

# Group versus individual cognitive-behavioural treatment for obsessive-compulsive disorder: A controlled trial

Rebecca A. Anderson, Clare S. Rees\*

*School of Psychology, Curtin University of Technology, GPO Box U1987, Perth, Western Australia 6845, Australia*

Received 12 September 2005; received in revised form 23 January 2006; accepted 31 January 2006

---

## Abstract

The efficacy of group cognitive behaviour therapy (CBT) for obsessive-compulsive disorder (OCD) has received relatively little research attention compared with the large number of studies that have investigated individual CBT. The current study is the first controlled study to compare an identical CBT protocol, containing both cognitive and behavioural elements, delivered either individually or in a group. Participants were randomly assigned to either 10 weeks of individual CBT, 10 weeks of group CBT or a 10 week wait-list. Participants with significant rates of secondary comorbidity were included in the study to enhance the generalisability of results. Intention-to-treat and completer analyses were carried out and indicated no differences between the group and individual treatments on outcome measures. Large effect sizes were found for both conditions. Analysis of clinically significant change indicated that the individual treatment was associated with a more rapid response but that both treatments had equivalent rates of recovered participants by brief follow-up. The importance of further investigations of the efficacy of group CBT for OCD is discussed.

© 2006 Elsevier Ltd. All rights reserved.

*Keywords:* Obsessive-compulsive disorder; Cognitive-behavioural treatment; Group treatment; Efficacy

---

## Introduction

A large research literature attesting to the success of behavioural and cognitive-behavioural treatments for obsessive-compulsive disorder (OCD) now exists (Cottraux et al., 2001; Emmelkamp, 1982; Freeston et al., 1997; Jones & Menzies, 1998; Lindsay, Crino, & Andrews, 1997; Steketee, 1993; van Oppen et al., 1995; Whittal, Thordarson, & McLean, 2005). Studies have examined behavioural interventions alone, cognitive interventions alone and combinations of the two. The consensus is that a combination of behavioural and cognitive techniques leads to significant improvement in a large number of patients. This large body of evidence is based however almost exclusively on treatment provided on an individual basis. Evidence for the efficacy of behavioural and cognitive behavioural treatments provided in a group format for OCD is lacking. This is somewhat surprising given that there are issues affecting the accessibility of individual treatments.

---

\*Corresponding author. Tel.: +61 8 9266 3039; fax: +61 8 9266 2464.

E-mail address: [c.rees@curtin.edu.au](mailto:c.rees@curtin.edu.au) (C.S. Rees).

One of the major impediments to accessing such treatment is the relatively small number of clinicians trained in the specific behavioural and cognitive behavioural techniques necessary to effectively treat OCD. The impressive success rates reported in the literature may be largely dependent upon the quality of the therapists in the treatment trials. Such therapists typically receive training by expert therapists who closely scrutinize the accuracy of the behavioural and cognitive behavioural techniques employed in the studies. Outside of these research settings it is unusual to find many clinicians with this level of expertise in the treatment of OCD. Consequently, patients are often forced to wait for long periods of time to consult an appropriately trained clinician or may instead receive sub-optimal treatment. The provision of cognitive behavioural treatment (CBT) in groups is one means by which more patients could access treatment in a more timely manner from highly skilled clinicians.

However, at this stage only a small number of studies have examined the efficacy of treating OCD in groups. These studies can be divided into those employing a behavioural intervention alone and those also including cognitive interventions. Table 1 displays the characteristics of published studies investigating the efficacy of group treatment for OCD. Although initial results suggested the group format was minimally effective for treating obsessive-compulsive symptoms (Enright, 1991; Espie, 1986), later studies have displayed more favourable results. Krone, Himle, and Nesse (1991) evaluated a 7-week group treatment program consisting of education, instruction regarding cognitive and behavioural self-treatment, and guided exposure exercises. Thirty six individuals completed the treatment, with a mean pre-post treatment Y-BOCS symptom reduction of 24%, and an effect size of 0.79. This represented a significant reduction in OCD symptoms, which was maintained and improved upon by follow-up. Krone and colleagues therefore concluded that this treatment was an effective and efficient method for decreasing OCD symptomatology.

Fals-Stewart, Marks, and Schafer (1993) conducted the first controlled-trial of group behavioural therapy. This study compared a group behavioural treatment, with individual behaviour therapy, and a control group who received individual relaxation sessions. The average pre- to post-treatment Yale-Brown Obsessive Compulsive Scale (Y-BOCS) symptom reductions were 46%, 40% and 9% for group, individual and relaxation control conditions, respectively. Fals-Stewart and colleagues noted that although patients in the individual treatment condition initially showed faster rates of improvement than those in the group condition, by the completion of the 12-week treatment neither condition was superior to the other.

Van Noppen, Stেকে, McCorkle, and Pato (1997) compared group behavioural therapy with group multifamily behavioural therapy. Both treatments included exposure and response prevention components, yet the multifamily treatment consisted of additional psychoeducation and behavioural contracting for exposure and limiting of rituals for family members. Both treatment modes resulted in significant symptom reductions as measured by the Y-BOCS, with mean pre to post treatment symptom reductions of 31% and 35%, representing effect sizes of 1.01 and 1.38, for group and group multifamily modes, respectively. While the multifamily mode therefore appeared somewhat more effective than the group mode, individuals were (non-randomly) assigned to the multifamily mode on the basis of having a family member willing to participate in the program. Family support may be a positive prognostic factor, thus attenuating the study results. Regardless of this methodological limitation, both group and multifamily group behavioural therapies were shown to produce large treatment effects, comparable to those noted in individual behavioural therapy, which were maintained at follow-up.

Van Noppen, Pato, Marsland, and Rasmussen (1998) evaluated a 10-week open trial of group behavioural therapy for OCD with 90 patients. A mean pre- to post-treatment Y-BOCS symptom reduction of 24% was reported along with an effect size of 0.89. Van Noppen and colleagues concluded that this effect size was similar to that noted in pharmacological studies, was within the range reported for other group behavioural studies, but was slightly lower than the range typically reported for individual behavioural treatment. Of note, they recognised that group behavioural therapy could bring about significant symptom improvement utilising one fifth of the therapist resources required to conduct an equivalent amount of individual behavioural therapy.

Hilme et al. (2001) also investigated the use of group behavioural therapy but in either 7 or 12 week formats. They found average pre- to post-treatment Y-BOCS symptom reductions of 30% and 32%, representing effect sizes of 1.03 and 1.02, for 7 and 12 weeks of behavioural therapy, respectively. The seven and twelve week formats did not differ significantly in terms of treatment outcomes. Hilme et al. (2001) therefore concluded

Table 1  
Characteristics of published studies investigating efficacy of group treatment for OCD

	Group behavioural therapy			Group cognitive behavioural therapy			
	Krone et al. (1991)	Fals-Stewart, Marks, and Schafer (1993)	Van Noppen et al. (1997)	Van Noppen et al. (1998)	Hilme et al. (2001)	Cordioli et al. (2003)	McLean et al. (2001)
N	36	93	17	90	113	47	76
Control group	No	Individual relaxation	No	No	No	Wait-list	Wait-list
Compared group with individual	No	Yes	No	No	No	No	No
Randomised	No	No	No	No	No	Yes	Yes (CBT and ERP)
Cognitive component	Unclear	No	No	Non-Beckian	No	Yes	Yes
Length (weeks)	7	12	10	10	7	12	12
Hours/week	2h, 1/wk	1h, 2/wk	2h, 1/wk	1.5h, 1/wk	2, 1/wk	2h, 1/wk	2.5h, 1/wk
OCD diagnosis	DSM-III-R	DSM-III	DSM-IV <sup>a</sup>	DSM-III-R <sup>a</sup>	DSM-IV <sup>a</sup>	DSM-IV	DSM-IV
Exclusion criteria	Organic mental disorder, schizophrenia, active substance abuse in prior 6 months	Axis II diagnosis, major depression diagnosis + BDI > 22	Did not mention	Cognitive deficits, psychosis, active substance use, Severe Axis I or II comorbidity deemed "at risk" of interfering with group, Low motivation	Did not mention	Medication unless stable for 3 months prior, score < 16 on Y-BOCS, severe social phobia, anorexia nervosa, depression, personality disorder, OCD onset following traumatic brain injury	Active thought disorder, mental retardation, organic mental disorder, medication unless 3 months stable, some other concurrent treatments, some physical ailments
Sample characteristics	Pre t/ment Y-BOCS	21	24	22	22	25	22
	Pre t/ment BDI	12	10 (HRSD)	NA	16	NA	17
	Mean symptom duration (years)	12.7	NA	> 7	NA	21	NA
	Taking medication at time of trail (%)	NA	NA	81	60	45	48
	Other psychotherapy	17% concurrent psychotherapy at time of trial	NA	NA	NA	NA	NA
	Comorbid disorders reported	(47% of sample) MDD, dysthymia, alcohol dependence, anorexia/bulimia nervosa, simple phobia, panic disorder/agoraphobia <sup>a</sup>	None screened out	NA	NA	major depression and "several comorbidities"	(50% of sample) MDD, GAD, social phobia
Follow-up (months)	3	6	12	Average = 25	3	3	3
Effect size pre-post	0.79	2.69 <sup>b</sup>	1.01	0.89 <sup>b</sup>	1.03	1.33 <sup>b</sup>	CBT = 1.00, ERP = 1.87

NA—Not available/not reported in original article.

<sup>a</sup>Diagnosis made following discussion with client. No formal/standardised assessment.

<sup>b</sup>Effect size reported in original publication, unclear of method used to calculate this. All other effect sizes calculated using Cohen's formula (mean pre-mean post-treatment Y-BOCS)/standard deviation pre-treatment).

that two hours of behavioural therapy for seven weeks was able to bring about significant and enduring changes in obsessive-compulsive symptomatology. However, it should be noted that a high attrition rate was reported (i.e., approximately 50% of participants by 3 month follow-up), thus limiting any conclusions regarding the lasting effects of the interventions.

McLean and colleagues (2001) conducted a comparison of group CBT, group exposure and response prevention (E/RP), and a wait-list control condition. They found that both the 12 week group CBT and group E/RP treatment modes were able to bring about statistically and clinically significant changes when compared to the wait-list control condition. The group E/RP was found to be marginally more favourable than the group CBT treatment mode, with this advantage maintained at a 3-month follow-up. Effect sizes for group E/RP versus wait-list control and for group CBT versus wait-list control were reported as 1.62 and 0.98, respectively. Of note, more individuals initially refused group CBT than they did group E/RP, but of those who started treatment more dropped-out of the group E/RP condition. The authors concluded that although both group treatment methods were effective for treating OCD, E/RP may be a more favourable approach for the group treatment of OCD due to the relative ease with which E/RP can be delivered to clients, and the ease with which therapists can be trained in E/RP methods over CBT.

In a later study, Cordioli and colleagues (2003) compared 12 weeks of group CBT with a wait-list control condition of equivalent length. Cordioli et al. (2003) found average pre to post treatment Y-BOCS symptom reductions of 43%, and reported an effect size of 1.33. Group CBT was reported to not only reduce the intensity of obsessive-compulsive symptomatology, but also reduced the intensity of over-valued ideas and improved the participants' ratings of their quality of life. Furthermore, these changes were noted to be further improved upon at a 3-month follow-up. These changes were not noted in those individuals included in the control group. The authors concluded that this form of treatment was effective in reducing OCD symptomatology, and improving one's quality of life, in a short period of time.

To conclude, the two studies to date evaluating group CBT for OCD have reported both statistically and clinically significant outcomes for clients treated using this approach. The average pre- to post-treatment effect sizes noted in studies utilising this approach (1.00 to 1.33) are only slightly lower than those reported in prior studies of individual CBT (e.g., 1.91 in Van Oppen et al., 1995) and are classified as large effect sizes as defined by Cohen's conventions (Cohen, 1988). However, it is notable that of the seven studies evaluating group behavioural and cognitive-behavioural treatments not one has compared group CBT and individual CBT, thus limiting the ability for researchers, clinicians and consumers to make informed decisions about the treatments comparative efficacy. Given that the current Expert Consensus Guidelines (March, Frances, Carpenter, & Kahn, 1997) recommend the use of cognitive components to address erroneous beliefs commonly noted in OCD, this appears to be an important consideration in evaluating group treatment programs for OCD.

In addition to the lack of a comparison study of group and individual CBT for OCD, an assessment of the design and methodology of the treatment studies published to date reveals that few of the studies are ideal in nature. As shown in Table 1, of the seven studies reviewed, only three included a control group thus limiting conclusions regarding the effectiveness of the treatment itself. Only one of the seven studies compared group treatment to the recommended individual treatment mode, thus not allowing clinicians to judge whether the treatment modes were equivalent, or whether one was significantly better than the other for their clients. However this comparison was for behavioural therapy and did not include any cognitive components. In fact, only two of the seven studies included a cognitive component as is recommended in the Expert Consensus Guidelines for Treatment. While two further studies stated that they included cognitive components they were not described adequately, or included cognitive strategies (e.g., thought-stopping) now considered less effective than standard CBT (March et al., 1997). Three of the studies did not undertake a formal or standardised assessment for the diagnosis of OCD. Finally, four of the seven studies implemented exclusion criteria including comorbid Axis I and II disorders, low motivation, "mild" scores on the Y-BOCS, and concurrent treatments for other Axis I or II diagnoses. Such exclusion criteria may be deemed a serious limitation to the generalisability of the studies results given that the majority of individuals seeking treatment for OCD experience, and thus may require treatment for, comorbid Axis I and II disorders.

The aim of this study was to conduct a randomized controlled trial of group cognitive behavioural treatment for OCD that would satisfy the criteria of being a controlled trial but also aim to produce more

generalisable results by including participants with a range of additional comorbid problems. Given that both group and individual CBT have been shown to bring about statistically significant change on outcome measures of obsessive-compulsive symptomatology and related phenomenology when compared to control conditions, it was hypothesized that both CBT conditions would display better outcomes on the treatment measures when compared to those in the wait-list control condition. Based on prior suggestions that CBT for OCD may lend itself better to individual therapy due to the complex and idiosyncratic nature of obsessions and compulsions and the high level of therapeutic skill demanded in delivering CBT itself (Fals-Stewart et al., 1993; McLean et al., 2001; Whittal & McLean, 2002), it was hypothesized that participants in the individual CBT condition would display better outcomes on the treatment measures when compared to those treated in the group CBT condition.

## Method

### *Participants*

Participants between the ages of 18 and 75 years were recruited via referrals from general practitioners, mental health professionals from both government and private organizations and self-referrals. Participants with a principal DSM-IV OCD diagnosis were selected into the study. This was determined by use of the Structured Clinical Interview for DSM-IV (SCID-IV). When more than one diagnosis was identified, clinical interview was used to determine the primary reason for the visit and the degree of interference in functioning as recommended by the DSM-IV (American Psychiatric Association, 2000). Eleven individuals were excluded from the study via this process as a principal diagnosis other than OCD was indicated. Other diagnoses included generalised anxiety disorder and major depressive disorder ( $n = 2$  each), and post-traumatic stress disorder, bulimia, binge eating disorder, body dysmorphic disorder, obsessive-compulsive personality disorder, dysthymia, and anger management problems ( $n = 1$  each).

Individuals were initially excluded from the study if they were undergoing concurrent psychological treatment for OCD, had a current diagnosis of schizophrenia, an intellectual disability, or an organic mental disorder. Individuals were also excluded from the study if their medication dosage had been unstable in the 3 months prior to assessment. This was determined via the initial assessment interview. Of those accepted into the study, any participants taking medication were asked to maintain their current regime throughout the course of the treatment. This was monitored for each participant at the beginning of the session during homework review.

### *Measures*

The following measures were implemented at pre- and post-treatment, and at the 1 month follow-up. Wait-list participants completed the measures at intake and then at a 10 week follow-up.

*The Y-BOCS:* The Y-BOCS (Goodman et al., 1989) measures the severity of OCD symptoms. It includes 10 items (five assess obsessions and five assess compulsions), each of which are assessed on a 5-point scale ranging from 0 (no symptoms) to 4 (severe symptoms). For both obsessive and compulsive symptoms, the following are assessed: the time spent engaged in the symptoms; the degree of interference with functioning; the level of distress; attempts to resist the symptoms; and the level of control over the symptoms. The Y-BOCS has served as the major outcome measure in OCD research. Furthermore, Goodman et al. (1989) note that the Y-BOCS has shown adequate interrater agreement, internal consistency, and validity.

*Beck Depression Inventory (BDI):* The BDI (Beck, Rush, Shaw, & Emery, 1979) is a 21-item self-report measure that assesses symptoms of depression over the previous week. It is one of the most widely implemented measures of depression, and is often utilised in treatment studies. The psychometric properties of the BDI are well established. Beck, Steer, and Garbin (1988) conducted a meta-analysis of the BDI's internal consistency and found a mean  $\alpha$  coefficient of 0.86 for psychiatric patients and 0.81 for non-psychiatric individuals. Furthermore, high correlations between the BDI and clinical ratings, and the BDI and the Hamilton Psychiatric Rating Scale have been noted in psychiatric populations (0.72 and 0.73, respectively) and in non-psychiatric samples (0.64 and 0.74, respectively).

*Global Assessment of Functioning (GAF) Scale:* The GAF Scale (American Psychiatric Association, 2000) is a single measure that is particularly useful in tracking the clinical progress of individuals in global terms. The GAF is divided into 10 ranges of functioning. A rating is made by picking a single value that best represents the individual's overall level of symptom severity and functioning on a scale of 0–100. The DSM-IV identifies that GAF scores are useful in planning treatment and measuring its impact, and in predicting outcome.

*Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q):* The Q-LES-Q (Endicott, Nee, Harrison, & Blumenthal, 1993) is a self-report measure consisting of 93 items that are grouped into 10 summary scales: physical health; subjective feelings; leisure time activities; social relationships; general activities; work; household duties; medication satisfaction; school/course work; and life satisfaction and enjoyment. Responses are scored on a 5-point scale. Scores are summed and divided by the number of valid sections, then multiplied by 100 to give a Q-LES-Q total score. Higher scores are indicative of better quality of life. Reported internal consistency for the Q-LES-Q domains (Cronbach's  $\alpha$ ) ranged from 0.90 to 0.96, and test-retest reliability (inter-class coefficient) ranged from 0.63 to 0.89 (Endicott et al., 1993; Bishop, Walling, Dott, Folkes, & Bucy, 1999). Only one of the 10 scales was utilized in the present study, as factor analyses have indicated that nearly all of the variance in the total score can be accounted for by the final scale of "overall life satisfaction and enjoyment" (French & Nathan, 2001). This shorter version contains 14 items and still covers all of the areas (e.g., physical health, subjective feelings, etc.) included in the full questionnaire.

### *Attrition*

Treatment attendance and dropout were recorded on a weekly basis. Individuals were recorded as a dropout if they simply stopped attending, contacted the therapist to state that they were no longer going to attend or missed three sessions.

### *Treatment protocol*

Rees and Nathan's (2001) CBT treatment protocol was used in this research. The protocol was designed to be suitable for delivery in either a group or individual format. It consists of a 10-session treatment programme with a follow-up at 1-month post-treatment. All group sessions are 2 h in length and are facilitated by two therapists. The individual condition also includes 10 sessions and is 1 h in length with one therapist only. The treatment programme includes cognitive restructuring based on Beck's model (Beck, 1976) of logical analysis and hypothesis testing, integrated into exposure exercises following specific training in the identification, analysis, and disputation of irrational thoughts. Specific cognitive strategies are incorporated into this program to challenge faulty estimations of danger (e.g., probability testing, see van Oppen & Arntz, 1994), elevated responsibility appraisals (e.g., responsibility pie charts, see Salkovskis, Forrester, Richards, & Morrison, 1998), and thought-action fusion beliefs (e.g., metacognitive therapy, see Wells, 1997). Exposure exercises are developed to suit the idiosyncratic obsessions and rituals associated with each presentation. The treatment protocol includes specific homework exercises attached to each component of the treatment. Exposure exercises are introduced as both an opportunity to test beliefs as well as learn to habituate to anxiety. As such this treatment protocol represents a blend of cognitive and behavioural techniques. Table 2 presents each session of the treatment protocol. The treatment programme was delivered by trained postgraduate level clinical psychology students. Franklin, Abramowitz, Furr, Kalsy, and Riggs (2003) have shown that therapists with 0–1 years clinical experience are able to implement exposure and response prevention for the treatment of OCD with comparable results to those clinicians with more than 9 years experience, and slightly better than those clinicians with 2–8 years experience. This finding supports the use of postgraduate level clinical psychology students in implementing such a treatment protocol. Furthermore, all treatment sessions were videotaped and reviewed in regular supervision with a clinical psychologist (C.S.R) experienced in the treatment of OCD, to ensure the treatment protocol was adhered to. This involved C.S.R utilizing a checklist of session objectives and ensuring that for every session these were met. This process revealed no deviations from the treatment protocol.

Table 2  
The CBT treatment protocol (Rees & Nathan, 2001): session outline

Session number	Session content
1	Overview of course; discussion of nature and causes of OCD, symptoms of OCD, and treatment process; identification of target areas for exposure exercises
2	Motivational analysis; explanation of subjective units of distress scale (SUDS); development of experiment hierarchies
3	Introduction to cognitive therapy (identifying erroneous thoughts); begin E/RP exercises
4	Introduction to disputation; in-session E/RP incorporating cognitive therapy component
5	Introduction to specific disputation techniques (e.g., probability and responsibility re-appraisals); incorporating into E/RP exercises
6–9	E/RP exercises with cognitive therapy component; continuous review and troubleshooting
10	Review and troubleshooting; planning for next month (e.g., coping with setbacks); discussion of strategies for maintaining goals
11	One-month follow-up: review and trouble shooting

### *Procedure*

Participants were screened via a telephone interview to determine suitability for the programme. Assessment interviews were then arranged at the Stress Anxiety Research and Treatment (StART) Clinic within the School of Psychology at Curtin University. The SCID I/P (First, Spitzer, Gibbon, & Williams, 1996) was used to determine a DSM-IV diagnosis of OCD and the presence of any additional Axis I diagnoses. In addition the SCID-II (First, Spitzer, Gibbon, Williams, & Lorna, 1994) was given to assess Axis II disorders. The SCID interviews are comprehensive diagnostic interviews designed to assess DSM-IV (American Psychiatric Association, 1994) diagnostic criteria.

All assessments were carried out by post-graduate students in clinical psychology who were extensively trained in the administration of the SCID. To ensure reliability of SCID diagnoses, all assessments were videotaped and 25% later reviewed by a senior clinician (C.S.R). The overall  $k$  agreement for the presence and assignment of a principal diagnosis of OCD between the two raters was 1.00 in both cases.

Individuals meeting the criteria for the study were then given both verbal and written information regarding the research and signed consent forms were then collected. Participants attended a further assessment session where the therapist completed the Y-BOCS interview and provided the other study measures to the clients for completion. Participants were then randomly assigned to either group or individual cognitive-behavioural therapy treatment conditions, or to a wait-list control condition. Both group and individual treatment conditions consisted of a closed ended 10-week cognitive behavioural treatment programme, with a 1-month follow-up session.

## **Results**

### *Assumption testing*

Analysis of covariance with the pre-test score as the covariate was selected to test the research hypotheses. A number of assumptions underlying the use of ANCOVA were tested prior to proceeding with the analysis. Six assumptions underlie the ANCOVA, including: independence of observations; independence of the covariate and treatment conditions; reliability of the covariate; normal distribution of scores on the covariate for each group; a linear relationship between the dependent variable and the covariate for each group; and homogeneity of variance (Coakes & Steed, 2003). Each of these assumptions was addressed and no violations found. The procedure for determining independence of observations using intracluster correlation (ICC) is described in detail below.

### *Intragroup dependency*

Research involving patient samples often involves clustered samples, in which subjects are treated at a group level but then analysed at the individual level. Killip, Mahfoud, and Pearce (2004) state that the “similarities among subjects in clusters can reduce the variability of responses from a cluster compared with those expected from a simple random sample” (2004, p. 204), thus violating the independence of observations assumption of several statistical analyses. For the current sample, dependence could arise from two sources: individuals within a group sharing particular experiences, and individuals having been systematically, rather than randomly, allocated at the group level. Given that the current study utilises the treatment results for 23 individuals treated in four separate treatment groups, intragroup dependency required investigation. This was achieved by calculating the intraclass correlation (ICC) for each outcome measure at pre- and post-treatment and at the 1-month follow-up, using the following calculation:

$$ICC = \frac{(MS_{BETWEENGROUP} - MS_{WITHINGROUP})}{(MS_{BETWEENGROUP} + [n - 1]MS_{WITHINGROUP})}$$

An ICC value of one means that all individuals within a cluster behave in an identical manner, while a value of zero indicates that behaviour is unaffected by group membership. Due to uneven numbers in each of the groups in the current study,  $n$  for this calculation was represented by the harmonic mean of the number of individuals in each of the four treatment groups, calculated according to the formula below. The four groups were started with six, five, seven and five participants, respectively. Thus, for the current study  $n = 5.637583893$ .

$$n = \frac{a(\text{i.e., number of groups})}{(1/n_1(1/+))n_2(1/+))n_3(1/+))n_4)}$$

The results of the calculations indicated a series of non-significant findings for: the Y-BOCS measure at pre-test (ICC = -0.117,  $p > 0.05$ ), post-test (ICC = -0.008,  $p > 0.05$ ), and 1-month follow-up (ICC = -0.078,  $p > 0.05$ ); the BDI measure at pre-test (ICC = -0.053,  $p > 0.05$ ), post-test (ICC = -0.079,  $p > 0.05$ ), and 1-month follow-up (ICC = -0.121,  $p > 0.05$ ); the Q-LES-Q measure at pre-test (ICC = -0.026,  $p > 0.05$ ), post-test (ICC = -0.187,  $p > 0.05$ ), and 1-month follow-up (ICC = -0.086,  $p > 0.05$ ); and the GAF measure at pre-test (ICC = -0.1796,  $p > 0.05$ ), post-test (ICC = -0.044,  $p > 0.05$ ), and 1-month follow-up (ICC = -0.109,  $p > 0.05$ ). All ICC factors were negative, indicating that the individuals within each group did not significantly influence reporting on outcome measures, and that the independence of observations assumption was not violated.

### *Treatment completer analyses*

A total of 51 participants completed the study (group  $n = 20$ , individual  $n = 17$ , wait-list  $n = 14$ ). Forty six individuals were initially offered CBT. Of these, two people did not start treatment in the group mode due to: a) work commitments; and, b) severe comorbid agoraphobia. Furthermore, four people dropped out of individual treatment and three out of group CBT, respectively, three individuals in the wait-list condition were not available to complete outcome measures after the 10-week period, and not all participants were available or completed the 1 month follow-up. A summary of the participant attrition and outcome measurement completion is presented in Table 3. The mean number of sessions completed was 9.15 in group CBT and 10.0 in individual CBT. The perfect attendance for the individual condition was due to the flexibility of treatment scheduling.

Table 4 displays the mean scores and standard deviations for participant characteristics and the study outcome measures at pre-, post-treatment and at brief follow-up.  $\chi^2$  analyses indicated no significant differences between conditions based on gender or current medication use. Analysis of variance also indicated no significant differences between conditions on other sociodemographic variables (age, number of Axis I and II disorders, age at onset, length of presentation) or on outcome variables (Y-BOCS, BDI, Q-LES-Q, and GAF) at pre-treatment. All analyses were conducted with an  $\alpha$  level of 0.05. A total of 65% of participants had a second Axis I diagnosis with the most common being major depression (41.3%) followed by social

Table 3  
Participant attrition and outcome measure completion

	GCBT	ICBT	Wait-list
Offered treatment and accepted	25	21	17
Started treatment	23	21	17
Dropped out during treatment	3	4	NA
Completed treatment	20	17	NA
Completed post-treatment measures	20	17	14
Available at brief follow-up+completed measures	18	13	NA

Table 4  
Demographics and treatment outcome means and standard deviations for participants who completed treatment

Variable	Group CBT	Individual CBT	Wait-list
Age	34.6 (15.9)	32.2 (7.6)	34.4 (10.2)
Age of onset	18.4 (8.0)	20.4 (10.8)	20.8 (10.3)
Duration	16.1 (14.3)	11.4 (9.0)	13.6 (7.1)
No.Comorbid Axis I	2.2 (1.0)	1.8 (0.7)	2.5 (1.0)
No.Comorbid Axis II	1.4 (1.6)	0.6 (1.0)	0.8 (0.9)
%Using medications	65.0	64.7	57.1
%Female	80.0	64.7	64.3
Y-BOCS			
Pre	25.4 (7.3)	24.0 (6.2)	24.1 (5.1)
Post	18.1 (7.7)	16.7 (6.8)	23.5 (6.4)
Brief follow-up	17.1 (6.6)	14.2 (8.4)	NA
BDI			
Pre	22.3 (10.8)	17.8 (10.2)	14.5 (9.6)
Post	12.4 (6.2)	10.5 (8.5)	18.4 (10.4)
Brief follow-up	14.6 (10.8)	10.4 (11.5)	NA
Q-LES-Q <sup>a</sup>			
Pre	47.0 (18.0)	56.4 (15.7)	52.6 (16.2)
Post	61.0 (13.6)	64.1 (18.9)	54.3 (16.5)
Brief follow-up	62.4 (19.5)	71.8 (21.4)	NA
GAF <sup>a</sup>			
Pre	52.6 (9.4)	56.6 (8.8)	54.3 (7.8)
Post	58.2 (9.3)	64.6 (10.5)	55.1 (8.5)
Brief follow-up	62.0 (10.0)	67.8 (13.2)	NA

Note: Post-treatment group  $n = 20$ , individual  $n = 17$ , wait-list  $n = 14$ , Follow-up group  $n = 18$ , individual  $n = 13$ . Y-BOCS = Yale-Brown Obsessive-Compulsive Scale; BDI = Beck Depression Inventory; Q-LES-Q = Quality of Life Enjoyment and Satisfaction Questionnaire; GAF = Global Assessment of Functioning Scale.

<sup>a</sup>Higher scores indicate improvement.

phobia (11.1%). Over half (52.4%) of the participants had an additional Axis II diagnosis with the most common being obsessive-compulsive personality disorder (23.8%) followed by avoidant personality disorder (12.7%). Sixty three percent of the participants were currently using medication for their OCD.

Due to the large number of comparisons a modified  $p$  level of 0.25 was applied to all analyses. ANCOVAs with pre-treatment scores as a covariate indicated significant main effects at post-treatment on the Y-BOCS [ $F(2,48) = 6.79, p = 0.003$ ], BDI [ $F(2,48) = 8.32, p = 0.001$ ] and GAF measures [ $F(2, 48) = 5.55, p = 0.007$ ], but not for the Q-LES-Q [ $F(2,40) = 0.934, p > 0.025$ ]. At one-month follow-up, the ANCOVAs indicated no significant difference between group and individual CBT on the Y-BOCS [ $F(1,29) = 0.541, p > 0.025$ ], BDI [ $F(1,29) = 0.294, p > 0.025$ ], Q-LES-Q [ $F(1,28) = 0.412, p > 0.025$ ], or GAF [ $F(1,29) = 0.939, p > 0.025$ ].

Post-hoc comparisons indicated that participants in the group CBT condition and individual CBT condition had significantly lower scores on the post-treatment Y-BOCS [Group:  $F(1,32) = 9.55, p = 0.004$ ; Individual:  $F(1,29) = 13.96, p = 0.001$ ] and BDI [Group:  $F(1,32) = 9.21, p = 0.005$ ; Individual:  $F(1,29) = 18.66, p = 0.000$ ] when compared to the wait-list condition. There was no significant difference between group and individual CBT conditions on the post-treatment Y-BOCS [ $F(1,33) = 0.394, p > 0.025$ ], or BDI [ $F(1,35) = 0.039, p > 0.025$ ]. Participants in the individual CBT condition had significantly higher GAF scores at post-treatment than the wait-list condition [ $F(1,29) = 11.02, p = 0.003$ ], but there were no significant differences between individual and group CBT [ $F(1,35) = 1.88, p > 0.025$ ], or group and wait-list conditions [ $F(1,32) = 4.80, p > 0.025$ ] on this measure.

### *Intention-to-treat analyses*

The intention-to-treat sample consisted of 63 participants (group  $n = 25$ , individual  $n = 21$ , wait-list  $n = 17$ ). Intention-to-treat analyses comparing the three treatment conditions were undertaken using ANCOVAs of post-treatment and 1-month follow-up scores on the outcome measures, using the pre-treatment scores as a covariate. In the case of treatment dropouts, the last observation carried forward method was used as a conservative estimate of symptomatology for those individuals without outcome measure scores following treatment. Using this method, individuals with missing data following treatment or at follow-up are assigned the score from the last measurement taken from them. This resulted in an additional four participants in the individual CBT condition, three in the group CBT condition and three additional participants in the wait-list control condition.

The ANCOVAs with pre-treatment scores as a covariate indicated significant main effects at post-treatment on the Y-BOCS [ $F(2,60) = 5.12, p = 0.009$ ], BDI [ $F(2,60) = 5.87, p = 0.005$ ] and GAF measures [ $F(2,60) = 4.36, p = 0.017$ ], but not for the Q-LES-Q [ $F(2,52) = 0.69, p > 0.025$ ]. At 1-month follow-up, the ANCOVAs indicated no significant difference between group and individual CBT on the Y-BOCS [ $F(1,42) = 0.317, p > 0.025$ ], BDI [ $F(1,42) = 0.046, p > 0.025$ ], Q-LES-Q [ $F(1,40) = 0.029, p > 0.025$ ], or GAF [ $F(1,42) = 0.433, p > 0.025$ ].

Post-hoc comparisons indicated that participants in the group CBT condition and individual CBT condition had significantly lower scores on the post-treatment Y-BOCS [Group:  $F(1,40) = 8.25, p = 0.007$ ; Individual:  $F(1,36) = 10.23, p = 0.003$ ] and BDI [Group:  $F(1,40) = 6.85, p = 0.013$ ; Individual:  $F(1,36) = 14.61, p = 0.001$ ] when compared to the wait-list condition. There was no significant difference between group and individual CBT conditions on the post-treatment Y-BOCS [ $F(1,44) = 0.001, p > 0.025$ ], or BDI [ $F(1,44) = 0.003, p > 0.025$ ]. Participants in the individual CBT condition had significantly improved GAF scores at post-treatment compared to the wait-list condition [ $F(1,36) = 8.95, p = 0.005$ ], but there were no significant differences between individual and group CBT [ $F(1,44) = 1.55, p > 0.025$ ], or group and wait-list conditions [ $F(1,40) = 3.45, p > 0.025$ ] on this measure.

### *Effect size calculations*

Effect sizes (Cohen's  $d$ ) were calculated for post-treatment and 1-month follow-up Y-BOCS scores for comparison with prior treatment studies. Effect sizes were calculated for wait-list versus group CBT, wait-list versus individual CBT, and for group versus individual CBT treatment conditions. To enable comparisons with prior studies the effect sizes were calculated for treatment completers only, using unadjusted means, and utilising the following formulae for post-treatment calculations (with substitution of mean 1-month follow-up scores for the 1-month follow-up effect size calculations):

$$d = \frac{M_{\text{POSTCONDITION1}} - M_{\text{POSTCONDITION2}}}{SD_{\text{POOLED}}}$$

Mean change effect sizes were also calculated for each treatment condition, however these utilised subtracted mean pre- and post-treatment scores for the numerator, and pre-treatment standard deviations for the denominator of the equation. The mean change and comparison effect sizes for each treatment condition are presented in Table 5.

Table 5  
Mean change and comparison effect sizes

Change	Effect size	Comparison	Effect size
Group		GCBT vs. wait-list (post)	0.77
Pre to post	1.00	ICBT vs. wait-list (post)	1.03
Pre to brief follow-up	1.14	ICBT vs. GCBT (post)	0.19
Individual		ICBT vs. GCBT (follow-up)	0.39
Pre to post	1.18		
Pre to brief follow-up	1.58		

### Clinical improvement analyses

While effect sizes tell us how much an individual has improved from pretest to posttest or in comparison with a control group, they do not tell us about the clinical impact a treatment has on the individuals' symptom severity. Jacobson and Truax (1991) therefore propose a method for determining whether a treatment has led to an individual's recovery or produced a clinically meaningful change.

First, clinically significant change is determined by assessing whether an individual's post-treatment score on an established outcome measure is more likely to represent the normal or dysfunctional population. For OCD, this means establishing whether the individual's post-treatment or follow-up Y-BOCS scores are below a nominated cut-off score. In the absence of any appropriate normative data for non-clinical populations on the Y-BOCS, Fisher and Wells (2005) identify the need to assess such change as being represented by a score two standard deviations lower than the mean reported in clinical population norms. In their review of five studies, covering 300 cases of OCD, they identified a cut-off point of 14 or below on the Y-BOCS for post-treatment and follow-up scores as representing clinically significant change.

Second, the Reliable Change Index (RCI) is used to establish whether changes from pre- to post-treatment and pre-treatment to follow-up are statistically reliable, and not simply the result of errors of measurement. Again, in reviewing a large sample of individuals with OCD scores on the Y-BOCS, Fisher and Wells (2005) were able to calculate that a 10-point change on the Y-BOCS was required to indicate that a reliable change had taken place. This signifies that individuals whose scores on the Y-BOCS decreased by 10 or more points are *improved*, those whose scores on the Y-BOCS increase by 10 or more points are *deteriorated*, and those whose scores do not vary by more than 9 points are *unchanged*. Only those individuals who meet both the criteria for reliable and clinically significant change are classified as *recovered*. Given that the Fisher and Wells (2005) study provides the only clear normative Y-BOCS data to date for a large number of individuals with OCD, the current study utilised the same cut-off points and RCI for meeting the recovered, improved, unchanged and deteriorated status at post-treatment and at brief follow-up.

The rates at which individuals in the group CBT, individual CBT and wait-list conditions met the recovered, improved, unchanged and deteriorated status at post-treatment and 1-month follow-up are reported in Table 6. The reported rates are in percentages and are for treatment completers only.

The difference in rates of improvement from pre to post-treatment between individual CBT and wait-list was non-significant,  $\chi^2(1, N = 38) = 1.709, p > 0.05$ , however there was a significant difference between the rates of recovery,  $\chi^2(1, N = 38) = 6.946, p = 0.009$ . Pre- to post-treatment improvement rates between group CBT and wait-list was non-significant,  $\chi^2(1, N = 42) = 3.859, p > 0.05$ , as were the rates of recovery,  $\chi^2(1, N = 42) = 3.006, p > 0.05$ . Pre to post treatment improvement rates between group and individual CBT was non-significant,  $\chi^2(1, N = 46) = 0.971, p > 0.05$ , as were the rates of recovery,  $\chi^2(1, N = 46) = 1.885, p > 0.05$ . Finally, pre-treatment to 1-month follow-up improvement rates between group and individual CBT was not significant,  $\chi^2(1, N = 31) = 0.003, p > 0.05$ , nor were the rates of recovery,  $\chi^2(1, N = 31) = 0.003, p > 0.05$ .

### Discussion

This is the first published controlled study which has directly compared group CBT with individual CBT. As predicted both of the active treatment conditions resulted in significantly greater symptom improvement than

Table 6  
Rates of clinical improvement on the Y-BOCS (%)

	GCBT	ICBT	Wait-list
<i>Pre- to post-treatment</i>			
<i>n</i>	20	17	14
Recovered	20	41	0
Improved	25	12	0
No change	55	47	93
Deteriorated	0	0	7
<i>Pre-treatment to brief follow-up</i>			
<i>n</i>	18	13	NA
Recovered	22	23	—
Improved	22	23	—
No change	56	54	—
Deteriorated	0	0	—

the control condition. The prediction that individual CBT would produce statistically significant improvement beyond the group CBT condition was not supported. In fact, the group CBT condition yielded large effect sizes that were comparable to the individual CBT condition.

Examination of clinically significant change revealed some important results. Analysis of scores from pre- to post-treatment indicated that the individual CBT condition resulted in a larger percentage of participants meeting the criteria for recovered. However, the percentage of participants in the individual CBT condition meeting the criteria for recovered dropped from 41% at post-treatment to 23% by brief follow-up. In contrast, the percentage of participants in the group CBT condition meeting the criteria for recovered increased from 20% at post-treatment to 22% at brief follow-up. Indeed, by brief follow-up both individual and group conditions were equivalent in terms of the percentage of participants meeting the criteria for recovered. Although it is acknowledged that the nature of treatment trajectories was not explored via session-by-session measures of symptomatology, these results are consistent with prior reports by Fals-Stewart and colleagues (1993) who found that individual behavioural therapy led to faster rates of symptom improvement than group behavioural therapy, but that over time the treatment modes were equally effective.

To ensure that changes in recovery rates in the individual condition were not due to systematic participant drop-out from post-treatment to brief follow-up, the original case data was consulted. This inspection revealed that of the four individuals who were not available for brief follow-up, three were from the no change and only one was from the recovered category at post-treatment. Taking these dropouts into account, if gains had been maintained to brief follow-up, a 46.1% recovery, 15.4% improvement and 38.5% no change rate would have been expected at brief follow-up. Systematic dropouts were therefore not considered a plausible explanation for the noted decrease in recovered rates in the individual treatment condition.

Given that recovery status was based on a categorical conceptualisation of significant and reliable change, it is possible that minor fluctuations in obsessive-compulsive symptom reporting led to individuals no longer meeting the recovered status. To explore this possibility, original case data was again consulted. While one individual had moved from recovered to improved status, three individuals had dropped from recovered to no change status. These were due to two, five and eight point increases on the Y-BOCS from post-treatment to brief follow-up. Whether these represented trivial fluctuations cannot be determined. Of note, one would anticipate that if scores were appreciably subject to such fluctuations that the group CBT condition would also have been affected, however this was not the case with stable rates of recovery and improvement reported from post-treatment to brief follow-up.

An alternative explanation for this finding is that those participants in the group condition knew that they would be seeing other group members at the follow-up session and may have felt more motivated than those in the individual condition to continue applying the skills learnt in treatment. In contrast to those in the individual condition, group participants had their homework completion publicly reviewed at the beginning of each therapy session. As such, the knowledge that other group members would be aware of their efforts may

have had a motivating effect. A further explanation for the different rates of change could be that in the individual CBT condition participants received a minimum of 1 h of direct therapist contact each week and may have had more opportunity to complete a greater number of exposure exercises at an earlier stage of treatment than those in the group condition. However, as mentioned we did not complete repeated measures throughout the intervention and so this remains a tentative explanation only. Nevertheless, the present results indicate that despite different rates of change, both treatments produced an equivalent amount of change.

It is also important to note that the group CBT condition was associated with a low attrition rate of 13%. This rate compares favourably with rates reported for individual CBT in the literature (Fisher & Wells, 2005). This suggests that being treated in a group does not have any negative impact upon engaging in treatment. In fact, it is quite possible that the group condition facilitates attendance as a result of the non-specific effects of the group milieu. Such non-specific factors might include the support and encouragement of the group and observation of improvement in other group members.

### *Depression, global functioning and quality of life*

Given the high level of disability associated with OCD we felt it important to measure other more general areas of functioning in addition to obsessive-compulsive symptomatology. As expected we found that both active treatments produced equally significant reductions in severity of depression. However, we were particularly interested in the impact of the active treatments upon general functioning. Improvements occurred for participants in the group and individual conditions according to both the self-report of general functioning (quality of life measure—Q-LES-Q) and the therapist report of general functioning (global assessment of functioning—GAF). However, these improvements did not result in significant differences on the quality of life measure across the three groups. Improvement in global functioning at post-treatment was significantly superior in the individual condition compared to the control condition. Improvements on these measures continued at brief follow-up with no significant differences between the group and individual conditions.

It is not surprising that improvement in general functioning did not reach significance given that these measures are assessing changes in general functioning that would generally be expected to occur some time after initial symptom improvement. It is quite possible that continued improvements on these measures could be expected some time after the end of treatment. Unfortunately, due to funding limitations we were only able to include a brief, 1-month follow-up in this study. Clearly, this limits conclusions regarding the enduring effects of the treatment upon all of the outcomes measured. A longer follow-up period in the present study would have helped to clarify this issue.

One potential factor affecting this study is the number of treatment hours received by participants in each of the active treatment conditions. Specifically, the group CBT participants received a total of 11 sessions of 2 h duration (total therapy hours = 22) compared to the individual CBT participants who received 11 sessions of 1 h duration (total therapy hours = 11). On the surface this could be interpreted as indicating that the individual treatment is able to produce significant results after half the therapy time. However, the group CBT treatment consisted of an average of 5 participants each sharing the 2 h session and thus in reality each participant received approximately 24 min of direct therapy time. In this sense it is not correct to argue that participants in the group CBT condition received more therapy hours.

The large effect size for group CBT found in this study is consistent with other studies of group CBT for OCD and was only marginally lower than the effect size obtained for individual CBT. The large effect size obtained in this study is promising given that the intervention consisted of a relatively short number of treatment sessions. The Expert Consensus Guidelines suggest that for optimal effectiveness, CBT interventions should consist of between 12 and 20 sessions with 2–3 sessions per week. Given that this frequency and duration of therapy is often not practically possible, the present results indicate that large effects can still be obtained following briefer treatment.

Based on their findings, previous authors (McLean et al., 2001; Whittal et al., 2005) have concluded that behaviour therapy (ERP) is more suited to delivery in a group format than CBT for treating OCD. They suggest that group CBT for OCD may under treat participants compared to individual CBT due to insufficient time to adequately identify and challenge each participant's idiosyncratic cognitive distortions. However, in

this study we found that a cognitive-behavioural treatment protocol which included a substantial cognitive component resulted in both statistically and clinically significant improvement. In order to clarify this issue more studies investigating the efficacy of group CBT are required.

The results of this study indicate that OCD can be effectively treated in a group using CBT. A major advantage of this type of treatment approach is the reduction in therapist time and thus the cost and time efficiency of the treatment. For example, in this study each therapist in the group CBT condition logged a total of 88 h to treat 25 participants. To treat the same number of participants individually 275 h of therapist time would be required. Thus, individual CBT requires three times the number of therapist hours than group CBT.

## Conclusion

These findings highlight the need for further studies to investigate the efficacy of group CBT for OCD. This study included participants with many secondary comorbid problems and so enables some generalization as to the results. However, more studies with larger samples are required as well as studies that attempt to measure the non-specific effects of group therapy for OCD. This study could have been improved with the inclusion of a longer follow-up period to assess for ongoing symptom change. The promising results found here require further replication by well-controlled clinical trials.

## Acknowledgements

We are grateful to the Division of Health Sciences, Curtin University of Technology for funding received in 2003/2004 which has made this research possible. We would like to thank Annette Brown, James Dent, Hunna Watson, Sara Dina, and Jessica George for their assistance with treatment. We also appreciate the work of the clinic co-coordinator Sarah Egan for assisting with recruitment and general aspects of the project. Finally, we would like to thank Robert Kane, Ph.D. for his invaluable statistical advice.

## References

- American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text revision). Washington, DC: American Psychiatric Association.
- American Psychiatric Association. (1994). *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.). Washington, DC: American Psychiatric Association.
- Beck, A. (1976). *Cognitive therapy and the emotional disorders*. New York: International Universities Press.
- Beck, A., Rush, A., Shaw, A., & Emery, G. (1979). *Cognitive therapy of depression*. New York: Guilford.
- Beck, A., Steer, R., & Garbin, M. (1988). Psychometric properties of the Beck Depression Inventory: Twenty five years of evaluation. *Clinical Psychology Review*, 8, 77–100.
- Bishop, S., Walling, D., Dott, S., Folkes, C., & Bucy, J. (1999). Refining quality of life: Validating a multidimensional factor measure in the severe mentally ill. *Quality of Life Research*, 8, 151–160.
- Coakes, S., & Steed, L. (2003). *SPSS: Analysis without anguish Version 11.0 for Windows*. Milton: Wiley.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Erlbaum.
- Cordioli, A., Heldt, E., Bochi, D., Margis, R., de Sousa, M., Tonello, J., et al. (2003). Cognitive-behavioral group therapy in obsessive-compulsive disorder: A randomised clinical trial. *Psychotherapy and Psychodynamics*, 72, 211–216.
- Cottraux, J., Note, I., Yao, S., Lafont, S., Note, B., Mollard, E., et al. (2001). A randomised controlled trial of cognitive therapy versus intensive behavior therapy in obsessive compulsive disorder. *Psychotherapy and Psychodynamics*, 70, 288–297.
- Emmelkamp, P. (1982). *Phobic and obsessive-compulsive disorders: Theory, research and practice*. New York: Plenum Press.
- Endicott, J., Nee, J., Harrison, W., & Blumenthal, R. (1993). Quality of Life Enjoyment and Satisfaction Questionnaire: A new measure. *Psychopharmacology Bulletin*, 29, 321–326.
- Enright, S. (1991). Group treatment for obsessive-compulsive disorder: An evaluation. *Behavioral Psychotherapy*, 19, 183–192.
- Espie, C. (1986). The group treatment of obsessive-compulsive ritualizers: Behavioral management of identified patterns of relapse. *Behavioral Psychotherapy*, 14, 21–33.
- Fals-Stewart, W., Marks, A., & Schafer, J. (1993). A comparison of behavioral group therapy and individual behavior therapy in treating obsessive-compulsive disorder. *The Journal of Nervous and Mental Disease*, 181, 189–193.
- First, M., Spitzer, R., Gibbon, M., & Williams, J. (1996). *Structured clinical interview for DSM-IV axis I disorders—patient edition (SCID-I/P, Version 2.0)*. New York: Biometrics Research Department, New York State Psychiatric Institute.
- First, M., Spitzer, R., Gibbon, M., Williams, J., & Lorna, B. (1994). *Structured clinical interview for DSM-IV Axis II personality disorders (SCID-II; Version 2.0)*. New York: Biometrics Research Department New York State Psychiatric Institute.

- Fisher, P., & Wells, A. (2005). How effective are cognitive and behavioral treatments for obsessive-compulsive disorder? A clinical significance analysis. *Behaviour Research and Therapy*, 43, 1543–1558.
- Franklin, M., Abramowitz, J., Furr, J., Kalsy, S., & Riggs, D. (2003). A naturalistic examination of therapist experience and outcome of exposure and ritual prevention for OCD. *Psychotherapy Research*, 13, 153–167.
- Freeston, M., Ladouceur, R., Gagnon, F., Thibodeau, N., Rheaume, J., Letarte, H., et al. (1997). Cognitive-behavioural treatment of obsessive thoughts: A controlled study. *Journal of Consulting and Clinical Psychology*, 65, 405–413.
- French, D., Nathan, P. (2001). Quality of life: A short measure of mental health outcome in cognitive behaviour therapy. In *Proceedings of the eighth annual national health outcomes conference, 17–18 July 2002, Canberra. Convened by the Australian Health Outcomes Collaboration*.
- Goodman, W., Price, L., Rasmussen, S., Mazure, C., Fleischmann, R., Hill, C., et al. (1989). The Yale-Brown Obsessive Compulsive Scale. I. Development, use, and reliability. *Archives of General Psychiatry*, 46, 1006–1011.
- Himle, J., Rassi, S., Haghigatgou, H., Krone, K., Nesse, R., & Abelson, J. (2001). Group behavioral therapy of obsessive-compulsive disorder: seven vs. twelve-week outcomes. *Depression and Anxiety*, 13, 161–165.
- Jacobson, N., & Truax, P. (1991). Clinical significance: A statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting and Clinical Psychology*, 59, 12–19.
- Jones, M., & Menzies, R. (1998). Danger ideation reduction therapy for obsessive-compulsive washers: A controlled trial. *Behaviour Research and Therapy*, 36, 959–970.
- Killip, S., Mahfoud, Z., & Pearce, K. (2004). What is an intraclass correlation coefficient? Crucial concepts for primary care researchers. *Annals of Family Medicine*, 2, 204–208.
- Krone, K., Himle, J., & Nesse, R. (1991). A standardized behavioral group treatment program for obsessive-compulsive disorder: Preliminary outcomes. *Behaviour Research and Therapy*, 29(6), 627–631.
- Lindsay, M., Crino, R., & Andrews, G. (1997). Controlled trial of exposure and response prevention in obsessive-compulsive disorder. *British Journal of Psychiatry*, 171, 135–139.
- March, J., Frances, A., Carpenter, D., & Kahn, D. (1997). The expert consensus guideline series: Treatment of obsessive-compulsive disorder. *Journal of Clinical Psychiatry*, 58(Suppl. 4), 1–16.
- McLean, P., Whittal, M., Thordarson, D., Taylor, S., Sochting, I., Koch, W., et al. (2001). Cognitive versus behavior therapy in the group treatment of obsessive-compulsive disorder. *Journal of Consulting and Clinical Psychology*, 69, 205–214.
- Rees, C., & Nathan, P. (2001). *Obsessive Compulsive Disorder Group Treatment Program: A group cognitive behavioural programme*. Nedlands, Western Australia: Riobay Enterprises.
- Salkovskis, P., Forrester, E., Richards, C., & Morrison, N. (1998). The devil is in the detail: Conceptualising and treating obsessional problems. In N. Tarrier, A. Wells, & G. Haddock (Eds.), *Treating complex cases: The cognitive behavioural therapy approach*. Chichester: Wiley.
- Steketee, G. (1993). *Treatment of Obsessive-Compulsive Disorder*. New York: Guilford Press.
- Van Noppen, B., Pato, M., Marsland, R., & Rasmussen, S. (1998). A time-limited behavioral group for treatment of obsessive-compulsive disorder. *Journal of Psychotherapy Practice and Research*, 7, 272–280.
- Van Noppen, B., Steketee, G., McCorkle, B., & Pato, M. (1997). Group and multifamily behavioral treatment for obsessive compulsive disorder: A pilot study. *Journal of Anxiety Disorders*, 11, 431–446.
- van Oppen, P., & Arntz, A. (1994). Cognitive therapy for obsessive compulsive disorder. *Behaviour Research and Therapy*, 32, 79–87.
- van Oppen, P., De Haan, E., van Balkom, A., Spinhoven, P., Hoogduin, K., & van Dyck, R. (1995). Cognitive therapy and exposure in vivo in the treatment of obsessive compulsive disorder. *Behaviour Research and Therapy*, 33, 379–390.
- Wells, A. (1997). *Cognitive therapy of anxiety disorders: A practice manual and conceptual guide*. Chichester: Wiley.
- Whittal, M., & McLean, P. (2002). Group cognitive-behavioral therapy for obsessive-compulsive disorder. In R. Frost, & G. Steketee (Eds.), *Cognitive approaches to obsessions and compulsions: Theory, assessment, and treatment* (pp. 417–433). Sydney: Elsevier Science.
- Whittal, M., Thordarson, D., & McLean, P. (2005). Treatment of obsessive-compulsive disorder: Cognitive behavior therapy vs. exposure and response prevention. *Behaviour Research and Therapy*, 43, 1559–1576.