63% of the ERP group (19 participants) received additional therapy sessions during the follow-up. However, the reasons for the additional treatment sessions were not stated.

Although preliminary research suggests that group treatments are effective, it remains unclear if they are as durable as individual formats or if CT and ERP components are differentially effective in the two treatment modalities. Using samples from Whittal et al., (2005) and McLean et al. (2001), we examined the durability of CBT conducted in a group versus individual format and assessed the differential efficacy of cognitive and behavioral strategies in both modalities in the current study. Given prior findings, we hypothesized that the acute results as described in McLean et al. and Whittal et al. would be retained and maintained over a 2-year follow-up. Overall gains achieved during treatment would be maintained over time, and the comparative efficacy between treatment types would be retained. Specifically, we hypothesized that there would be no differential efficacy between individual CT and ERP but that group ERP would be more effective than group CT.

Method

Participants

Participants were recruited via physician and self-referral in Vancouver, British Columbia, and the surrounding area. Recruitment for the group treatment study occurred between July 1996 and June 1998. Recruitment for the individual treatment study occurred between December 1998 and October 2000. Inclusion criteria for McLean et al. (2001) and Whittal et al. (2005) included adulthood (18–65 years of age) and a primary diagnosis of OCD according to the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM–IV;* American Psychiatric Association, 1994). Fluency in written and spoken English and minimum symptom duration of 1 year were also necessary. Exclusion criteria included active thought disorder, uncontrolled bipolar disorder, and organic mental disorder. Participants were retained and assessed later if medications were initiated or changed within 3 months of their initial intake and were excluded if they changed medication type or dose during acute treatment. With the exception of individuals receiving marital therapy or supportive therapy for depression, people who were receiving concurrent psychological treatment for Axis I and II disorders were excluded.

Study Designs

In the McLean et al. (2001) group treatment study, a 2 (immediate treatment/3-month delay) × 2 (CT/ERP) factorial design was used. Given that the symptoms of the wait-listed participants in the McLean study did not change, Whittal et al. (2005) randomized participants directly into immediate CT or ERP in an individual treatment format and did not use a wait list. All participants were assessed at pretreatment, posttreatment, 3-month follow-up, and 2-year follow-up. Given that the question of interest was durability of previously identified treatment gains (McLean et al., 2001; Whittal et al., 2005), we did not include pretreatment data in our analyses. Results are limited to treatment completers and do not include all randomized participants.

Procedure

Participants were assessed with two clinician-administered measures, the Structured Clinical Interview for *DSM–IV* (SCID; First, Spitzer, Gibbon, & Williams, 1996) and the YBOCS (Goodman et al., 1989). Assessors were blind to treatment type (i.e., CT or ERP). Interrater reliability was .85 for YBOCS total. Raters of the YBOCS tapes were unaware of the score given by the initial rater. Participants were block randomized by the research assistant, who was not involved in the assessment to immediate or delayed treatment or again to CT or ERP. Subsequent participants were placed in the same group until the group had filled and randomization was restarted. Individual participants were randomized to CT or ERP according to a coin toss. Once the participant was randomized, the treating clinician completed an individualized information-gathering session from which a conceptualization was derived. These appointments averaged 3 hr and included a review of symptoms and social history, an introduction to the model used to guide the upcoming treatment, and hierarchy development if the participant was randomized to ERP. Group treatment consisted of 6–8 participants and two clinicians for 2.5 hr, whereas individual treatment was 50–60 min. Both treatments were conducted weekly for 12 consecutive weeks.

Treatments

Details of the CT and ERP protocols are provided in McLean et al. (2001) and Whittal et al. (2005). Both treatments were manual driven: The ERP manual was adapted from van Noppen et al. (1997), and the CT manual was derived at our center. In summary, ERP entailed graduated exposure to triggers and prevention of a compulsive response that allowed anxiety to extinguish. Exposure occurred during the session and was modeled by the clinician. Each participant agreed on home-based exposures to be conducted multiple times per week between sessions. Discussion about threat, responsibility, and other cognitive variables was redirected by having participants focus on extinction of the fear response through repeated and graduated exposure to triggering situations. CT was based upon the work of Salkovskis (1999); Freeston, Rheaume, and Ladouceur (1996); and van Oppen and Arntz (1994). The treatment centered on identifying intrusions and the associated interpretations and challenging these appraisals through a variety of strategies (e.g., generating alternatives, conducting surveys, assessing logical probabilities, and conducting behavioral experiments). A central component of the CT included discussions of threat overestimation, inflated responsibility, overimportance of thoughts, and thought–action fusion. See Whittal and McLean (1999, 2002) and Whittal, Rachman, and McLean (2002) for additional information on the CT used at our center.

Therapists

Licensed clinical psychologists with experience in treating OCD conducted the groups with a psychology intern, postdoctoral fellow, or less experienced licensed psychologist as a co-therapist. Individual treatment was completed or supervised (11 cases) by a licensed psychologist with expertise in OCD. Sessions were audiotaped, and a random sample was selected to determine treatment fidelity. In the McLean study, investigators completed adherence ratings for groups they had not conducted. Independent raters with no allegiance to the study conducted fidelity ratings in the Whittal study. Adherence was generally high for group and individual treatments for both CT and ERP (see McLean et al., 2001, and Whittal et al., 2005, for additional details). Therapist competence, however, was not assessed.

Measures

Diagnostic Measures

The SCID–I (First et al., 1996) is a semistructured interview used to assist the interviewer in making a five-axial diagnosis according to the *DSM–IV*. Trained interviewers completed the SCID–I at pretreatment, posttreatment, and follow-ups.

Primary OCD measure. The YBOCS (Goodman et al., 1989) is a semistructured interview comprising a checklist of various obsessions and compulsions followed by 10 items divided equally between obsessions and compulsions regarding frequency, distress, and control. Each item is rated 0 (*none*) to 4 (*extreme*) for a possible subscale score of 20 and a grand total of 40. Interrater reliability and 2-week test–retest reliability are good, but discriminant validity is lacking (Taylor, 1998).

Secondary measures. The Obsessional Beliefs Scale (OBQ; Obsessive-Compulsive Cognitions Working Group, 2004) is a 44-item self-report questionnaire designed to measure the extent to which participants endorse beliefs thought to be related to OCD. Items are rated 1–7 and include three factor-analytically-derived subscales: Responsibility/Harm, Importance/Control of Thoughts, and Perfection/Certainty. Participants completed an earlier 87-item version of the OBQ that was scored in accordance with the latest version. Internal consistency for the subscales is good (.89–.95), as is criterion validity in clinical and nonclinical samples.

The Interpretations of Intrusions Inventory (III; Frost & Steketee, 2002) is a 31-item self-report questionnaire designed to assess appraisals of intrusive thoughts. Items are rated on a scale of 0 to 100. In a recent factor analysis, the Obsessive-Compulsive Cognitions Working Group (2004) found that the three rationally derived scales of Importance, Control, and Responsibility were not separate factors. The III is now reported as a total score. Internal consistency is high (.94), and criterion validity is good.

The Beck Depression Inventory–II (BDI–II; Beck, Steer, & Brown, 1996) is a 21-item self-report questionnaire designed to rate the severity of depressive symptoms. Items are rated from 0 to

3 for a possible total of 0 to 63. Psychometric properties of the BDI–II are well established.

Statistical Analysis

As the individual and group treatment trials were completed sequentially, the choice was made to separate the analysis of the long-term follow-up data. Although combining the data would increase power to detect effects, participants were not randomly assigned to group or to individual treatment; thus, combining their data would threaten the internal validity of cross-study comparisons. However, a few exploratory analyses were completed in which the samples were combined.

Power Analysis

An a priori power analysis was originally conducted for the McLean et al. (2001) group treatment study and was subsequently adapted for the Whittal et al. (2005) individual treatment study, resulting in a sample size of 81.[1] Given that there was necessarily attrition among participants who completed the 2-year follow-up measures, sample size in the present research was reduced; this impacted the power of the expected effects. Power analyses were conducted separately for the group and individual treatments on the basis of observed sample size.

Although multiple analyses are expected to increase the incidence of Type I error, reductions in power similarly increase Type II error and reduce the likelihood of finding significant effects. Given that changes in YBOCS scores were of primary interest in the present research, we decided to assess the significance of results using the YBOCS at $\alpha = .05$. To achieve a balance between protection from Type I and Type II error, we subjected analyses with the remaining secondary measures to a Bonferroni correction that resulted in $\alpha = .01$ (.05/5 = .01).

To address the question of treatment durability over a 2-year follow-up, we used hierarchical multilevel linear modeling (HMLM) to estimate changes in scores on the YBOCS as well as on the secondary cognitive measures and BDI–II (Raudenbush, Bryk, & Congdon, 2001) with data obtained at posttreatment, 3-month follow-up, and 2-year follow-up. HMLM is robust to missing data and allows for unbalanced data sets. Moreover, by partitioning the variability of the outcome data into within- and between-subjects sources, HMLM leads to more accurate estimates of the relationship between predictors and outcomes, which enhances the likelihood that these estimates can be replicated (Bryk & Raudenbush, 1992). Clinically significant change was assessed according to Jacobson and Truax (1991). Recovery status, medication use, and the impact of additional treatment at 2-year follow-up were assessed with chi-square analysis and Fisher's exact test. All effect size estimates subsequent to *t*-test analyses were calculated with Cohen's *d*.

Results

Study 1: Treatment in Individual Format

Participants

In the original efficacy study (Whittal et al., 2005), 83 participants were given a primary diagnosis of OCD following the intake interview. Of these, 59 participants completed treatment. Among the treatment completers, 41 participants (70%) completed 2-year follow-up (see Figure 1). Participants (26 women, 15 men) had a mean age of 36.1 years ($SD = 11.4$) and were largely well educated: 27 (65.9%) had at least some postsecondary education, 12 (29.2%) had graduated from high school, and 2 (4.9%) had some high school education. Participants were predominantly European Canadian ($n = 35$, 85.4%); there were 5 Asian participants (12.2%) and 1 African American participant (2.4%). The mean age of onset of OCD symptoms was 23.4 years ($SD = 13.9$), and symptom duration averaged 13.1 years ($SD = 11.8$).

Power analysis. Given the decision to test statistical results using YBOCS scores at $\alpha = .05$ and all remaining measures at $\alpha = .01$ (subsequent to Bonferroni correction), we conducted two separate power analyses to account for the differential alphas and use of the obtained sample size of 41. With an expected effect size of 0.60 (see McLean et al., 2001; Whittal et al., 2005), the power for YBOCS analyses was .46 and the power for analyses that used secondary measures was .23.

Follow-Up Participants Compared With Nonparticipants

A series of *t* tests for independent groups and Fisher's exact tests was conducted to compare participants who completed the 2-year follow-up and those who did not. No significant differences were found between the two groups according to age, gender, ethnicity, education, or marital status. Moreover, no significant difference between groups emerged according to duration of OCD symptoms prior to entering treatment, $t(56) = -.16$, $p = .87$, $d = 0.05$, confidence interval (CI) = –.51 to .60; disability status ($p = .514$, one-tailed Fisher's exact test); or medication use when entering treatment ($p = .565$, Fisher's exact test).

In terms of symptom scores, no significant differences between 2-year follow-up completers and noncompleters were found on YBOCS scores at pretreatment, $t(57) = -.56$, $p = .58$, $d = 0.16$, CI = −.40 to .71, or posttreatment, $t(57) = -.15$, $p = .88$, $d = 0.04$, CI = −.51 to .60. A similar nonsignificant finding emerged for BDI–II scores at pretreatment, $t(55) = -.53$, $p = .59$, $d = 0.15$, CI = −.41 to .71, and at posttreatment, $t(55) = -.65$, $p = .52$, $d = 0.19$, CI = −.38 to .75. Taken together, these results suggest that the participants who completed the 2-year assessment did not differ significantly from the participants who did not.

Outcome Trajectories Over 2 Years

HMLM can be thought of as a series of person-specific linear regressions in which measurement units (Level 1) are nested within individuals (Level 2), who can be further nested within groups (Level 3).

[1] Sample size for the McLean et al. (2001) group treatment study was based on YBOCS effect sizes as reported by van Balkom et al. (1994). It was expected that contemporary cognitive strategies would enhance the noted effect size for CBT, such that differences in effect sizes would be ≥ .60. When one-tailed tests at $\alpha = .05$ were used, the design had power ≥ .80 to detect effect sizes ≥ .60. To create an equal basis for comparison with the group treatment study, we randomized the same number of participants into the Whittal et al. (2005) individual treatment study.

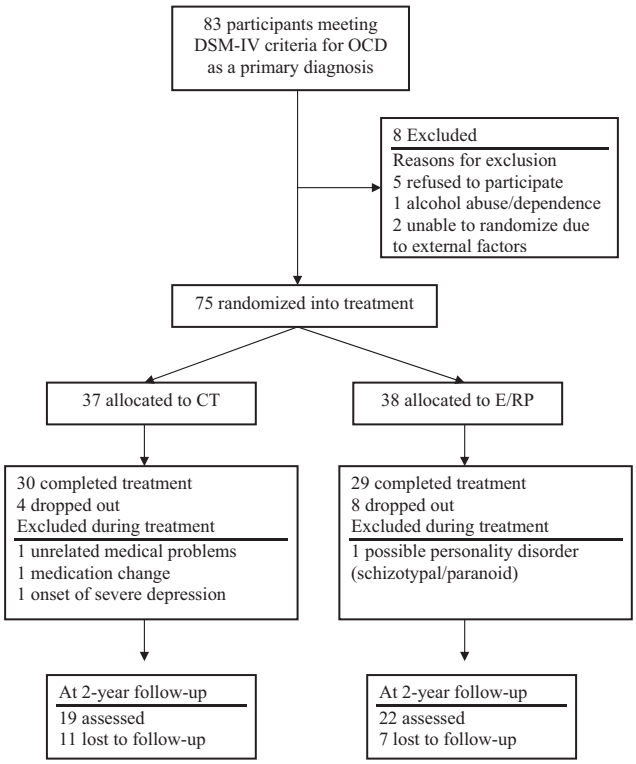

Figure 1. Flowchart of participants' progress throughout the treatment phases of Study 1 (individual treatment). *DSM–IV = Diagnostic and Statistical Manual of Mental Disorders* (4th ed; American Psychiatric Association, 1994); OCD = obsessive-compulsive disorder; CT = cognitive therapy; E/RP = exposure and response prevention.

YBOCS. A two-level model was generated for participants in Study 1.[2] Results indicated that at Time 1 (posttreatment), the CT and ERP intercepts were not significantly different from each other ($p = .796$). Over time, the slope means were not significantly different from zero ($p = .826$), nor were the CT and ERP slope means different from each other ($p = .822$). Taken together, these results suggest that treatment gains are maintained across 2 years, independent of treatment type. Raw means and standard deviations for all study variables are presented in Table 1.

Cognitive measures and BDI–II. A similar pattern of results emerged for scores on the III, the OBQ subscales, and the BDI–II. No significant effects for treatment type or time were found; nor was there a significant interaction between treatment type and time. Overall, these results suggest that both cognitive change and depression scores remain stable over time for participants in both CT and ERP.

Clinically Significant Change and Maintenance of Treatment Gains

To further evaluate the maintenance of treatment gains, we used criterion *c* as established by Jacobson and Truax (1991) to identify YBOCS total scores that were more likely to be in the normal than the clinical distribution. Normative and clinical data were respectively reported by Frost, Steketee, Krause, and Trepanier (1995) and Goodman et al., (1989). Participants who met criterion *c* (YBOCS score below 11) and also achieved a reliable change on the YBOCS (a minimum decrease of 6 points) were categorized as "recovered." At both posttreatment and 2-year follow-up, 25 participants (61%) met criteria for recovery. Specifically, 21 participants (51.2%) had retained their recovery status from posttreatment to 2-year follow-up, 12 participants (29.3%) did not achieve recovery at either time point, 4 participants (9.7%) were recovered at posttreatment but not at 2-year follow-up, and 4 participants (9.7%) were recovered at 2-year follow-up but not at posttreatment.

Moreover, there was no significant difference in recovery status according to treatment type at 2-year follow-up ($p = .279$, Fischer's exact test). Of the 19 participants who had received CT, 13 (68.4%) were recovered and 6 (31.6%) were not, and among the 22 participants who had received ERP, 12 (54.5%) met criteria for recovery and 10 (45.5%) did not. Taken together, these results suggest that the majority of participants retained their high end-state recovery status at 2-year follow-up, irrespective of treatment type.

Medication Use and Additional Treatment at 2-Year Follow-Up

At 2-year follow-up, 25 participants (61%) reported being on medication. The majority of them were taking either a selective serotonin reuptake inhibitor (SSRI) or a tricyclic antidepressant ($n = 20$). From pretreatment to 2-year follow-up, 29 participants (70.7%) maintained their medication status, with 21 participants (51.2%) consistently staying on medication and 8 participants (19.5%) consistently not taking any medication. Five participants (12.2%) went off medication between the two time points, and 4 participants (9.7%) began taking medication at some point between pretreatment and 2-year follow-up. The relationship between recovery status at 2-year follow-up and medication use was assessed. Neither a change in medication

[2] In the first, or within-person, stage of analysis (Level 1), the YBOCS score is the outcome variable, which is modeled as the YBOCS score at time *i* for individual *j,* plus an error term, e_{ij}. Associated with each regression line are the coefficients π_{0j} and π_{1j}. These represent, respectively, the person-specific intercept (YBOCS score at time = 0, here represented by posttreatment) and slope (trajectory of change across time) for individual *j*. In the second, or between-person, stage of analysis, the goal is to determine which person-level characteristics may explain differences in the person-specific intercepts and slopes. In our case, the between-person predictor was treatment type (CT or ERP). Equations for this two-level model are as follows:

$$\text{Level 1: } (\text{YBOCS})_{ij} = \pi_{0j} + \pi_{1j}\text{Time}_{ij} + e_{ij}$$

$$\text{Level 2: } \pi_{0j} = \beta_{00} + \beta_{01}(\text{TXTYPE}_j) + u_{0j}$$

$$\pi_{1j} = \beta_{10} + \beta_{11}(\text{TXTYPE}_j) + u_{1j}$$

At Level 2, the person-specific intercepts (π_{0j}) were modeled as a function of the average intercept across all individuals (β_{00}) plus between-persons differences in these intercepts due to TXTYPE (β_{01}) plus a random error term, u_{0j}. Similarly, the person-specific slopes (π_{1j}) were modeled as a function of the average slope across all individuals (β_{10}) plus between-persons differences in slopes due to TXTYPE (β_{11}) plus a random error term, u_{1j}.

Table 1
Study 1: Mean Scores of Completers Across Treatment Times for Participants Receiving Individual Treatment

Variable	Posttreatment *M* (*SD*)	3-month follow-up *M* (*SD*)	2-year follow-up *M* (*SD*)	Post to 2-year *d*[a]	Post to 2-year 95% CI
YBOCS					
CT	10.6 (7.1)	9.7 (5.7)	10.3 (6.2)	0.05	−0.53, 0.62
ERP	10.4 (7.6)	10.6 (8.5)	11.2 (8.8)	−0.10	−0.65, 0.46
Total	10.5 (7.3)	10.1 (7.0)	10.8 (7.6)	0.04	−0.43, 0.36
BDI–II					
CT	11.7 (8.4)	10.5 (7.9)	11.2 (10.3)	0.05	−0.55, 0.64
ERP	9.3 (10.8)	6.8 (8.4)	6.2 (9.0)	0.30	−0.30, 0.89
Total	10.5 (9.6)	9.0 (8.2)	8.7 (9.8)	0.19	−0.24, 0.61
OBQ–RH					
CT	52.2 (21.3)	50.7 (19.8)	45.6 (19.7)	0.32	−0.29, 0.92
ERP	49.4 (26.5)	38.2 (21.1)	36.1 (21.6)	0.54	−0.09, 1.15
Total	50.9 (23.8)	45.8 (21.0)	40.8 (20.9)	0.44	0.01, 0.87
OBQ–PC					
CT	51.4 (17.5)	51.8 (19.4)	44.1 (19.9)	0.39	−0.22, 0.99
ERP	52.5 (25.1)	45.5 (24.8)	42.9 (26.2)	0.38	−0.24, 0.98
Total	51.9 (21.4)	49.3 (21.6)	43.5 (22.9)	0.38	−0.05, 0.81
OBQ–IC					
CT	23.9 (13.0)	22.9 (9.7)	23 (16.4)	0.06	−0.54, 0.66
ERP	24.8 (14.7)	20.8 (10.6)	21.1 (8.8)	0.29	−0.33, 0.89
Total	24.3 (13.7)	22.1 (10.0)	22.1 (13.0)	0.28	−0.15, 0.71
III					
CT	22.0 (19.0)	21.2 (15.7)	24.4 (20.7)	−0.12	−0.73, 0.49
ERP	26.7 (24.2)	20.8 (21.4)	28.8 (25.4)	−0.08	−0.69, 0.52
Total	24.3 (21.6)	21.1 (17.9)	26.7 (23.0)	−0.11	−0.54, 0.32

Note. CI = confidence interval; YBOCS = Yale–Brown Obsessive Compulsive Inventory; CT = cognitive therapy; ERP = exposure and response prevention; BDI–II = Beck Depression Inventory–II; OBQ–RH = Obsessional Beliefs Scale, Responsibility/Harm subscale; OBQ–PC = Obsessional Beliefs Scale, Perfectionism/Certainty subscale; OBQ–IC = Obsessional Beliefs Scale, Importance/Control of Thoughts subscale; III = Interpretations of Intrusions Inventory.
[a] *d* is an effect size index calculation: (mean of 2-year follow-up – mean of posttreatment)/pooled standard deviation.

status, $\chi^2(3, N = 38) = 3.35$, $p = .35$, nor medication use at 2-year follow-up ($p = .126$, Fisher's exact test) was significantly associated with recovery status.

Between posttreatment and 2-year follow-up, 14 participants (34%) sought additional treatment for their OCD symptoms. Data regarding additional treatment at 2-year follow-up were missing for 1 participant. Interventions included additional CBT ($n = 3$), consultations with a general practitioner or psychiatrist ($n = 9$), sessions with a counselor ($n = 1$), and a relaxation course ($n = 1$). To determine whether these supplementary interventions led to an improvement in recovery status, we conducted a Fisher's exact test. Participants were coded as "improved" if their recovery status changed from not recovered at posttreatment to recovered at 2-year follow-up and as "not improved" if there was no change in their recovery status or there was a change from recovered at posttreatment to not recovered at 2-year follow-up. No significant differences emerged, and this finding suggested that more treatment did not lead to further improvements in OCD recovery status. Among the 14 participants who had received additional OCD treatment, 1 was improved and 13 were not improved. A similar pattern was observed for the participants who had not sought additional treatment ($n = 26$), of whom 24 were not improved and 2 were improved.

Study 2: Treatment in Group Format

Participants

In the original efficacy study (see McLean et al., 2001), 93 participants were given a primary diagnosis of OCD following the intake interview. Of these participants, 63 completed treatment (CT or ERP) and were included in the research trial. Among these research participants, 45 (71%) completed the 2-year follow-up measures (see Figure 2). The statistical approach we used in Study 1 with participants receiving individual treatment was replicated herein with group participants.

The sample (22 women, 23 men) had a mean age of 35.4 years ($SD = 9.82$) and was largely well educated: Of the participants, 31 (68.9%) had at least some postsecondary education, 12 (26.7%) had graduated from high school, and 2 (4.4%) had some high school education. Participants were predominantly European Canadian ($n = 37$, 82.2%); there were 6 Asian participants (13.3%), 1 First Nations participant (2.2%), and 1 East Indian participant (2.2%). Mean age of onset of OCD symptoms was 22.5 years ($SD = 9.9$), and symptoms had lasted on average 13 years ($SD = 8.9$).

Power analyses identical to the ones conducted in Study 1 were calculated for Study 2. Given an obtained sample size of 45 and an expected effect size of 0.60, the power for YBOCS

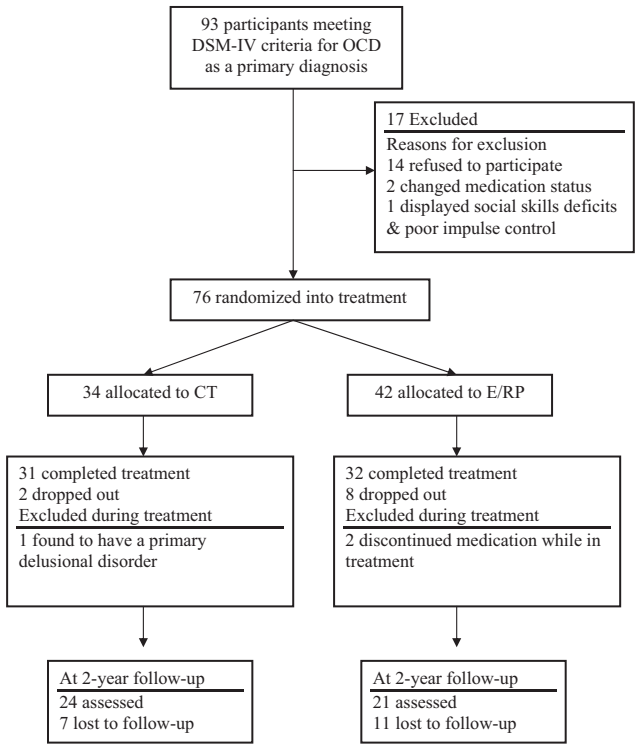

Figure 2. Flowchart of participants' progress throughout the treatment phases of Study 2 (group treatment). *DSM–IV = Diagnostic and Statistical Manual of Mental Disorders* (4th ed; American Psychiatric Association, 1994); OCD = obsessive-compulsive disorder; CT = cognitive therapy; E/RP = exposure and response prevention.

analyses ($\alpha = .05$) was .50 and the power for analyses that used secondary measures ($\alpha = .01$) was .26.

Follow-Up Participants Compared With Nonparticipants

A series of *t* tests for independent groups and Fisher's exact tests was conducted to compare those participants who completed the 2-year follow-up and those who did not. No significant differences were found between the two groups according to sociodemographic characteristics, duration of OCD symptoms, $t(60) = -1.32$, $p = .19$, $d = 0.37$, CI = −.19 to .92; disability status ($p = .177$, Fisher's exact test); or pretreatment medication use ($p = .276$, Fisher's exact test). Differences between symptom scores were nonsignificant for the YBOCS at pretreatment, $t(61) = -1.14$, $p = .22$, $d = 0.34$, CI = –.21 to .89, and posttreatment, $t(61) = -.42$, $p = .68$, $d = 0.12$, CI = −.43 to .66, and for the BDI–II at pretreatment, $t(61) = -.97$, $p = .34$, $d = 0.27$, CI = −.28 to .82, and posttreatment, $t(57) = -.84$, $p = .40$, $d = 0.24$, CI = −.33 to .82. These results suggest that the participants who completed the 2-year assessment did not differ significantly from the participants who did not.

Outcome Trajectories Over 2 Years

A three-level HMLM model was generated for participants in Study 2, given that participants were nested within groups over time.[3] In addition to its aforementioned advantages, HMLM accounts for the dependency of data points for participants who belong to the same group.

YBOCS. There was a significant difference between CT and ERP intercepts at posttreatment, $t(64) = -2.30$, $p = .02$, as well as significant differences for the effect of time, $t(64) = -2.25$, $p = .02$, and for the Time × Treatment Type interaction, $t(64) = 1.98$, $p = .048$. These results suggest that among group treatment participants, ERP led to greater reductions in YBOCS scores across time. Raw means and and standard deviations for all study variables are presented in Table 2.

Cognitive measures and BDI–II. For the III scores, there was a marginal difference between CT and ERP intercepts at posttreatment, $t(47) = -2.22$, $p = .03$. The effects of time, $t(47) = -3.07$, $p = .004$, and of the Time × Treatment Type interaction, $t(47) = 2.29$, $p = .03$, were also significant. However, following Bonferroni correction for secondary analyses (0.05/5 = 0.01), this difference was no longer significant; only the effect of time remained significant, with further reductions noted over time. The effects of time, treatment type, and the interaction were nonsignificant for the Perfectionism/Certainty and Responsibility/Harm subscales of the OBQ. For the Importance/Control of Thoughts subscale, a marginal effect of time emerged, $t(47) = -2.51$, $p = .02$, which disappeared following familywise correction. No effect of treatment type or interaction was found. No significant effects were found for the BDI–II.

Clinically Significant Change and Maintenance of Treatment Gains

Among the participants who completed 2-year follow-up, 12 (26.7%) were recovered at posttreatment and 18 (40%) were recovered at 2-year follow-up. When McNemar's test was used, no significant difference was found in recovery status between patients at posttreatment and at 2-year follow-up ($p = .15$). Regarding change in recovery status, 9 participants (20%) maintained their recovery from posttreatment to 2-year follow-up, 24 participants (53.3%) did not achieve recovery at either time period, 3

[3] In Study 2, there was a third level of nesting, with the Level 1 equation now representing the YBOCS score at time *i* for individual *j* within group *k*. Equations for this three-level model are as follows:

$$\text{Level 1: } \text{YBOCS}_{ijk} = \pi_{0jk} + \pi_{1jk}\text{Time}_{ijk} + e_{ijk}$$

$$\text{Level 2: } \pi_{0jk} = \beta_{00k} + \beta_{01k}(\text{TXTYPE}_{jk}) + u_{0jk}$$

$$\pi_{1jk} = \beta_{10k} + \beta_{11k}(\text{TXTYPE}_{jk}) + u_{1jk}$$

$$\text{Level 3: } \beta_{00k} = \gamma_{000} + u_{00k}$$

$$\beta_{01k} = \gamma_{010}$$

$$\beta_{10k} = \gamma_{100}$$

$$\beta_{11k} = \gamma_{110}$$

Because no Level-3 predictors were implied by our hypotheses, the group-specific intercepts (β_{00k}) were simply modeled as the average intercept (i.e., posttreatment YBOCS score) across all groups (γ_{000}), plus a random error term, u_{00k}. Due to insufficient variability in our data set, the remaining coefficients (β_{01k}, β_{10k}, and β_{11k}) were simply modeled as the average levels of these coefficients across all groups.

Table 2
Study 2: Mean Scores of Completers Across Treatment Times for Participants Receiving Group Treatment

Variable	Post treatment *M* (*SD*)	3-month follow-up *M* (*SD*)	2-year follow-up *M* (*SD*)	Post to 2-year *d*	Post to 2-year 95% CI
YBOCS					
CT	16.1 (6.7)	17.3 (8.4)	14.2 (9.0)	0.24	−0.30, 0.77
ERP	13.3 (7.0)	12.8 (7.2)	12.9 (8.2)	0.05	−0.50, 0.60
Total	14.7 (6.9)	15.0 (8.0)	13.6 (8.6)	0.20	−0.19, 0.58
BDI–II					
CT	14.7 (13.4)	14.6 (12.6)	11.9 (9.9)	0.22	−0.40, 0.83
ERP	10.8 (9.7)	11.6 (12.0)	10.2 (11.3)	0.06	−0.52, 0.63
Total	12.7 (11.8)	13.2 (12.3)	11 (10.6)	0.26	−0.16, 0.68
OBQ–RH					
CT	63.5 (27.1)	59.4 (27.8)	55.9 (26.0)	0.29	−0.41, 0.97
ERP	47.4 (19.4)	52.7 (23.1)	51.2 (24.5)	−0.16	−0.98, 0.66
Total	58.5 (25.8)	57.1 (26.1)	53.4 (24.9)	0.29	−0.23, 0.80
OBQ–PC					
CT	66.2 (24.9)	62.6 (27.0)	64.2 (21.2)	0.08	−0.60, 0.77
ERP	59.2 (13.5)	59.1 (16.4)	59.4 (19.5)	−0.01	−0.83, 0.81
Total	64.0 (22.0)	61.4 (23.7)	61.6 (20.1)	0.17	−0.35, 0.68
OBQ–IC					
CT	37.4 (19.3)	37.4 (18.6)	35.3 (23.0)	0.10	−0.60, 0.80
ERP	27.6 (5.8)	26.7 (10.7)	29.3 (12.8)	−0.16	−0.97, 0.67
Total	34.4 (16.9)	33.9 (17.0)	32.0 (18.0)	0.19	−0.33, 0.70
III					
CT	45.5 (26.9)	42.4 (26.5)	34.2 (26.7)	0.42	−0.28, 1.10
ERP	26.9 (10.5)	26.0 (12.7)	27.7 (16.1)	−0.06	−0.87, 0.76
Total	39.7 (24.5)	36.7 (23.8)	30.8 (21.6)	0.39	−0.13, 0.90

Note. CI = confidence interval; YBOCS = Yale–Brown Obsessive Compulsive Inventory; CT = cognitive therapy; ERP = exposure and response prevention; BDI–II = Beck Depression Inventory–II; OBQ–RH = Obsessional Beliefs Scale, Responsibility/Harm subscale; OBQ–PC = Obsessional Beliefs Scale, Perfectionism/Certainty subscale; OBQ–IC = Obsessional Beliefs Scale, Importance/Control of Thoughts subscale; III = Interpretations of Intrusions Inventory.

participants (6.7%) relapsed, and 9 participants (20%) achieved recovery status at 2-year follow-up but not at posttreatment.

Moreover, recovery status was the same across the two treatment types. When chi-square was used, no significant difference emerged between recovery status and treatment type at 2-year follow-up, $\chi^2(1, N = 45) = .95$, $p = .33$. Of the 24 participants who had received CT, 8 (33.3%) were recovered and 16 (66.7%) were not, and among participants who had received ERP, 10 were recovered (47.6%) and 11 (52.4%) were not.

Medication Use and Additional Treatment at 2-Year Follow-Up

At 2-year follow-up, 25 participants (55.5%) reported being on medication. The majority were taking either an SSRI or a tricyclic antidepressant ($n = 18$). From pretreatment to 2-year follow-up, 37 participants (82.2%) maintained their medication status, with 20 participants (44.4%) consistently staying on medication and 17 participants (37.8%) consistently not taking any medication. Three participants (6.7%) went off medication between the two time points, and 5 participants (11.1%) began taking medication at some point between pretreatment and 2-year follow-up. As in Study 1, the relationship between recovery status and medication use at 2-year follow-up was assessed, although no significant difference emerged, $\chi^2(3, N = 45) = .62$, $p = .89$.

Between posttreatment and 2-year follow-up, 21 participants (46.7%) sought out additional treatment for their OCD symptoms. Interventions included additional CBT or behavior therapy ($n = 4$), consultations with a family physician or psychiatrist ($n = 15$), or non-CBT therapy sessions with a psychologist ($n = 1$). To determine whether these supplementary interventions led to an improvement in recovery status, we conducted a chi-square analysis, with participants coded as "improved" or "not improved" according to the same criteria used in Study 1. Once again, no significant differences emerged; this suggested that more treatment did not lead to any further improvements in OCD recovery status. Among the participants who had received additional OCD treatment, 4 were improved and 17 were not improved. Of the 24 participants who had not received other treatment, 5 were improved and 19 were not improved.

Exploratory (and Preliminary) Analyses

As Study 1 and Study 2 were conducted sequentially, such that there was no random assignment into either group or individual treatment, no definitive statements can be made when comparing the impact of treatment format on the long-term outcome of participants. However, given some prior research findings, we felt it was appropriate to initiate two highly tentative analyses with data from both studies combined to allow for further discussion.

First, it has been postulated that a benefit of CT over standard exposure treatments might be a lower dropout rate, given that CT might be less anxiety provoking for clients (i.e., direct exposure to fearful stimuli is minimal in cognitive interventions). Given that the dropout rates in both Study 1 and 2 were too low to permit us to conduct a chi-square analysis (i.e., expected frequencies < 5) and that the data reflected a 2×2 contingency table, we combined dropout rates and conducted a Fisher's exact test. In the CT condition, 61 participants completed treatment and 6 dropped out during treatment, whereas in the ERP condition, 61 participants completed treatment and 16 dropped out. A significant difference was found ($p = .04$, Fischer's exact test), and this difference suggested that a greater number of participants randomized to the ERP conditions dropped out during treatment.

Second, as noted earlier, McLean et al. (2001) suggested that the idiographic nature of CT might make cognitive treatment less effective in a group format than an individual format. To begin to assess this, albeit tentatively, we compared recovery rates at 2-year follow-up between group and individual treatment participants according to type of treatment received (CT or ERP). When Fisher's exact test was used, no significant difference was found between recovery rates and treatment format for participants who had received ERP ($p = .441$). Among participants who had received CT, however, a significant difference did emerge ($p = .023$, Fischer's exact test), with nonrecovery rates occurring significantly more frequently for those in group treatment (not recovered, $n = 16$; recovered, $n = 8$) than in individual treatment (not recovered, $n = 6$; recovered, $n = 13$).

Discussion

As hypothesized, for those participants who completed interview and self-report measures, treatment gains achieved during group and individual therapy were maintained 2 years following treatment. Among individual treatment participants, CT and ERP displayed equivalent reductions in OCD symptom severity, depression, and associated belief change. However, for participants treated in groups, those who received ERP had consistently lower YBOCS scores over time. Additionally, for group participants, III scores continued to decline during the 2-year follow-up. The scores for the remaining belief measures and associated depression remained stable among group participants. Despite these differences, recovery status or relapse rates were equivalent for group and individual treatment. The similarity between types of treatment is consistent with the predictions made for individual treatment. In terms of expected group treatment findings, a significant group ERP superiority over group CT is consistent with the findings of group treatment outcome reported in McLean et al. (2001).

The outcome of treatment, both acute and at follow-up, was largely consistent with that of other randomized trials in other centers. The pretreatment-to-follow-up effect size of over 1.7 for individual treatment completers and the 52% percent YBOCS change compare favorably with outcomes reported in two recent meta-analyses. Abramowitz et al. (2002) reported an average YBOCS decline of 44% and an effect size of 1.5. Eddy et al. (2004) reported an effect size for individual therapy of 1.48 and a pre–post YBOCS decline of 51%.

Although meta-analysis data are not available for long-term follow-up (Eddy et al., 2004), the publication of two long-term follow-ups (Braga et al., 2005, and van Oppen et al., 2005) makes limited comparison possible. Our 2-year YBOCS mean of 13.6 for group participants is comparable with the YBOCS scores of 11.6 for group treatment reported by Braga et al. (2005) at 12-month follow-up. However, the relapse rates noted in the current study (8.1%) are notably lower than the 36% reported by Braga et al. The difference in relapse may be partially explained by the differential attrition rates. Braga et al. had only 5% attrition in the 12-month follow-up, whereas the current study had 28% attrition over 24 months. In the van Oppen et al. (2005) study, the 5-year follow-up YBOCS score for the 62 CT and ERP participants treated individually was 13.7, but in the current study the 2-year follow-up YBOCS score for the 41 participants who completed either individual CT or ERP was 10.8. Again, attrition may be playing a role. Specifically, of the 71 participants originally randomized to van Oppen et al. (1995), YBOCS interviews were obtained for 62. The 87% retention rate is remarkable, given the length of the follow-up.

Of those completing individual treatment in the current study, close to two thirds met criteria for recovery; the majority achieved their recovery after acute treatment and maintained their gains during the follow-up. In contrast, of those completing treatment in a group format, only one quarter had achieved recovery at post-treatment but a notable number improved during the follow-up, such that there were no differences in recovery rates at 2 years. Although cross-study comparisons are tentative at best, a similar number of ERP participants achieved recovery independently of type of treatment (i.e., group or individual), whereas CT conducted in group resulted in a lower frequency of recovered participants than did individual CT. Given the heterogeneity in OCD plus the idiographic nature of cognitive treatment, it is not surprising that group CT does not produce recovery rates similar to those of broad-based exposure treatment or individual CT. When the participants who received CT in a group-based format are excluded, approximately 56% of the people who completed treatment and participated in follow-up were recovered at 2 years. The recovery rates decrease to 50% when participants who received group CT are included. Direct comparisons to van Oppen et al. (2005) and Braga et al. (2005) are not possible, as the definitions of recovery used in these studies were different than the one used in the current study. However, when van Oppen et al.'s definition of recovery (a follow-up score of 2 standard deviations below the pretest score on the YBOCS) is adopted, 55% of our treatment completers met van Oppen's criteria for recovery. The van Oppen et al. study reported 46.8% recovery at 5 years.

Overall, 58% percent of treatment completers continued to report being on medication 2 years following psychological treatment for their OCD. Similarly, only 9% of treatment completers across studies discontinued medication during the follow-up. Although recovery status was not related to medication use, these results are somewhat discouraging and reflect a higher rate of medication use than did the van Oppen et al. (1995) study, in which only 25% of participants reported using antidepressants at follow-up. Although this difference in notable, it is likely due to differences in inclusion/exclusion criteria. The McLean et al. (2001) and Whittal et al. (2005) studies included participants who were on stable doses of medications for 3 months prior to diagnostic assessment (48% and 68%, respectively, were on medication), whereas the van Oppen et al. study excluded participants who were using antidepressants.

Across group and individual treatment studies, approximately 40% of participants sought additional treatment for their OCD. However, in both individual and group treatment formats, additional treatment did not shift recovery status at follow-up, and this suggests a potential subgroup of treatment resistant individuals. Alternatively, in the absence of treatment, these participants may have sought treatment secondary to a worsening of symptoms, and this subsequent treatment may have prevented a relapse. There are undoubtedly individuals who require maintenance treatment (i.e., occasional contacts with health care providers to prevent relapse), but this contact does not necessarily result in symptom improvement.

Although this subject was not directly addressed in the current study, cognitive change was comparable for these two treatments, perhaps in part because of the overlap in treatment components. As discussed by Abramowitz, Taylor, and McKay (2005), most cognitive treatments contain behavioral experiments and behavioral treatments contain informal discussion of risk and probability in the context of planning and debriefing exposure (e.g., Kozak & Foa, 1998). The procedural overlap raises important questions about mechanisms of action. Is cognitive change a coeffect of symptom change? Is less exposure necessary when alternate, less threatening appraisals are generated? Does cognitive challenging make it easier to engage in exposure in the context of a behavioral experiment? The design of the current study did not allow exploration of these questions, but the questions do provide guidelines for future investigations.

One area of potential superiority is differential dropout in CT and ERP treatments. On the basis of a tentative cross-study comparison in the current study, CT resulted in lower dropout rates than did ERP. This finding suggests that treatments in which prolonged and repeated exposure are not emphasized are better tolerated and ultimately result in a treatment that is more effective. Abramowitz et al. (2005) reported a similar finding when they compared dropout rates reported by four recent randomized trials that had compared contemporary CT and ERP. Specifically, across the four studies, 18.6% of ERP participants and 10.2% of CT/CBT participants had dropped out of treatment. Perhaps the cognitive challenging prior to the behavioral experiment decreases the threat associated with exposure and attenuates the anxiety, thus making it easier to tolerate.

Despite the notable percentage of people who seek additional care, it is encouraging that psychological treatment for OCD results in recovery for the majority who complete treatment and that most retain their gains over a long-term follow-up. However, efficacy of treatment has not improved over time but has reached a plateau. Rachman (2006) stated that "improvement rates are not improving " (p. 8), on the basis of a comparison between Rachman, Cobb, Grey, McDonald, and Sartory (1979) and Foa et al. (2005). In the first reported psychosocial study that used the YBOCS (Fals-Stewart et al., 1993), participants ($n = 61$) received 24 individual or group sessions of behavioral therapy over 12 weeks. Posttreatment YBOCS scores were 12.0 for group participants and 12.1 for individual participants, which respectively represent a 45% and a 40% change from pre- to posttreatment. Twelve years later, Foa et al. (2005) completed intensive individual ERP with 21 participants for 2 hr/day for 15 days plus eight maintenance sessions. Posttreatment YBOCS was 11.0, which represented a decline of 55%. Although there was a greater drop in YBOCS than reported by Fals-Stewart et al., the number of treatment hours and therapist time were greater.

It is also clear that existing treatments continue to be difficult for our patients to tolerate. For example, Foa et al. (2005) reported a 21% refusal rate and a 27% dropout rate in their ERP treatment. Less intensive treatments may result in a higher percentage of completers, but the rates continue to be less than optimal. Whittal et al. (2005) reported a 5% refusal rate and a 21.6% dropout rate for individual ERP. It is clear that, for those who can tolerate the associated anxiety, existing exposure treatments are an excellent option. However, a goal for future randomized trials is to make the treatment easier to tolerate, which would, it is hoped, decrease refusal and dropout rates and thereby increase the overall effectiveness rates. Recent considerations regarding the judicious use of safety behaviors (Rachman, Radomsky, & Shafran, 2008) are a particularly intriguing possibility. The result awaits empirical investigation.

A limitation of the current study is our choice to restrict long-term follow-up to those who completed treatment rather than to include everyone who was randomized in an attempt to acquire data from participants who had dropped out of treatment. As the opportunity was lost to examine the long-term follow-up of this particular group, no comparisons can be made with existing research on this point. Additionally, although treatment fidelity was assessed, therapist competence was not.

Another notable limitation is the low observed power for expected effects. This finding resulted from our constraints in sample size, given the reliance upon participants who chose to complete 2-year follow-up data. Subsequent research on the durability of CT and ERP for the treatment of OCD would benefit from a larger sample size that would achieve adequate power. An unfortunate consequence of low power is the significant increase in Type II error, which might be postulated to have contributed to the lack of significant findings between CT and ERP over time among participants treated in individual therapy. However, despite the limitation of low power, significantly greater symptom score reductions were found among group participants who received ERP over CT. The mere presence of a significant effect despite the decreased likelihood of significance suggests that the greater success of group ERP, as noted by McLean et al. (2001), is likely a stable result.

A final limitation is the attrition rate from posttreatment to 2-year follow-up. Although the majority of treatment completers complied with a long-term follow-up that was not expected at the time of randomization, our attrition rate was 28%, which was substantially higher than the rates reported for the two existing studies with long-term follow-up for OCD. This level of attrition is a limitation of the current study, in that the observed YBOCS scores and recovery rates at 2 years may be misleading. It is possible that participants who were lost to follow-up had relapsed. However, we must consider alternatives for their failure to complete the follow-up assessment (e.g., never receiving the packet, doing better and thus being too busy, and simply forgetting). It should be noted that attrition rates in the four groups were comparable, so it is unlikely that the main result would shift, rather than the magnitude of response. Moreover, it is encouraging that our 2-year YBOCS and recovery rates are comparable with those reported for other studies with very little attrition. This suggests that a lower attrition rate may not in fact alter the magnitude of response.

In conclusion, ERP and CT are effective treatments for OCD. The majority of those who complete treatment will experience substantial decreases in obsessions and compulsions and will retain them over time. When delivered individually, CT is as effective as the gold standard psychological treatment, which means that patients and therapists have wider treatment options. Additionally, given the cost of treatment and the lack of trained clinicians, group ERP represents a cost-effective and practical solution for people who have OCD. Despite this affirming information, we must continue to develop and test treatments that are better tolerated and that produce fewer dropouts and treatment refusers. Moreover, because efficacy rates in OCD treatment outcome appear to have become stagnant, the disorder is in need of a fresh analysis. Given the heterogeneity of symptom presentation in OCD, perhaps a targeted treatment according to predominant subtype (e.g., primary obsessions vs. contamination) will be necessary to move efficacy rates even higher.

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