The role of exposure in treatment of anxiety disorders: A meta-analysis

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Abstract

OBJECTIVE: 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).

METHOD: 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.

RESULTS: Overall, manualised 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.

CONCLUSION: 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.

Keywords: anxiety disorder; meta-analysis; efficacy; effectiveness; psychotherapy

The role of exposure in treatment of anxiety disorders: A meta-analysis

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 al. (2005) 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 al., 2001; Hansen, Lambert, & Forman, 2002; Schindler, Hiller, and 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 al., 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 when considering therapist drift, 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.

Methods

Selection criteria

Inclusion criteria differed according to whether the study came from a controlled 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 larger 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 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., 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.

Insert figure 1 about here

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.Fo

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. 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 Heges and Pigott (2004). Effect size (*d*) was calculated as $\frac{\bar{x}_{control}-\bar{x}_{experimental}}{SD_{pooled}}$ where SD_{pooled} was calculated using Cohen's simplified formula, $\sqrt{\frac{SD^2_{control}+SD^2_{experimental}}{2}}$. 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: $\left(1-\frac{3}{4(N-2)-1}\right)d$. d_{unbiased} was used here to control for the difference in sample sizes between the two conditions in each comparison. Variance $(\hat{\sigma}_d^2)$ for controlled analysis was calculated thusly: $\frac{n_i^e+n_i^c}{n_i^e n_i^c}+\frac{d_i^2}{2(n_i^e+n_i^c)}$, 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: $\frac{\sum\frac{d}{\hat{\sigma}_d^2}}{\sum\frac{1}{\hat{\sigma}_d^2}}$. The estimate of standard deviation of the overall effect size $(\hat{\sigma}_{d+})$ was calculated using: $\sqrt{\left(\sum\frac{1}{\hat{d}_d^2}\right)^{-1}}$. From there, the overall score was standardized to a *z*-distribution by dividing the overall 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 overall effect size.

Standard error for the forest plots was calculated using the standard error of the effect size, and was calculated as follows: $SE_{(\bar{d})}=\frac{d}{\sqrt{d\times n}}$. 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 al. (2004), and Johnson and Eagly (2000). Effect size was calculated as $\frac{\bar{x}_{pre}-\bar{x}_{post}}{SD_{pooled}}$, where SD_{pooled} was calculated using Cohen's simplified formula, $\sqrt{\frac{SD_{pre}^2+ SD_{post}^2}{2}}$. 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 $\frac{4\left(1+\frac{d_i^2}{8}\right)}{n_i}$, 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 $Q = \sum w(d)^2 - \frac{\sum(wd)^2}{\sum w}$, 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: $w^* = \frac{1}{V_i+\tau^2}$. Weighted effect sizes were therefore calculated as the product of w^* and

effect size (*d*). The overall mean effect size $(\bar{d}^*)$ was calculated as: $\frac{\sum w^* d}{\sum w^*}$.

Confidence intervals were calculated using effect size $\pm$ (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: $v_{\cdot}^* = \frac{1}{\sum w^*}$.

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: $\frac{|\bar{d}^* - 0|}{SE_{\bar{d}}}$. 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 al. (2004) and Johnson et al. (2000). For four of the five moderator analyses, ANOVA analogues were computed by hand with a chi-square distribution, using a mixed-model methods.

Comparisons were made between study types (i.e., efficacy and effectiveness) but 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 (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 al., 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 $\frac{SE}{\sqrt{MSE}}$ 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 were met by the inclusion criteria for this meta-analysis (e.g., must be manualised). To be considered 'efficacious', a study had to be replicated by an independent lab and meet all the criteria set by Chambless and Hollon.

Results

Summary of study characteristics

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 al., 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 steams 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)[1]; panic disorder (k = 5); PTSD (k = 27)[2]; social anxiety disorder (SAD; k = 32)[3]; and simple/specific phobia (k = 10)[4].

Insert Table 1 about here

[1] Two of these conditions were comorbid OCD with an autism spectrum disorder.
[2] Two of these conditions were comorbid PTSD with alcohol use disorder; another two conditions recruited from a treatment resistant PTSD sample.
[3] One of these conditions was comorbid SAD with a personality disorder.
[4] 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)[5]; panic disorder (k = 5)[6]; PTSD (k = 23)[7]; social anxiety disorder (k = 6)[8].

Insert Table 2 about here

Summary of quality assurance

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 al., 2013). Regarding effectiveness studies, only 15 (29.41%) of conditions reported a follow-up. All reported follow-up data were useable.

Insert Tables 3 and 4 about here

Inter-rater reliability. 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).

Publication bias

[5] One of these conditions focused on hoarding.
[6] 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.
[7] One condition was comorbid PTSD with major depressive disorder; two conditions were comorbid PTSD with traumatic brain injury.
[8] One condition was comorbid SAD with any depressive disorder.

Regarding efficacy CA studies, visual inspection of the funnel plot, presented in figure 2(a), 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, $\tau_a = 0.31$, $p = .002$. 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.

Figure 2(b) 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.

Figure 2(c) 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 2(d) 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, though given the low *K* this result should be interrupted with caution, $\tau_a = 0.3$, $p = .037$. 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.

Insert Figure 2 about here

Analysis of controlled effect sizes

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.

Insert Figures 3 and 4 about here

Analysis of uncontrolled effect sizes.

Pre-/post-test. Table 5 presents the analyses for uncontrolled effect sizes from pre- to post-test. Overall, all analyses yielded significant results, $p < .001$ in all cases. The mean effect sizes were all large ($\geq$ 1.15 in all cases).

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

Maintenance (post-test to follow-up). 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.

Insert Table 5 about here

Moderator analyses

Exposure use. 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) out performed those treatments that did not use an exposure element, ($\bar{d}^*$= 0.96, SE =.1), p = .002.

Disorder. 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, $p \geq .285$ in both cases.

Length of treatment. 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.

Therapeutic Alliance. 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. 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 completer analyses published in the year 2011.

Insert Table 6 about here

Empirically supported treatments

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 consider 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.

Insert Table 7 about here

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 al., 2008; Taylor, 1996; Van Etten & Taylor, 1998). CBT performed better than most controls, as Hofmann et al. (2008) found. This meta-analysis supports the findings of Bisson et al. (2007) and Van Etten et al. (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).

Clinical implications

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 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.

Research implications

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 may be 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 interrupted 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 different in the intervention portions of both types of studies.

Limitations

This meta-analysis had many limitations. First and foremost were the search criteria. The criteria used, in particular the third category (see Appendix A), 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 preform 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 examples, 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.

Considerin 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 literatures support of therapeutic alliance being fundamental in 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.

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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Tables

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

Study	Disorder	Treatment[1]	Exposure	Measure[2]	N used in pre-/post-analysis	N used in follow-up analysis	Follow-up length	% female participants	Age *M* (*SD*)	Treatment Length
2014 studies										
Asnaani et al. (2014)	SAD	AAT	No	LSAS	22	-	-	Not clearly reported	Not clearly reported	3-sessions
Baker et al. (2014)	PTSD	WET	Yes	CAPS	19	19	12-weeks	Not clearly reported	Not clearly reported	5-sessions
Chen et al. (2014)	PTSD	CBT	No	CRIES-13	10	10	3-Month	Not clearly reported	Not clearly reported	6-Sessions
Ehlers et al. (2014)	PTSD	Intensive CT	Yes	CAPS	30	30	40-Week	60%	39.7 (12.4)	7-days
Ehlers et al. (2014)	PTSD	Weekly CT	Yes	CAPS	31	31	40-Week	58.10%	41.5 (11.7)	12-Sessions
Ehlers et al. (2014)	PTSD	Weekly ST	No	CAPS	30	30	40-Week	56.70%	37.8 (9.9)	12-Sessions
Kucketz et al. (2014)	SAD	AMP	No	LSAS	40	40	4-Month	65%	35.1 (13.3)	8-Sessions
Kucketz et al. (2014)	SAD	AMP + FACT	Yes	LSAS	39	39	4-Month	69.20%	42 (13.3)	8-Sessions
Kucketz et al. (2014)	SAD	iCBT	Yes	LSAS	40	40	4-Month	62.50%	39.5 (12)	9-Sessions
Lloyd, et al. (2014)	PTSD	CPT	Yes	CAPS	30	30	3-Month	Not reported	Not reported	12-sessions
Newman et al. (2014)	GAD	CAGT	No	HARS	11	11	12-Month	54.50%	42.45 (10.95)	6-Sessions

Study	Disorder	Treatment[1]	Exposure	Measure[2]	N used in pre-/post-analysis	N used in follow-up analysis	Follow-up length	% female participants	Age *M* (*SD*)	Treatment Length
Newman et al. (2014)	GAD	CBGT6	No	HARS	14	13	12-Month	50%	45.19 (12.61)	6-Sessions
Newman et al. (2014)	GAD	Group CBT	No	HARS	9	5	12-Month	77.80%	37.11 (12.57)	12-Sessions
2013 studies										
Bonsaksen et al. (2013)	SAD	RCT (residential)	No	SPAI-SP	40	32	1-Year	Not reported	37.7 (11.3)	40 group sessions & 10 individual
Bonsaksen et al. (2013)	SAD	RIPT (residential)	No	SPAI-SP	40	37	1-Year	Not reported	37.2 (11.6)	40 group sessions & 10 individual
Farrell et al. (2013)	OCD	ERP + d-cycloserine (25 or 50 mg)	Yes	CYBOCS	9	9	3-Month	Not clearly reported	Not clearly reported	9-sessions
Farrell et al. (2013)	OCD	ERP + placebo (25 or 50 mg)	Yes	CYBOCS	8	8	3-Month	Not clearly reported	Not clearly reported	9-sessions
Foa et al. (2013)	OCD	SRI + ERP	Yes	YBOCS	38	-	-	26%	36.1 (14.1)	8-Sessions
Foa et al. (2013)	OCD	SRI + SRT	Yes	YBOCS	11	-	-	45%	41.7 (11.7)	8-Sessions
Hayes-Skelton (2013)	GAD	ABBT	No	PSWQ	30	25	6-Month	60%	33.30 (12.42)	16-Sessions

Study	Disorder	Treatment[1]	Exposure	Measure[2]	N used in pre-/post-analysis	N used in follow-up analysis	Follow-up length	% female participants	Age *M* (*SD*)	Treatment Length
Hoffart, et al. (2013)	PTSD	CBT - Imaginal Exposure	Yes	PTSD Symptom Scale-Interview	31	-	-	Not clearly reported	Not clearly reported	10-seasions
Hoffart, et al. (2013)	PTSD	CBT Imagery Rescripting	No	PTSD Symptom Scale-Interview	34	-	-	Not clearly reported	Not clearly reported	10-seasions
Hovland (2013)	PD	CBT	Yes	Panic-related distress/disability	19	19	6-Month	73.70%	37.8 (8.9)	12-Sessions
Hovland (2013)	PD	Group physical exercise	No	Panic-related distress/disability	17	17	6-Month	88.20%	38.1 (8.6)	36-Sessions
Kocovski et al. (2013)	SAD	CBGT	Yes	LSAS (CA) SPIN (ITT)	32 (CA) 53 (ITT)	27 (CA) N/A (ITT)	3-Month	52.83%	32.66 (9.07)	12-Sessions 12-Sessions
Kocovski et al. (2013)	SAD	MAGT	No	LSAS (CA) SPIN (ITT)	37 (CA) 53 (ITT)	32 (CA) N/A (ITT)	3-Month	49.06%	34.94 (12.52)	12-Sessions 12-Sessions
Ma et al. (2013)	OCD	CCT + pharmacotherapy	No	YBOCS	71	Not Reported	Not included in analysis	47.90%	27.4 (8.2	9-Sessions

Study	Disorder	Treatment[1]	Exposure	Measure[2]	N used in pre-/post-analysis	N used in follow-up analysis	Follow-up length	% female participants	Age *M* (*SD*)	Treatment Length
Månsson et al. (2013)	SAD	iCBT	Yes	LSAS-LR	12	-	-	85%	32.46 (8.6)	5-sessions
Månsson et al. (2013)	SAD	Attention Bias Modification (internet)	No	LSAS-LR	12	-	-	85%	32.08 (10.9)	10-sessions
Margolies, et al. (2013)	PTSD	CBT for insomnia	No	PSS-SR	20	-	-	10%	36.43 (9.3)	10-sessions
Meyerbroeker et al. (2013)	Agoraphobia with Panic Disorder	CBT + VRET	Yes	PDSS	23	-	-	Not reported	Not reported	20-Sessions
Meyerbroeker et al. (2013)	Agoraphobia with Panic Disorder	CBT + in vivo exposure	Yes	PDSS	21	-	-	Not reported	Not reported	20-Sessions
Olatunji (2013)	OCD	CT	Yes	YBOCS	30	25	52-Week	83.33%	36.83 (9.80)	14-Sessions
Olatunji (2013)	OCD	ERP	Yes	YBOCS	30	23	52-Week	65.63%	34.84 (11.38)	14-Sessions
Reynolds et al. (2013)	OCD	CBT	Yes	CYBOCS	25	25	6-Month	Not reported	14.4 (1.35)	6-sessions
Reynolds et al. (2013)	OCD	Parent-enhanced CBT	Yes	CYBOCS	25	25	6-Month	Not reported	14.6 (1.61)	6-sessions
Rus-Calafell et al. (2013)	Simple Phobia (Flying)	VRET	Yes	Fear of Flying Scale	7	7	6-Month	87.00%	37.14 (14.28)	17.43 (4.3) Sessions

Study	Disorder	Treatment[1]	Exposure	Measure[2]	N used in pre-/post-analysis	N used in follow-up analysis	Follow-up length	% female participants	Age *M* (*SD*)	Treatment Length
Rus-Calafell et al. (2013)	Simple Phobia (Flying)	Imaginal Exposure	Yes	Fear of Flying Scale	8	8	6-Month	Not reported	36.13 (12.59)	14.43 (5.3) Sessions
Russell et al. (2013)	OCD and ASD	ERP	yes	YBOCS	20	18	1-Month	17.40%	28.6 (11.3)	12-Sessions
Russell et al. (2013)	OCD and ASD	AM	No	YBOCS	20	17	1-Month	30.40%	25.2 (13.5)	12-Sessions
Sannible et al. (2013)	PTSD and AUD	Integrated CBT for PTSD + AUD	Yes	CAPS severity	33	33	9-Month	58%	41.85 (12.62)	17-Sessions
Sannible et al. (2013)	PTSD and AUD	CBT for AUD + supportive counselling	No	CAPS severity	29	29	9-Month	48%	40.41 (11.21)	10-weeks
Simpson et al. (2013)	OCD	SSRI + ERP	Yes	YBOCS	37	-	-	52.50%	34.3 (12.7)	10-weeks
Sportel et al. (2013)	SAD	Group CBT	Yes	RCADS	84	84	12-Month	67%	14.06 (0.73)	14-sessions
Sportel et al. (2013)	SAD	CBM	No	RCADS	86	86	12-Month	77%	14.12 (0.66)	14-sessions
Storch et al. (2013)	OCD	Sertraline (standard dose) + ERP	Yes	CYBOCS	14	-	-	50%	11.57 (3.06)	14-sessions
Storch et al. (2013)	OCD	Sertraline (titrated slowly) + ERP	Yes	CYBOCS	17	-	-	35.30%	11.47 (3.68)	2 sessions

Study	Disorder	Treatment[1]	Exposure	Measure[2]	N used in pre-/post-analysis	N used in follow-up analysis	Follow-up length	% female participants	Age *M* (*SD*)	Treatment Length
Tart et al. (2013)	Simple Phobia (Acrophobia)	VRET + D-Cycloserine	Yes	Acrophobia avoidance questionnaire	15	15	1-Month	Not reported	29.33 (14.67)	4-sessions
Tart et al. (2013)	Simple Phobia (Acrophobia)	VRET + Pill Placebo	Yes	Acrophobia avoidance questionnaire	14	14	1-Month	Not reported	37.71 (16.81)	4-sessions
Zang et al. (2013)	PTSD	NET	Yes	HADS - anxiety	11	11	2-Month	73%	56.64 (12.22)	2 to 3 sessions
Zang et al. (2013)	PTSD	NET (post-wait list)	Yes	HADS - anxiety	11	11	2-Month	82%	54.82 (11.59)	2 to 3 sessions
2012 studies										
Aldahandha et al. (2012)	PTSD	EMDR	Yes	Trauma Systems Inventory	25	22	1-Month	52%	Not clearly reported	10-Sessions
Aldahandha et al. (2012)	PTSD	EMDR (after Wait List)	Yes	Trauma Systems Inventory	26	22	1-Month	53.85%	Not clearly reported	10-Sessions
Andersson (2012)	OCD	iCBT	Yes	YBOCS	49	50	4-Month	66%	33 (12)	12-sessions
Andersson (2012)	OCD	Attention Control	No	YBOCS	51	-	4-Month	66.70%	35 (14)	12-sessions
de Oliveira et al. (2012)	SAD	TBTR	No	LSAS	17	17	12-Month	70.60%	33.9 (9.9)	12-sessions

Study	Disorder	Treatment[1]	Exposure	Measure[2]	N used in pre-/post-analysis	N used in follow-up analysis	Follow-up length	% female participants	Age *M* (*SD*)	Treatment Length
de Oliveira et al. (2012)	SAD	CT	No	LSAS	19	19	12-Month	78.90%	34.9 (13.4)	8-sessions and one one-day meditation retreat
Jazaieri et al. (2012)	SAD	MBSR	No	LSAS	24	16	3-Month	61.30%	32.87 (8.83)	5-sessions
Nations et al. (2012)	PD	CBT + Org 25935 (4 mg)	Yes	PDSS	10	10	1-Month	63.60%	33.3 (11.0)	5-sessions
Nations et al. (2012)	PD	CBT + Org 25935 (12 mg)	Yes	PDSS	14	14	1-Month	60%	36.4 (8.9)	1-session
Nations et al. (2012)	PD	CBT + Placebo	Yes	PDSS	13	13	1-Month	78.60%	32.4 (11.2)	1-session
Nave et al. (2012)	Simple Phobia (arachnophobia)	Exposure + D-Cyloserine	Yes	CGI-S	10	-	-	60%	34.6 (12.69)	9-Sessions
Nave et al. (2012)	Simple Phobia (arachnophobia)	Exposure + Placebo	Yes	CGI-S	10	-	-	60%	39 (13.91)	9-Sessions
Nixon et al. (2012)	PTSD	CBT	Yes	CAPS	17	17	6-Month	47%	11.59 (3.31)	8-Sessions
Nixon et al. (2012)	PTSD	CT	No	CAPS	17	17	6-Month	25%	10 (2.48)	24.6 (4.2) Sessions

Study	Disorder	Treatment[1]	Exposure	Measure[2]	N used in pre-/post-analysis	N used in follow-up analysis	Follow-up length	% female participants	Age *M* (*SD*)	Treatment Length
Willutzki et al. (2012)	SAD	CT	No	social phobia scale	23	16	2-Year	43.80%	Not clearly reported	12-sessions
Willutzki et al. (2012)	SAD	ROCBT	No	social phobia scale	40	35	2-Year	40%	Not clearly reported	6-lessons
2011 studies										
Alden et al. (2011)	SAD	interpersonal CBT	No	SIAS	27	21	6-Month	35%	34.7 (*SD* not reported)	7-Sessions
Andrews et al. (2011)	SAD	iCBT	Yes	SIAS	21	-	-	Not clearly reported	Not clearly reported	18-sessions
Andrews et al. (2011)	SAD	Group CBT	No (can't tell)	SIAS	14	-	-	Not clearly reported	Not clearly reported	29-sessions
Belloch et al. (2011)	OCD	CT	No	PSWQ	16	16	-	62.50%	30.44 (5.70)	14-sessions
Bidel et al. (2011)	PTSD	Trauma Management Therapy	Yes	CAPS	14	-	-	0%	58.93 (*SD* not reported)	12-sessions
Bidel et al. (2011)	PTSD	Exposure Therapy	Yes	CAPS	16	-	-	0%	59.76 (*SD* not reported)	5-sessions
Bolton (2011)	OCD	CBT	No	CYBOCS	36	36	3-Month	58%	15 (2.5)	15-sessions
Bolton (2011)	OCD	Brief CBT	No	CYBOCS	36	36	3-Month	64%	14.33 (2.33)	15-sessions
Hedman et al. (2011)	SAD	iCBT	Yes	LSAS	64	64	6-Month	37.50%	35.1 (11.1)	10-Sessions

Study	Disorder	Treatment[1]	Exposure	Measure[2]	N used in pre-/post-analysis	N used in follow-up analysis	Follow-up length	% female participants	Age *M* (*SD*)	Treatment Length
Hensel-Dittman (2011)	PTSD	NET	Yes	CAPS	11	7	1-Year	Not reported	Not reported	14-sessions
Hensel-Dittman (2011)	PTSD	SIT	No	CAPS	10	8	1-Year	Not reported	Not reported	14-sessions
Hinton et al. (2011)	PTSD (treatment resistant)	CBT (culturally adapted)	No	PCL	12	12	12-Week	100%	47.6 (8.2)	16-sessions + 3 boosters
Hinton et al. (2011)	PTSD (treatment resistant)	Applied Muscle Relaxation	No	PCL	12	12	12-Week	100%	51.4 (5.9)	16-sessions + 3 boosters
Jónsson et al. (2011)	OCD	Group CBT	Yes	YBOCS	42	31	1-Year	59.60%	32.7 (11.1)	8-sessions
Jónsson et al. (2011)	OCD	CBT	Yes	YBOCS	37	26	1-Year	71.70%	32.7 (9.5)	8-sessions
Karatzias et al. (2011)	PTSD	EMDR	Yes	CAPS	23	23	3-Month	60.90%	41.5 (10.8)	24-sessions
Karatzias et al. (2011)	PTSD	Emotional freedom techniques	Yes	CAPS	23	23	3-Month	52.20%	39.7 (10.9)	16-Sessions
Melfsen et al. (2011)	SAD	CBT	No	ADIS for Children German version	15	-	-	38.10%	10.60 (1.64)	16-Sessions

Study	Disorder	Treatment[1]	Exposure	Measure[2]	N used in pre-/post-analysis	N used in follow-up analysis	Follow-up length	% female participants	Age *M* (*SD*)	Treatment Length
Mörtberg et al. (2011)	SAD	CT	No	LSAS	23	23	5-Year	69%	36.1 (9.8)	14-sessions
Nacasch (2011)	PTSD	PE	Yes	PSS-I	15	15	at least 12-months after treatment	Not reported	34.8 (11.4)	8-Sessions
Newman et al. (2011)	GAD	CBT + Supportive Listening	No	PSWQ	40	40	24-Month	80%	37.39 (11.99)	8-sessions
Paxling et al. (2011)	GAD	iCBT	Yes	PSWQ	44	44	3-Year	82.82%	40 (11.3)	8-sessions
Price & Anderson (2011)	SAD	Group CBT	Yes	Fear of Negative Evaluation - Brief Form	51	-	-	Not clearly reported	Not clearly reported	8-sessions
Price and Anderson (2011)	SAD	Group CBT + VRET	Yes	Fear of Negative Evaluation - Brief Form	40	-	-	Not clearly reported	Not clearly reported	1-session
Price, Mehta, et al. (2011)	SAD	VRET	Yes	Personal Report of Confidence as a Speaker	31	-	-	Not clearly reported	Not reported	1-session

Study	Disorder	Treatment[1]	Exposure	Measure[2]	N used in pre-/post-analysis	N used in follow-up analysis	Follow-up length	% female participants	Age *M* (*SD*)	Treatment Length
Raes et al. (2011)	Simple Phobia (arachnophobia)	One-session exposure (Exposure only)	Yes	Spider Phobia Questionnaire	16	16	1-Month	Not clearly reported	Not clearly reported	10-sessions
Raes et al. (2011)	Simple Phobia (arachnophobia)	One-session exposure (Behavioural experiments)	Yes	Spider Phobia Questionnaire	15	15	1-Month	Not clearly reported	Not clearly reported	10-sessions
Rakowska (2011)	SAD	BST	Yes	SCL-PHOB	30	30	3-Month	Not clearly reported	Not clearly reported	16-sessions
Rakowska (2011)	Sad and personality disorder	BST	Yes	SCL-PHOB	30	30	3-Month	Not clearly reported	Not clearly reported	16-sessions
Stangier et al. (2011)	SAD	CT	No	LSAS	38	38	1-Year	44.70%	34.6 (12.9)	14-sessions
Stangier et al. (2011)	SAD	interpersonal psychotherapy	No	LSAS	38	38	1-Year	57.90%	33.9 (9.5)	20-sessions
Storch et al. (2011)	OCD	CBT (family based, teletherapy)	yes	CYBOCS	16	14	3-Month	37%	11.00 (2.5)	17-sessions
Tolin et al. (2011)	OCD	Stepped-care ERP	Yes	YBOCS	19	19	-	68.40%	35.95 (15.16)	6-sessions
Tolin et al. (2011)	OCD	ERP	Yes	YBOCS	15	15	-	46.70%	31.33 (10.50)	6-sessions

Study	Disorder	Treatment[1]	Exposure	Measure[2]	N used in pre-/post-analysis	N used in follow-up analysis	Follow-up length	% female participants	Age *M* (*SD*)	Treatment Length
Tortella-Feliu et al. (2011)	Simple Phobia (flying)	Self-administered computer-aided exposure	Yes	Fear of Flying Scale	21	21	1-Year	47.62% based on reported n of 10 females out of 21 (authors reported: 52.8%, this is accurate if n is 11)	36.24 (8.51)	3-sessions
Tortella-Feliu et al. (2011)	Simple Phobia (flying)	VRET	Yes	Fear of Flying Scale	19	19	1-Year	52.63%	36.89 (11.71)	3-sessions

[1]ABBT - Acceptance Based Behaviour Therapy; AM - Anxiety Management; AMP - Attention Modification Program; AMP + FACT - Attention Modification Program + Fear Activation; AAT - Approach-Avoidance Task; BST - Brief Strategic Therapy; CAGT - Computer-Assisted Group CBT; CBM - Cognitive Bias Modification; CBGT6 - Six-session Group CBT; CBGT - Group CBT; CBT - Cognitive Behavioural Therapy; CCT - Cognitive-Coping Therapy; CPT - Cognitive Processing Therapy; CT - Cognitive Therapy; ERP - Exposure and Response/Ritual Prevention; iCBT - Internet-delivered/based CBT; MAGT - Mindfulness and Acceptance-Based Therapy; MBSR - Mindfulness-Based Stress Reduction; MCT - Metacognitive Therapy; NET - Narrative Exposure Therapy; RCT - Residential Cognitive Group Therapy; RIPT - Residential Interpersonal Group Therapy; ROCBT - Resource-Orientated Cognitive Behavioural Therapy; SIT - Stress Incoulation Training; SRI - Seretonin Reuptake Inhibitor; SSRI - Selective Seretonin Reuptake Inhibitor; SRT - Stress Managment Training; ST - Supportive Therapy; TBTR - Trial-based Cognitive Therapy; WET - Written Exposure Therapy; VRET - Virtual reality exposure therapy.

[2]ADIS - Anxiety Disorders Interview Schedule; CAPS - Clinician administered PTSD scale; CGI-S: Clinical Global Impression - Severity Scale; CRIES-13 - Children's Revised Impact of Event Scale; CYBOCS- Children's Yale-Brown Obsessive-Compulsive Scale; HADS - Hospital Anxiety and Depression Scale; HARS - Hamilton Anxiety Rating Scale; LSAS - Liebowitz Social Anxiety Scale; LSAS-SR - Liebowitz Social

Anxiety Scale - Self-report; PCL - PTSD Checklist; PDS - Post Traumatic Stress Diagnostic Scale; PDSS - Panic Disorder Severity Scale; PSS-I - PTSD Symptom Scale-Interview; PSS-SR - PTSD Symptom Scale-Self-Report; PSWQ - Penn State Worry Questionnaire; RCADS - Revised Children's Anxiety and Depression Scale; SCL-PHOB - Derogatis Symptom Checklist - Phobic Anxiety; SIAS - Social Interaction Anxiety Scale; SPIN - Social Phobia Inventory; YBOCS - Yale-Brown Obsessive-Compulsive Scale.

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

Study	Disorder	Treatment[1]	Exposure[2]	Measure	N used in pre-/post-analysis	N used in follow-up analysis	Follow-up length	% female participants	Age *M* (*SD*)	Treatment Length
2014 studies										
Dalrymple et al. (2014)	SAD and a depressive disorder	ACT	Yes	LSAS (Fear subscale)	18 (CA) 38 (ITT)	-	-	45.90%	36.43 (13.0)	16-Sessions
Jeffreys et al. (2014)	PTSD	CPT-G	Yes	PCL	20	-	-	Not clearly reported	Not clearly reported	12-Sessions
Jeffreys et al. (2014)	PTSD	CPT	Yes	PCL	7	-	-	Not clearly reported	Not clearly reported	12-Sessions
Jeffreys et al. (2014)	PTSD	CPT-C	Yes	PCL	150	-	-	Not clearly reported	Not clearly reported	12-Sessions
Jeffreys et al. (2014)	PTSD	PE	Yes	PCL	81	-	-	5.90%	38.2 (13.26)	10 to 15-Sessions
Matulis et al. (2014)	PTSD	CPT (developmentally adapted)	Yes	CAPS	12	12	6-Week	Not reported	18.08 (1.67)	30-Sessions
Shirotsuki et al. (2014)	SAD	CBT	Yes	SFNE	15	-	-	46.67%	30.06 (No SD reported)	6-Sessions
Wesner et al. (2014)	PD	Group CBT	Yes	CGI	48	-	-	75%	38.8 (11.1)	12-Sessions

Study	Disorder	Treatment[1]	Exposure[2]	Measure	N used in pre-/post-analysis	N used in follow-up analysis	Follow-up length	% female participants	Age *M* (*SD*)	Treatment Length
2013 studies										
da la Cruz et al. (2013)	OCD	ERP	Yes	CYBOCS	50	-	-	Not clearly reported	Not clearly reported	13-Sessions
da la Cruz et al. (2013)	OCD	ERP	Yes	CYBOCS	103	-	-	Not clearly reported	Not clearly reported	12-Sessions
Dèttore, et al. (2013)	OCD	ERP	Yes	YBOCS	38	-	-	50%	33.38 (9.44)	50 Sessions
Eftekhari et al. (2013)	PTSD	PE	Yes	PCL	1389 (CA) 1888 (ITT)	-	-	12.90%	46.8 (14.3)	9 (4.2) Seasons
Furukawa et al. (2013)	SAD	CBGT	Yes	LSAS	52	Not included	Follow-up reported using a different measure	50%	35.5 (9.3)	13.4 (4.5) Seasons
King, et al. (2013)	PTSD	MBCT	No	CAPS	15 (CA) 20 (ITT)	-	-	Not reported	60.1 (9.7)	8-Sessions
Kleim, et al. (2013)	PTSD	TF-CBT	No	PDSS	268	-	-	58.60%	38.67 (11.26)	12-Sessions
Najavits et al. (2013)	PTSD	Seeking Safety	No	Basis-32	7	-	-	57%	45.89 (10.61)	18.86 (8.17)

Study	Disorder	Treatment[1]	Exposure[2]	Measure	N used in pre-/post-analysis	N used in follow-up analysis	Follow-up length	% female participants	Age *M* (*SD*)	Treatment Length
Sripada et al. (2013)	PTSD	PE	Yes	PCL-S	51 CA 40 ITT	-	-	Not reported	49.3 (No SD reported)	12 (2.7) CA 10 (3.8) ITT
Stott et al. (2013)	SAD	Internet-delivered CT	Yes	LSAS	11	-	-	45%	33.1 (5.9)	13.7 (4.0) Weeks
van der Helden et al. (2013)	GAD	Group Metacognitive Therapy	Yes	PSWQ	24 (CA) 33 (ITT)	14 (CA) 33 (ITT)	6-Month	63.64%	31.33 (8.96)	14-Sessions
Voder et al. (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 al. (2013)	SAD	ABBT	Yes	LSAS	26	26	3-Month	25%	35 (10.8)	12-Sessions
2012 studies										
Tarquinio et al. (2012)	PTSD	EMDR	Yes	IES Total	12	12	6-Month	100%	33 (4.6)	5-Session
Wagner et al. (2012)	PTSD	iCBT	No	PDS	15	-	-	86.70%	29.3 (7.1)	Not reported (10 assignments)
Wroe et al. (2012)	OCD	Group CBT	Yes	YBOCS	15	-	-	54.50%	35 (10.54)	7 to 8 sessions
2011 studies										
Alvarez et al. (2011)	PTSD	CPT (residential)	Yes	PCL	104	-	-	0%	50.20 (11.55)	14-Sessions

Study	Disorder	Treatment[1]	Exposure[2]	Measure	N used in pre-/post-analysis	N used in follow-up analysis	Follow-up length	% female participants	Age *M* (*SD*)	Treatment Length
Ayers et al. (2011)	OCD (hoarding)	CBT	Yes	UCLA Hoarding Severity Scale	12	10	6-Month	58.33%	73.66 (6.54)	26 sessions
Chard et al. (2011)	PTSD and mild TBI	CPT (residential)	No	CAPS	28	-	-	0%	33.93 (8.59)	14.11 (1.17) sessions 7-weeks (2 group and minimum of 2 individual a week)
Chard et al. (2011)	PTSD and moderate/severe TBI	CPT (residential)	No	CAPS	14	-	-	0%	38.7 (10.59)	14.71 (1.98) Sessions 7-weeks (2 group and minimum of 2 individual a week)
Gros, Antony, et al. (2011)	PD	Group CBT	Yes	ASI	32	-	-	Not clearly reported	Not clearly reported	12-Sessions
Gros, Antony, et al. (2011)	PD and Irritable Bowel Syndrome	Group CBT	Yes	ASI	23	-	-	Not clearly reported	Not clearly reported	12-Sessions

Study	Disorder	Treatment[1]	Exposure[2]	Measure	N used in pre-/post-analysis	N used in follow-up analysis	Follow-up length	% female participants	Age *M* (*SD*)	Treatment Length
Gros, Yoder, et al. (2011)	PTSD	PE	Yes	PCL-M	27	-	-	11.10%	45.2 (16.0)	12-Sessions
Haraguchi et al. (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-Sessions
Hindo et al. (2011)	SAD	One-Session Exposure	Yes	LSAS	32	23	1-Month	75%	28.25 (9.22)	1-Session
Long et al. (2011)	PTSD	Imagery Rescripting and Exposure Therapy	Yes	PCL-M	33	-	-	0%	62.1	6-Sessions
Nakatani et al. (2011)	OCD	CBT/ERP	Yes	CYBOCS	40	-	-	41.10%	12.5 (2.9)	12-Sessions
Nakatani et al. (2011)	OCD	CBT/ERP	Yes	CYBOCS	69	-	-	41.60%	14.7 (1.7)	12-Sessions
Nevo et al. (2011)	PTSD	PE (TMT)	Yes	CPSS patient	15	15	1-Month	86%	10.8 (4.39)	7 to 16-Sessions
Nixon et al. (2011)	PTSD and MDD	Behavioural activation, Cognitive Restructuring, and exposure	Yes	CAPS	20	20	3-Month	85%	45.3 (11.88)	12 to 16 sessions

Study	Disorder	Treatment[1]	Exposure[2]	Measure	N used in pre-/post-analysis	N used in follow-up analysis	Follow-up length	% female participants	Age *M* (*SD*)	Treatment Length
Telch et al. (2011)	PD	CBT	Yes	SPRAS	119	-	-	Not clearly reported	Not clearly reported	12-Sessions
Telch et al. (2011)	PD and personality disorder	CBT	Yes	SPRAS	54	-	-	Not clearly reported	Not clearly reported	12-Sessions
Turek et al. (2011)	PTSD	PE	Yes	PCL-M	43 (CA) 65 (ITT)	-	-	11%	31.77 (8.19)	7 (5) sessions (ITT) 10 (4) sessions (CA)
Westra et al. (2011)	GAD	CBT	Yes	PSWQ	11	11	1-Year	63.64%	41.36 (*SD* not reported)	6-Sessions
Westra et al. (2011)	GAD	CBT	Yes	PSWQ	6	6	1-Year	83.33%	49.83 (*SD* not reported)	6-Sessions
Westra et al. (2011)	GAD	CBT	Yes	PSWQ	8	8	1-Year	87.50%	33.75(*SD* not reported)	6-Sessions
Westra et al. (2011)	GAD	CBT	Yes	PSWQ	7	7	1-Year	57.14%	42.86 (SD not reported)	6-Sessions
Wetherall et al. (2011)	GAD	CBT + Escitalopram	No	HAMA	10	-	-	60%	68.6 (8.59)	16-Sessions

Study	Disorder	Treatment[1]	Exposure[2]	Measure	N used in pre-/post-analysis	N used in follow-up analysis	Follow-up length	% female participants	Age *M* (*SD*)	Treatment Length
Wootton et al. (2011)	OCD	iCBT	Yes	YBOCS	21	21	3-Month	59%	35.18 (11.32)	8-lessons

[1]ABBT - Acceptance Based Behaviour Therapy; ACT - Acceptance and Commitment Therapy; CBGT - Group CBT; CBT - Cognitive Behavioural Therapy; CPT - Cognitive Processing Therapy; CPT-G - Cognitive Processing Therapy - Group; CT - Cognitive Therapy; EMDR - Eye Movement Desensitization and Reprocessing; ERP - Exposure and Response/Ritual Prevention; ICBT - Internet-delivered/based CBT; MBCT - Mindfulness-based Cognitive Therapies; PE - Prolonged Exposure; PE (TMT) - Prolonged Exposure (Trauam Mastery Therapy); TF-CBT - Trauma-Focused Cognitive Behavioural Therapy.

[2]ASI - Anxiety Sensitivity Index; Basis-32 - Behavior And Symptom Identification Scale; CAPS - Clinician Administered PTSD Scale; CGI - Clinical Global Impression; CPSS - Child PTSD symptom Scale; CYBOCS - Children's Yale-Brown Obsessive-Compulsive Scale; HAMA - Hamilton Anxiety Rating Scale; IES - Impact of Event Scale; LSAS - Liebowitz Social Anxiety Scale; PCL - PTSD Checklist; PCL-C - PTSD Checklist - Civilian; PCL-M - PTSD Checklist - Military; PCL-S - PTSD Checklist - Specific; PDS - Post Traumatic Stress Diagnostic Scale; PDSS - Panic Disorder Severity Scale; PSWQ - Penn State Worry Questionnaire; SPARS - Sheehan Patient-Related Anxiety Scale; SFNE - Short Fear of Negative Evaluation Scale; YBOCS - Yale-Brown Obsessive-Compulsive Scale.

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

Study	1	2	3	4	5	6	7	8 (95% CI)	9	10	11	Total Yes
2014 studies												
Asnaani et al. (2014)	Y	Y	Y	Y	Y	Y	Small	51.18 - 67.82	N	N	Y	7
Baker et al. (2014)	Y	Y	Y	CT	CT	Y	Large	13.67 - 24.23	CT	CT	Y	5
Chen et al. (2014)	Y	Y	CT	CT	N	N	Large	22.59 - 31.81	Y	CT	Y	4
Ehlers et al. (2014)	Y	Y	Y	N	Y	Y	Large	22.49 - 41.95	Y	Y	Y	8
Ehlers et al. (2014)	Y	Y	Y	N	Y	Y	Large	16.87 - 37.07	Y	Y	Y	8
Ehlers et al. (2014)	Y	Y	Y	N	Y	Y	Large	36.51 - 59.25	Y	Y	Y	8
Kucketz et al. (2014)	Y	Y	Y	CT	CT	Y	small	58.86 - 76.24	Y	Y	Y	7
Kucketz et al. (2014)	Y	Y	Y	CT	CT	Y	Large	42.45 - 56.21	Y	Y	Y	7
Kucketz et al. (2014)	Y	Y	Y	CT	CT	Y	Large	37.57 - 49.89	Y	Y	Y	7
Lloyd, et al. (2014)	Y	Y	CT	CT	Y	N	Large	38.05 - 58.01	Y	N	Y	5
Newman et al. (2014)	Y	Y	CT	Y	Y	Y	Large	7.4 - 13.36	Y	Y	Y	8
Newman et al. (2014)	Y	Y	CT	Y	Y	Y	Large	9.25 - 15.83	Y	Y	Y	8
Newman et al. (2014)	Y	Y	CT	Y	Y	Y	Large	9.55 - 21.45	Y	Y	Y	8
2013 studies												
Bonsaksen et al. (2013)	Y	Y	CT	Y	Y	Y	Large	97.99 - 119.83	Y	Y	Y	8
Bonsaksen et al. (2013)	Y	Y	CT	Y	Y	Y	Large	103.66 - 124.24	Y	Y	Y	8
Farrell et al. (2013)	Y	Y	CT	Y	CT	Y	Large	10.32 - 17.24	CT	Y	Y	6
Farrell et al. (2013)	Y	Y	CT	Y	CT	Y	Large	8.41 - 19.09	CT	Y	Y	6
Foa et al. (2013)	Y	Y	Y	Y	Y	Y	Large	10.13 - 12.87	Y	N	Y	8
Foa et al. (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 al. (2013)	Y	Y	Y	CT	Y	Y	Large	15.06 - 24.74	Y	N	Y	7
Hoffart, et al. (2013)	Y	Y	Y	CT	Y	Y	Large	17.91 - 27.51	Y	N	Y	7

Study	1	2	3	4	5	6	7	8 (95% CI)	9	10	11	Total Yes
Hovland (2013)	Y	Y	Y	CT	Y	Y	Large	0.17 - 1.35	Y	Y	Y	8
Kocovski et al. (2013)	Y	Y	Y	Y	Y	Y	Medium	29.94 - 37.5 (ITT)	Y	Y	Y	9
Kocovski et al. (2013)	Y	Y	Y	Y	Y	Y	Large	29.93 - 37.89 (ITT)	Y	Y	Y	9
Ma et al. (2013)	Y	Y	Y	N	Y	CT	Large	13.52 - 16.08	Y	N	Y	6
Månsson et al. (2013)	Y	Y	Y	Y	Y	Y	Large	32.49 - 67.01	Y	N	Y	8
Månsson et al. (2013)	Y	Y	Y	Y	Y	Y	Large	46.72 - 64.94	Y	N	Y	8
Margolies, et al. (2013)	Y	Y	CT	Y	Y	Y	Medium	27.5 – 39.5	Y	N	N	6
Meyerbroeker et al. (2013)	Y	Y	N	Y	Y	Y	Large	0.66 - 1.4	Y	N	Y	7
Meyerbroeker et al. (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 al. (2013)	Y	Y	Y	Y	Y	Y	Large	10.96 - 17.68	Y	Y	Y	9
ReyNlds et al. (2013)	Y	Y	Y	Y	Y	Y	Large	10.74 - 17.42	Y	Y	Y	9
Rus-Calafell et al. (2013)	Y	Y	CT	Y	Y	Y	Large	38.53 - 60.05	Y	Y	Y	8
Rus-Calafell et al. (2013)	Y	Y	CT	Y	Y	Y	Large	38.94 - 60.32	Y	Y	Y	8
Russell et al. (2013)	Y	Y	Y	Y	Y	Y	Large	14.12 - 21.48	Y	Y	Y	9
Russell et al. (2013)	Y	Y	Y	Y	Y	Y	Medium	17.43 - 24.17	Y	Y	Y	9
Sannible et al. (2013)	Y	Y	Y	Y	Y	Y	Large	33.78 - 51.82	Y	Y	Y	9
Sannible et al. (2013)	Y	Y	Y	Y	Y	Y	Large	37.15 - 56.27	Y	Y	Y	9
Simpson et al. (2013)	Y	Y	Y	Y	Y	Y	Large	11.03 - 14.97	Y	N	Y	8
Sportel et al. (2013)	Y	Y	Y	Y	Y	Y	small	11.31 - 13.39	Y	Y	Y	9
Sportel et al. (2013)	Y	Y	Y	Y	Y	Y	Medium	10.19 - 12.49	Y	Y	Y	9
Storch et al. (2013)	Y	Y	Y	Y	Y	Y	Large	10.34 - 20.52	Y	N	Y	8
Storch et al. (2013)	Y	Y	Y	Y	Y	Y	Large	13.57 - 20.79	Y	N	Y	8
Storch et al. (2013)	Y	Y	Y	Y	Y	Y	Large	12.32 - 18.8	Y	N	Y	8
Tart et al. (2013)	Y	Y	Y	CT	Y	Y	Large	5.25 - 12.75	Y	Y	Y	8

Study	1	2	3	4	5	6	7	8 (95% CI)	9	10	11	Total Yes
Zang et al. (2013)	Y	Y	Y	Y	Y	Y	Large	3.6 - 6.94	CT	N	Y	7
Zang et al. (2013)	Y	Y	Y	Y	Y	Y	Large	3.13 - 6.87	CT	N	Y	7
2012 studies												
Aldahandha et al. (2012)	Y	Y	CT	CT	Y	Y	Lage	41.76 - 45.76	CT	N	Y	5
Aldahandha et al. (2012)	Y	Y	CT	CT	Y	Y	Lage	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 al. (2012)	Y	Y	CT	Y	Y	Y	Large	39.95 - 71.35	Y	Y	Y	8
de Oliveira et al. (2012)	Y	Y	CT	Y	Y	Y	Large	50.07 - 73.29	Y	Y	Y	8
Jazaieri et al. (2012)	Y	Y	CT	CT	Y	Y	Large	48.09 - 62.91	Y	N	Y	6
Nations et al. (2012)	Y	Y	Y	N	Y	Y	Large	4.38 - 6.22	Y	Y	CT	7
Nations et al. (2012)	Y	Y	Y	N	Y	Y	Large	5.18 - 10.02	Y	Y	CT	7
Nations et al. (2012)	Y	Y	Y	N	Y	Y	Large	4.27 - 8.93	Y	Y	CT	7
Nave et al. (2012)	Y	Y	Y	Y	Y	Y	Large	2.29 - 3.71	Y	N	Y	8
Nave et al. (2012)	Y	Y	Y	Y	Y	Y	Large	2.28 - 3.12	Y	N	Y	8
Nixon et al. (2012)	Y	Y	Y	Y	Y	Y	Large	12.97 - 37.27	Y	Y	Y	9
Nixon et al. (2012)	Y	Y	Y	Y	Y	Y	Large	13.82 - 37.68	Y	Y	Y	9
Wells et al. (2012)	Y	Y	N	Y	CT	Y	Large	6.64 - 26.96	Y	N	Y	6
Willutzki et al. (2012)	Y	Y	CT	CT	CT	Y	Large	14.39 - 23.53	Y	CT	CT	4
Willutzki et al. (2012)	Y	Y	CT	CT	CT	Y	Large	13.94 - 22.42	Y	CT	CT	4
2011 studies												
Alden et al. (2011)	Y	Y	CT	Y	Y	Y	Large	30.34 - 39.52	Y	Y	Y	8
Andrews et al. (2011)	Y	Y	N	CT	Y	Y	Medium	37.2 - 50.8	Y	N	Y	6
Andrews et al. (2011)	Y	Y	N	CT	Y	Y	Large	34.06 - 53.66	Y	N	Y	6
Belloch et al. (2011)	Y	Y	N	N	N	Y	Medium	44.32 - 57.14	Y	Y	Y	6
Bidel et al. (2011)	Y	Y	CT	Y	Y	Y	Large	56.43 - 81.57	Y	N	Y	7

Study	1	2	3	4	5	6	7	8 (95% CI)	9	10	11	Total Yes
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 al. (2011)	Y	Y	Y	Y	Y	Y	Large	34.52 - 44.28	Y	Y	Y	9
Hedman et al. (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 al. (2011)	Y	Y	CT	Y	Y	Y	Large	30.56 - 47.64	Y	N	Y	7
Hinton et al. (2011)	Y	Y	CT	Y	Y	Y	Large	54.13 - 69.07	Y	N	Y	7
Jónsson et al. (2011)	Y	Y	N	Y	Y	Y	Large	16.35 - 21.31	Y	Y	Y	8
Jónsson et al. (2011)	Y	Y	N	Y	Y	Y	Large	15.69 - 21.01	Y	Y	Y	8
Karatzias et al. (2011)	Y	Y	Y	Y	Y	Y	Large	30.4 - 55	Y	Y	Y	9
Karatzias et al. (2011)	Y	Y	Y	Y	Y	Y	Large	29.75 - 51.25	Y	Y	Y	9
Melfsen et al. (2011)	Y	Y	CT	Y	Y	Y	Large	2.86 - 4	Y	N	Y	7
Mörtberg et al. (2011)	Y	Y	Y	Y	Y	Y	Large	45.34 - 59.46	Y	Y	Y	9
Mörtberg et al. (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 al. (2011)	Y	Y	CT	N	N	Y	Large	45.61 - 52.51	N	N	N	3
Paxling et al. (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 al. (2011)	Y	Y	CT	CT	CT	N	Large	13.86 - 18.98	Y	N	Y	4
Raes et al. (2011)	Y	Y	Y	Y	Y	N	Large	10.04 - 13.46	Y	Y	Y	8
Raes et al. (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 al. (2011)	Y	Y	Y	Y	Y	Y	Large	32.78 - 46.2	Y	Y	Y	9

Study	1	2	3	4	5	6	7	8 (95% CI)	9	10	11	Total Yes
Storch et al. (2011)	Y	Y	Y	CT	Y	Y	Large	5.97 - 16.29	Y	N	Y	7
Tolin et al. (2011)	Y	Y	Y	Y	Y	Y	Large	12.67 - 17.65	Y	Y	Y	9
Tolin et al. (2011)	Y	Y	Y	Y	Y	Y	Large	11.12 - 17.38	Y	Y	Y	9
Tortella-Feliu et al. (2011)	Y	Y	CT	Y	Y	Y	Large	44.25 - 54.95	Y	N	Y	7
Tortella-Feliu et al. (2011)	Y	Y	CT	Y	Y	Y	Large	41.07 - 50.33	Y	N	Y	7

Table 4. Methodological quality (CASP cohort rating) of effectiveness studies included in the main analyses.

Study	1	2	3	4	5	6	7	8 (95% CI)	9	10	11	Total Yes
2014 studies												
Dalrymple et al. (2014)	Y	Y	Y	N	(a) N (b) N	(a) N (b) N	Large	34.81 - 45.05 (ITT)	CT	CT	CT	3
Jeffreys et al. (2014)	Y	CT	CT	CT	(a) CT (b) CT	(a) N (b) N	Large	47.44 - 57.46	Y	Y	Y	4
Jeffreys et al. (2014)	Y	CT	CT	CT	(a) CT (b) CT	(a) N (b) N	Large	25.86 - 39	Y	Y	Y	4
Jeffreys et al. (2014)	Y	CT	CT	CT	(a) CT (b) CT	(a) N (b) N	Large	51.95 - 56.27	Y	Y	Y	4
Jeffreys et al. (2014)	Y	CT	CT	CT	(a) CT (b) CT	(a) N (b) N	Large	30.33 - 35.19	Y	Y	Y	4
Matulis et al. (2014)	Y	Y	Y	Y	(a) N (b) N	(a) Y (b) N	Large	22.38 - 55.78	Y	Y	Y	8
Shirotsuki et al. (2014)	Y	Y	Y	Y	(a) Y (b) Y	(a) N (b) N	Large	32.26 - 43.08	Y	Y	Y	9
Wesner et al. (2014)	Y	Y	Y	Y	(a) CT (b) CT	(a) N (b) N	Large	2.39 - 3.01	Y	Y	Y	7
2013 studies												
da la Cruz et al. (2013)	Y	Y	CT	N	(a) N (b) N	(a) N (b) N	Large	12.95 - 17.45	CT	Y	Y	4
da la Cruz et al. (2013)	Y	Y	CT	N	(a) N (b) N	(a) N (b) N	Large	12.54 - 15.66	CT	Y	Y	4
Dèttore, et al. (2013)	CT	Y	Y	Y	(a) Y (b) Y	(a) N (b) N	Large	15.83 - 20.85	Y	Y	Y	8

Study	1	2	3	4	5	6	7	8 (95% CI)	9	10	11	Total Yes
Eftekhari et al. (2013)	Y	Y	Y	Y	(a) N (b) Y	(a) N (b) N	Medium	47.04 - 48.96 (ITT)	Y	Y	CT	7
Furukawa et al. (2013)	Y	Y	Y	Y	(a) N (b) Y	(a) N (b) Y	Large	46.79 - 60.21	Y	Y	Y	9
King, et al. (2013)	Y	CT	Y	Y	(a) N (b) N	(a) N (b) N	Medium	52.48 - 72.72 (ITT)	CT	CT	CT	3
Kleim, et al. (2013)	Y	Y	Y	Y	(a) Y (b) Y	(a) N (b) N	Large	0.98 - 1.16	Y	N	Y	8
Najavits et al. (2013)	Y	Y	Y	Y	(a) N (b) N	(a) N (b) N	Large	0.24 - 1.16	CT	CT	CT	2
Plagge et al. (2013)	Y	Y	Y	Y	(a) Y (b) N	(a) N (b) N	Medium	49.63 - 59.57	Y	Y	Y	8
Sripada et al. (2013)	Y	Y	Y	Y	(a) CT (b) CT	(a) N (b) N	Large	83.11 - 101.49 (ITT)	Y	Y	Y	7
Stott et al. (2013)	Y	CT	Y	Y	(a) Y (b) Y	(a) N (b) N	Large	22.01 - 57.59	Y	Y	Y	7
van der Helden et al. (2013)	Y	Y	Y	Y	(a) Y (b) Y	(a) Y (b) Y	Large	46.33 - 56.09 (ITT)	Y	Y	Y	11
Voder et al. (2013)	Y	CT	Y	N	(a) N (b) N	(a) N (b) N	Large	39.5 - 47.08 (ITT)	Y	Y	Y	5
Yuen et al. (2013)	Y	Y	Y	Y	(a) Y (b) Y	(a) Y (b) N	Large	39.38 - 56.04	Y	Y	CT	9
2012 Studies												
Tarquinio et al. (2012)	Y	Y	N	N	(a) N (b) N	(a) Y (b) N	Large	26.41 - 32.19	N	Y	Y	5

Study	1	2	3	4	5	6	7	8 (95% CI)	9	10	11	Total Yes
Wagner et al. (2012)	Y	Y	CT	CT	(a) N (b) N	(a) N (b) N	Large	8.93 - 18.81	CT	CT	CT	2
Wroe et al. (2012)	Y	Y	Y	Y	(a) N (b) N	(a) N (b) N	Large	12.36 - 20.18	Y	Y	Y	7
2011 studies												
Alvarez et al. (2011)	Y	Y	Y	N	(a) Y (b) Y	(a) N (b) N	Medium	53.04 - 57.96	Y	Y	Y	8
Andersson et al. (2011)	Y	Y	Y	Y	(a) Y (b) Y	(a) N (b) N	Large	6.98 - 13.02	Y	Y	Y	9
Ayers et al. (2011)	Y	Y	Y	Y	(a) Y (b) Y	(a) Y (b) Y	Large	18.8 - 25.7	Y	Y	Y	9
Chard et al. (2011)	Y	Y	Y	Y	(a) Y (b) Y	(a) N (b) N	Large	40.7 - 57.22	Y	Y	N	8
Chard et al. (2011)	Y	Y	Y	Y	(a) Y (b) Y	(a) N (b) N	Large	28.58 - 46.7	Y	Y	N	8
Gros, Antony, et al. (2011)	Y	Y	Y	Y	(a) N (b) N	(a) N (b) N	Large	16.94 - 25.26	Y	Y	Y	7
Gros, Antony, et al. (2011)	Y	Y	Y	Y	(a) N (b) N	(a) N (b) N	Large	23.39 - 34.01	Y	Y	CT	6
Gros, Yoder, et al. (2011)	Y	Y	Y	Y	(a) N (b) N	(a) N (b) N	Large	43.03 - 52.57	Y	Y	Y	7
Gros, Yoder, et al. (2011)	Y	Y	Y	Y	(a) N (b) N	(a) N (b) N	Large	27.64 - 35.56	Y	Y	Y	7
Haraguchi et al. (2011)	Y	Y	Y	Y	(a) Y (b) Y	(a) N (b) N	Large	16.52 - 21.48 (ITT)	Y	Y	Y	9

Study	1	2	3	4	5	6	7	8 (95% CI)	9	10	11	Total Yes
Hindo et al. (2011)	Y	CT	Y	Y	(a) Y (b) Y	(a) Y (b) N	Large	48.02 - 63.46	Y	Y	Y	9
Long et al. (2011)	Y	Y	Y	Y	(a) N (b) N	(a) N (b) N	Large	50.72 - 60.68	Y	Y	Y	7
Nakatani et al. (2011)	Y	Y	Y	Y	(a) N (b) N	(a) N (b) N	Large	8 - 11.6	Y	Y	Y	7
Nakatani et al. (2011)	Y	Y	Y	Y	(a) N (b) N	(a) N (b) N	Large	9.53 - 13.07	Y	Y	Y	7
Nevo et al. (2011)	Y	Y	Y	Y	(a) N (b) N	(a) Y (b) N	Large	9.04 - 10.96	Y	Y	Y	8
Nixon et al. (2011)	Y	Y	Y	Y	(a) Y (b) Y	(a) Y (b) N	Large	32.11 - 56.09	Y	Y	Y	10
Olino et al. (2011)	Y	Y	Y	Y	(a) Y (b) Y	(a) N (b) N	Large	10.98 - 11.8	Y	Y	Y	9
Telch et al. (2011)	Y	Y	Y	Y	(a) N (b) N	(a) N (b) N	Large	14.91 - 21.25	Y	Y	Y	7
Telch et al. (2011)	Y	Y	Y	Y	(a) N (b) N	(a) N (b) N	Large	22.31 - 32.51	CT	Y	Y	6
Turek et al. (2011)	Y	CT	Y	Y	(a) N (b) Y	(a) N (b) N	Large	41.54 - 51.04	Y	Y	Y	6
Westra et al. (2011)	Y	Y	Y	Y	(a) Y (b) Y	(a) Y (b) Y	Large	30.11 - 49.07	Y	Y	Y	11
Westra et al. (2011)	Y	Y	Y	Y	(a) Y (b) Y	(a) Y (b) Y	Large	44.12 - 69.22	Y	Y	Y	11
Westra et al. (2011)	Y	Y	Y	Y	(a) Y (b) Y	(a) Y (b) Y	Large	25.51 - 39.49	Y	Y	Y	11

Study	1	2	3	4	5	6	7	8 (95% CI)	9	10	11	Total Yes
Wetherall et al. (2011)	Y	CT	Y	Y	(a) N (b) N	(a) N (b) N	Medium	4.23 - 12.17	CT	CT	CT	3
Wootton et al. (2011)	Y	CT	Y	Y	(a) Y (b) Y	(a) Y (b) N	Large	10.33 - 14.87	Y	Y	Y	9

Table 5.

Summary of meta-analysis results for overall effect sizes

	Efficacy									
	Completer analysis					Intent-to-treat analysis				
	k	$\bar{d}^*$	SE	95% CI	*z*	*k*	$\bar{d}^*$	SE	95% CI	*z*
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									
	Completer analysis					Intent-to-treat analysis				
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)									
	Completer analysis					Intent-to-treat analysis				
	k	$\bar{d}^*$	SE	95% CI	*z*	*k*	$\bar{d}^*$	SE	95% CI	*z*
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)									
	Completer analysis					Intent-to-treat analysis				
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)									
	Completer analysis					Intent-to-treat analysis				
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	-	-	-	-

Table 6.
Moderators in the treatment of anxiety disorders

	K	$\bar{d}^*$	SE	95% CI	Subgroup analysis		
Exposure at Pre-/post-test					*Q*	*df*	*p*
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 follow-up							
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)					1.06	1	.302
Completer between study type							
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			

	K	$\bar{d}^*$	SE	95% CI	Subgroup analysis		
					Q	*df*	*p*
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			

	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			
Effectivness – 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			

* $p \leq .05$ (2-tailed), ** $p \leq .01$

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 al. 2013)	Lacks independent replication with an appropriate sample size.
PTSD		
Efficacious	• None to add	
Possibly efficacious	• CT/Intensive CT (Ehlers et al. 2014)	Lacks independent replication with an appropriate sample size.
	• CPT (Lloyd et al. 2013)	Lacks independent replication
SAD		
Efficacious	• CBT (Kucketz et al., 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 al., 2013)	Lack independent replication
	• CT (Stangier et al. 2011)	Lack independent replication with an appropriate sample size
	• MAGT (Kucketz et al., 2014)	Lacks independent replication; needs each component tested seperately.

[1] BST – Brief Strategic Therapy; CBM - Cognitive Bias Modification; CBT – Cognitive Behavioural Therapy; CT – Cognitive Therapy; ERP – Exposure and Ritual/Response prevention; MAGT - Mindfulness and Acceptance-Based Therapy.

Figure 1

Figure 1. Flowchart of identification and selection of articles

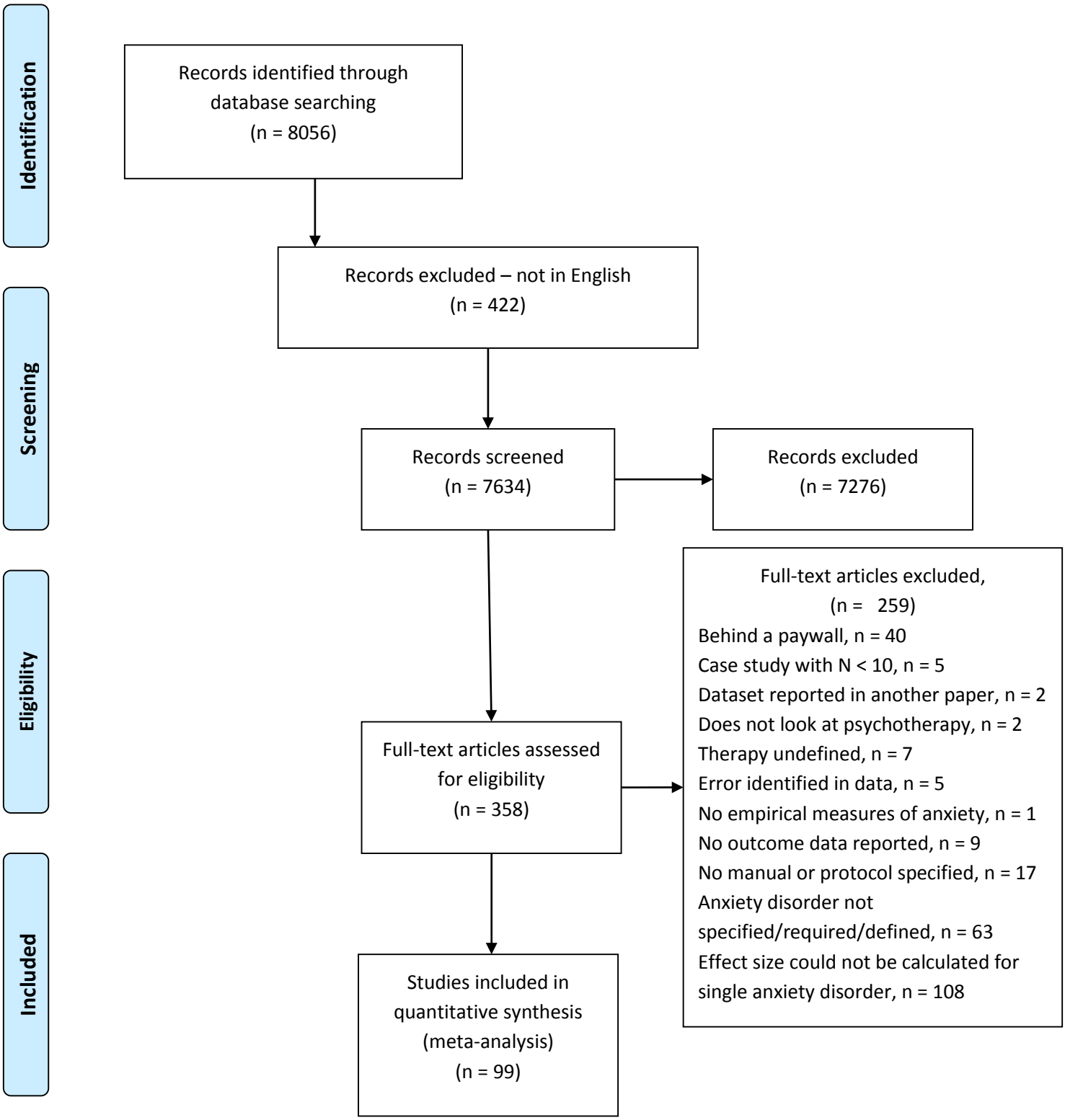


Figure 2

Figure 2A. Funnel plot for publication bias (Efficacy CA)

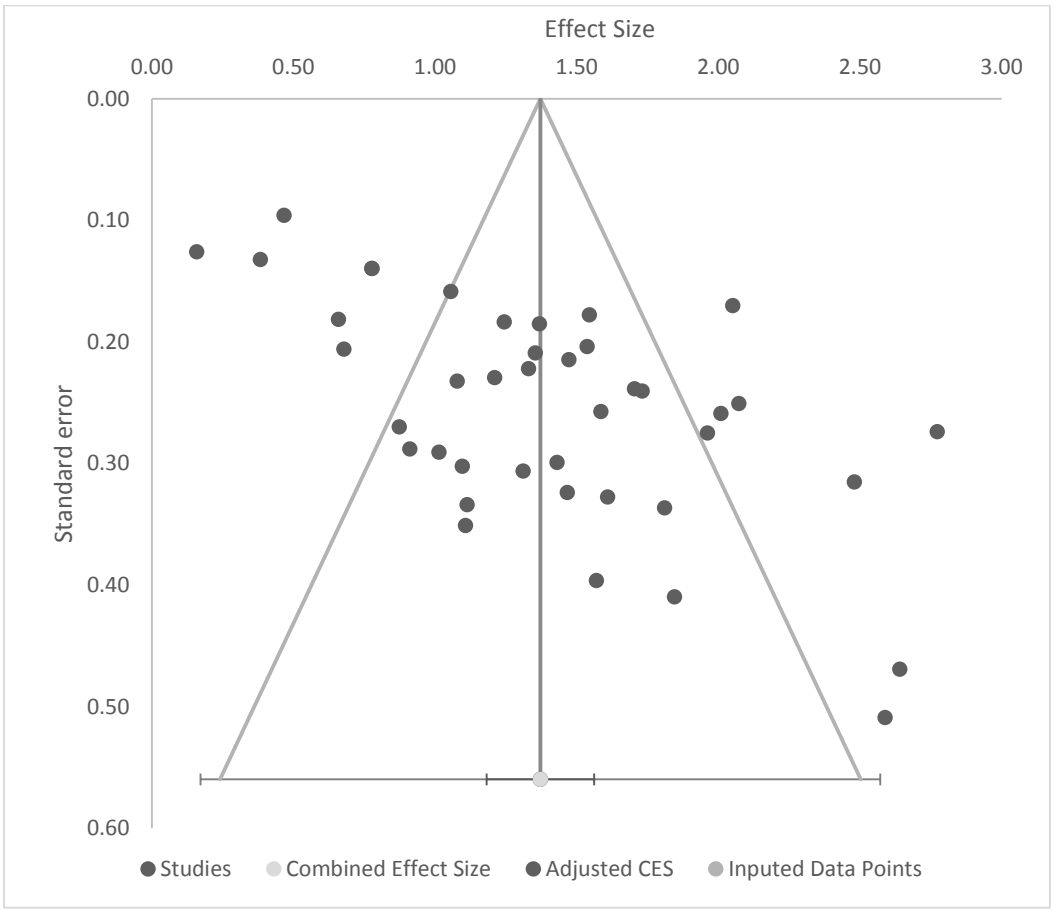


Figure 2B. Funnel plot for publication bias (Efficacy ITT)

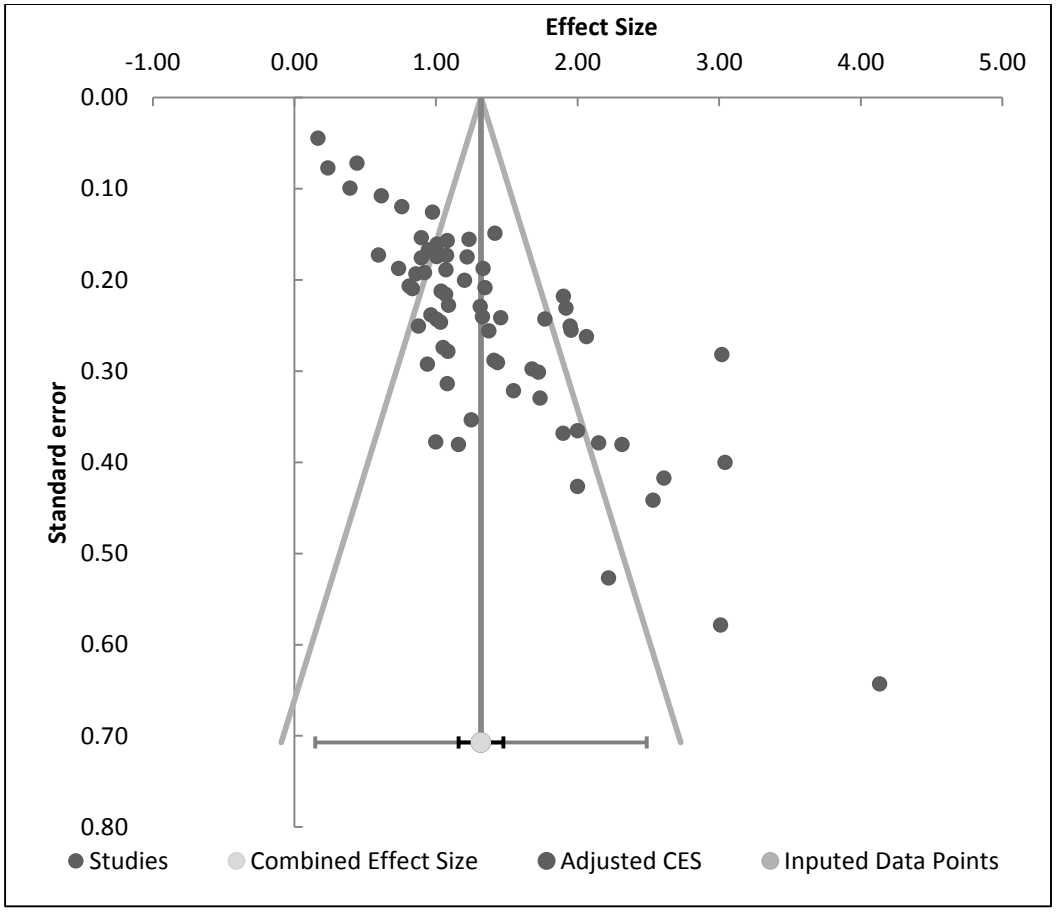


Figure 2C. Funnel plot for publication bias (Effectiveness CA)

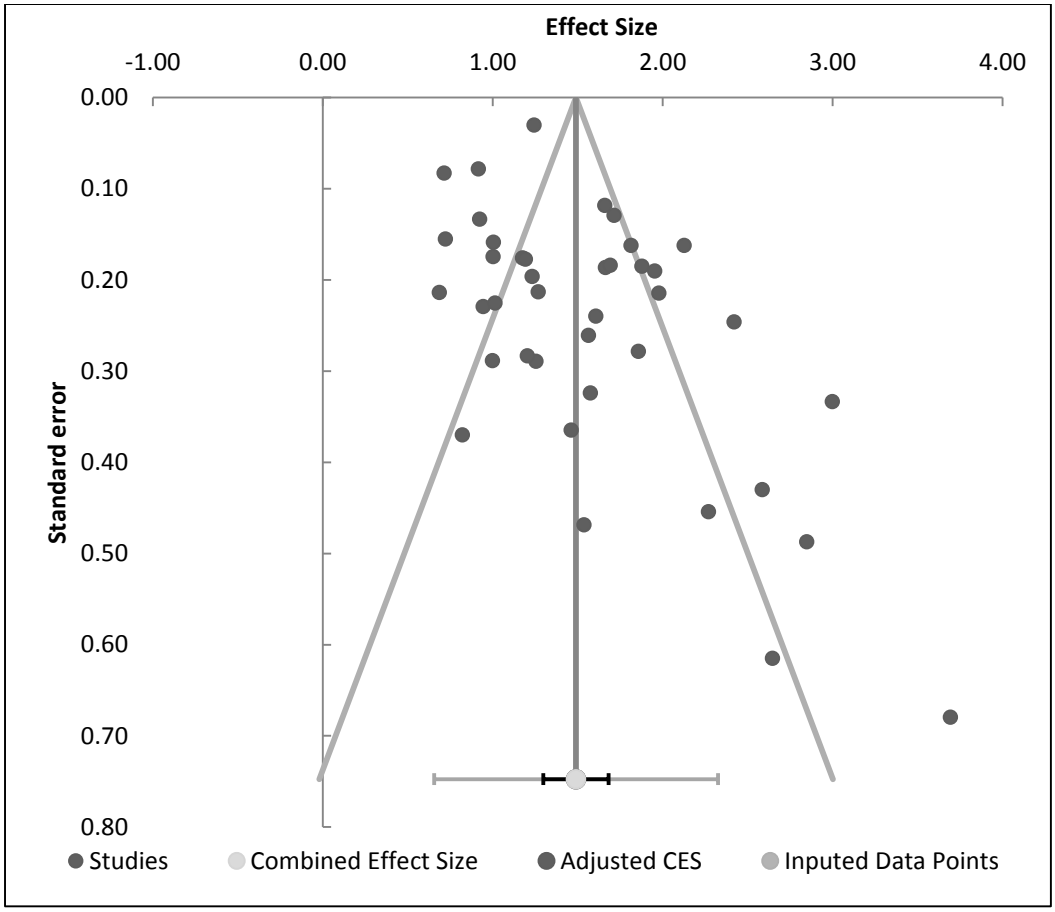


Figure 2D. Funnel plot for publication bias (Effectiveness ITT)

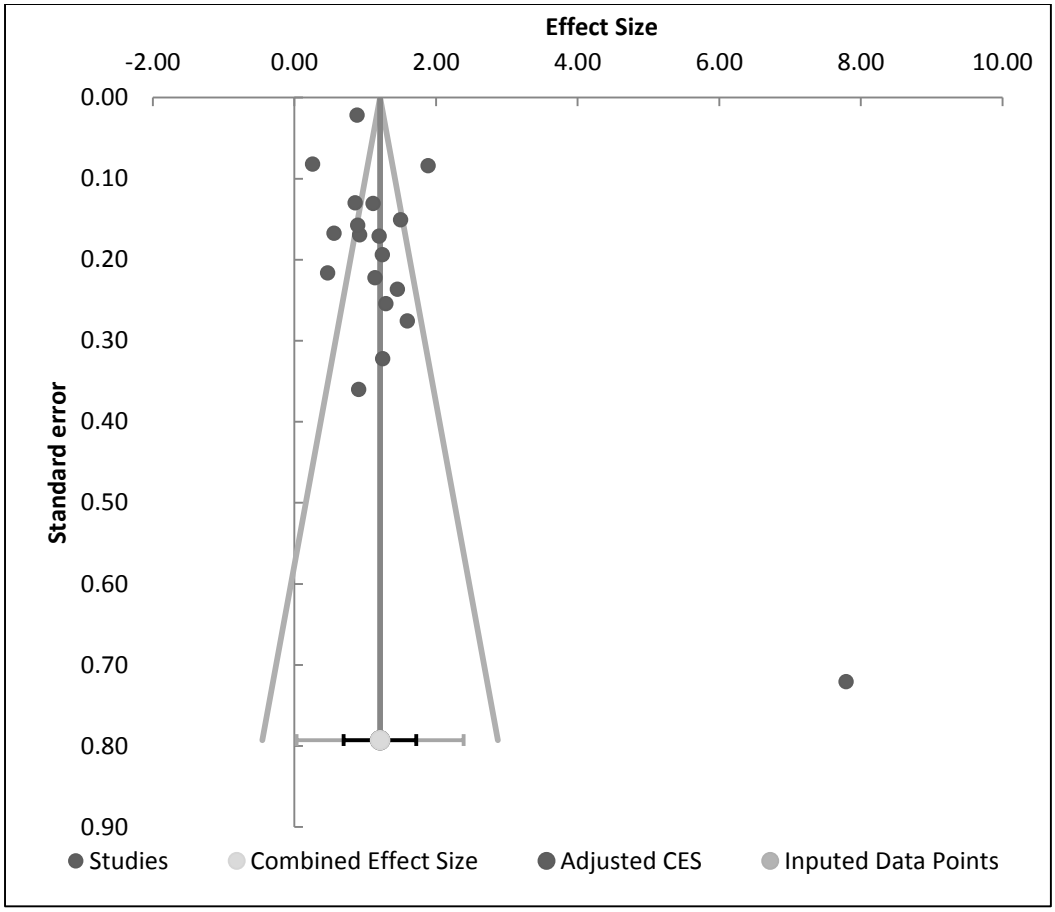

Effect Size
-2.00
0.00
2.00
4.00
6.00
8.00
10.00
Standard error
0.00
0.10
0.20
0.30
0.40
0.50
0.60
0.70
0.80
0.90
Studies
Combined Effect Size
Adjusted CES
Inputed Data Points

Figure 3

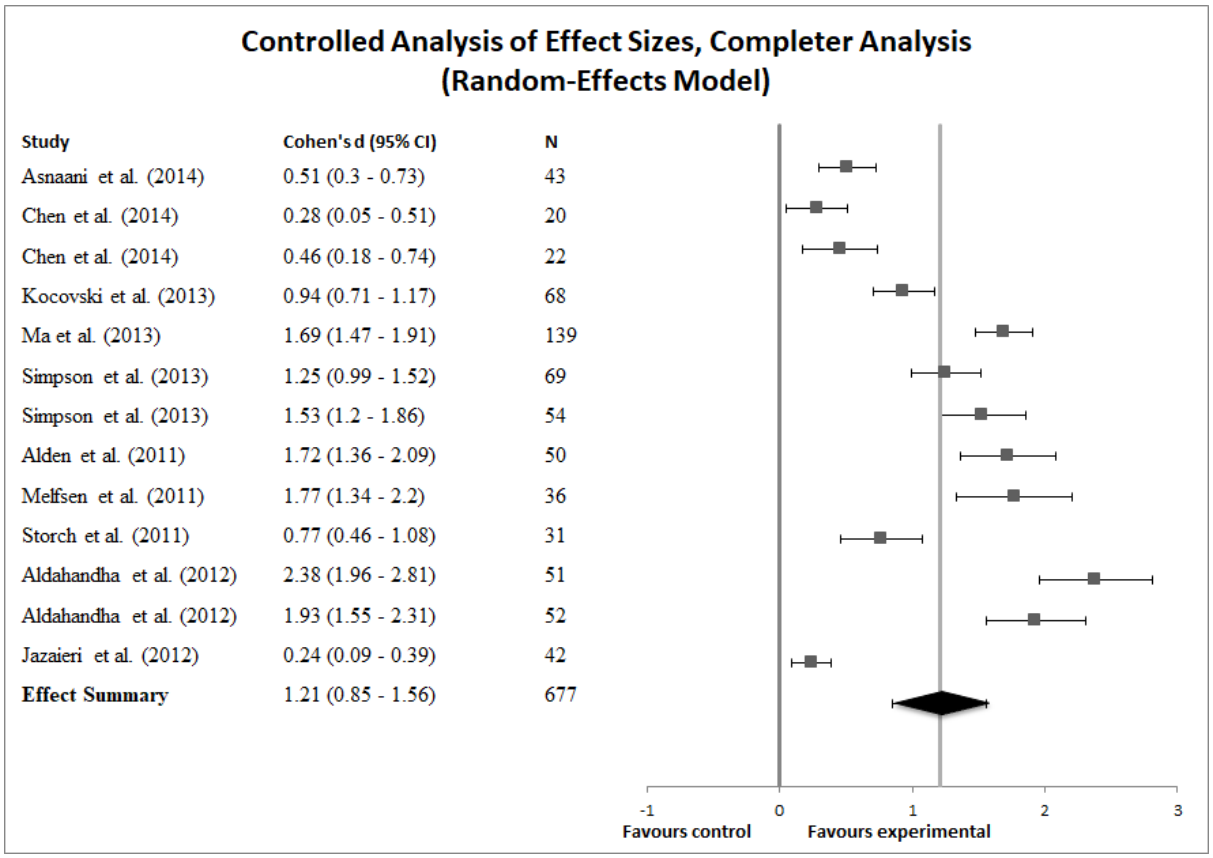
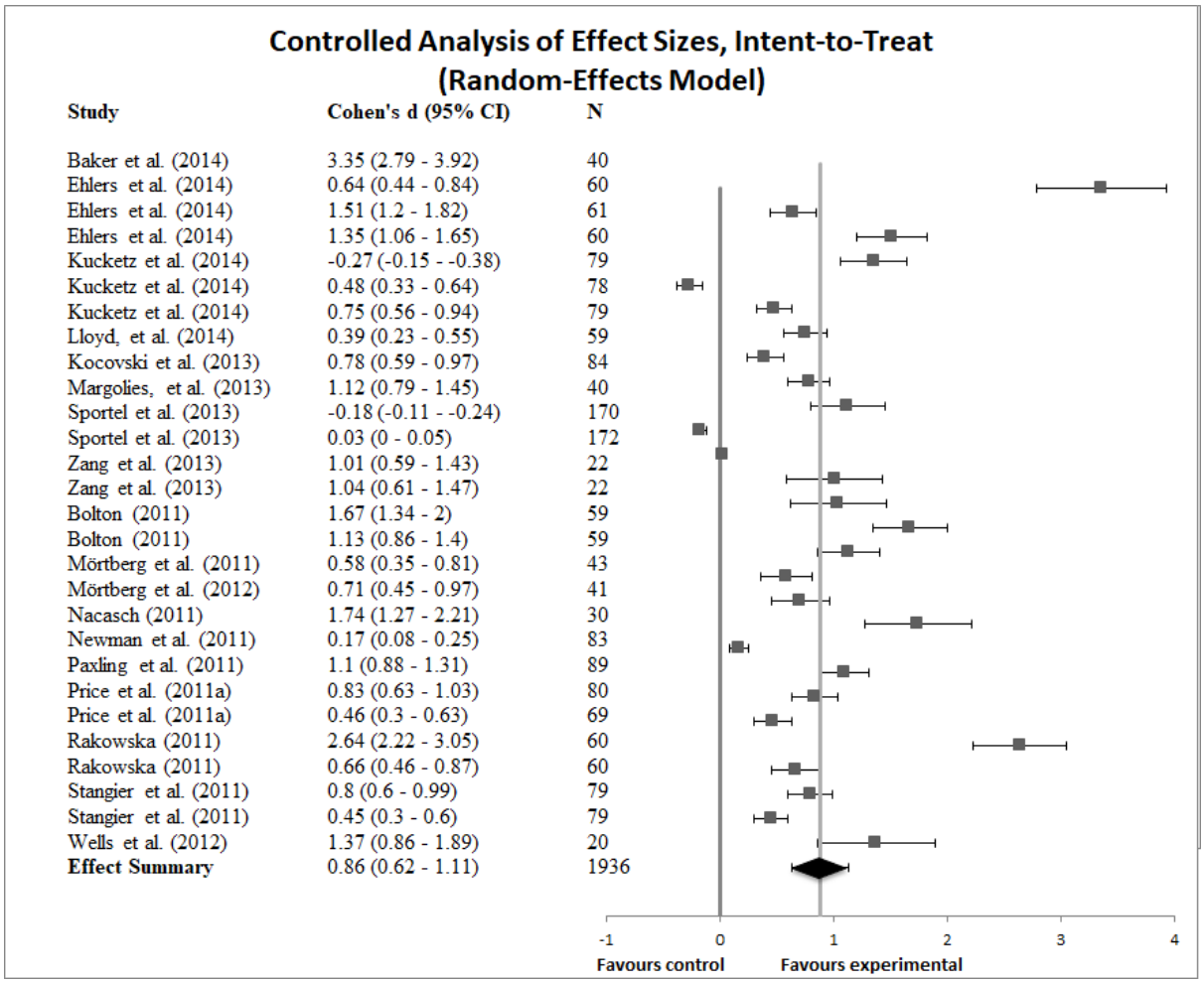

Controlled Analysis of Effect Sizes, Completer Analysis
(Random-Effects Model)
Study
Cohen's d (95% CI)
N
Asnaani et al. (2014)
0.51 (0.3 - 0.73)
43
Chen et al. (2014)
0.28 (0.05 - 0.51)
20
Chen et al. (2014)
0.46 (0.18 - 0.74)
22
Kocovski et al. (2013)
0.94 (0.71 - 1.17)
68
Ma et al. (2013)
1.69 (1.47 - 1.91)
139
Simpson et al. (2013)
1.25 (0.99 - 1.52)
69
Simpson et al. (2013)
1.53 (1.2 - 1.86)
54
Alden et al. (2011)
1.72 (1.36 - 2.09)
50
Melfsen et al. (2011)
1.77 (1.34 - 2.2)
36
Storch et al. (2011)
0.77 (0.46 - 1.08)
31
Aldahandha et al. (2012)
2.38 (1.96 - 2.81)
51
Aldahandha et al. (2012)
1.93 (1.55 - 2.31)
52
Jazaieri et al. (2012)
0.24 (0.09 - 0.39)
42
Effect Summary
1.21 (0.85 - 1.56)
677
-1
0
1
2
3
Favours control
Favours experimental

Figure 4



Appendix A

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.