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The Role of Exposure in Treatment of Anxiety Disorders: A Meta-Analysis

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Abstract

This meta-analysis aimed to determine the overall effect that psychotherapy has on anxiety disorders and to determine what moderates that effect. Studies were grouped by type (efficacy or effectiveness) and grouped by analysis type (completer or intent-to-treat). Medline was searched for articles published between 2011 and 2014 that related to the treatment of anxiety disorders. An initial search revealed 8056 articles. Of these, 99 articles met inclusion criteria and were included in the final analyses. Overall, manualized psychotherapy outperformed control conditions. In general, psychotherapy for anxiety disorders had a large effect. This effect appeared to be moderated by the use or lack of use of exposure techniques, with greater effects if exposure was used. This finding held particularly true for the treatment of post-traumatic stress disorder. Psychotherapies for anxiety disorders are both efficacious and effective. Exposure techniques enhance the effect of therapies. Future research work is required to determine what else moderates the effect of such therapies.
Key words: anxiety disorder, meta-analysis, efficacy, effectiveness, psychotherapy.

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Novelty and Significance

What is already known about the topic?

- That therapies for anxiety, trauma, and obsessive disorders are typically seen as being more efficacious than effective.
- That there are several highly recommended psychological therapies for treating these disorders, some have empirical support, while some psychological therapies do not.

What this paper adds?

- Despite perceptions, psychological interventions for anxiety, trauma, and obsessive disorders are both equally efficacious and effectively.
- The effect size of intent-to-treat case were moderated by the use of exposure. In addition, exposure moderated the effect size in the treatment of post-traumatic stress disorder. No other moderators were identified (including therapeutic alliance).

Anxiety disorders are amongst the most prevalent mental health issues in the world (Kadri, Agoub, El Gnaoui, Berrada, & Moussaoui, 2007; Kessler, Aguilar Gaxiola, Alonso, Chatterji, Lee, Ormel, Üstün, & Wang, 2009; Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005; Sartorius, Üstün, Lecrubier, & Wittchen, 1996). A series of treatments from the cognitive behavioural therapy (CBT) paradigm have been shown to be efficacious in the treatment of anxiety disorders (e.g., Bradley, Greene, Russ, Dutra, & Westen, 2005; Eddy, Dutra, Bradley, & Westen, 2004; Fedoroff & Taylor, 2001; Hofmann & Smits, 2008; Norton & Price, 2007; Otto, Pollack, & Maki 2000; Westen & Morrison, 2001). For example, in efficacy studies, Bradley *et alii* (2005)

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report a recovery rate of 67% for patients with post-traumatic stress disorder (PTSD) who complete treatment, while Butler, Chapman, Forman, and Beck (2006) report 58% of clients showing clinically significant improvement after completing treatment for generalized anxiety disorder (GAD).

Exposure techniques are amongst the most powerful techniques for treating anxiety disorders from the CBT paradigm (Barlow, 2002; Minekla & Thomas, 1999). For example, interoceptive exposure is the most efficacious method for reducing distress from panic attacks (Craske & Barlow, 2007), and Öst (1989) has shown that one-session exposure is efficacious in the treatment of specific/simple phobias. Prolonged exposure and eye-movement desensitization reprocessing (EMDR) both use imaginal exposure, and are considered to be the most efficacious treatments for PTSD (Foa, Dancu, Hembree, Jaycox, Meadows, & Street, 1999; Foa, Hembree, Cahill, Rauch, Riggs, Feeny, & Yadin, 2005; Ironson, Freund, Strauss, & Williams, 2002; Lee, Gavriel, Drummond, Richards, & Greenwald, 2002; Resick, Nishith, Weaver, Astin, & Feuer, 2002).

The findings derived from efficacy studies are not always matched by results in the everyday practice. In such settings, most clients do not improve, but rather show no change after therapy (Chiver *et alii*, 2001; Hansen, Lambert, & Forman, 2002; Schindler, Hiller, & Witthöft, 2011; Westbrook & Kirk, 2005, 2007). It is not clear whether these lower levels of everyday practice outcomes are a product of the different setting, or of failure to use the evidence-based treatment appropriately. It is crucial to consider whether therapies for anxiety disorders can have the same impact in real-life settings if the therapy is conducted appropriately. Therefore, the key comparison is between highly controlled efficacy studies and real-world effectiveness studies, rather than comparing efficacy studies with routine practice.

A potential cause of the difference between efficacy studies and real-world effectiveness studies might be the underutilization of exposure techniques. One of the most often cited reasons that exposure is not used is clinicians assume that it will not work in real-world clinical settings (Becker, Zayfert, & Anderson, 2004; Feeney, Hembree, & Zoellner, 2003; Olatunji, Deacon, & Abramowitz, 2009). However, other researchers (Feeney *et alii*, 2003; Koch, Gloster, & Waller, 2007; Levita, Salas Duhne, Girling, & Waller, 2016) have posited that exposure might be underutilized due to the therapists' own levels of anxiety about causing distress to the patient.

While efficacy studies in the form of randomized controlled trials (RCTs) have traditionally been used to set the standard for clinicians to achieve, effectiveness studies have been viewed as being a more accurate representation of what is achievable in 'real-world' settings (Rush, 2009). Therefore, this meta-analysis will examine both efficacy and effectiveness studies to compare the impact of the relevant therapies on anxiety disorders. However, it is important to note that effectiveness studies are not truly analogous to actuarial data from routine practice. Effectiveness studies are only a closer representation of routine practice as compared to RCTs.

Another criticism of RCTs was that they typically have used completer analyses (CA) only and had not used intent-to-treat analyses (ITT). The issue is that CA is not reflective of the real-world, whereas ITT analyses are more reflective of the real-world and less biased (Gupta, 2011; Hollis & Campbell, 1999; Schell, McBridge, Gennings, & Koch, 2001). In many recent RCTs both CA and ITT analyses are provided. Therefore, in addition to considering efficacy (in RCT studies) versus effectiveness, this meta-analysis also will compare CA and ITT analyses. Finally, while it is important to make direct comparison between efficacy and effectiveness studies, it is equally important to consider

whether the findings of each are affected by potential moderator factors (e.g., diagnosis; type of therapy; the presence or absence of key therapy elements; therapeutic alliance).

This study aims to replicate previous literature (that addressed the efficacy and effectiveness of treatments for anxiety disorders), by determining the overall efficacy and effectiveness of psychological interventions for anxiety disorders, focusing on CBT based interventions. The second aim is to extend the previous literature by determining what moderated treatment outcome. If a particular, component, for example exposure techniques, positively affects outcomes then it is important to make sure these techniques are employed. For each of these aims, the impact of both study type (efficacy and effectiveness) and analysis type (CA and ITT) will be assessed. The third aim of this study is to update the list of empirically supported treatments (ESTs) using Chambless and Hollon's (1998) criteria.

Method

Selection criteria

Inclusion criteria differed according to whether the study came from a highly controlled setting (i.e., efficacy studies) or from an uncontrolled clinical setting/real-world setting (i.e., effectiveness studies). The differences in inclusion criteria were kept as minimal as possible to ensure comparability across both study types. All studies were in English and published between 2011 and February 2014, so that research could be completed during the course of a PhD program. These dates were used for convenience given the size of the literature. The end (14 February 2014) was selected as it was the date on which the identification phase started. To the knowledge of the author of this dissertation, no other studies have previously explored moderators in the treatment of anxiety disorders like this one has. Therefore, the start date was selected to ensure an adequate sample size that would provide meaningful results.

The inclusion criteria were as follows: (a) a treatment study of a clearly specified and diagnosed anxiety disorder; (b) use of a treatment manual or set protocol (for efficacy studies, this only applied to the experimental conditions); (c) that the treatment employed at least psychological intervention (pharmacological only studies were excluded whereas studies using both psychology and pharmacological approaches were included); (d) in a series of single-case studies, a sample size of 10 or greater was required; (e) there was a standardized measure of anxiety symptoms at pre-test and post-test; (f) the study included the data necessary to calculate effect size (i.e., mean and standard deviation); and (g) in efficacy studies, the experimental condition had to either be compared to a wait-list control, treatment as usual (TAU) control, minimal/no contract control, healthy control, a control with the active treatment component missing, or another empirically supported treatment. Any studies not fulfilling these requirements were not included in analysis.

These criteria were used to help find a large heterogeneous sample. By having a large sample like heterogenous sample, more moderation analyses would be possible. While the samples may be heterogenous (e.g., inpatient and outpatient, different disorders), there is overlap in protocols used to treat many of these various groups. Despite the attempt to get a richer sample to work with, there were not enough data to analyse all the moderators of interest.

Exclusion criteria

Studies without standardized measures were not included, as standardized measures allow for a more accurate and reliable way to compare included groups than other methods (e.g., clinical judgement; Dawes, Faust, & Meehl, 1989). Any articles without English translation were also excluded. If the article was only available behind a paywall, the article was not included (see eligibility below). Any study not including psychotherapy (e.g., pharmacotherapy only) was not included. Finally, any studies where the type of psychotherapy was left undefined were not included.

If two related studies used the same dataset (e.g., a follow-up study that included the original dataset or an extension on the original study), the more recent of the two datasets were used. In this case, no articles met this criterion. A few studies were follow-up studies but the original studies were from prior to 2011. If the datasets were the same but the focus of the article was different (outcome of services versus cost of services), only the article originally coded into the study was included (n= 2).

Missing data or errors related to essential data (i.e., mean, *SD*, *N*) resulted in that study/condition not being coded. If an error was identified in the data in the original paper (e.g., number of participants was greater at the end of the study than at the start), the data were not included.

In cases where multiple clinical populations (e.g., PTSD and OCD) were analysed separately, the data were coded separately. However, in cases where multiple clinical populations were analysed as one group (i.e., all participants with an anxiety disorder collapsed into a single group), the data were not included. Despite this meta-analysis considering a variety of anxiety disorders, the authors attempted to keep homogenous groupings (i.e., one disorder, one outcome). In cases where comorbid diagnoses were required by the study for inclusion, the comorbid disorder was noted (see summary of study characteristics below).

Finally, if there was an issue with the reporting of non-essential data (i.e., sample size not reported at follow-up; measure at follow-up changed, and not used elsewhere in the study; statistics clearly inaccurate), these data were not used but any useable non-essential data were included.

Moderator analyses

One of the primary moderators of interest was the difference between the two study types (i.e., efficacy and effectiveness). Efficacy and effectiveness studies were further divided into two more groups based on the analysis type used (i.e., CA or ITT). There were five other moderators of interest: the use of exposure; the anxiety disorder treated; length of treatment; therapeutic alliance; and the year of publication (to explore if therapies or the application of therapy became more effective in the treatment of anxiety disorders). Where possible, these moderators were examined together (e.g., efficacy studies for PTSD with exposure using ITT analysis versus efficacy studies for PTSD without exposure using ITT).

Search strategies

Initial search. Figure 1 shows the process of identification and selection of articles. Medline, via OVID, was searched for articles published between February 14, 2014 (day of initial search) and

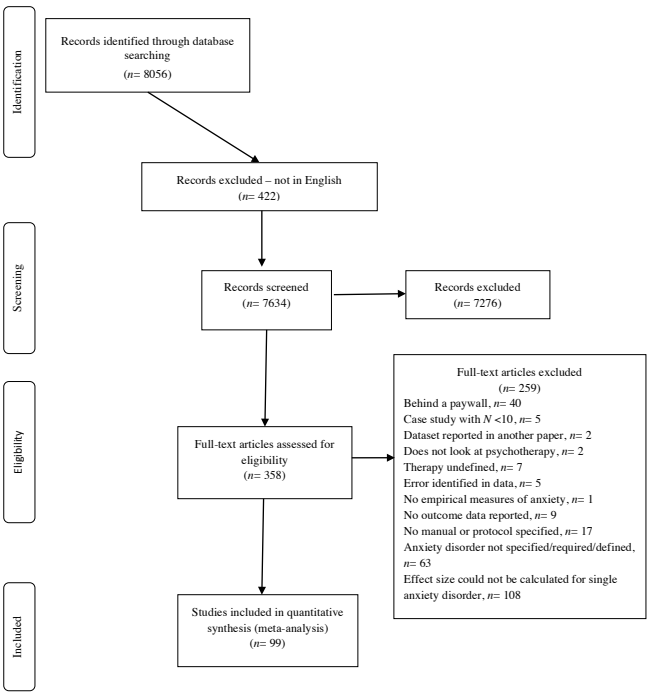

Figure 1. Flowchart of identification and selection of articles.

January 1, 2011. The search terms (see appendix A) were divided into three categories: disorder terms, therapy terms, and result terms. Due to the difference between American English and British English, wildcards were not always feasible. Therefore, to account for the differences in spelling, multiple spellings were used were appropriate. Within each category (e.g., disorder terms), 'OR' was placed between search term (e.g., 'anxiety OR anxiety disorder OR generalized anxiety disorder'). Between each category, 'AND' was placed. This was to ensure that the results had at least one keyword from each category.

Screening. The initial screening reviewed the title and abstracts of all articles returned by the initial search. Any study that appeared to be relevant and/or met inclusion criteria was included for the next step. Any article excluded (*n*= 7276) at this point was due to the subject of the paper either not relating the topic, the paper being a proposed study protocol, or meeting exclusion criteria based on information provided in the abstract. Many of these studies (exact amount not recorded) related to medical only treatments for anxiety disorders, medical issues (e.g., Chronic Obstructive Pulmonary Disease -COPD), anxiety around sexual health related to a medical issue (e.g., pelvic floor collapse and vaginismus) or anxiety around medical procedures (e.g., oral surgery). Considering the types of articles excluded and the publication bias analyses (see below), it is unlikely that these articles would or could have influenced the results of this study.

Eligibility. The next step was a full read of the article to determine eligibility. If the database did not have a full text copy, other methods (i.e., Google Scholar, academia.org, researchgate.com, and personal websites) were used to locate the article if possible. Contacting authors was not undertaken, to avoid response bias (i.e., where authors of newer papers are more likely to respond). Articles were examined at this stage to ensure all inclusion criteria and no exclusion criteria were met. Any questions regarding eligibility were assessed and dealt with in this stage by the lead author (ZJP) and second author (GW).

Judges. The primary judge was the lead author (ZJP), a PhD student. Another author (GW), a professor with 30 years of experience and supervisor to the first author, acted as a secondary judge and consulted with the primary judge when needed. Another author (PGSD), a first-year doctor of clinical psychology student, completed ratings of papers to establish inter-rater reliability.

Coding procedures

The coding for control conditions for the analysis of controlled effect sizes was completed by PGSD. All other coding was done by ZJP. Checking of coding and mathematical procedures was conducted by the remaining author (JD), a professor of health management, and statistician with 18 years of experience in academic research.

Coding. Coding was completed using Microsoft Excel. Randomized control trials (RCTs) had to be coded in twice - once for analysis of controlled effect sizes (see below), and again for analysis of uncontrolled effect sizes (see below). Only in the former were control (i.e., non-psychotherapy) conditions coded. The following was coded: author(s); year of publication; anxiety disorder treated (and any additional required disorder for inclusion in the selected study); inclusion criteria; exclusion criteria; use of exposure; study type; the mean and standard deviation at pre-test, post-test, and follow-up (if applicable) for CA and/or ITT analysis; measure used; sample size at post-test; sample size at follow-up; mean age in year with standard deviation; gender by percent female; ethnic group; length of treatment; working alliance; socioeconomic status; education; marital status; Critical Appraisal Skills Programme (CASP) ratings (see below); title; and any notes.

Assessment of quality. CASP rating systems were used to assess the quality of the studies included. In the end, only the CASP Randomised Controlled Trial Checklist and CASP Cohort Study Checklist were used. The former was used with all efficacy studies, and the latter with all effectiveness studies. Of the 99 articles, 10 (10.1%) were chosen randomly by a random integer generator from random.org, and then reviewed. All items, except item 8, on both versions of the CASP were rescored on those 10 articles for comparison. Item 8 (from both versions) was omitted as there was no possible answer other than what was initially reported.

Missing data. No substitution of missing data was carried out. For example, if an article had a follow-up but did not give enough information for the follow-up to be included in analysis, then only the pre/post-test effect size was included.

Unclear data. In cases where multiple groups were reported as one group without distinction, the information was coded as 'not clearly reported'. This held true unless the combined data pertained to essential data (e.g., inclusion criteria; see above), in which case the article was not included.

Data analysis

All analyses were done by hand using Microsoft Excel, unless stated otherwise. To address the first aim of the study, both analyses of controlled and uncontrolled effect sizes were conducted (see below). To address the second aim, both ANOVA analogues and meta-regressions were conducted (see below).

Publication bias. Three calculations were used to determine the scope and effect of publication bias. First, an *Egger's Regression* (Egger, Smith, Schneider, & Minder, 1997) was calculated, to determine the overall publication bias. Due to issues with *Egger's Regression* (see: Egger & Smith, 1998; Irwig, Macaskill, Berry, & Glasziou, 1998; Song, Khan, Dunnes, & Sutton, 2002; Van Enst, Ochodo, Scholten, Hooft, & Leeflang, 2014), Begg and Mazumdar's (1994) rank correlation test was also calculated. Finally, a Rosenthal's *Failsafe-N* (Rosenthal, 1979) was calculated to determine how many trivial effects would have to be reported to reduce the overall effect size.

Analysis of controlled effect sizes (See formulas that do not appear in the text in Appendix A). RCTs where at least one active treatment is compared to a control condition (e.g., TAU, waitlist, healthy control, no/minimal contact) were included for this analysis). In the cases where a study used

two (or more) active treatments, these active treatments were not compared against each other. All calculations for this analysis were derived from Field (2000), Ellis (2010), and Hedges and Pigott (2004). Effect size (d) was calculated as (1; see the formulas in Appendix A) where SD_{pooled} was calculated using Cohen's simplified formula (2). This way, positive effect sizes indicate that the experimental condition outperformed the control condition, as lower scores indicated greater reduction of distress. In this formula, the mean and standard deviation came from post-test for both the control and experimental group. Next $d_{unbiased}$ was calculated using the following formula: (3). $d_{unbiased}$ was used here to control for the difference in sample sizes between the two conditions in each comparison. Variance (δ_{d^2}) for controlled analysis was calculated thusly: (4), where n^e is the sample size of the experimental condition and n^c is the sample size of the control group. From there, an average effect size (d_+) was estimated using the formula: (5). The estimate of standard deviation of the average effect size (δ_{d+}) was calculated using: (6). From there, the overall score was standardized to a z-distribution by dividing the average effect by the estimate of the standard deviation. Heterogeneity (Q) was tested by taking the sum of squared differences between each effect size (d) and the overall effect size (d_+). From this, a random-effects model (calculations below) was used to determine the average effect size. Standard error for the forest plots was calculated using the standard error of the effect size, and was calculated as follows: (7). The calculations for the z-statistic are reported below.

Analysis of uncontrolled effect sizes. Arms of studies using TAU, waitlist, non-manualized treatments, or controls other than active treatment were not included for analysis of uncontrolled effect sizes. Only active treatments involving psychotherapy (with or without supplemental treatments) were included in this step. All calculations for this analysis come from Ellis (2010), Hedges *et alii* (2004), and Johnson and Eagly (2000). Effect size was calculated as (8), where SD_{pooled} was calculated using Cohen's simplified formula, (9). This way a positive effect size indicated a reduction in symptoms. In analysis of effect size from pre-test to follow-up, the mean and standard deviation from pre-test and follow-up were used. Similarly, in the analysis of maintenance, mean and standard deviation at from post-test and follow-up were used. Variance (V_i) was calculated using the following formula (10), where d_i is an individual study's effect size and n_i is an individual study's sample size. Homogeneity was tested by calculating a Q-statistic for each analysis, where (11), where w was the inverse of variance ($1/V_i$). It was expected, and found, that in most cases that the residual error was not normally distributed, or in other words, there was a significant level of heterogeneity (Q was greater than a critical chi-square value), and therefore a random-effects model was used. A τ^2 statistic was calculated using the following formula (Q-(K-1))/C, where K was the number of comparisons included and where C was the sum of squares of the study weights (w) from the fixed-effects model. The random-effects study weights were calculated as: (12). Weighted effect sizes were therefore calculated as the product of w^* and effect size (d). The overall mean effect size ($\overline{d}^*$) was calculated as: (13). Confidence intervals were calculated using effect size ±1.96* standard error. Standard error for the overall sample was calculated by taking the square root of the overall variance, where overall variance was calculated using the following formula: (14). For all tables presented, unless stated otherwise, the unweighted effect sizes are reported. Standard error was calculated. The standard error reported in the tables was calculated using the standard method. To determine if there was truly an effect, the difference between the observed effect and no effect were calculated on a z-distribution. The formula for which is: (15). If a score was greater than 1.96 (or less than -1.96), then there was a significant effect. If a score is not significant then it cannot be said that there was an effect.

Moderator analyses. Formulas for the moderator analyses come from Hedges *et alii* (2004) and Johnson *et alii* (2000). For four of the five moderator analyses, ANOVA analogues were computed in Excel with a chi-square distribution, using a mixed-model methods.

Comparisons were made between study types (i.e., efficacy and effectiveness) and within analysis type (i.e., CA or ITT). No comparisons were made within both types, as in some cases that would be using duplicate data where studies reported both ITT and CA results. All studies were included for this analysis.

Regarding the effects of exposure, a minimum k of five was required within each group. Data were grouped based on study type, then by analysis type, and then by exposure use (resulting in eight different combinations). This was done for pre/post-test effect size and for pre-test to follow-up effect sizes (resulting in a potential of 16 different cases). However, only 13 of the 16 groups meet the minimum k of five. ANOVA analogues were used to compare within study types

(e.g., efficacy CA with exposure versus efficacy CA without exposure), across study types (e.g., efficacy CA with exposure versus effectiveness CA with exposure). Effectiveness ITT without exposure (k= 4 in pre-/post-test and k= 0 in pre-test to follow-up) and Effectiveness CA without exposure (k= 0 at pre-test to follow-up only) were not included.

Regarding disorders, a minimum k of five was expected within each group. Initial analyses revealed that only three disorders would meet this criterion either (social anxiety disorder -SAD, PTSD, and OCD). They were grouped as described above, first by study type, then by analysis type, then by disorder type. ANOVA analogues were used to determine if there was a difference in effect size across each study type but within each analysis type for each disorder (e.g., efficacy CA of OCD studies versus effectiveness CA of OCD studies). Regarding exposure and disorder, where possible the groupings of disorders were then subdivided between those with exposure and those without exposure. Only PTSD offered enough data to compare the effects of exposure between and within study types. The following disorders did not offer enough datasets to conduct moderator analysis: generalized anxiety disorder (GAD), agoraphobia, panic disorder, and simple phobia.

Analysis on year of publication was conducted even if a set of studies from one year had a k of less than five and the other years had met minimal amount (this occurs in the analysis of effectiveness studies with CA). All combinations, except effectiveness ITT, were compared in this moderator analysis. Over the course of years included, there were on average 1.5 (range 0-3) studies a year that reported effectiveness ITT.

Length of treatment was grouped into a range as follows: 1-5, 6-10, 11-15, and 16+ sessions. Grouping was based on the easiest manageable chunks that would allow for comparison to findings from studies on the dose-redose effect of psychological interventions (e.g., Hansen *et alii*, 2002). Studies were divided similarly the other moderators, first by study type, then analysis, then into the length of treatment groups. ANOVA analogues were used to determine the effect of treatment length on the effect size of treatment. No moderator analysis was run on effectiveness studies using ITT analysis, as there was only one source (11-15 sessions) that had a k >5.

Finally, the fifth moderator (therapeutic alliance) was examined using a meta-regression, using SPSS version 21 to conduct the initial regression. For this, the raw effect size (Cohen's d), the scores on the therapeutic alliance measure, and w* were coded into SPSS and run through a weighted linear regression with w* acting as the case weight. The results were then modified in Excel to find the standard deviation of the slope and the z-score. Standard deviation of the slope was calculated by (16) where SE is the standard error of the slope provided by SPSS and MSE is the mean square error of the overall model as provided by SPSS. The I^2 index in all cases was 0; in no cases was the Q-statistic greater than the k-1 in any analyses.

Determining empirical support. This meta-analysis used a slightly stricter version of the criteria set forth by Chambless and Hollon (1998) for determining which treatments are empirically supported (aim 3). The reason for using this stricter set of criteria is that this meta-analysis examined only experimental versus control conditions in the analysis of controlled effect sizes. This means that comparisons between active treatment conditions, which are allowed under Chambless and Hollon's (1998) criteria, were not considered in this analysis. Furthermore, this meta-analysis only reports on studies published during the target years (2011-2014), independent from all other research. Treatments were grouped into two categories, as suggested in Chambless and Hollon's paper: 'efficacious' or 'possibly efficacious'. Anything not listed in either category was treated as having no empirical support. To be included in this analysis, RCTs needed 30 participants per condition. All other criteria from Chambless and Hollon (1998) were met by the inclusion criteria for this meta-analysis (e.g., must be manualized). To be considered 'efficacious', a study had to be replicated by an independent lab and meet all the criteria set by Chambless and Hollon (1998).

RESULTS

A total of 99 studies were included in the main analyses, of which 61 were efficacy studies, reporting 108 active treatment conditions and 40 control conditions. The

remaining 38 studies were effectiveness studies, reporting 51 active treatment conditions. Thus, a total of 159 active treatment conditions were included in the main analyses.

Table 1 presents the overview of efficacy studies included in the main analyses. Of these studies, 66 conditions reported using exposure techniques, and 42 conditions did not use exposure. In one condition of one study (Andrews *et alii*, 2011), it was not clear if exposure was utilized and referenced a text unavailable to the authors of this meta-analysis. As it was not expressly stated, it was assumed this active treatment condition in this study did not use exposure. The decision not to contact the author stems from the discussion not to contact authors during the selection process (see above). The following disorders are represented by this sample of studies: Agoraphobia with panic disorder (k= 2); GAD (k= 7); obsessive-compulsive disorder (OCD; k= 25; two of these conditions were comorbid OCD with an autism spectrum disorder); panic disorder (k= 5); PTSD (k= 27; two of these conditions were comorbid PTSD with alcohol use disorder; another conditions recruited from a treatment resistant PTSD sample); social anxiety disorder (SAD; k= 32; one of these conditions was comorbid SAD with a personality

Abbreviations and notes applicable to all tables

AAQ= Acrophobia avoidance questionnaire
AAT= Approach-Avoidance Task
ABBT= Acceptance Based Behaviour Therapy
ABMi= Attention Bias Modification (internet)
AC= Attention Control
ACT: Acceptance and Commitment Therapy
ADIS= Anxiety Disorders Interview Schedule
ADIS-CGV= ADIS Children German version
AM= Anxiety Management
AMP= Attention Modification Program
AMP+FACT= Attention Modification Program+Fear Activation
AMR= Applied Muscle Relaxation
APD: Agoraphobia with Panic Disorder
ASI= Anxiety Sensitivity Index
BACR+E= Behavioural Activation, Cognitive Restructuring, and Exposure
Basis-32= Behavior And Symptom Identification Scale
BST= Brief Strategic Therapy
CAGT= Computer-Assisted Group
CAPS= Clinician administered PTSD Scale
CBM= Cognitive Bias Modification
CBGT= Group CBT
CBGT6= Six-session Group CBT
CBT= Cognitive Behavioural Therapy
CBT for AUD+SC= AUD+supportive counselling
CBT-IE= CBT Imaginal Exposure
CBT-IR= CBT Imagery Rescripting
CBT-CA= CBT culturally adapted
CBT-FBT= CBT family based, teletherapy
CCT= Cognitive-Coping Therapy
CGI= Clinical Global Impression
CGI-S= Clinical Global Impression-Severity Scale
CBTIE= CBT-Imaginal Exposure
CBTIR= CBT Imagery Rescripting
CBT+SL= CBT+Supportive Listening
CPT= Cognitive Processing Therapy
CPT-DA= CPT (developmentally adapted)
CPT-G= Cognitive Processing Therapy-Group
CPT-R= CPT (residential)
CPSS= Child PTSD Symptom Scale
CRIES-13= Children's Revised Impact of Event Scale
CT= Cognitive Therapy
CYBOCS= Children's Yale-Brown Obsessive-Compulsive Scale
EFT= Emotional freedom techniques
EMDR= Eye Movement Desensitization and Reprocessing
ERP= Exposure and Response/Ritual Prevention
ET= Exposure Therapy
FFS= Fear of Flying Scale
FNE-BF: Fear of Negative Evaluation -Brief Form
FU= Follow-up
GMT= Group Metacognitive Therapy
GPE= Group physical exercise
HADS= Hospital Anxiety and Depression Scale
HAMA= Hamilton Anxiety Rating Scale
HARS= Hamilton Anxiety Rating Scale
iCBT= Internet-delivered/based CBT
ICBT= Interpersonal CBT
ICT= Intensive CT
IE= Imaginal Exposure
IES= Impact of Event Scale
IP= Interpersonal Psychotherapy
IR+ET= Imagery Rescripting and Exposure Therapy
LSAS= Liebowitz Social Anxiety Scale
LSAS-FS= LSAS (Fear subscale)
m= months
MAGT= Mindfulness and Acceptance-Based Therapy
MBCT= Mindfulness-based Cognitive Therapies
MBSR= Mindfulness-Based Stress Reduction
MCT= Metacognitive Therapy
N= No
(a) N= first question in series
(b) N= No second question series
NCR= Not clearly reported
NET= Narrative Exposure Therapy
NI= Not included
NR= Not reported
OCD= Obsesive-Compulsive Disorder
OCD-H= OCD (hoarding)
PCL= PTSD Checklist
PCL-C= PTSD Checklist-Civilian
PCL-M= PTSD Checklist-Military
PCL-S= PTSD Checklist-Specific
PD= Personality Disorder
PD+IBS= PD and Irritable Bowel Syndrome
PDS= Post Traumatic Stress Diagnostic Scale
PDSS= Panic Disorder Severity Scale
PE= Prolonged Exposure
PE (TMT)= Prolonged Exposure (Trauma Mastery Therapy)
PRCS= Personal Report of Confidence as a Speaker
P-RD/D= Panic-related distress/disability
PSS-I= PTSD Symptom Scale-Interview
PSS-SR= PTSD Symptom Scale-Self-Report
PSWQ= Pennsylvania State Worry Questionnaire
PTSD= Post-Traumatic Stress Disorder
PTSD+mTBI= PTSD and mild TBI
PTSD+m/s TBI= PTSD and mild/severe TB
PTSD-TR= PTSD (treatment resistant)
RCADS= Revised Children's Anxiety and Depression Scale
RCT= Residential Cognitive Group Therapy
RIPT= Residential Interpersonal Group Therapy
ROCBT= Resource-Orientated Cognitive Behavioural Therapy
s= sessions
SACAE= Self-administered computer-aided exposure
SAD= social anxiety disorder
SAD+DD= SAD and depresive disorder
SAD-PD= SAD and personality disorder
SCL-PHOB= Derogatis Symptom Checklist-Phobic Anxiety
SFNE= Short Fear of Negative Evaluation Scale
SIAS= Social Interaction Anxiety Scale
SIT= Stress Incoulation Training
SPARS= Sheehan Patient-Related Anxiety Scale
SPIN= Social Phobia Inventory
SPQ= Spider Phobia Questionnaire
SPS= Social Phobia Scale
SRI= Seretonin Reuptake Inhibitor
SRT= Stress Managment Training
SS= Seeking Safety
SSRI= Selective Seretonin Reuptake Inhibitor
ST= Supportive Therapy
TBTR= Trial-based Cognitive Therapy
TF-CBT= Trauma-Focused Cognitive Behavioural Therapy
TMT= Trauma Management Therapy
TSI= Trauma System Inventory
UCLA-HSS= UCLA Hoarding Severity Scale
VRET= Virtual Reality Exposure Therapy
w= weeks
WL= Wait List
WCT: Weekly CT
WST: Weekly ST
WET= Written Exposure Therapy;
y= years
Y= Yes
(a) Y= Yes first question in series
(b) Y= Yes second question series
YBOCS= Yale-Brown Obsessive-Compulsive Scale
*= reported n=10 females out of 21 (authors: 52.8%, accurate if n=11).

Table 1. Overview of efficacy studies included in the main analyses, 2014 studies.

Studies	Disorder	Treatment	Exposure	Measure	*N* in pre-post analysis	*N* in FU analysis	FU length	% females	Age *M* (*SD*)	Treatment Length
Asnaani et alii (2014)	SAD	AAT	No	LSAS	22	-	-	NCR	NCR	3 s
Baker et alii (2014)	PTSD	WET	Yes	CAPS	19	19	12 w	NCR	NCR	5 s
Chen et alii (2014)	PTSD	CBT	No	CRIES-13	10	10	3 m	NCR	NCR	6 s
Ehlers et alii (2014)	PTSD	ICT	Yes	CAPS	30	30	40 w	60%	39.7 (12.4)	7-days
Ehlers et alii (2014)	PTSD	WCT	Yes	CAPS	31	31	40 w	58.10%	41.5 (11.7)	12 s
Ehlers et alii (2014)	PTSD	WST	No	CAPS	30	30	40 w	56.70%	37.8 (9.9)	12 s
Kucketz et alii (2014)	SAD	AMP	No	LSAS	40	40	4 m	65%	35.1 (13.3)	8 s
Kucketz et alii (2014)	SAD	AMP+FACT	Yes	LSAS	39	39	4 m	69.20%	42 (13.3)	8 s
Kucketz et alii (2014)	SAD	iCBT	Yes	LSAS	40	40	4 m	62.50%	39.5 (12)	9 s
Lloyd, et alii (2014)	PTSD	CPT	Yes	CAPS	30	30	3 m	NR	NR	12 s
Newman et alii (2014)	GAD	CAGT	No	HARS	11	11	1 y	54.50%	42.45 (10.95)	6 s
Newman et alii (2014)	GAD	CBGT6	No	HARS	14	13	1 y	50%	45.19 (12.61)	6 s
Newman et alii (2014)	GAD	Group CBT	No	HARS	9	5	1 y	77.80%	37.11 (12.57)	12 s

Table 1 (cont.). Overview of efficacy studies included in the main analyses, 2013 studies.

Studies	Disorder	Treatment	Exposure	Measure	*N* used in pre-post analysis	*N* used in FU analysis	FU length	% female participants	Age *M* (*SD*)	Treatment Length
Bonsaksen et alii (2013)	SAD	RCT (residential)	No	SPAI-SP	40	32	1 y	NR	37.7 (11.3)	40 group & 10 individual
Bonsaksen et alii (2013)	SAD	RIPT (residential)	No	SPAI-SP	40	37	1 y	NR	37.2 (11.6)	40 group s & 10 individual
Farrell et alii (2013)	OCD	ERP+d-cycloserine (25 or 50 mg)	Yes	CYBOCS	9	9	3 m	NCR	NCR	9 s
Farrell et alii (2013)	OCD	ERP+placebo (25 or 50 mg)	Yes	CYBOCS	8	8	3 m	NCR	NCR	9 s
Foa et alii (2013)	OCD	SRI + ERP	Yes	YBOCS	38	-	-	26%	36.1 (14.1)	8 s
Foa et alii (2013)	OCD	SRI + SRT	Yes	YBOCS	11	-	-	45%	41.7 (11.7)	8 s
Hayes-Skelton (2013)	GAD	ABBT	No	PSWQ	30	25	6 m	60%	33.30 (12.42)	16 s
Hoffart, et alii (2013)	PTSD	CBT-IE	Yes	PSS-I	31	-	-	NCR	NCR	10 s
Hoffart, et alii (2013)	PTSD	CBT-IR	No	PSS-I	34	-	-	NCR	NCR	10 s
Hovland (2013)	PD	CBT	Yes	P-RD/D	19	19	6 m	73.70%	37.8 (8.9)	12 s
Hovland (2013)	PD	GPE	No	P-RD/D	17	17	6 m	88.20%	38.1 (8.6)	36 s
Kocovski et alii (2013)	SAD	CBGT	Yes	LSAS (CA) SPIN (ITT)	32 (CA) 53 (ITT)	27 (CA) N/A (ITT)	3 m	52.83%	32.66 (9.07)	12 s 12 s
Kocovski et alii (2013)	SAD	MAGT	No	LSAS (CA) SPIN (ITT)	37 (CA) 53 (ITT)	32 (CA) N/A (ITT)	3 m	49.06%	34.94 (12.52)	12 s 12 s
Ma et alii (2013)	OCD	CCT+ pharmacotherapy	No	YBOCS	71	NR	NI	47.90%	27.4 (8.2	9 s
Månsson et alii (2013)	SAD	iCBT	Yes	LSAS-LR	12	-	-	85%	32.46 (8.6)	5 s
Månsson et alii (2013)	SAD	ABMi	No	LSAS-LR	12	-	-	85%	32.08 (10.9)	10 s
Margolies, et alii (2013)	PTSD	CBT for insomnia	No	PSS-SR	20	-	-	10%	36.43 (9.3)	10 s
Meyerbroeker et alii (2013)	APD	CBT+VRET	Yes	PDSS	23	-	-	NR	NR	20 s
Meyerbroeker et alii (2013)	APD	CBT+in vivo exposure	Yes	PDSS	21	-	-	NR	NR	20 s
Olatunji (2013)	OCD	CT	Yes	YBOCS	30	25	52 w	83.33%	36.83 (9.80)	14 s
Olatunji (2013)	OCD	ERP	Yes	YBOCS	30	23	52 w	65.63%	34.84 (11.38)	14 s
Reynolds et alii (2013)	OCD	CBT	Yes	CYBOCS	25	25	6 m	NR	14.4 (1.35)	6 s
Reynolds et alii (2013)	OCD	Parent-enhanced CBT	Yes	CYBOCS	25	25	6 m	NR	14.6 (1.61)	6 s
Rus-Calafell et alii (2013)	Flying Phobia	VRET	Yes	FFS	7	7	6 m	87.00%	37.14 (14.28)	17.43 (4.3) s
Rus-Calafell et alii (2013)	Flying Phobia	IE	Yes	FFS	8	8	6 m	NR	36.13 (12.59)	14.43 (5.3) s
Russell et alii (2013)	OCD+ASD	ERP	yes	YBOCS	20	18	1 m	17.40%	28.6 (11.3)	12 s
Russell et alii (2013)	OCD+ASD	AM	No	YBOCS	20	17	1 m	30.40%	25.2 (13.5)	12 s
Sannible et alii (2013)	PTSD+ AUD	Integrated CBT	Yes	CAPS severity	33	33	9 m	58%	41.85 (12.62)	17 s
Sannible et alii (2013)	PTSD+AUD	CBT for AUD+SC	No	CAPS severity	29	29	9 m	48%	40.41 (11.21)	10 w
Simpson et alii (2013)	OCD	SSRI + ERP	Yes	YBOCS	37	-	-	52.50%	34.3 (12.7)	10 w
Sportel et alii (2013)	SAD	Group CBT	Yes	RCADS	84	84	1 y	67%	14.06 (0.73)	14 s
Sportel et alii (2013)	SAD	CBM	No	RCADS	86	86	1 y	77%	14.12 (0.66)	14 s
Storch et alii (2013)	OCD	Sertraline (standard	Yes	CYBOCS	14	-	-	50%	11.57 (3.06)	14 s

disorder); and simple/specific phobia (k= 10; four in these conditions were flying phobias; four were acrophobia; and two were snake phobias).

Table 2 presents the overview of effectiveness studies included in the main analyses. Of these studies (k= 51), 43 conditions reported using exposure techniques; the remaining eight conditions did not use exposure. The following disorders are represented by this sample of studies: GAD (k= 6); OCD (k= 11; one of these conditions focused on hoarding); panic disorder (k= 5; two of these conditions presented comorbid cases, one of panic disorder with irritable bowel syndrome and the other of panic disorder with a personality disorder); PTSD (k= 23; one condition was comorbid PTSD with major depressive disorder; two conditions were comorbid PTSD with traumatic brain injury; SAD), (k= 6, one condition was comorbid SAD with any depressive disorder).

Tables 3 and 4 present the quality ratings for efficacy and effectiveness studies, respectively. Follow-up was reported in 84 (77.06%) of the conditions in efficacy studies. However, one study could not be used, as it did not report the follow-up sample size (Ma *et alii*, 2013). Regarding effectiveness studies, only 15 (29.41%) of conditions reported a follow-up. All reported follow-up data were useable.

The overall inter-rater reliability score was 76%. There was substantial agreement between the two raters-Cohen's $k_{weighted}$= .71 (95% CI .57 to .85).

Regarding efficacy CA studies, visual inspection of the funnel plot, presented in Figure 2a, indicated possible publication bias, this was confirmed by an *Egger's Regression* (pre vs. post-treatment): (B0)= 9.24, 95% CI= [4.86-13.61], $p \leq .001$. This was confirmed by Begg-Mazumdar's rank correlation, τ_a= 0.31, p= .002. However, the necessary number of unpublished null trials to reduce the obtained mean effect size to trivial levels would be 2865. This suggests that there probably is not a file-drawer problem.

Table 1 (cont.). Overview of efficacy studies included in the main analyses,2012 studies.

Studies	Disorder	Treatment	Exposure	Measure	*N* in pre-post analysis	*N* in FU analysis	FU length	% females	Age *M* (*SD*)	Treatment Length
Aldahandha et alii (2012)	PTSD	EMDR	Yes	TSI	25	22	1 m	52%	NCR	10 s
Aldahandha et alii (2012)	PTSD	EMDR (after WL)	Yes	TSI	26	22	1 m	53.85%	NCR	10 s
Andersson (2012)	OCD	iCBT	Yes	YBOCS	49	50	4 m	66%	33 (12)	12 s
Andersson (2012)	OCD	AC	No	YBOCS	51	-	4 m	66.70%	35 (14)	12 s
de Oliveira et alii (2012)	SAD	TBTR	No	LSAS	17	17	1 y	70.60%	33.9 (9.9)	12 s
de Oliveira et alii (2012)	SAD	CT	No	LSAS	19	19	1 y	78.90%	34.9 (13.4)	8 s and 1 d meditation retreat
Jazaieri et alii (2012)	SAD	MBSR	No	LSAS	24	16	3 m	61.30%	32.87 (8.83)	5 s
Nations et alii (2012)	PD	CBT+Org 25935 (4 mg)	Yes	PDSS	10	10	1 m	63.60%	33.3 (11.0)	5 s
Nations et alii (2012)	PD	CBT+Org 25935 (12 mg)	Yes	PDSS	14	14	1 m	60%	36.4 (8.9)	1 s
Nations et alii (2012)	PD	CBT+placebo	Yes	PDSS	13	13	1 m	78.60%	32.4 (11.2)	1 s
Nave et alii (2012)	arachnophobia	exposure+D-cycloserine	Yes	CGI-S	10	-	-	60%	34.6 (12.69)	9 s
Nave et alii (2012)	arachnophobia	Exposure+placebo	Yes	CGI-S	10	-	-	60%	39 (13.91)	9 s
Nixon et alii (2012)	PTSD	CBT	Yes	CAPS	17	17	6 m	47%	11.59 (3.31)	8 s
Nixon et alii (2012)	PTSD	CT	No	CAPS	17	17	6 m	25%	10 (2.48)	24.6 (4.2) s
Wilhutzki et alii (2012)	SAD	CT	No	SPS	23	16	2 y	43.80%	NCR	12 s
Wilhutzki et alii (2012)	SAD	ROCBT	No	SPS	40	35	2 y	40%	NCR	6 lessons

Table 1 (cont.). Overview of efficacy studies included in the main analyses, 2011 studies.

Studies	Disorder	Treatment	Exposure	Measure	*N* used in pre-post analysis	*N* used in FU analysis	FU length	% female participants	Age *M* (*SD*)	Treatment Length
Alden et alii (2011)	SAD	ICBT	No	SIAS	27	21	6 m	35%	34.7 (*SD* NR)	7 s
Andrews et alii (2011)	SAD	iCBT	Yes	SIAS	21	-	-	NCR	NCR	18 s
Andrews et alii (2011)	SAD	Group CBT	No (can't tell)	SIAS	14	-	-	NCR	NCR	29 s
Belloch et alii (2011)	OCD	CT	No	PSWQ	16	16	-	62.50%	30.44 (5.70)	14 s
Bidel et alii (2011)	PTSD	TMT	Yes	CAPS	14	-	-	0%	58.93 (*SD* NR)	12 s
Bidel et alii (2011)	PTSD	ET	Yes	CAPS	16	-	-	0%	59.76 (*SD* NR	5 s
Bolton (2011)	OCD	CBT	No	CYBOCS	36	36	3 m	58%	15 (2.5)	15 s
Bolton (2011)	OCD	Brief CBT	No	CYBOCS	36	36	3 m	64%	14.33 (2.33)	15 s
Hedman et alii (2011)	SAD	iCBT	Yes	LSAS	64	64	6 m	37.50%	35.1 (11.1)	10 s
Hensel-Dittman (2011)	PTSD	NET	Yes	CAPS	11	7	1 y	NR	NR	14 s
Hensel-Dittman (2011)	PTSD	SIT	No	CAPS	10	8	1 y	NR	NR	14 s
Hinton et alii (2011)	PTSD-TR	CBT-CA	No	PCL	12	12	12 w	100%	47.6 (8.2)	16 s+3 boosters
Hinton et alii (2011)	PTSD-TR	AMR	No	PCL	12	12	12 w	100%	51.4 (5.9)	16 s+3 boosters
Jónsson et alii (2011)	OCD	Group CBT	Yes	YBOCS	42	31	1 y	59.60%	32.7 (11.1)	8 s
Jónsson et alii (2011)	OCD	CBT	Yes	YBOCS	37	26	1 y	71.70%	32.7 (9.5)	8 s
Karatzias et alii (2011)	PTSD	EMDR	Yes	CAPS	23	23	33 m	60.90%	41.5 (10.8)	24 s
Karatzias et alii (2011)	PTSD	EFT	Yes	CAPS	23	23	3 m	52.20%	39.7 (10.9)	16 s
Melfsen et alii (2011)	SAD	CBT	No	ADIS-CGV	15	-	-	38.10%	10.60 (1.64)	16 s
Mörtberg et alii (2011)	SAD	CT	No	LSAS	23	23	5 y	69%	36.1 (9.8)	14 s
Nacasch (2011)	PTSD	PE	Yes	PSS-I	15	15	At least 12-m after treatment	NR	34.8 (11.4)	8 s
Newman et alii (2011)	GAD	CBT+SL	No	PSWQ	40	40	24 m	80%	37.39 (11.99)	8 s
Paxling et alii (2011)	GAD	iCBT	Yes	PSWQ	44	44	3 y	82.82%	40 (11.3)	8 s
Price & Anderson (2011)	SAD	Group CBT	Yes	FNE-BF	51	-	-	NCR	NCR	8 s
Price & Anderson (2011)	SAD	Group CBT + VRET	Yes	FNE-BF	40	-	-	NCR	NCR	1 s
Price et alii (2011)	SAD	VRET	Yes	PRCS	31	-	-	NCR	NR	1 s
Raes et alii (2011)	arachnophobia	1 s exposure	Yes	SPQ	16	16	1 m	NCR	NCR	10 s
Raes et alii (2011)	arachnophobia	1s exposure	Yes	SPQ	15	15	1 m	NCR	NCR	10 s
Rakowska (2011)	SAD	BST	Yes	SCL-PHOB	30	30	3 m	NCR	NCR	16 s
Rakowska (2011)	SAD-PD	BST	Yes	SCL-PHOB	30	30	3 m	NCR	NCR	16 s
Stangier et alii (2011)	SAD	CT	No	LSAS	38	38	1 y	44.70%	34.6 (12.9)	14 s
Stangier et alii (2011)	SAD	IP	No	LSAS	38	38	1 y	57.90%	33.9 (9.5)	20 s
Storch et alii (2011)	OCD	CBT-FBT	yes	CYBOCS	16	14	3 m	37%	11.00 (2.5)	17 s
Tolin et alii (2011)	OCD	Stepped-care ERP	Yes	YBOCS	19	19	-	68.40%	35.95 (15.16)	6 s
Tolin et alii (2011)	OCD	ERP	Yes	YBOCS	15	15	-	46.70%	31.33 (10.50)	6 s
Tortella Feliu et alii (2011)	Flying Phobia	SACAE	Yes	FFS	21	21	1 y	47.62% *	36.24 (8.51)	3 s
Tortella Feliu et alii (2011)	Flying Phobia	VRET	Yes	FFS	19	19	1 y	52.63%	36.89 (11.71)	3 s

Table 2. Overview of effectiveness studies included in the main analyses, 2014 studies.

Studies	Disorder	Treatment	Exposure	Measure	*N* in pre-/post-analysis	N in FU analysis	FU length	% female	Age *M* (*SD*)	Treatment Length
Dalrymple et alii (2014)	SAD+DD	ACT	Yes	LSAS-FS	18 (CA) 38 (ITT)	-	-	45.90%	36.43 (13.0)	16 s
Jeffreys et alii (2014)	PTSD	CPT-G	Yes	PCL	20	-	-	NCR	NCR	12 s
Jeffreys et alii (2014)	PTSD	CPT	Yes	PCL	7	-	-	NCR	NCR	12 s
Jeffreys et alii (2014)	PTSD	CPT-C	Yes	PCL	150	-	-	NCR	NCR	12 s
Jeffreys et alii (2014)	PTSD	PE	Yes	PCL	81	-	-	5.90%	38.2 (13.26)	10 to 15 s
Matulis et alii (2014)	PTSD	CPT-DA	Yes	CAPS	12	12	6 w	NR	18.08 (1.67)	30 s
Shirotsuki et alii (2014)	SAD	CBT	Yes	SFNE	15	-	-	46.67%	30.06 (SD NR)	6 s
Wesner et alii (2014)	PD	Group CBT	Yes	CGI	48	-	-	75%	38.8 (11.1)	12 s

Table 2 (cont.). Overview of effectiveness studies included in the main analyses, 2013 studies.

Studies	Disorder	Treatment	Exposure	Measure	N in pre/post-analysis	N in FU analysis	FU length	% female	Age *M* (*SD*)	Treatment Length
da la Cruz et alii (2013)	OCD	ERP	Yes	CYBOCS	50	-	-	NCR	NCR	13 s
da la Cruz et alii (2013)	OCD	ERP	Yes	CYBOCS	103	-	-	NCR	NCR	12 s
Dèttore, et alii (2013)	OCD	ERP	Yes	YBOCS	38	-	-	50%	33.38 (9.44)	50 s
Eftekhari et alii (2013)	PTSD	PE	Yes	PCL	1389 (CA) 1888 (ITT)	-	-	12.90%	46.8 (14.3)	9 (4.2) s
Furukawa et alii (2013)	SAD	CBGT	Yes	LSAS	52	NI	Reported using a different measure	50%	35.5 (9.3)	13.4 (4.5) s
King, et alii (2013)	PTSD	MBCT	No	CAPS	15 (CA) 20 (ITT)	-	-	NR	60.1 (9.7)	8 s
Kleim, et alii (2013)	PTSD	TF-CBT	No	PDSS	268	-	-	58.60%	38.67 (11.26)	12 s
Najavits et alii (2013)	PTSD	SS	No	Basis-32	7	-	-	57%	45.89 (10.61)	18.86 (8.17) s
Sripada et alii (2013)	PTSD	PE	Yes	PCL-S	51 CA 40 ITT	-	-	NR	49.3 (SD NR)	12 (2.7) CA 10 (3.8) ITT
Stott et alii (2013)	SAD	i CT	Yes	LSAS	11	-	-	45%	33.1 (5.9)	13.7 (4.0) w
van der Helden et alii (2013)	GAD	GMT	Yes	PSWQ	24 (CA) 33 (ITT)	14 (CA) 33 (ITT)	6 m	63.64%	31.33 (8.96)	14 s
Voder et alii (2013)	PTSD	PE	Yes	PCL-M	55 (CA) 66 (ITT)	-	-	0%	64.92 (5.35)	12.67 (6.94) (CA) 11.37 (6.94) (ITT)
Yuen et alii (2013)	SAD	ABBT	Yes	LSAS	26	26	3 m	25%	35 (10.8)	12 s

Table 2 (cont.). Overview of effectiveness studies included in the main analyses, 2012 studies.

Studies	Disorder	Treatment	Exposure	Measure	*N* pre/post-analysis	*N* FU analysis	FU length	% female	Age *M* (*SD*)	Treatment Length
Tarquinio et alii (2012)	PTSD	EMDR	Yes	IES Total	12	12	6 m	100%	33 (4.6)	5 s
Wagner et alii (2012)	PTSD	iCBT	No	PDS	15	-	-	86.70%	29.3 (7.1)	NR (10 assignments)
Wroe et alii (2012)	OCD	Group CBT	Yes	YBOCS	15	-	-	54.50%	35 (10.54)	7 to 8 s

Table 2 (cont.). Overview of effectiveness studies included in the main analyses, 2011 studies.

Studies	Disorder	Treatment	Exposure	Measure	*N* pre/post-analysis	*N* FU analysis	FU length	% female	Age *M* (*SD*)	Treatment Length
Alvarez et alii (2011)	PTSD	CPT-R	Yes	PCL	104	-	-	0%	50.20 (11.55)	14 s
Ayers et alii (2011)	OCD-H	CBT	Yes	UCLA-HSS	12	10	6 m	58.33%	73.66 (6.54)	26 s
Chard et alii (2011)	PTSD+mTBI	CPT-R	No	CAPS	28	-	-	0%	33.93 (8.59)	14.11 (1.17) s, 7 w (2 group and minimum of 2 individual/w)
Chard et alii (2011)	PTSD+m/sTBI	CPT-R	No	CAPS	14	-	-	0%	38.7 (10.59)	14.71 (1.98) s 7 w (2 group and minimum of 2 individual/w)
Gros, Antony, et alii (2011)	PD	Group CBT	Yes	ASI	32	-	-	NCR	NCR	12 s
Gros, Antony, et alii (2011)	PD+IBS	Group CBT	Yes	ASI	23	-	-	NCR	NCR	12 s
Gros, Yoder, et alii (2011)	PTSD	PE	Yes	PCL-M	27	-	-	11.10%	45.2 (16.0)	12 s
Haraguchi et alii (2011)	OCD	Group CBT	Yes	YBOCS	28 (CA) 36 (ITT)	-	-	82.1% (CA) 77.8% (ITT)	32.6 (10.7) (CA) 30.9 (10.3) (ITT)	12 s
Hindo et alii (2011)	SAD	1s Exposure	Yes	LSAS	32	23	1 m	75%	28.25 (9.22)	1 s
Long et alii (2011)	PTSD	IR+ET	Yes	PCL-M	33	-	-	0%	62.1	6 s
Nakatani et alii (2011)	OCD	CBT/ERP	Yes	CYBOCS	40	-	-	41.10%	12.5 (2.9)	12 s
Nakatani et alii (2011)	OCD	CBT/ERP	Yes	CYBOCS	69	-	-	41.60%	14.7 (1.7)	12 s
Nevo et alii (2011)	PTSD	PE (TMT)	Yes	CPSS patient	15	15	1 m	86%	10.8 (4.39)	7 to 16-s
Nixon et alii (2011)	PTSD+MDD	BACR+E	Yes	CAPS	20	20	3 m	85%	45.3 (11.88)	12 to 16 s
Telch et alii (2011)	PD	CBT	Yes	SPRAS	119	-	-	NCR	NCR	12 s
Telch et alii (2011)	PD	CBT	Yes	SPRAS	54	-	-	NCR	NCR	12 s
Turek et alii (2011)	PTSD	PE	Yes	PCL-M	43 (CA) 65 (ITT)	-	-	11%	31.77 (8.19)	7 (5) s (ITT) 10 (4) s (CA)
Westra et alii (2011)	GAD	CBT	Yes	PSWQ	11	11	1 y	63.64%	41.36 (*SD* NR)	6 s
Westra et alii (2011)	GAD	CBT	Yes	PSWQ	6	6	1 y	83.33%	49.83 (*SD* NR)	6 s
Westra et alii (2011)	GAD	CBT	Yes	PSWQ	8	8	1 y	87.50%	33.75(*SD* NR)	s
Westra et alii (2011)	GAD	CBT	Yes	PSWQ	7	7	1 y	57.14%	42.86 (SD NR)	6 s
Wetherall et alii (2011)	GAD	CBT+Escitalopram	No	HAMA	10	-	-	60%	68.6 (8.59)	16 s
Wootton et alii (2011)	OCD	iCBT	Yes	YBOCS	21	21	3 m	59%	35.18 (11.32)	8-lessons

Table 3. Methodological quality (CASP RCT rating) of efficacy studies included in the main analyses, 2014 studies

Studies	1	2	3	4	5	6	7	8 (95% CI)	9	10	11	Total Yes
Asnaani et alii (2014)	Y	Y	Y	Y	Y	Y	Small	51.18-67.82	N	N	Y	7
Baker et alii (2014)	Y	Y	Y	CT	CT	Y	Large	13.67-24.23	CT	CT	Y	5
Chen et alii (2014)	Y	Y	CT	CT	N	N	Large	22.59-31.81	Y	CT	Y	4
Ehlers et alii (2014)	Y	Y	Y	N	Y	Y	Large	22.49-41.95	Y	Y	Y	8
Ehlers et alii (2014)	Y	Y	Y	N	Y	Y	Large	16.87-37.07	Y	Y	Y	8
Ehlers et alii (2014)	Y	Y	Y	N	Y	Y	Large	36.51-59.25	Y	Y	Y	8
Kucketz et alii (2014)	Y	Y	Y	CT	CT	Y	small	58.86-76.24	Y	Y	Y	7
Kucketz et alii (2014)	Y	Y	Y	CT	CT	Y	Large	42.45-56.21	Y	Y	Y	7
Kucketz et alii (2014)	Y	Y	Y	CT	CT	Y	Large	37.57-49.89	Y	Y	Y	7
Lloyd, et alii (2014)	Y	Y	CT	CT	Y	N	Large	38.05-58.01	Y	N	Y	5
Newman et alii (2014)	Y	Y	CT	Y	Y	Y	Large	7.4-13.36	Y	Y	Y	8
Newman et alii (2014)	Y	Y	CT	Y	Y	Y	Large	9.25-15.83	Y	Y	Y	8
Newman et alii (2014)	Y	Y	CT	Y	Y	Y	Large	9.55-21.45	Y	Y	Y	8

Table 3 (cont.). Methodological quality (CASP RCT rating) of efficacy studies included in the main analyses, 2013 studies

Studies	1	2	3	4	5	6	7	8 (95% CI)	9	10	11	Total Yes
Bonsaksen et alii (2013)	Y	Y	CT	Y	Y	Y	Large	97.99-119.83	Y	Y	Y	8
Bonsaksen et alii (2013)	Y	Y	CT	Y	Y	Y	Large	103.66-124.24	Y	Y	Y	8
Farrell et alii (2013)	Y	Y	CT	Y	CT	Y	Large	10.32-17.24	CT	Y	Y	6
Farrell et alii (2013)	Y	Y	CT	Y	CT	Y	Large	8.41-19.09	CT	Y	Y	6
Foa et alii (2013)	Y	Y	Y	Y	Y	Y	Large	10.13-12.87	Y	N	Y	8
Foa et alii (2013)	Y	Y	Y	Y	Y	Y	Large	14.22-19.78	Y	N	Y	8
Hayes-Skelton (2013)	Y	CT	CT	N	Y	Y	Large	48-54.06	Y	N	Y	5
Hayes-Skelton (2013)	Y	CT	CT	N	Y	Y	Large	48.63-55.93	Y	N	Y	5
Hoffart, et alii (2013)	Y	Y	Y	CT	Y	Y	Large	15.06-24.74	Y	N	Y	7
Hoffart, et alii (2013)	Y	Y	Y	CT	Y	Y	Large	17.91-27.51	Y	N	Y	7
Hovland (2013)	Y	Y	Y	CT	Y	Y	Large	0.17-1.35	Y	Y	Y	8
Kocovski et alii (2013)	Y	Y	Y	Y	Y	Y	Medium	29.94-37.5 (ITT)	Y	Y	Y	9
Kocovski et alii (2013)	Y	Y	Y	Y	Y	Y	Large	29.93-37.89 (ITT)	Y	Y	Y	9
Ma et alii (2013)	Y	Y	Y	N	Y	CT	Large	13.52-16.08	Y	N	Y	6
Månsson et alii (2013)	Y	Y	Y	Y	Y	Y	Large	32.49-67.01	Y	N	Y	8
Månsson et alii (2013)	Y	Y	Y	Y	Y	Y	Large	46.72-64.94	Y	N	Y	8
Margolies, et alii (2013)	Y	Y	CT	Y	Y	Y	Medium	27.5-39.5	Y	N	N	6
Meyerbroeker et alii (2013)	Y	Y	N	Y	Y	Y	Large	0.66-1.4	Y	N	Y	7
Meyerbroeker et alii (2013)	Y	Y	N	Y	Y	Y	Large	0.64-1.38	Y	N	Y	7
Olatunji (2013)	Y	Y	Y	Y	Y	Y	Large	12.92-19.34	Y	Y	Y	9
Olatunji (2013)	Y	Y	Y	Y	Y	Y	Large	12.97-19.29	Y	Y	Y	9
ReyNlds et alii (2013)	Y	Y	Y	Y	Y	Y	Large	10.96-17.68	Y	Y	Y	9
ReyNlds et alii (2013)	Y	Y	Y	Y	Y	Y	Large	10.74-17.42	Y	Y	Y	9
Rus-Calafell et alii (2013)	Y	Y	CT	Y	Y	Y	Large	38.53-60.05	Y	Y	Y	8
Rus-Calafell et alii (2013)	Y	Y	CT	Y	Y	Y	Large	38.94-60.32	Y	Y	Y	8
Russell et alii (2013)	Y	Y	Y	Y	Y	Y	Large	14.12-21.48	Y	Y	Y	9
Russell et alii (2013)	Y	Y	Y	Y	Y	Y	Medium	17.43-24.17	Y	Y	Y	9
Sannible et alii (2013)	Y	Y	Y	Y	Y	Y	Large	33.78-51.82	Y	Y	Y	9
Sannible et alii (2013)	Y	Y	Y	Y	Y	Y	Large	37.15-56.27	Y	Y	Y	9
Simpson et alii (2013)	Y	Y	Y	Y	Y	Y	Large	11.03-14.97	Y	N	Y	8
Sportel et alii (2013)	Y	Y	Y	Y	Y	Y	Small	11.31-13.39	Y	Y	Y	9
Sportel et alii (2013)	Y	Y	Y	Y	Y	Y	Medium	10.19-12.49	Y	Y	Y	9
Storch et alii (2013)	Y	Y	Y	Y	Y	Y	Large	10.34-20.52	Y	N	Y	8
Storch et alii (2013)	Y	Y	Y	Y	Y	Y	Large	13.57-20.79	Y	N	Y	8
Storch et alii (2013)	Y	Y	Y	Y	Y	Y	Large	12.32-18.8	Y	N	Y	8
Tart et alii (2013)	Y	Y	Y	CT	Y	Y	Large	5.25-12.75	Y	Y	Y	8
Zang et alii (2013)	Y	Y	Y	Y	Y	Y	Large	3.6-6.94	CT	N	Y	7
Zang et alii (2013)	Y	Y	Y	Y	Y	Y	Large	3.13-6.87	CT	N	Y	7

Figure 2b presents the funnel plot for publication bias for efficacy studies using ITT analysis, indicating potential publication bias. Again, this was confirmed by a significant *Egger's Regression* (pre vs. post-treatment): (B0)= 11.06, 95% CI= [8.84-13.29], $p \leq .001$. This was confirmed by a Begg-Mazumdar's rank correlation, $\tau a = 0.4$, $p \leq .001$. However, the necessary numbers of unpublished null trials to reduce the obtained mean effect size to trivial levels would be 7833. This suggests there probably is not a file-drawer problem.

Table 3 (cont.). Methodological quality (CASP RCT rating) of efficacy studies included in the main analyses, 2012 studies

Studies	1	2	3	4	5	6	7	8 (95% CI)	9	10	11	Total Yes
Aldahandha et alii (2012)	Y	Y	CT	CT	Y	Y	Large	41.76-45.76	CT	N	Y	5
Aldahandha et alii (2012)	Y	Y	CT	CT	Y	Y	Large	42.68-47.7	CT	N	Y	5
Andersson (2012)	Y	Y	Y	Y	Y	Y	Large	11.19-14.69	Y	Y	Y	9
Andersson (2012)	Y	Y	Y	Y	Y	Y	Medium	17.73-20.03	Y	N	Y	8
de Oliveira et alii (2012)	Y	Y	CT	Y	Y	Y	Large	39.95-71.35	Y	Y	Y	8
de Oliveira et alii (2012)	Y	Y	CT	Y	Y	Y	Large	50.07-73.29	Y	Y	Y	8
Lazaieri et alii (2012)	Y	Y	CT	CT	Y	Y	Large	48.09-62.91	Y	N	Y	6
Nations et alii (2012)	Y	Y	Y	N	Y	Y	Large	4.38-6.22	Y	Y	CT	7
Nations et alii (2012)	Y	Y	Y	N	Y	Y	Large	5.18-10.02	Y	Y	CT	7
Nations et alii (2012)	Y	Y	Y	N	Y	Y	Large	4.27-8.93	Y	Y	CT	7
Nave et alii (2012)	Y	Y	Y	Y	Y	Y	Large	2.29-3.71	Y	N	Y	8
Nave et alii (2012)	Y	Y	Y	Y	Y	Y	Large	2.28-3.12	Y	N	Y	8
Nixon et alii (2012)	Y	Y	Y	Y	Y	Y	Large	12.97-37.27	Y	Y	Y	9
Nixon et alii (2012)	Y	Y	Y	Y	Y	Y	Large	13.82-37.68	Y	Y	Y	9
Wells et alii (2012)	Y	Y	N	Y	CT	Y	Large	6.64-26.96	Y	N	Y	6
Willutzki et alii (2012)	Y	Y	CT	CT	CT	Y	Large	14.39-23.53	Y	CT	CT	4
Willutzki et alii (2012)	Y	Y	CT	CT	CT	Y	Large	13.94-22.42	Y	CT	CT	4

Table 3 (cont.). Methodological quality (CASP RCT rating) of efficacy studies included in the main analyses, 2011 studies

Studies	1	2	3	4	5	6	7	8 (95% CI)	9	10	11	Total Yes
Alden et alii (2011)	Y	Y	CT	Y	Y	Y	Large	30.34-39.52	Y	Y	Y	8
Andrews et alii (2011)	Y	Y	N	CT	Y	Y	Medium	37.2-50.8	Y	N	Y	6
Andrews et alii (2011)	Y	Y	N	CT	Y	Y	Large	34.06-53.66	Y	N	Y	6
Belloch et alii (2011)	Y	Y	N	N	N	Y	Medium	44.32-57.14	Y	Y	Y	6
Bidel et alii (2011)	Y	Y	CT	Y	Y	Y	Large	56.43-81.57	Y	N	Y	7
Bolton (2011)	Y	Y	Y	Y	Y	Y	Large	6.89-12.11	Y	Y	Y	9
Bolton (2011)	Y	Y	Y	Y	Y	Y	Large	9.86-16.14	Y	Y	Y	9
Hedman et alii (2011)	Y	Y	Y	Y	Y	Y	Large	34.52-44.28	Y	Y	Y	9
Hedman et alii (2011)	Y	Y	Y	Y	Y	Y	Large	42.28-54.72	Y	Y	Y	9
Hensel-Dittman (2011)	Y	Y	N	Y	Y	Y	Large	61.25-92.21	Y	N	Y	7
Hensel-Dittman (2011)	Y	Y	N	Y	Y	Y	Small	70.95-94.25	Y	N	Y	7
Hinton et alii (2011)	Y	Y	CT	Y	Y	Y	Large	30.56-47.64	Y	N	Y	7
Hinton et alii (2011)	Y	Y	CT	Y	Y	Y	Large	54.13-69.07	Y	N	Y	7
Jónsson et alii (2011)	Y	Y	N	Y	Y	Y	Large	16.35-21.31	Y	Y	Y	8
Jónsson et alii (2011)	Y	Y	N	Y	Y	Y	Large	15.69-21.01	Y	Y	Y	8
Karatzias et alii (2011)	Y	Y	Y	Y	Y	Y	Large	30.4-55	Y	Y	Y	9
Karatzias et alii (2011)	Y	Y	Y	Y	Y	Y	Large	29.75-51.25	Y	Y	Y	9
Melfsen et alii (2011)	Y	Y	CT	Y	Y	Y	Large	2.86-4	Y	N	Y	7
Mörtberg et alii (2011)	Y	Y	Y	Y	Y	Y	Large	45.34-59.46	Y	Y	Y	9
Mörtberg et alii (2011)	Y	Y	Y	Y	Y	Y	Large	36.98-57.42	Y	Y	Y	9
Nacasch (2011)	Y	Y	Y	N	Y	Y	Large	14.29-23.51	Y	Y	Y	8
Newman et alii (2011)	Y	Y	CT	N	N	Y	Large	45.61-52.51	N	N	N	3
Paxling et alii (2011)	Y	Y	Y	Y	Y	Y	Large	53.98-61.66	Y	Y	Y	9
Price and Anderson (2011)	Y	Y	CT	Y	Y	Y	Large	33.3-36.96	Y	N	Y	7
Price and Anderson (2011)	Y	Y	CT	Y	Y	Y	Small	34.89-40.67	Y	N	Y	7
Price, Mehta, et alii (2011)	Y	Y	CT	CT	CT	N	Large	13.86-18.98	Y	N	Y	4
Raes et alii (2011)	Y	Y	Y	Y	Y	N	Large	10.04-13.46	Y	Y	Y	8
Raes et alii (2011)	Y	Y	Y	Y	Y	N	Large	8.27-13.73	Y	Y	Y	8
Rakowska (2011)	Y	Y	CT	Y	Y	Y	Large	0.09-0.51	Y	Y	Y	8
Rakowska (2011)	Y	Y	CT	Y	Y	Y	Large	0.54-0.98	Y	Y	Y	8
Stangier et alii (2011)	Y	Y	Y	Y	Y	Y	Large	32.78-46.2	Y	Y	Y	9
Storch et alii (2011)	Y	Y	Y	CT	Y	Y	Large	5.97-16.29	Y	N	Y	7
Tolin et alii (2011)	Y	Y	Y	Y	Y	Y	Large	12.67-17.65	Y	Y	Y	9
Tolin et alii (2011)	Y	Y	Y	Y	Y	Y	Large	11.12-17.38	Y	Y	Y	9
Tortella Feliu et alii (2011)	Y	Y	CT	Y	Y	Y	Large	44.25-54.95	Y	N	Y	7
Tortella Feliu et alii (2011)	Y	Y	CT	Y	Y	Y	Large	41.07-50.33	Y	N	Y	7

Figure 2c presents the funnel plot for publication bias for effectiveness studies using CA, indicating potential publication bias. This was confirmed by a significant *Egger's Regression* (pre vs. post-treatment): (B0)= 5.09, 95% CI= [2.59-7.60]. $p \leq .001$. This was also confirmed by a Begg-Mazumdar's rank correlation, $\tau_a = 0.23$, $p = .019$. However, the necessary number of unpublished null trials to reduce the obtained mean effect size to trivial levels would be 6106. This suggests there probably is not a file-drawer problem.

Figure 2d presents the funnel plot for publication bias for effectiveness studies using ITT analysis, indicating potential publication bias. This bias was confirmed by a significant *Egger's Regression* (pre vs. post-treatment): (B0)= 15.42, 95% CI= [10.12-20.72], $p \leq .001$. This was also confirmed by a Begg-Mazumdar's rank correlation,

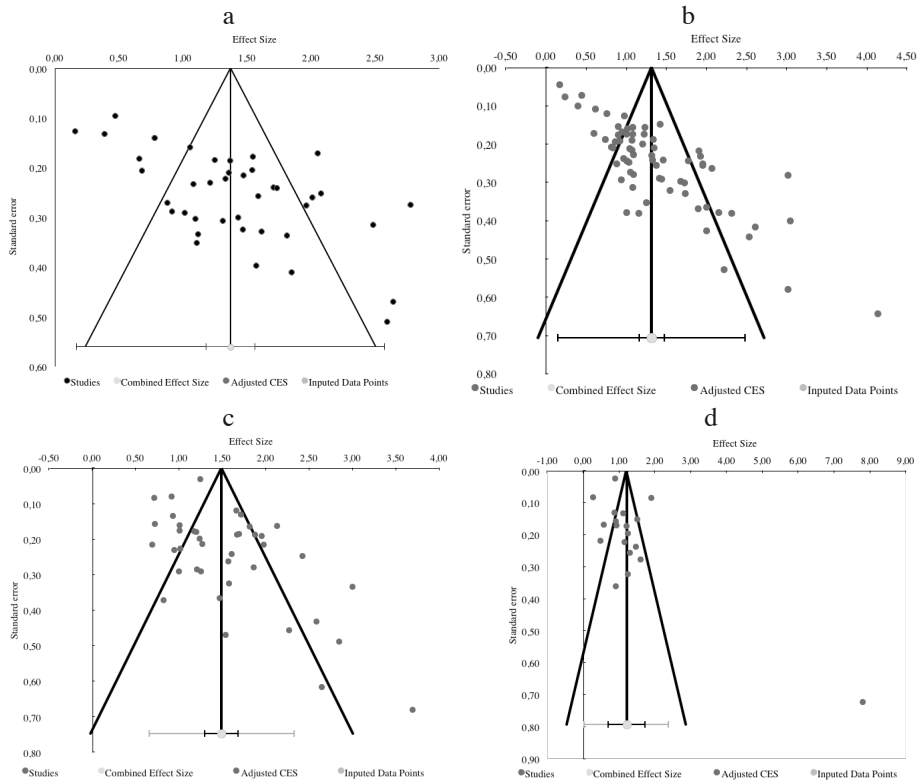

Figure 2. Funnel plots for publication bias.

though given the low *k* this result should be interrupted with caution, τ_a= 0.3, *p*= .037. However, the necessary number of unpublished null trials to reduce the obtained mean effect size to trivial levels would be 713. Again, this suggests there probably is not a file-drawer problem.

Figures 3 and 4 present the forest plots for the analysis of controlled effect sizes for CA and ITT analyses respectively. In all but two cases (in the ITT set), the experimental condition performed better than the control condition.

Table 5 presents the analyses for uncontrolled effect sizes from pre- to post-test. Overall, all analyses yielded significant results, $p \leq .001$ in all cases. The mean effect sizes were all large (≥1.15 in all cases). Also, Table 5 presents the findings for the uncontrolled effect sizes from post-test to follow-up. Overall, all analyses yielded significant results, $p \leq .001$ in all cases. The mean effect sizes were all large (≥1.4 in all case).

Table 5 also presents the findings for the analysis of uncontrolled effect sizes from post-test to follow-up (i.e., maintenance). Only efficacy studies had a significant effect; [Efficacy CA ($\bar{d}$*= 0.23, *p*= .046) and Efficacy ITT ($\bar{d}$*= 0.16, *p*= .003)]. Neither effectiveness analysis yielded significant results ($p \geq .34$ in both cases). Therefore, there is support for a continued effect from therapies after completion of treatment in efficacy studies. No such support exists for effectiveness studies.

Studies	Cohen's *d* (95% CI)	*N*
Asnaani et alii (2014)	0.51 (0.3-0.73)	43
Chen et alii (2014)	0.28 (0.05-0.51)	20
Chen et alii (2014)	0.46 (0.18-0.74)	22
Kocovski et alii (2013)	0.94 (0.71-1.17)	68
Ma et alii (2013)	1.69 (1.47-1.91)	139
Simpson et alii (2013)	1.25 (0.99 - 1.52)	69
Simpson et alii (2013)	1.53 (1.2 - 1.86)	54
Alden et alii (2011)	1.72 (1.36 - 2.09)	50
Melfsen et alii (2011)	1.77 (1.34 - 2.2)	36
Storch et alii (2011)	0.77 (0.46 - 1.08)	31
Aldahandha et alii (2012)	2.38 (1.96 - 2.81)	51
Aldahandha et alii (2012)	1.93 (1.55 - 2.31)	52
Jazaieri et alii (2012)	1.21 (0.85 - 1.56)	42
Effect Summary		677

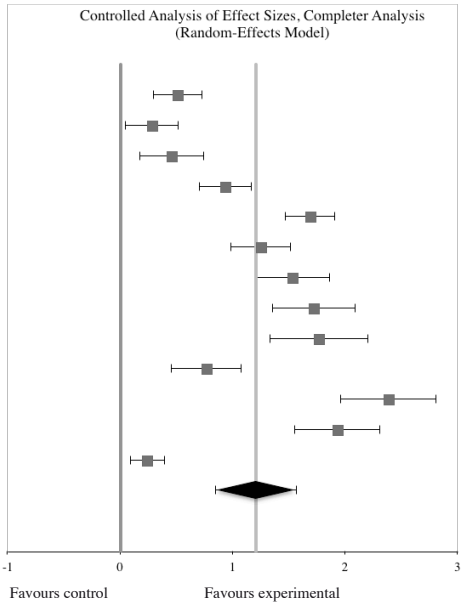

Figure 3. Forest plot for controlled effect sizes for completer analysis (using random-effects model).

Studies	Cohen's *d* (95% CI)	*N*
Baker et alii (2014)	3.35 (2.79 - 3.92)	40
Ehlers et alii (2014)	0.64 (0.44 - 0.84)	60
Ehlers et alii (2014)	1.51 (1.2 - 1.82)	61
Ehlers et alii (2014)	1.35 (1.06 - 1.65)	60
Kucketz et alii (2014)	-0.27 (-0.15 - -0.38)	79
Kucketz et alii (2014)	0.48 (0.33 - 0.64)	78
Kucketz et alii (2014)	0.75 (0.56 - 0.94)	79
Lloyd, et alii (2014)	0.39 (0.23 - 0.55)	59
Kocovski et alii (2013)	0.78 (0.59 - 0.97)	84
Margolies, et alii (2013)	1.12 (0.79 - 1.45)	40
Sportel et alii (2013)	-0.18 (-0.11 - -0.24)	170
Sportel et alii (2013)	0.03 (0 - 0.05)	172
Zang et alii (2013)	1.01 (0.59 - 1.43)	22
Zang et alii (2013)	1.04 (0.61 - 1.47)	22
Bolton (2011)	1.67 (1.34 - 2)	59
Bolton (2011)	1.13 (0.86 - 1.4)	59
Mörtberg et alii (2011)	0.58 (0.35 - 0.81)	43
Mörtberg et alii (2012)	0.71 (0.45 - 0.97)	41
Nacasch (2011)	1.74 (1.27 - 2.21)	30
Newman et alii (2011)	0.17 (0.08 - 0.25)	83
Paxling et alii (2011)	1.1 (0.88 - 1.31)	89
Price et alii (2011a)	0.83 (0.63 - 1.03)	80
Price et alii (2011a)	0.46 (0.3 - 0.63)	69
Rakowska (2011)	2.64 (2.22 - 3.05)	60
Rakowska (2011)	0.66 (0.46 - 0.87)	60
Stangier et alii (2011)	0.8 (0.6 - 0.99)	79
Stangier et alii (2011)	0.45 (0.3 - 0.6)	79
Wells et alii (2012)	1.37 (0.86 - 1.89)	20
Effect Summary	0.86 (0.62 - 1.11)	1936

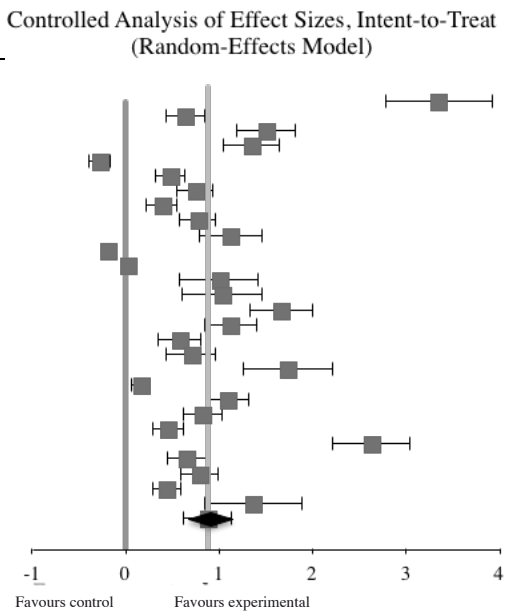

Figure 4. Forest plot for controlled effect sizes for intent-to-treat analysis (using random-effects model).

Table 5. Summary of meta-analysis results for overall effect sizes.

		Completer analysis					Intent-to-treat analysis				
		k	$\bar{d}^*$	SE	95% CI	*z*	*k*	$\bar{d}^*$	SE	95% CI	*z*
Efficacy	Pre- to post-test	41	1.37	.09	1.19 - 1.56	14.6	69	1.25	.08	1.1 - 1.40	16.43
	Pre-test to follow-up	29	1.63	.15	1.34 - 1.93	10.72	53	1.41	.08	1.24 - 1.57	16.66
	Post-test to follow-up	29	0.23	.11	.01 - .45	2.08	53	0.17	.05	.06 - .27	3.09
Effectiveness	Pre- to post-test	40	1.47	.08	1.3 - 1.63	17.58	19	1.15	.14	.87 - 1.43	8.08
	Pre-test to follow-up	8	1.62	.3	1.04 - 2.2	5.47	6	1.77	.41	.97 - 2.58	4.31
	Post-test to follow-up	8	0.01	.21	-0.4 - .43	0.07	6	0.10	.18	-0.25 - .45	.057
OCD (pre to post-test)	Efficacy	12	1.39	.2	1.0 - 1.77	7.09	13	1.72	.17	1.39 - 2.06	10.02
	Effectiveness	9	1.63	.12	.12 - 1.86	13.29	4	-	-	-	-
PTSD (pre to post-test)	Efficacy	9	1.44	.26	.94 - 1.94	5.6	19	1.26	.12	1.03 - 1.48	10.92
	Effectiveness	18	1.40	.13	1.15 - 1.66	10.73	10	1.30	.23	.85 - 1.75	5.71
SAD (pre to post-test)	Efficacy	13	1.61	.12	.93 - 1.39	10.05	20	0.87	.11	.67 - 1.08	8.27
	Effectiveness	5	1.08	.19	.19 - .71	5.70	1	-	-	-	-

Notes: OCD= Obsesive-Compulsive Disorder; PTSD= Postraumatic Stress Disorder ; SAD= Social Anxiety Disorders.

Table 6 reports the outcomes from the examination of exposure as a moderator. Only in efficacy ITT studies was exposure a moderating variable in the outcome of therapy. Studies with treatments using some form of exposure in efficacy ITT ($\bar{d}^*$= 1.39, SE= .1) outperformed those treatments that did not use an exposure element, ($\bar{d}^*$= 0.96, SE= .1), p= .002.

The overall effects size for each disorder are presented in table 5. All primary analyses for disorder were significant and most had large effect sizes.

Regarding OCD, the only analyses possible (due to number of conditions available) were between study type and CA and the comparison between study types using CA and exposure techniques. The results of which are reported in Table 6. In neither case was there a significant difference, $p \geq .30$ in both cases.

The results from the moderator analyses of PTSD are also presented in Table 6. Again, exposure was found to be a moderating factor in the differences in effect size for efficacy ITT studies, where those who received exposure ($\bar{d}^*$= 1.43, SE= 0.15) had better outcome than those who did not receive exposure ($\bar{d}^*$= .94, SE= 0.18). Overall, treatments for PTSD were found to have a large and significant effect size.

Regarding SAD, only analyses involving CA between study types and efficacy studies using ITT analyses with and without exposure could be conducted. The results of which are presented in Table 6. Neither result was significant, $p > .285$ in both cases.

Table 6 presents the findings for the moderator analyses of the length of treatment. Length of treatment did not appear to moderate the effect size from pre to post-test.

A meta-regression examining therapeutic alliance's association with effect size at end of treatment yielded a non-significant model $F(1,4)$= 1.78, p= .275. The meta-regression equation was also not significant, z= .34, p= .377.

Year of publication did not moderate the effect size at the end of treatment in any condition. Table 6 presents the findings for each study and analysis type by year. Table 6 also presents the only significant difference found, which was between efficacy and effectiveness studies with completed analyses published in the year 2011.

Table 7 details which treatments met Chambless and Hollon's (1998) criteria for empirically supported treatments, within the limitations outlined above. Again, this analysis of which treatments are empirically supported looks at the research collected for this meta-analysis independent of all other research. This means that a study listed as 'possibly efficacious' here might have been considered efficacious in the wider literature. Some of the treatments in the 'possibly efficacious' group had been replicated, but the replications lacked a sufficient sample size, while others lacked any independent replication.

Table 6. Moderators in the treatment of anxiety disorders.

		K	$\bar{d}^{*}$	SE	95% CI	Subgroup analysis *Q*	*df*	*p*
Exposure at Pre/post-test	Efficacy-Completer					3.64	1	.056
	With exposure	18	1.56	0.12	1.33 - 1.79			
	Without exposure	23	1.22	0.13	.96 - 1.48			
	Efficacy Intent-to-treat**					9.49	1	.002
	With exposure	49	1.40	0.1	1.2 - 1.59			
	Without exposure	20	0.96	0.1	.75 - 1.16			
	Effectiveness Completer					0.29	1	.590
	With exposure	35	1.49	0.09	1.32 - 1.66			
	Without exposure	5	1.31	0.31	.7 - 1.92			
	Completer between study types-with exposure					.001	1	.903
	Efficacy	18	1.56	0.12	1.33 - 1.79			
	Effectiveness	35	1.49	0.09	1.31 - 1.66			
	Completer between study types-without exposure					0.07	1	.786
	Efficacy	23	1.22	0.13	.96 - 1.48			
	Effectiveness	5	1.31	0.31	.7 - 1.92			
	Intent-to-treat between study types-with exposure					2.89	1	.089
	Efficacy	49	1.40	0.1	1.2 - 1.59			
	Effectiveness	15	1.12	0.13	.86 - 1.38			
Exposure at Pre-test to FU	Efficacy-Completer					0.27	1	.603
	With exposure	11	1.71	0.19	1.34 - 2.09			
	Without exposure	18	1.55	0.23	1.1 - 2.02			
	Efficacy - Intent-to-treat					0.15	1	.698
	With exposure	37	1.56	0.1	1.35-1.76			
	Without exposure	16	1.35	0.51	.36 - 2. 35			
	Completer between study types - with exposure					0.07	1	.792
	Efficacy	11	1.71	0.19	1.34 - 2.09			
	Effectiveness	8	1.62	0.3	1.04 - 2.21			
	Intent-to-treat between study types - with exposure					0.26	1	.613
	Efficacy	37	1.56	0.1	1.35-1.76			
	Effectiveness	6	1.77	0.41	.97 - 2.76			
OCD (Pre-/post-test)	Completer between study type					1.06	1	.302
	Efficacy	12	1.39	0.2	1.0 - 1.77			
	Effectiveness	9	1.63	0.12	1.39 - 1.86			
	Completer between study type with exposure					0.06	1	.800
	Efficacy	8	1.57	.19	1.2 - 1.93			
	Effectiveness	9	1.63	0.12	1.39 - 1.86			
PTSD (Pre-/post-test)	Completer between study type					0.02	1	.887
	Efficacy	9	1.44	0.26	.94 - 1.94			
	Effectiveness	18	1.4	0.13	1.15 - 1.66			
	Intent-to-treat between study types					0.02	1	.899
	Efficacy	18	1.27	0.12	1.03 – 1.51			
	Effectiveness	10	1.3	0.23	0.85 - 1.75			
	Efficacy - Intent-to-treat and exposure*							
	With exposure	12	1.46	0.17	1.14 – 1.79	4.66	1	.031
	Without exposure	6	0.94	0.18	.59 - 1.29			
	Effectiveness - Completer and exposure					0.12	1	.729
	With exposure	13	1.43	0.15	1.14 - 1.73			
	Without exposure	5	1.31	0.31	.7 - 1.92			
SAD (Pre-/post-test)	Completer between study type					0.13	1	.714
	Efficacy	13	1.16	0.12	.12 - 1.39			
	Effectiveness	5	1.08	0.19	.71 - 1.45			
	Efficacy - Intent-to-treat and exposure					1.14	1	.285
	With exposure	10	0.96	0.17	.63 - 1.29			
	Without exposure	10	0.74	0.12	.51 - .97			
Session Length	Efficacy – Completer					3.81	3	.283
	1 to 5 sessions	5	1.72	0.46	.83 - 2.61			
	6 to 10 sesions	11	1.11	0.16	.80 - 1.43			
	11 to 15 sessions	10	1.51	016	1.19 - 1.83			
	16+ Sessions	15	1.39	.15	1.11 - 1.68			
	Efficacy - Intent to Treat					1.86	3	.601
	1 to 5 sessions	13	1.57	.26	1.06 - 2.07			
	6 to 10 sesions	29	1.20	.13	.95 - 1.46			
	11 to 15 sessions	22	1.20	.09	1.01 - 1.39			
	16+ Sessions	6	1.24	.17	.89 - 1.58			
	Effectivenss – Completer					2.04	1	.154
	6 to 10 sessions	11	1.27	.15	.98 - 1.56			
	11 to 15 sessions	22	1.55	.12	1.31 - 1.78			

Table 6 (cont.). Moderators in the treatment of anxiety disorders.

		K	$\bar{d}^*$	SE	95% CI	Subgroup analysis *Q*	*df*	*p*
Year of Publication	Efficacy–Completer					7.59	3	.055
	2014	5	0.83	.21	.42–1.23			
	2013	14	1.49	.17	1.16–1.82			
	2012	9	1.51	.23	1.06–1.96			
	2011	13	1.21	.14	.95–1.48			
	Efficacy–Intent-to-treat					2.82	3	.420
	2014	8	1.33	.23	.88–1.78			
	2013	28	1.10	.12	.85–1.34			
	2012	8	1.49	.28	.94–2.03			
	2011	25	1.31	.10	1.12–1.51			
	Effectiveness–Completer					3.29	3	.349
	2014	7	1.41	.25	.92–1.90			
	2013	11	1.31	.11	1.09–1.53			
	2012	3	1.72	.44	.86–2.57			
	2011	19	1.63	.15	1.33–1.92			
	Effectiveness–Intent-to-treat					1.55	2	.460
	2014	2	0.60	.47	-0.32–1.53			
	2013	8	1.20	.22	.78–1.63			
	2011	9	1.24	.24	.76–1.72			
	Difference between study types-Completer (2011)*					4.10	1	.043
	Efficacy	13	1.21	.14	.95–1.48			
	Effectiveness	19	1.63	.15	1.33–1.92			

Notes: *= p <.05 (2-tailed); **= p <.01.

Table 7. Treatments and their level of empirical support.

Disorder		Treatments[1]	Notes
OCD	Efficacious	None to add	
	Possibly efficacious	CBT (Bolton 2011)	Lacks independent replication with an appropriate sample size.
		ERP (Simpson et alii, 2013)	Lacks independent replication with an appropriate sample size.
PTSD	Efficacious	None to add	
	Possibly efficacious	CT/Intensive CT (Ehlers et alii, 2014)	Lacks independent replication with an appropriate sample size.
		CPT (Lloyd et alii, 2013)	Lacks independent replication
SAD	Efficacious	CBT (Kucketz et alii, 2014; Price & Anderson, 2011)	Supported by several other studies, that lack an appropriate sample size.
	Possibly efficacious	BST (Rakowska, 2011)	Lacks independent replication.
		CBM (Sportel et alii, 2013)	Lack independent replication.
		CT (Stangier et alii, 2011)	Lack independent replication with an appropriate sample size.
		MAGT (Kucketz et alii, 2014)	Lacks independent replication; needs each component tested seperately.

DISCUSSION

This was a meta-analysis of efficacy and effectiveness studies of the psychotherapeutic treatment of anxiety disorders. It included studies from a period of over three years. In addition, it considered possible moderators, such as type of anxiety disorder, use or absence of an exposure therapy element, length of treatment, therapeutic alliance, and year of publication. While the studies allowed firm conclusions regarding outcome by the end of treatment, it was noteworthy that the number of effectiveness studies with follow-up data was limited.

Overall, psychotherapy had a large effect size in the treatment of anxiety disorders. However, there was no overall difference between efficacy studies and effectiveness studies, indicating that the impact of psychotherapy is as positive in 'real life' settings as in highly controlled 'lab' settings. Finally, patients whose therapy included an exposure element fared substantially better by the end of therapy than those who did not have any exposure element to their psychotherapy. There were not enough studies to consider this difference within all individual disorders, but it is noteworthy that those patients with

PTSD who received exposure did significantly better than those who did not receive exposure. In contrast, there was no such difference for the treatment of SAD.

The findings of this meta-analysis are generally in line with what is reported in other meta-analyses (Abramowitz, 1996; Bisson, Ehler, Matthews, Pilling, Richard, & Turner, 2007; Hofmann *et alii*, 2008; Taylor, 1996; Van Etten & Taylor, 1998). CBT performed better than most controls, as Hofmann *et alii* (2008) found. This meta-analysis supports the findings of Bisson *et alii* (2007) and Van Etten *et alii* (1998), in that CBT and EMDR are efficacious treatments for PTSD. It also concurs with the conclusion that exposure and response/ritual prevention (ERP) is highly efficacious in the treatment of OCD (Abramowitz, 1996). Finally, it shows no difference between CBT and treatments with an element of exposure for social anxiety disorder, as has previously been concluded (Feske & Chambless, 1995). There was no difference between effectiveness and efficacy studies, as would be expected. This lack of difference may be due to the inclusion criteria, or the lack of variance due to heterogeneity across the studies (as indicated by the I^2 index being 0 in all cases); or issues related to the weighting, use of effect sizes, and or issues with meta-analytic methods in general (Ferguson, 2009; Hedges & Pigott, 2004).

Exposure was shown to be the only moderator in ITT analyses and in PTSD treatments. No such effect was found in CA and with other disorders, though the likelihood of finding this effect might have been reduced by publication bias. As ITT is a more accurate representation of what occurs in daily practice, these findings show that it is important for clinicians to consider the use of exposure techniques in the treatment of anxiety and related disorders.

The data regarding the treatment of OCD indicate that CBT or ERP should be used. Considering PTSD, exposure had the most support, though both cognitive therapy (CT) and cognitive processing therapy may also work. Considering SAD, CBT should be used as the frontline treatment, while both mindfulness and acceptance-based therapy and CT might also be effective.

Future studies should explore the difference between CA and ITT with regards to the use of exposure. As this meta-analysis revealed that the effect of exposure only moderated outcomes in ITT analysis and not CA, the question as to why remains. It is quite possible that the sample size was inadequate for the CA to show a moderation effect, or that as compared to ITT everyone in the CA had exposure but some in the ITT sample did not as they left therapy prior to starting exposure.

Only three studies reported on therapeutic alliance. Of those, only two (k= 5) were measured in such a way that would have allowed for them to be assessed in a meta-regression. Therefore, more studies need to include some measure of therapeutic alliance if it is to be tested for it importance. The same is true of quality of life. In future meta-analyses, the relationship between both variables (therapeutic alliance and quality of life) and clinical improvement should be assessed.

A further issue is that several studies could not be included in this analysis because they collapsed clinical groups (e.g., PTSD and OCD) into one group, and did not give diagnosis- and condition-specific demographics. Therefore, future researchers should consider reporting their findings by specific disorders and for the different experimental conditions (e.g., treatment A vs treatment B).

Future meta-analyses that use Chambless and Hollon's (1998) criteria to define studies as efficacious or partially efficacious should use a longer time frame, in order not to miss treatments that maybe meet the criteria. Similarly, as this meta-analysis

assessed the publication dates and found no difference, future meta-analyses may instead want to compare first, second, and third wave therapies.

This meta-analysis indicated that there was maintenance of treatment outcomes in efficacy studies but no such maintenance in effectiveness studies. This can be an artefact of relatively few effectiveness studies having a follow-up as compared to efficacy studies. The maths used in this study, should account for the difference in number of relevant articles, however, these techniques are not full-proof. Therefore, the results should be interpreted with caution and future meta-analyses should assess the difference between maintenance effects across efficacy and effectiveness studies. In addition, future studies can also look at the difference in follow-ups between efficacy studies and effectiveness studies, similar to how studies have previously reviewed the difference in the intervention portions of both types of studies.

This meta-analysis had many limitations. First and foremost were the search criteria. The criteria used, in particular the third category (see Appendix B), meant that more therapies related to CBT or behavioural therapy would be returned. This does not allow for an accurate analysis looking at the differences between various theoretical paradigms. Other methods (e.g., psychodynamic, mindfulness-based) may have had more studies than what was represented here and may or may not have a greater effect than reported.

Another limitation is the lack of routine care data. If the primary question is how well do clinicians perform in the highly controlled settings versus routine care, the use of effectiveness studies and efficacy studies does not fully address this question. However, there are very few published studies that used actuarial data from routine clinical work. Therefore, the lack of difference between efficacy and effectiveness may not reflect the difference between efficacy studies and the real-world. Alternatively, the result reported here may correctly reflect the lack of difference in efficacy and effectiveness studies but not address other issues within publication bias. For example, it is possible that only studies that showed a positive effect were published. This means that studies with a trivial or null effect may have been missed in the analysis. Therefore, publication bias may obscure the amount and case of trivial or null effects.

Considering therapeutic alliance, while just enough arms of studies (k= 5) were present to conduct a meta-regression, these data only came from two studies. Given the literature support of therapeutic alliance being fundamental to the success of therapy, it is shocking that so few studies would include a measure of therapeutic alliance. Future studies should include measures of therapeutic alliance so that synthesis of data (i.e., meta-analyses) can properly assess the effects of the therapeutic alliance on the outcome of therapy.

In conclusion, psychotherapies for anxiety disorders are both highly efficacious (work in highly controlled settings) and highly effective (work in real-world settings). Exposure techniques enhance the effect of therapies, and are to be recommended for wide use with anxiety disorders. Future research work is required to determine what else moderates the effect of such therapies.

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Note: (*= Papers included in the meta-analysis.)

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APPENDIX A

Formulas

	(1)	$\frac{\bar{x}_{control} - \bar{x}_{experimental}}{SD_{pooled}}$
	(2)	$\sqrt{\frac{SD^2_{control} + SD^2_{experimental}}{2}}$
	(3)	$\left(1 - \frac{3}{4(N-2)-1}\right) d$
Analysis of controlled effect sizes	(4)	$\frac{n_i^e + n_i^c}{n_i^e n_i^c} + \frac{d_i^2}{2(n_i^e + n_i^c)}$
	(5)	$\frac{\sum \frac{d}{\hat{\sigma}_d^2}}{\sum \frac{1}{\hat{\sigma}_d^2}}$
	(6)	$\sqrt{\left(\sum \frac{1}{\hat{d}_d^2}\right)^{-1}}$
	(7)	$SE_{(\bar{d})} = \frac{d}{\sqrt{d \times n}}.$
	(8)	$\frac{\bar{x}_{pre} - \bar{x}_{post}}{SD_{pooled}}$
	(9)	$\sqrt{\frac{SD^2_{pre} + SD^2_{post}}{2}}$
	(10)	$\frac{4\left(1 + \frac{d_i^2}{8}\right)}{n_i}$
Analysis of uncontrolled effect sizes	(11)	$Q = \sum w(d)^2 - \frac{\sum (wd)^2}{\sum w}$
	(12)	$w^* = \frac{1}{V_i + \tau^2}$
	(13)	$\frac{\sum w^* d}{\sum w^*}$
	(14)	$v_{\cdot}^* = \frac{1}{\sum w^*}$
	(15)	$\frac{\lvert \bar{d}^* - 0 \rvert}{SE_{\bar{d}}}$
Moderator analyses	(16)	$\frac{SE}{\sqrt{MSE}}$

APPENDIX B

Category 1: Disorder terms

Anxiety, anxiety disorders, generalized anxiety disorder, generalised anxiety disorder, GAD, post-traumatic stress disorder, post traumatic stress disorder, posttraumatic stress disorder, PTSD, simple phobia, phobias, social phobias, phobia, obsessive-compulsive personality disorder, obsessive compulsive personality disorder, OCD, panic disorders, separation anxiety, and situational anxiety

Category 2: Therapy terms

Therapy, therapies, treatment, treatments, cognitive behavior therapy, cognitive behaviour therapy, CBT, behavior therapy, behaviour therapy, behavioral therapy, behavioural therapy, behavioural modification, behavioral modification.

Category 3: Result terms

Results, outcome, efficacy, effectiveness, benefit, and impact.