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An update on the efficacy of psychological therapies in the treatment of obsessive-compulsive disorder in adults

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Abstract

We conducted a review to provide an update on the efficacy of psychological treatments for OCD in general and with regard to specific symptom presentations. The PubMed and PsycINFO databases were searched for randomized controlled trials (RCTs) published up to mid February 2012. Forty-five such studies were identified. Exposure and response prevention (ERP) and cognitive-behavioral therapy (CBT) were found to be efficacious and specific for OCD. More purely cognitive interventions that did not include ERP or behavioral experiments were found to be possibly efficacious, as were Acceptance and Commitment Therapy, Motivational Interviewing as an adjunct to the established treatments, Eye Movement Desensitization and Reprocessing, and Satiation Therapy. There was little support for Stress Management or Psychodynamic Therapy. Although the majority of the studies recruited mixed or unspecified samples of patients and did not test for moderation, CBT was efficacious for obsessional patients who lacked overt rituals. One more purely cognitive intervention named Danger Ideation Reduction Therapy was found to be possibly efficacious for patients with contamination obsessions and washing compulsions. Although ERP and CBT are the best established psychological treatments for OCD, further research is needed to help elucidate which treatments are most effective for different OCD presentations.

Keywords

Empirically supported; psychological treatments; randomized controlled trials; OCD; qualitative review

Obsessive compulsive disorder (OCD) is a complex condition characterized by recurrent, intrusive, unwanted ideas, thoughts or impulses (obsessions) and attempts to reduce or neutralize the anxiety or prevent a dreaded outcome associated with the obsessions through carrying out repetitive ritualistic behavioral or mental actions (compulsions) (American Psychiatric Association, 2000). It is associated with substantial impairment and is a major cause of disability in young to middle-aged adults (Markarian et al., 2010; World Health

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Organization, 2001). Comorbidity with other psychiatric disorders is high (Torres et al., 2006).

Given the wide variation in the presentation of OCD, there is increasing evidence that it may be best conceptualized as a dimensional disorder and the following symptom dimensions have been most consistently identified: (a) contamination obsessions with cleaning/washing rituals, (b) doubts about harm with checking/reassurance seeking rituals, (c) obsessions relating to a need for symmetry, exactness or completeness and associated ordering, repeating or arranging rituals; (d) unacceptable thoughts of a violent, sexual or religious content with covert mental rituals, and (e) hoarding (Abramowitz et al., 2010; Bloch et al., 2008; Mataix-Cols et al., 2005; McKay, et al., 2004; Wheaton et al., 2010). However, the specific underlying dimensional structure of OCD and whether hoarding is a type of OCD (Pertusa et al., 2008) continues to be debated. In fact, criteria for a new diagnostic category entitled hoarding disorder have been developed (Mataix-Cols et al., 2011). Nonetheless, a dimensional understanding of the symptomatic heterogeneity in OCD clearly has important implications for treatment.

Behavioral and cognitive theories have been particularly influential in shaping our understanding of the development and maintenance of OCD. Historically from the perspective of learning theory it was postulated that obsessions are previously neutral stimuli that come to elicit distress via classical conditioning and that this association is maintained over time by the fact that compulsions (themselves negatively reinforced by their capacity to reduce anxiety) serve as escape/avoidance behaviors that remove the individual from the situation before habituation to the cues occurs (Eysenck & Rachman, 1965; Rachman, 1971). While some aspects of this model have received empirical support, others have not (for a review see Clark, 2004). For example, obsessions may develop in the absence of any link to a traumatic event and compulsions sometimes increase anxiety. Importantly, the model has been limited in adequately explaining the varied and complex content and form of obsessions and compulsions in many individuals with OCD.

Cognitive theories of OCD attempted to deal with these issues by proposing that obsessions develop when the person misinterprets otherwise typical intrusive images or thoughts as indicative of underlying character flaws or predictive of subsequent catastrophes and indicative of increased responsibility for bringing about or preventing harm (Rachman, 1997; 1998; Salkovskis, 1985; 1999). Anxiety and distress arise as a consequence of these misinterpretations, and the individual engages in behavioral responses (e.g., rituals) trying too hard to reduce anxiety, seek safety, neutralize, reduce harm or decrease responsibility (Salkovskis & McGuire, 2003). Several studies have shown associations between OCD and cognitive variables including inflated responsibility and threat perceptions, lowered confidence in memory, difficulty tolerating uncertainty, perfectionism, thought-action fusion, and the over-importance of and need to control thoughts (e.g. Abramowitz et al., 2006; Moore & Abramowitz, 2007; Rassin et al., 2000; Salkovskis et al., 2000; Shafran et al., 1996; Tolin et al., 2001; van den Hout & Kindt, 2003; Wheaton et al., 2010; Wilson & Chambless, 1999).

Based on behavioral principles, early interventions for OCD initially focused on largely behavioral procedures such as exposure and response prevention (ERP), with the theoretical rationale that if individuals were prevented from carrying out their rituals, their anxiety would naturally abate through the mechanism of habituation, leading to a decrease in the association between intrusive thoughts and compulsions (Rachman et al., 1971). In ERP, patients are exposed (in vivo or in imagination) to stimuli that evoke obsessive thoughts, and their consequent distress, and encouraged to refrain from engaging in compulsive behaviors (Fals-Stewart et al., 1993; Foa et al., 2005). Nevertheless, some theorists have suggested that

the largely behavioral procedures used in ERP may work in part by mobilizing underlying cognitive mechanisms. For example, Meyer (1966) proposed that patients' expectations are altered in ERP, and Foa & Kozak (1986) argued that corrective information is incorporated into activated fear structures. Thus, it can be useful to distinguish between the *procedures* that are used in a therapy in an effort to bring about change and the underlying *mechanisms* that are mobilized in the client that actually bring that change about.

The evolution of cognitive theories of OCD has influenced the development of additional procedures that focus specifically on the cognitive aspects of OCD, such as the formation of alternative but less threatening explanations of OCD symptoms ("I am dangerous" becomes "I worry too much about being dangerous"). Explicitly cognitive techniques (i.e. guided discovery and cognitive reappraisal) are used to challenge inflated responsibility, overestimation of threat, thought-action fusion, perfectionism and other maladaptive appraisals thought to maintain OCD (e.g., "thinking something is as bad as doing it" and "I should be able to control my thoughts"), to strengthen the alternative perspective that OCD is merely a problem of worry and to reduce anxiety (Salkovskis, 1999; Wells, 1997).

Although originally derived from learning theory, ERP protocols often include cognitive procedures. For example, Foa and colleagues noted that therapists may discuss patients' OCD-related beliefs along with the evidential disconfirmation provided by exposure assignments (Foa et al., 2005). Similarly, behavioral experiments are an integral part of many cognitive therapy protocols (Bennett-Levy et al., 2004) and may involve exposure to feared stimuli, such as public toilets, to challenge maladaptive beliefs (concerning contracting an illness for example; Morrison & Westbrook, 2004). Abramowitz et al. (2005) have argued that there is too much overlap among treatment elements to define ERP as "purely" behavioral and cognitive therapy as "purely" cognitive, and have suggested that it may be best to conceptualize their differences as a matter of emphasis and focus, with cognitive interventions focusing more on cognitive elements and behavioral (ERP) devoting more attention to behavioral elements.

We agree with this perspective, but note that it often translates into differences in the rationale provided and the amount of time devoted to the different procedures. For example, cognitively-oriented therapists make more extensive use of cognitive restructuring and tend to use behavioral experiments (including ERP techniques) for the purpose of testing beliefs. Behavior therapists spend less time attending to beliefs and may repeat exposure exercises multiple times in order to facilitate the process of habituation. For this reason, we have organized our review according to whether studies investigate a) predominantly behavioral interventions, such as ERP; b) cognitive-behavioral treatment (CBT) that uses both cognitive and behavioral strategies to change beliefs; or c) purely cognitive interventions that eschew ERP and behavioral experiments altogether. This classification system reflects the relative balance struck among the various types of procedures used in the different approaches (which usually reflect the mechanisms specified by theory) and may or may not correspond to the actual mechanisms mobilized.

Chambless and Hollon (1998) developed criteria for determining if a treatment works and whether it works better than generic treatment, and DeRubeis and Crits-Christoph (1998) applied those criteria to OCD in adults. However, there have been new developments in the treatment of OCD in the past decade and periodic updates are needed to stay abreast of the latest findings (Weissman & Sanderson, 2001). The aim of this article is to review randomized controlled trials (RCTs) of psychological treatments for OCD in adults using the criteria proposed by Chambless and Hollon (1998). These criteria differentiate between interventions that are *efficacious and specific* (i.e., two or more independent research groups have found that the treatment leads to a better outcome than another treatment or nonspecific

control), *efficacious* (at least two independent research teams have shown the treatment to be more efficacious than its absence) and *possibly efficacious* (supported by evidence from only one research group awaiting replication). Since patients suffering from certain OCD subtypes may respond less well to particular treatments than those suffering from other subtypes (Abramowitz et al., 2003; Mataix-Cols et al., 1999; Rufer et al., 2006), we apply these criteria to the treatment of OCD in general as well as to the OCD symptom dimensions.

METHOD

We followed a similar method to what we used for earlier reviews on the efficacy of psychological treatments for social phobia (Ponniah & Hollon, 2008), traumatic stress disorders (Ponniah & Hollon, 2009), and mood disorders (Hollon & Ponniah, 2010). Studies were included if they met the following criteria: a) they included adults who met criteria for OCD according to a formal diagnostic system; b) used random assignment to treatment (or control) condition; c) provided a clear account of the treatment approach; d) change in OCD diagnosis/symptom severity or functioning/impairment was reported and analyzed; and e) the findings were reported in a peer-reviewed journal.

Studies were identified through electronic searches of the PubMed and PsycINFO databases through February 14, 2012 conducted by the first author (KP). An advanced PubMed search of title and abstract fields for one of three keywords (OCD, obsessi* or compulsi*) using three limits (English, Humans, and RCT) was conducted. This search identified 612 papers. A similar strategy was used for the PsycINFO database. Papers had to contain at least one of the words OCD, obsessi* or compulsi* and the word random* in their title or abstract, with two limits applied (English language and Human). This search identified 667 papers. The first author (KP) reviewed the output of both searches to determine which papers met our inclusion criteria. Papers that met inclusion criteria (N=71) were then grouped by RCT since some reported the main outcome and others reported predictors of outcome or maintenance of gains. One paper reported imaging results of a subset of patients in an RCT. Since the electronic search had not identified the paper reporting the main findings of the trial based on the whole sample, this paper was added, resulting in a total of 72 papers. A total of 45 RCTs were identified.

Reviews by Chambless et al. (1998), Chambless and Ollendick (2001), DeRubeis and Crits-Christoph (1998), and the NICE guidelines (2005) were consulted to facilitate the classification of the psychological treatments evaluated in these trials. Behavioral and cognitive treatments were differentiated from other psychological interventions. We also drew a distinction between treatments that are predominantly behavioral from those that involve a combination of behavioral and cognitive techniques and those that are largely cognitive. In the category of behavioral treatments we included ERP, Satiation Therapy, and Acceptance and Commitment Therapy (ACT). Satiation Therapy can be considered exposure *without* response prevention as it involves repeated exposure to OCD triggers with patients instructed to increase the frequency of those symptoms until they become less compelling (Khodarahimi, 2009). ACT aims to foster psychological flexibility through the practice of acceptance and mindfulness along with commitment and behavior modification exercises (Hayes et al., 2006). Different versions of CBT combine behavioral and cognitive components in either a sequential or a more integrated fashion. The more purely cognitive interventions involve cognitive restructuring but eschew exposure or behavioral experiments altogether (for example Rational Emotive Therapy; Emmelkamp & Beens, 1991; or Danger Ideation Reduction Therapy; Jones & Menzies, 1998; Krochmalik et al., 2004). We treated Stress Management as a separate category including Progressive Muscle Relaxation (Fals-Stewart et al., 1993), Anxiety Management (Lindsay et al., 1997), and Autogenic Training

(Nakatani et al., 2005). Although behavioral in nature, such approaches do not involve exposure or behavioral experiments. In the category of other psychological interventions we included Eye Movement Desensitization and Reprocessing (EMDR; Nazari et al., 2011), Motivational Interviewing (MI; Miller & Rollnick, 2002), and Psychodynamic Therapy (Maina et al., 2010). For each psychological therapy evaluated, we drew conclusions about the extent to which it was empirically supported using the Chambless and Hollon (1998) criteria for OCD in general and with respect to subtype when applicable. The quality of the included studies was considered using in part the criteria derived by Cuijpers et al. (2010) from work by others (Chambless & Hollon, 1998; Higgins & Green, 2006).

RESULTS

The 45 RCTs that met our inclusion criteria are listed in Table 1. The treatments tested, diagnostic criteria and main outcomes are provided in the table. All but two of the RCTs evaluated behavioral and/or cognitive treatments. ERP was evaluated in the largest number of trials (N=31), with CBT second (N=18). More purely cognitive interventions were evaluated in a handful of trials (N=4) and the newer behavioral interventions—ACT and Satiation Therapy—once each (N's=1). Stress Management was tested in several trials, but almost always as the control treatment in comparison to other preferred alternatives (N=9). MI was tested twice, but only as an adjunct to ERP or CBT (N's=1). Psychodynamic Therapy and EMDR were each evaluated once (N's=1). Only a few studies investigated the effects of treatment on specific OCD subtypes, including contamination obsessions and washing compulsions (N=2) and obsessions without overt compulsions (N=3).

Behavioral Interventions

Exposure and Response Prevention—ERP was superior to wait list controls in the reduction of OCD symptoms in each of five comparisons (Fritzler et al., 1997; Khodarahimi, 2009; McLean et al., 2001; van Balkom et al., 1998; Vogel et al., 2004). This indicates that ERP is *efficacious* in the treatment of OCD. It also was superior to Anxiety Management (Lindsay et al., 1997) and Progressive Muscle Relaxation (see Fals-Stewart et al., 1993; Greist et al., 2002; Marks et al., 2000), as well as Stress Management when each was combined with medication (Simpson et al., 2008b) and to Autogenic Training when each was combined with pill-placebo (Nakatani et al., 2005). This indicates that ERP is *efficacious and specific* in the treatment of OCD.

That being said, there was considerable variability in the way ERP was implemented across the studies, which affects interpretation of the results. Some studies conducted sessions on an almost daily basis with in-session (therapist supervised) and homework ERP (e.g. Foa et al., 2005), while other studies conducted sessions only once or twice per week and used ERP only for homework (e.g. Emmelkamp & Beens, 1991). A number of studies stripped ERP of any cognitive elements procedurally and presented it with a strictly habituation rationale (e.g., Whittal et al., 2005), while others included informal discussions of mistaken beliefs (e.g. Simpson et al., 2008).

The training, experience, and supervision of study therapists varied as well. Therapists in Foa et al. (2005), for example, were trained by observing experts deliver ERP, used a treatment manual, and were supervised by world-renowned experts in the field. The trial by McLean and colleagues (2001) employed licensed clinical psychologists experienced in CBT for anxiety disorders and audiotaped sessions to monitor adherence to the protocol. Emmelkamp et al., (1988), in contrast, had advanced clinical psychology students provide ERP, following training and the provision of manuals and supervision. Moreover, some studies did not provide information on therapist training and supervision (e.g. Marks et al., 1988). Although a weekly session format delivered by non-expert clinicians devoting little

time to exposure may most closely approximate standard clinical practice, it may also result in little therapeutic change (Kozak, 1999).

A strength of many ERP trials was the use of the Yale-Brown Obsessive-Compulsive Scale (YBOCS; Goodman, Price et al, 1989 a; b) as an outcome measure. This clinician-administered tool is viewed as the gold standard for ascertaining OCD symptom severity (Abramowitz, 2006; Summerfeldt, 2001). Moreover, even greater weight can be given to those studies that employed independent assessors for YBOCS administration (e.g. Foa et al., 2005).

Psychiatric comorbidity is common in OCD populations, yet the treatment of specific comorbid presentations has rarely been investigated. One study found that adding ERP to standard substance use treatment provided in a therapeutic community was superior to adding Progressive Muscle Relaxation or no other intervention on OCD symptom reduction, the length of time in treatment and the rate of substance use relapse following discharge in comorbid patients (Fals-Stewart & Schafer, 1992). Given that comorbidity can contribute to poorer ERP outcome in medicated patients (Maher et al., 2010; Pinto et al., 2011), future research should be directed at evaluating the efficacy of integrating treatments for these populations.

ERP has also fared well in comparison to the other empirically supported treatments for OCD. It was superior to CBT in one study (McLean et al., 2001) and did not differ in five others (Cottraux et al., 2001; Emmelkamp & Beens, 1991; O'Connor et al., 2005; Vogel et al., 2004; Whittal et al., 2005), although in a number of these studies, the sample sizes were relatively small. It is also noteworthy that the only trial to find an advantage for CBT over ERP used a version of self-guided exposure (van Oppen et al., 1995), which might have diluted its efficacy.

Comparisons to medication are more impressive still. ERP was superior to clomipramine and to a pill-placebo (Foa et al., 2005), and ERP enhanced response to serotonergic medication when it was added for patients who had already partially responded to these agents (Tenneij et al., 2005). ERP combined with medication was also more efficacious than either medication alone (Foa et al., 2005) or medication plus anti-exposure instructions (Marks et al., 1988), but not more efficacious than ERP alone (de Haan et al., 1997; Foa et al., 2005; van Balkom et al., 1998). Finally, ERP appears to have a long-term effect that is not found for medications. Improvement following ERP often was maintained up to five years after treatment discontinuation (Fals-Stewart et al., 1993; Rowa et al., 2007; van Oppen et al., 2005; Vogel et al., 2004; Whittal et al., 2008), and patients who responded to ERP in Foa et al. (2005) were less likely to relapse following termination than were patients who responded to medication alone (Simpson et al., 2004).

The above evidence represents a strong and consistent record of success that might justify the recommendation that ERP be considered the treatment of choice for OCD. The only factors that weigh against such a recommendation are that: (a) medications are easy to prescribe and are more readily available than ERP, (b) many practicing clinicians are either unfamiliar with or reluctant to perform ERP of sufficient intensity, and (c) some patients are reluctant to engage in exposure because of its anxiety-evoking qualities. Nonetheless, no other psychosocial intervention has so consistently outperformed other treatment options.

Still, ERP is no panacea. OCD remains one of the most refractory of the non-psychotic disorders and few patients end treatment completely symptom free (Abramowitz, 1998). Only about half of all treated patients show clinically significant change with ERP (Abramowitz, 1998), and fewer still show full remission (Belloch et al., 2008; McLean et al., 2001; Simpson et al., 2006; Simpson et al., 2010; van Oppen et al., 2010; Vogel et al.,

2004; Whittal et al., 2005). Follow-up studies report that a sizable proportion of patients receive additional medication or psychological therapy following the end of even successful ERP trials (Rowa et al., 2007; van Oppen et al., 2005). Thus, there is a clear need to continue work to enhance its efficacy.

A number of studies have examined possible ways to make ERP more efficacious, or at least more cost-effective. Computer-guided ERP (*BT Steps*) was less efficacious than a more expensive therapist-guided ERP, but more efficacious in reducing OCD symptoms than was relaxation training (Greist et al., 2002). Differences between therapist-guided and computer-guided ERP were no longer significant when only the patients who had completed one or more sessions of self-exposure for homework were considered, suggesting that the major benefit of having a therapist is to increase the likelihood that the patient will engage in the exposure process. Moreover, providing scheduled (as opposed to on an “as needed” basis) telephone support to patients improved outcomes to computer-guided ERP as Kenwright et al. (2005) reported.

A comparison of standard ERP to a less expensive stepped care approach found that these approaches were similarly efficacious, and 28% of patients who started stepped care responded to the low intensity intervention (Tolin et al., 2011). Computer-guided and stepped care approaches to ERP represent viable options for at least some patients. Involving the family in ERP treatment led to greater OCD symptom reduction and greater amelioration of impairment in work and family domains in one study (Mehta, 1990), although van Oppen et al. (2010) found no differences in outcome between self-conducted versus therapist-assisted ERP, regardless of whether experienced or student therapists were used. Therapist experience may be less important for the delivery of ERP than it is for the more complex cognitive interventions (see Hollon & Ponniah, 2010 with respect to major depressive disorder). It has been argued that training clinicians in ERP is easier than training them in CBT for OCD (McLean et al., 2001), and the same has been said with respect to behavioral activation relative to cognitive therapy (a cognitive-behavioral intervention) for depression (Coffman et al., 2007).

Satiation therapy—In the only study to examine satiation therapy, Khodarahimi (2009) found that it was comparable to conventional ERP; and both treatments were superior to a wait list condition. These advantages were also maintained at six-month follow-up. Some peculiarities, however, render this study difficult to interpret. Mean YBOCS scores at pre-treatment were considerably higher ($M = 37.10$ for satiation therapy and 37.20 for ERP out of a possible 40) than is reported in most trials (mid to late 20's); and the post-treatment YBOCS scores ($M = 6.40$ for satiation therapy and 5.58 for ERP) were well below what typically is observed in most OCD treatment studies (low double digits). If scores on the YBOCS mean the same thing in this trial that they do in other studies, then this was not only the most severe OCD sample studied in the literature, but also the most efficacious interventions. We suspect that neither is wholly (or even largely) true. The author suggested that these discrepancies may reflect cultural differences since the study was conducted in Iran. It is also possible that this particular sample was less chronic than in other published trials (although this might explain the low post-treatment scores, it does not account for the unusually high scores at baseline). Similarly, none of the patients in this study reported comorbid psychiatric diagnoses.

It would also have been helpful if a more detailed and consistent description of satiation therapy had been provided in the article, especially given that (a) its application to OCD is relatively new, and (b) researchers would likely be interested in trying to replicate its very robust effects. For example, although it is noted that “satiation involves prolonged listening to or acting out an obsession or compulsion usually using a closed-loop audiotape or

repeated ritual”, it is later written that “patients were simply instructed to double or triple their baseline OCD symptom rates” (p.205). Thus, it is not clear whether the patients were asked to increase the frequency of their compulsive behaviors and, if so, whether they succeeded. On the basis of this single study, Satiation Therapy meets the criteria for a *possibly efficacious* treatment, but this designation is tenuous given the methodological shortcomings noted above. It will be interesting to see whether other investigators pick up on this approach.

Acceptance and commitment therapy—A single well-controlled trial investigated the efficacy of ACT relative to Progressive Muscle Relaxation (PMR) (Twohig et al., 2010). This study had several strengths including the use of the Structured Clinical Interview for DSM-IV-TR (SCID; First et al., 2002) to ascertain diagnoses, independent assessment of outcome using the YBOCS, expert training and supervision, a detailed description of the ACT intervention and the use of intent to treat analyses, amongst others. ACT led to significantly greater reductions in OCD symptoms than PMR; at the end of treatment 46% of the ACT patients had achieved clinically significant change compared to 13% in PMR. ACT may therefore be designated as *possibly efficacious* in the treatment of OCD. Importantly, ACT has yet to be compared to established OCD treatments, yet given the enthusiasm shown for ACT, we expect to see such comparisons shortly.

Cognitive Interventions

Cognitive Behavior Therapy—As was the case for ERP, CBT has been found to be superior to wait list controls in every relevant trial (Anderson & Rees, 2007; Cordioli et al., 2003; Freeston et al., 1997; McLean et al., 2001; Vogel et al., 2004; Whittal et al., 2010). Freeston et al. (1997) and Whittal et al. (2010) recruited patients suffering from obsessions without overt rituals, whereas the rest of the studies cited above involved samples of patients with mixed or unspecified OCD subtypes. These studies indicate that CBT is *efficacious* whether compulsions are present or not.

CBT also has fared well relative to medication treatment, although the evidence is not as compelling as it is for ERP. One study found CBT superior to sertraline in reducing OCD symptoms, but the medication dosage was low (100 mg/day) and most of the differences between treatment effects were non-significant trends (Sousa et al., 2006). Another study compared CBT to fluoxetine in a sample of OCD patients, the majority of whom suffered from additional psychiatric disorders (Belotto-Silva et al., 2012; Hoexter et al., 2012). There were no significant differences in outcome between treatments, but comorbidity reduced the magnitude of response. Adding CBT after 12 weeks of treatment enhanced the efficacy of medication in a third study (Jaurrieta et al., 2008a), although combined treatment with fluvoxamine was no more efficacious than either CBT or ERP alone in a fourth (de Haan et al., 1997; van Balkom et al., 1998). In conjunction with Whittal and colleagues’ (2010) finding that CBT was superior to Stress Management in the reduction of symptoms in purely obsessional patients we conclude that CBT is *efficacious and specific* in the treatment of OCD. This conclusion, however, is based on fewer studies than was the case for ERP. It is also noteworthy that Stress Management in the Whittal et al. (2010) study produced very good results and was almost as effective as CBT. Nonetheless, further analysis of the data from that trial found evidence of moderation in that patients who suffered from more severe symptoms responded better to CBT, whereas patients with milder symptoms showed greater change following Stress Management (Woody et al., 2011). As with ERP there was considerable variability in the way CBT was implemented across studies, with some combining generic cognitive restructuring and ERP (e.g. Emmelkamp & Beens, 1991) and others testing a more sophisticated cognitive behavioral intervention targeting specific cognitions such as inflated responsibility (e.g. Freeston et al., 1997). Moreover, some trials

provided no information on the training or supervision of study therapists (e.g. Sousa et al., 2006), whereas others described training and supervision arrangements in detail (e.g. Whittal et al., 2010).

As previously noted, the majority of the trials comparing CBT to ERP have found no differences between these two modalities in terms of symptom reduction (Emmelkamp & Beens, 1991; O'Connor et al., 2005; Vogel et al., 2004; Whittal et al., 2005). When differences have emerged, they usually can be attributed to anomalies in the implementation of the less efficacious modality. For example, McLean and colleagues (2001) found ERP superior to CBT when each was implemented in a group format that may have favored the more universal exposure process over the focus on more idiosyncratic cognitions in CBT; conversely, the self-guided exposure used by van Oppen and colleagues (1995) generated a notably smaller within-group effect size across treatment than typically is the case for ERP (Whittal et al., 2005). A study conducted by Anderson and Rees (2007) found that whereas CBT was superior to a wait list control regardless of whether it was provided in a group or individual format, only the latter led to better functioning and a higher remission rate. Nevertheless, individual and group CBT had comparable outcomes in a more recent trial (Jonsson et al., 2011a). On the whole, there is little clear evidence that either modality is superior to the other, although ERP may be easier to learn and better suited to a group format. No differences were found when CBT was first targeted at depression in comorbid patients (Rector et al., 2009). Further work needs to be done to identify interventions that enhance outcome for patients with comorbid psychiatric disorders.

There is evidence that improvements in OCD symptoms that occur as a result of CBT are maintained over follow-up periods of up to 5 years (Cordioli et al., 2003; Freeston et al., 1997; Jonsson et al., 2011a; Meyer et al., 2010a; van Oppen et al., 2005; Vogel et al., 2004; Whittal et al., 2008). While this suggests that CBT may have an enduring effect similar to that found for ERP, this conclusion is made less compelling by the absence of any comparison to medication withdrawal (see Simpson et al., 2004, with respect to ERP). A naturalistic 5-year follow-up of patients treated in the trial by Sousa et al. (2006) found that there was a tendency for greater relapse following group CBT than medication (Borges et al., 2011). However, the majority of the patients continued their assigned treatment or started the comparison treatment during the follow-up interval, limiting the conclusions that can be drawn. A significant proportion of patients in the van Oppen et al. (2005) follow-up also received additional treatment. Given that generating an enduring effect is perhaps the main advantage that CBT has over medications, it will be of interest to see if that holds for OCD as it does for depression (Hollon et al., 2006).

Purely cognitive interventions—The more purely cognitive interventions fall into two main categories. Early studies used generic cognitive approaches that did not specifically target obsessional thinking. Sample sizes were small and less experienced graduate students often delivered the treatments (e.g., Emmelkamp et al., 1988). As might be expected, few found differences and are of interest only because ERP was not so powerful that it separated from these approaches. Nonetheless, a diluted version of ERP was typically used in which patients practiced exposure and response prevention tasks between sessions only (no therapist supervised exposure) and the focus of treatment sessions was merely to review homework and set new assignments. One study found no differences between ERP and RET (Emmelkamp et al., 1988), and another found no benefit from adding ERP to RET at midtreatment (with no differences up until that point) (Emmelkamp & Beens, 1991). A third study found a more purely cognitive intervention superior to a wait list control at midtreatment before behavioral experiments were added for the rest of the trial (van Balkom et al., 1998). Although that one study is enough to earn the more generic cognitive

interventions the designation of *possibly efficacious*, this was not a particularly impressive set of studies.

More recent cognitive formulations of OCD have emphasized the importance of challenging the patient's *misinterpretation* of the meaning or significance of obsessional images, thoughts, or urges, as opposed challenging the validity of the intrusions themselves (Rachman, 1997; Salkovskis, 1985; 1999). Belloch and colleagues (2008) found that a purely cognitive intervention based on this approach was as effective as (yet not significantly better than) ERP. This study is noteworthy because it attempted to study a more recent and sophisticated cognitive approach that held its own relative to ERP. However, we are reluctant to make too much of what are essentially null findings; and the absence of a control condition makes it difficult to draw firm conclusions.

Finally, a pair of Australian studies (Jones and Menzies, 1998; Krochmalik et al., 2004) that evaluated a novel cognitive intervention called Danger Ideation Reduction Therapy (DIRT) provides perhaps the strongest evidence for the efficacy of more purely cognitive interventions that do not involve any exposure procedures. DIRT targets danger-related cognitions regarding contamination and eschews any behavioral strategies. In the first of two studies of patients presenting with primarily contamination/washing symptoms, DIRT resulted in markedly greater reductions in OCD symptoms as compared to a wait list control (Jones & Menzies, 1998). A second study by this same group found DIRT superior to ERP (Krochmalik et al., 2004). The fact that DIRT was superior to comparison conditions in two studies by the same research group speaks to it being *possibly efficacious* (Chambless & Hollon, 1998) for patients with the contamination/washing subtype of OCD. We hesitate, however, to draw conclusions regarding its value relative to ERP since "no strict hierarchy was used" and "some moderate washing behaviour was sometimes allowed" in the implementation of the latter (p.256).

On the whole, cognitive interventions can be said to be *possibly efficacious* based on a single study. Interventions based on recent cognitive models appear to be interesting conceptually, but rarely used in the absence of behavioral strategies and rarely compared to minimal treatment controls. DIRT showed promise and appeared to be *possibly efficacious* in the treatment of patients with fears of contamination, but the effects of DIRT require replication by groups other than that which developed the treatment. We question whether purely cognitive treatments have the power to compete with well-established ERP and CBT.

Stress Management

The various versions of Stress Management have not fared well in comparison to other interventions in the treatment of OCD, but one explanation for this is that this intervention is typically used as a control comparison by investigators with allegiances to other approaches such as ERP. Progressive Muscle Relaxation, alone or in combination with other anxiety management techniques such as problem solving and breathing exercises, was less efficacious than ERP in reducing symptoms of OCD in three separate trials (Fals-Stewart et al., 1993; Greist et al., 2002; Lindsay et al., 1997), failed to produce change over time as did ERP in a fourth (Marks et al., 2000), and was less efficacious than ACT in a fifth (Twohig et al., 2010). No conclusions regarding absolute efficacy can be drawn in the absence of no-treatment control groups.

Stress Management was less efficacious than ERP when combined with pill placebo in a study in Japan (Nakatani et al., 2005), and less efficacious than ERP when added to ongoing medication treatment in patients who had shown partial response (Simpson et al., 2008b), and when added to substance abuse treatment in a therapeutic community for patients with comorbid substance use disorders (Fals-Stewart & Schafer, 1992). A Canadian study found

Stress Management superior to a wait list control for patients without overt compulsions (the only study in which they were compared), but less efficacious than CBT (Whittal et al., 2010). This one study is sufficient to state that Stress Management is *possibly efficacious* in the treatment of obsessional patients, but outcomes across studies generally have been unimpressive.

Other Interventions

Motivational interviewing—Two studies have evaluated the efficacy of adding MI to cognitive and behavioral treatments, with mixed results. Meyer et al. (2010a) assigned patients to either (a) two individual sessions of MI with thought mapping or (b) two individual sessions of health information. Then both groups received twelve weekly group sessions of CBT. Symptom reduction was significantly greater among patients who received MI, with further reductions in OCD symptoms over a subsequent 3-month follow-up. Over half of these patients had achieved full remission at the end of treatment compared to about a third in the control condition; a difference which was both large and significant. Future research should explore whether adding MI also enhances outcome to individual CBT and whether the addition of Thought Mapping helps boost the efficacy of MI.

A smaller trial by Simpson et al. (2010) that investigated the efficacy of integrating MI into ERP was considerably less supportive. Patients were assigned to ERP alone or integrated treatment over 18 twice-weekly sessions. The integrated treatment included MI techniques in the introductory sessions and also later as needed, especially if there was resistance to ERP. As a consequence, there was some variation in the amount and timing of the MI that patients received. Still, the addition of MI produced no benefit relative to ERP alone in terms of OCD symptom reduction. The authors speculated that the fact that patients were neither uncertain about change nor reluctant to engage in treatment may have suppressed the added efficacy of MI (Simpson et al., 2010), but the same was true for the patients in Meyer et al.'s study described previously. Accordingly, adding MI to behavioral and cognitive treatments to enhance readiness to change in OCD patients can be said to be *possibly efficacious*, but not yet established. Given the enthusiasm for MI in the treatment community, it is likely that more such trials will follow.

Eye Movement Desensitization and Reprocessing (EMDR)—One trial compared EMDR to citalopram (20mg per day) in a group of mainly adult patients (18% were juveniles) (Nazari et al., 2011) with OCD. Although EMDR outperformed citalopram in symptom reduction, doses were less than adequate. In addition, it was unclear from the brief description provided how EMDR was applied to OCD in this study. Thus, we can only tentatively conclude that EMDR is *possibly efficacious* for OCD.

Psychodynamic therapy—Ten to 16 sessions of Psychodynamic Therapy as an adjunct to one of the SSRIs (either fluvoxamine or sertraline) did not enhance outcome in an Italian study of patients diagnosed with both OCD and major depressive disorder (Maina et al., 2010). Given that short-term psychodynamic therapy can vary in length with up to 30 sessions (Leichsenring et al., 2004), it is possible that more sessions were needed to treat such comorbidity. Based on the findings of this trial, we are unable to comment on the efficacy of psychodynamic therapy as a stand-alone treatment for OCD.

DISCUSSION

A summary of the empirical support for the psychological treatments evaluated in the RCTs included in our review is provided in Table 2. Our conclusions are in line with, and extend those of previously published reviews. ERP has consistently been found to be *efficacious*

and specific, whereas CBT has gained this status only in the last decade (DeRubeis & Crits-Christoph, 1998; Roth & Fonagy, 2005). Our conclusions are also generally consistent with those reached by the NICE guidelines (2005) and the American Psychiatric Association (2007). Our review extends these earlier reviews by applying the criteria developed by Chambless and Hollon (1998) to more recently tested therapies and the treatment of specific OCD presentations.

While both ERP and CBT are efficacious and specific in the treatment of OCD, it remains unclear whether adding cognitive restructuring enhances the efficacy of more purely behavioral interventions. Most studies comparing the two found comparable efficacy, and those few differences that were found can be attributed plausibly to variability in how the treatments were implemented. It has been argued that behavioral procedures are the most powerful means of producing cognitive change (Bandura, 1977). If so, then it is of little surprise that CBT is not superior to ERP, and that the more purely cognitive approaches (i.e., those without any behavioral exposure) have not yet been shown to be as efficacious as either CBT or ERP (Abramowitz et al., 2005). From a theoretical perspective, it is possible that the reason both ERP and CBT are *efficacious and specific* in the treatment of OCD is because both address the same maintaining factors, such as maladaptive beliefs (e.g., inflated responsibility), neutralizing strategies (e.g., reassurance seeking and rituals), and avoidance (Salkovskis, 1999; Rachman, 1971; 1997; 1998). The relative inefficacy of Stress Management might stem from its lack of such a focus. That being said, it is noteworthy that research to date has provided only limited evidence that ERP and CBT differ in their primary mechanisms of change (fear activation and habituation versus the disconfirmation of OCD-related beliefs, respectively) (Abramowitz, 1997; Abramowitz et al., 2005; Cougle et al., 2007; Craske et al., 2008; Jonsson et al., 2011b; Polman et al., 2010). As Polman and colleagues (2010) note, further investigation is required, including whether the mechanisms of change differ as a function of specific OCD subtype given the heterogeneity in the disorder.

Other psychological treatments that have been evaluated in the context of OCD include ACT, EMDR, and satiation therapy. Based on the findings of single studies in each instance (with the one supporting ACT being the most methodologically sound), these treatments can be said to be *possibly efficacious*. Replication by other research groups, however, is required before firm conclusions can be drawn regarding the efficacy of each. If their efficacy is established, it would be interesting to further explore their mechanisms of action. Both EMDR (Nazari et al., 2011) and satiation therapy (Khodarahimi, 2009) involve some exposure, which might be a critical ingredient. One difference between ERP and satiation therapy, however, is that the latter can include instructions to repeatedly engage in compulsive behaviors. Some behavioral experiments in cognitive therapy for OCD involve patients testing the effects of alternate conditions by trying to suppress intrusions versus merely noting their occurrence, checking versus refraining, and so on (Salkovskis, 1999). It is possible that this element of satiation therapy results in a reappraisal of the utility of such behaviors. ACT is believed to work via increasing patients' psychological flexibility, defined as 'the ability to contact the present moment more fully as a conscious human being, and to change or persist in behavior when doing so serves valued ends' (Hayes et al., 2006, p.7), and there is preliminary evidence to suggest that this may be the case (Twohig et al., 2010).

The findings of this review have several clinical implications. The psychological treatments that have received most empirical support include exposure and response prevention assignments or behavioral experiments. In clinical practice, therefore, ERP or CBT should be considered as a first-line approach to therapy. Nonetheless, there is some reluctance among clinicians in the community to use exposure based techniques, not only in the

treatment of OCD but for other anxiety disorders more broadly (e.g. Becker et al., 2004). As noted by Becker and colleagues, various factors might influence whether a particular treatment is adopted in clinical practice, including theoretical orientation, attitudes towards manual-based treatments, concerns about the effects of particular techniques such as exposure to feared stimuli on patients, whether the clinician has received training in the intervention and access to supervision. Most of the high quality clinical trials demonstrating the efficacy of ERP and CBT for OCD employed a treatment manual and provided training and ongoing supervision. A recent study of training methods found that merely providing access to a manual with instructions to practice on one's own is far less effective than providing a training seminar involving detailed manual review, videotaped demonstrations of therapy techniques plus opportunities to practice them in role plays, as well as supervised practice (Sholomskas et al., 2005). Access to appropriate training and supervision is important for the adoption and competent practice of empirically supported treatments (Shafran et al., 2009). Other dissemination strategies have also been suggested, such as the development of regional specialty clinics (Foa et al., 2005) and community-partnership research (Becker et al., 2009).

Several limitations should be noted. Although we restricted our attention to only RCTs, the gold standard in treatment outcome literature (Crits-Christoph et al., 2005), there still was considerable variability in the quality of the included studies. We rated each study on eight criteria developed by Cuijpers and colleagues (2010) and found that the mean quality rating for all RCTs included in this review was only 4.6 (SD 2.2) out of a maximum of 8.0. This indicates that there was considerable room for improvement in study design and reporting quality (see also American Psychological Association Publications and Communications Board Working Group on Journal Article Reporting Standards, 2008). It was encouraging that more recent RCTs received higher quality ratings than earlier RCTs (the mean quality rating for RCTs published after 2005 [N=18] was 5.7 [SD 1.7] compared to 3.9 [SD 2.3] for earlier RCTs [N=27]).

Another limitation was that very few of the studies examined the effects of particular psychological interventions on specific OCD subtypes. Such indices could be used for treatment selection if they predicted differential response to different interventions (moderation) (Fournier et al., 2009). Moreover, even purely prognostic indices can indicate the need to develop or modify existing treatments to deal with specific OCD subtypes that do not respond well to existing treatments. For example, hoarding may respond less well to treatment than other types of OCD (Abramowitz et al., 2003; Rufer et al., 2006), leading to the development of a type of CBT that appears to be specifically efficacious for hoarding problems (Steketee et al., 2010). Other developments in the cognitive behavioral treatment of OCD that have yet to be evaluated in RCTs include modular cognitive therapy that targets the maladaptive belief domains of most pertinence in a particular patient in a more flexible fashion (Wilhelm et al., 2009).

A further limitation of the present review was that hardly any RCTs evaluated other psychological interventions such as Psychodynamic Therapy. This restricted our ability to draw conclusions about the efficacy of these interventions (see also Westen et al., 2004). Absence of evidence is not evidence of absence with respect to treatment efficacy, but in a system dominated by third-party payers absence of evidence likely will lead to absence of reimbursement.

Finally, although comorbidity may lead to a poorer ERP or CBT outcome (Belotto-Silva et al., 2012; Maher et al., 2010; Pinto et al., 2011), patients with more complex presentations may still benefit from established OCD treatments either in isolation or integrated with other interventions (Belotto-Silva et al., 2012; Fals-Stewart & Schafer, 1992; Rector et al., 2009).

This points to the importance of including such patients in clinical trials and developing interventions that can more effectively address comorbidity.

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Table 1

Randomized controlled trials evaluating the efficacy of psychological treatments for obsessive compulsive disorder

Author, year, country	Diagnostic method, OCD subtype/s (if given)	Treatment/control conditions, main outcomes
Emmelkamp et al., 1988 (NED)	DSM-III; Severe rituals primary problem	ERP = RET
Marks et al., 1988; Lax et al., 1992 (GBR)	DSM-III and ICD-9; Mixed subtypes involving severe disabling rituals	Meds plus self-directed anti-ERP or self-directed ERP alone/with tx-assisted ERP vs placebo plus self-directed and tx-assisted ERP (meds + anti-ERP < meds + ERP)
Mehta, 1990 (IND)	DSM-III	Patient-based ERP < family-based ERP
Emmelkamp & Beens, 1991 (NED)	DSM-III; Severe rituals primary problem	ERP = RET alone followed by RET and ERP combined
Fals-Stewart & Schafer, 1992 (USA)	DSM-III; DIS; Mixed subtypes; Patients had a substance use disorder and OCD	Substance use disorder treatment in therapeutic community alone or plus PMR < plus ERP
Fals-Stewart et al., 1993 (USA)	DSM-III; DIS; Mixed subtypes with overt compulsions	Individual or group ERP > PMR
Hiss et al., 1994 (USA)	DSM-III-R; SCID; Mixed subtypes	ERP followed by CBT relapse prevention > ERP followed by associative tx
Lovell et al., 1994 (GBR)	DSM-III; Dominant obsessions without severe overt rituals	ERP = exposure to neutral poetry/prose
de Araujo et al., 1995, 1996; Ito et al., 1995a,b; Nakagawa et al., 1996 (GBR)	DSM-III-R; Mixed subtypes	ERP in vivo only = ERP in vivo plus in imagination
van Oppen et al., 1995,2005; de Haan et al., 1997; van Balkom et al., 1998; Anholt et al., 2011 (NED)	DSM-III-R; ADIS; None had only obsessions	CBT vs ERP/CBT or ERP with or without meds/CBT vs ERP alone or following and in combination with meds vs WL (CBT > ERP in one; meds did not add in another)
Freeston et al., 1997 (CAN)	DSM-III-R; SCID; Dominant obsessions with cognitive efforts to neutralize but no severe overt compulsions	CBT > WL
Fritzler et al., 1997 (USA)	DSM-III-R; Mixed subtypes	ERP > WL
Lindsay et al., 1997 (AUS)	DSM-IV	ERP > AM
Jones & Menzies, 1998 (AUS)	DSM-IV; Contamination/washing subtype	Group DIRT > WL
Marks et al., 2000 (GBR)	DSM-IV; Mixed subtypes	Therapist- or computer-guided ERP > PMR
Cotraux et al., 2001 (FRA)	DSM-IV; Structured interview, not further specified	ERP = CBT
McLean et al., 2001; Whittal et al., 2008 (CAN)	DSM-IV; SCID; Mixed subtypes	Group ERP > group CBT > WL
Greist et al., 2002; Mataix-Cols et al., 2002; McCrone et al., 2007 (USA; CAN)	DSM-IV; SCID; Mixed subtypes	Therapist-guided ERP > computer-guided ERP > PMR
Cordioli et al., 2003 (BRA)	DSM-IV; MINI	Group CBT > WL
Krochmalik et al., 2004 (AUS)	DSM-IV; Formal clinical assessment, not further specified; Cleaning/washing subtype	DIRT > ERP
Vogel et al., 2004, 2006; Hansen et al., 2007 (NOR)	DSM-III-R; ADIS; Mixed subtypes	ERP plus CT or plus PMR > WL
Foa et al., 2005; Simpson et al., 2004, 2005, 2006, 2008a	DSM-III-R or DSM-IV; SCID	ERP alone or plus meds > meds alone > pill placebo

Author, year, country	Diagnostic method, OCD subtype/s (if given)	Treatment/control conditions, main outcomes
(USA; CAN)		
Kenwright et al., 2005 (GBR)	DSM-IV; Structured interview; Mixed subtypes	Computer-guided ERP with requested phone support < with scheduled phone support
Nakatani et al., 2005; Nakao et al., 2005 (JPN)	DSM-III-R; SCID; Mixed subtypes	ERP plus pill placebo > meds plus AT > pill placebo plus AT
O'Connor et al., 2005 (CAN)	DSM-IV; ADIS and SCID; All had overt compulsions	ERP = therapy based on CAM = therapy based on IBA
Tenneij et al., 2005 (NED)	DSM-IV; MINI	ERP + continued meds > continued meds alone (in meds responders)
Whittal et al., 2005, 2008 (CAN)	DSM-IV; SCID	ERP = CBT
Sousa et al., 2006; Borges et al., 2011 (BRA)	DSM-IV; MINI	Group CBT > meds
Anderson & Rees, 2007 (AUS)	DSM-IV; SCID	Individual or group CBT > WL
Rowa et al., 2007 (CAN)	DSM-IV; SCID	Home-based ERP = office-based ERP
Belloch et al., 2008 (ESP)	DSM-IV; ADIS; Obsessions with overt rituals	ERP = CT
Jaurrieta et al., 2008a,b (ESP)	DSM-IV; SCID; Mixed subtypes	Individual or group CBT > WL (as adjunct to meds)
Simpson et al., 2008b; Maher et al., 2010; Pinto et al., 2011 (USA)	DSM-IV; SCID	ERP > SM (as adjunct to meds)
Khodarahimi, 2009 (IRI)	DSM-IV-TR; Clinical interview, not further specified	ERP or Satiation Therapy > WL
Rector et al., 2009 (CAN)	DSM-IV-TR; SCID; Patients had OCD and major depressive disorder	CBT with focus on OCD only = CBT for MDD then OCD
Maina et al., 2010 (ITA)	DSM-IV; SCID; Patients had OCD and major depressive disorder	Meds alone = meds + Brief Psychodynamic Therapy
Meyer et al., 2010a,b (BRA)	DSM-IV; SCID	Group CBT preceded by individual MI and TM > Group CBT preceded by health information
Simpson et al., 2010, 2011 (USA)	DSM-IV; SCID; Various subtypes	ERP alone = ERP+MI
Twohig et al., 2010 (USA)	DSM-IV; SCID; Mixed subtypes	ACT > PMR
van Oppen et al., 2010 (NED)	DSM-IV; SCID; None had only obsessions	Therapist-assisted vs self-directed ERP provided by experienced vs student therapists (all =)
Whittal et al., 2010; Woody et al., 2011 (CAN)	DSM-IV; SCID; Obsessions with no or few overt compulsions	CBT > SM > WL
Jonsson et al., 2011a (DEN)	DSM-IV; ADIS	Individual CBT = group CBT
Nazari et al., 2011 (IRI)	DSM-IV-TR; Clinical interview, not further specified	EMDR > meds
Tolin et al., 2011 (USA)	DSM-IV-TR; ADIS	Stepped ERP = standard ERP
Belotto-Silva et al., 2012; Hoexter et al., 2012 (BRA)	DSM-IV; SCID; >80% had an additional psychiatric diagnosis	Group CBT = meds

Treatment/control: ACT, Acceptance and Commitment Therapy; AM, Anxiety Management; AT, Autogenic Training; CAM, Cognitive Appraisal Model; CBT, Cognitive Behavior Therapy; CT, Cognitive Therapy; DIRT, Danger Ideation Reduction Therapy; ERP, Exposure and Response Prevention; IBA, Inference-Based Approach; MI, Motivational Interviewing; PMR, Progressive Muscle Relaxation; RET, Rational Emotive Therapy; SM, Stress Management; TM, Thought Mapping; WL, Waiting List

Diagnostic: ADIS, Anxiety Disorders Interview Schedule; DIS, Diagnostic Interview Schedule; MINI, Mini Internat Neuropsych Interview; SCID, Structured Clinical Interview for DSM-III-R/DSM-IV

Table 2

Empirically supported psychological treatments for obsessive compulsive disorder irrespective of subtype*

Classification	Treatment type	Evidence
Efficacious and specific	Exposure and Response Prevention	Fals-Stewart & Schafer (1992); Fals-Stewart et al. (1993); Foa et al. (2005); Greist et al. (2002); Lindsay et al. (1997); Marks et al. (1988); Nakatani et al. (2005); Simpson et al. (2008b)
	Cognitive Behavior Therapy	Sousa et al. (2006); Whittal et al. (2010)
Possibly efficacious	Acceptance and Commitment Therapy	Twohig et al. (2010)
	Eye Movement Desensitization and Reprocessing	Nazari et al. (2011)
	More purely cognitive interventions that do not include exposure and response prevention or behavioral experiments	van Balkom et al. (1998) (mid)
	Motivational Interviewing and Thought Mapping as an adjunct to Cognitive Behavior Therapy	Meyer et al. (2010a)
	Satiation Therapy	Khodarahimi (2009)
	Stress Management	Whittal et al. (2010)

* Using the criteria developed by Chambless & Hollon (1998)

ERP and CBT were both found to be efficacious and specific for OCD Several psychological therapies were found to be possibly efficacious Most studies recruited mixed or unspecified samples and did not test for moderation