A Meta-Analytic Test of the Efficacy of Cognitive-Behavioral Therapy for Perfectionism:

A Replication and Extension

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Public Significance Statement

The importance of evaluating treatments for perfectionism is crucial given the deleterious effects of this personality variable. Although there are indications that CBT for perfectionism is efficacious, the current work indicates that a substantial proportion of participants do not experience reliable post-treatment improvements. Moreover, for those who experience improvements, it is unclear how much improvement extends beyond post-treatment. Dropout also appears higher in treatment conditions than in control conditions, suggesting that CBT for perfectionism might not be well tolerated by many individuals with perfectionism. Developing and refining treatment for perfectionism is urgently needed.

Abstract

Meta-analyses conclude that cognitive-behavioral therapy (CBT) for perfectionism is efficacious without addressing indices of efficacy such as reliable improvement, deterioration, dropout, and change at follow-up. We addressed this through a re-analysis of the 16 randomized controlled trials included in Galloway et al. (2022), Robinson and Wade (2021), and Suh et al. (2019). At post-treatment, small-to-large effects favoring CBT were found for certain perfectionism measures: high standards ($g = -0.40$), doubts about actions ($g = -0.49$), personal standards ($g = -0.50$), concern over mistakes ($g = -0.85$), and clinical perfectionism ($g = -0.97$). Small-to-medium post-treatment effects were found for symptoms of eating disorders ($g = -0.29$), anxiety ($g = -0.37$), and depression ($g = -0.62$). In contrast, self-oriented perfectionism ($g = -0.60$; 95% CI: -1.96, 0.78), other-oriented perfectionism ($g = -0.36$; 95% CI: -1.15, 0.43), socially prescribed perfectionism ($g = -0.53$; 95% CI: -1.58, 0.51), perfectionistic cognitions ($g = -0.70$; 95% CI: -1.57, 0.17), discrepancy ($g = -0.48$; 95% CI: -1.83, 0.87), life satisfaction ($g = -0.59$; 95% CI: -1.02, 0.01), and self-esteem ($g = -0.53$; 95% CI: -1.25, 0.18) did not differ between treatment and control conditions. Risk ratios for reliable improvement were significant for perfectionistic cognitions ($RR = 1.46$), concern over mistakes ($RR = 2.36$), and clinical perfectionism ($RR = 3.07$). Dropout was 27.0%, and higher in treatment than control conditions ($RR = 1.78$). At follow-up, all between-group effects were non-significant. Findings support the efficacy of CBT for certain perfectionism features while underscoring crucial limitations and areas for improvement.

Keywords: perfectionism, psychotherapy, CBT, treatment, meta-analysis.

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Over 35 years of research suggests perfectionism is a multidimensional personality style that can act as a core vulnerability (Hewitt & Flett, 2002) or a transdiagnostic factor (Shafran & Mansell, 2001) for depression, anxiety, eating disorders, and suicide behaviors (see Limburg et al., 2017; Smith et al., 2018, 2021; Smith, Sherry, et al., 2022 for reviews) and even early death (Fry & Debats, 2009). Certain features of perfectionism are also implicated in marital, sexual, and other relationship dysfunctions (Haring et al., 2003; Stoeber, 2014). Additionally, theoretical accounts (e.g., Salzman, 1980) and empirical evidence imply that perfectionism can interfere with the therapeutic process and outcomes (e.g., Hewitt et al., 2020; Jacobs et al., 2009), promote negative help-seeking attitudes and fears of psychotherapy (Dang et al., 2020), and erode the therapeutic alliance (Hewitt et al., 2021; Shahar et al., 2004). And concerningly, Curran and Hill (2019) presented compelling meta-analytic evidence that levels of trait perfectionism dimensions have increased linearly among young adults over the past three decades (see also Smith et al., 2019). Thus, developing and evaluating psychological treatments that specifically target perfectionism is paramount.

To date, the bulk of this research focuses on cognitive-behavioral interventions, with extant meta-analytic reviews uniformly concluding that self-help and face-to-face cognitive-behavioral therapies (CBT) for perfectionism are efficacious (e.g., Lloyd et al., 2015; Robinson & Wade, 2021; Suh et al., 2019). Likewise, in the most comprehensive meta-analytic review to date, Galloway and colleagues (2022) examined the efficacy of self-help and face-to-face CBT for perfectionism for reducing perfectionism and associated symptoms of anxiety, depression, and eating disorders. And based on 15 RCTs, they concluded that "…CBT for perfectionism is

efficacious in reducing perfectionism and symptoms of depression, anxiety, and eating

disorders" (p. 1). However, there is still much to learn about the efficacy of CBT for

perfectionism.

Indeed, extant meta-analyses on CBT for perfectionism focus on standardized mean

differences (SMDs), which indicate the difference between the treatment and control conditions

in the degree of change in an outcome using standard deviations. However, what matters most to

patients and clinicians is not the standardized degree of change between treatment and control

conditions but the probability that a given patient will improve beyond that attributable to

statistical error if they receive treatment. To this end, SMDs are minimally informative and

cannot be used as a measure of clinical relevance (see Cuijpers, 2021; Cuijpers, Karyotaki,

Ciharova, Miguel, Noma, & Furukawa, 2021). Relatedly, some patients get worse, not better,

from psychotherapy (Scott & Young, 2016). Hence, both benefits and harms need to be

considered (e.g., Dimidjian & Hollon, 2010). Thus, determining meta-analytically the proportion

of patients who get reliably better and reliably worse after receiving CBT for perfectionism

would make an essential contribution (Cuijpers, Karyotaki, Ciharova, Miguel, Noma, &

Furukawa, 2021; Cuijpers, Karyotaki, Ciharova, Miguel, Noma, Stikkelbroek, et al., 2021).

Parenthetically, Cuijpers, Karyotaki, Ciharova, Miguel, Noma, and Furukawa's (2021) meta-

analysis found that across psychotherapies for adult depression, 59% to 68% of patients

experience a reliable reduction in depressive symptoms with less than 5% experiencing a reliable

increase in depressive symptoms.

Dropout is another crucial consideration when evaluating efficacy given that treatments

only work to the extent patients engage in them (Ong et al., 2018). Furthermore, when patients

who receive treatment are less likely to drop out from a study than patients who do not, it

indicates that the treatment under investigation is well tolerated (Cristea et al., 2017). In contrast, when treated patients are more likely to drop out than untreated patients, it indicates the treatment is not well tolerated. Additionally, extant meta-analytic evidence implies that the average dropout rate for CBT is 26.2% (Fernandez et al., 2015) and that CBT is generally well tolerated (Cuijpers, Noma et al., 2019). Even so, meta-analytic research suggests that during treatment dropout from CBT hinges on diagnosis and is significantly higher for depressive disorders (36.4%) than anxiety disorders (19.6%). Likewise, individual, group and telephone-based CBT are generally better tolerated than guided self-help CBT for patients with depression (Cuijpers, Noma et al., 2019). However, a meta-analytic test of the tolerability of CBT for perfectionism is absent from the literature. Likewise, it is unclear whether face-to-face CBT for perfectionism is more tolerable than self-help CBT for perfectionism.

Lastly, extant meta-analyses on CBT for perfectionism do not report changes in outcomes at follow-up. Hence, the extent to which CBT for perfectionism leads to sustained improvements in perfectionism and associated dysfunctions beyond treatment is unclear. On the one hand, sustained change beyond follow-up might be expected as CBT appears to have an enduring effect on symptoms of depression and anxiety (Hollon et al., 2006). On the other hand, some CBT-oriented researchers question the lasting effect of CBT on characterological issues (e.g., Young et al., 2006), and meta-analytic evidence is mixed. For instance, Cristea et al. (2017) found that CBT for borderline personality disorder (BPD) had a trivial ($g = .12$) non-significant effect on BPD-related outcomes at follow-up, and research suggests some aspects of perfectionism overlap with borderline personality organization (Chen et al., 2019).

Measure of Perfectionism and Perfectionism-Related Attitudes

In order to evaluate change in perfectionism as a consequence of CBT, it is essential to

understand how perfectionism is measured. Hewitt and Flett's (1991) Multidimensional

Perfectionism Scale (MPS) is one of the most widely used, researched, and validated measures of

perfectionism (Curran & Hill, 2019; Stoeber, 2017). The MPS distinguishes between the source

and direction of the requirement of perfection and has three subscales: self-oriented

perfectionism (requiring perfection of the self), other-oriented perfectionism (requiring

perfection from other people), and socially prescribed perfectionism (perceiving that other

people require perfection). Another popular measure is Frost et al.'s (1990) Multidimensional

Perfectionism Scale (FMPS). The FMPS assesses perfectionism-related attitudes via six

subscales: concern over mistakes, doubts about actions, personal standards, parental criticism,

parental expectations, and organization. Concern over mistakes characterizes overly adverse

reactions to perceived errors or setbacks, doubts about actions capture nagging uncertainties

about performance, and personal standards reflect the tendency to set unrealistically high goals

(Frost et al., 1990). In contrast, parental criticism, parental expectations, and organization are

correlates of perfectionism, as opposed to core characteristics (Limburg et al., 2017; Smith,

Hewitt, et al., 2022Stoeber, 2017). Slaney et al.'s (2001) Almost Perfect Scale-Revised (APS-R)

is another commonly used measure of perfectionism. The APS-R conceptualizes perfectionism

as having inherently positive aspects, which it assesses via high standards and order subscales,

and an inherently negative aspect that it measures via a discrepancy subscale. According to

Slaney et al. (2001), high standards capture the tendency to strive for excellence, whereas

discrepancy refers to a perceived gap between the actual and ideal selves. A final measure of

perfectionism is Fairburn et al.'s (2003) Clinical Perfectionism Questionnaire (CPQ). This scale

is based on an unpublished manuscript and is used less extensively in clinical populations than

the MPS or FMPS. See Supplemental Material A for a table listing each perfectionism dimension

and perfectionism-related attitude included and the associated definition and sample item.

Present Study

Against this background, we addressed these limitations by conducting a

methodologically rigorous re-analysis and extension of all the 16 randomized controlled trials

(RCTs) included in Galloway et al. (2022), Robinson and Wade (2021), and Suh et al. (2019).

Besides reanalyzing all outcomes, we sought to extend these meta-analyses in important ways.

First, we report findings for self-oriented perfectionism, other-oriented perfectionism, socially

prescribed perfectionism, perfectionistic cognitions, doubts about actions, high standards,

discrepancy, satisfaction with life, and self-esteem. Second, we provide novel evidence

concerning the proportion of participants receiving CBT for perfectionism who experienced

reliable improvements and reliable deteriorations across outcomes. Third, we present novel

meta-analytic findings regarding dropout, with particular attention to treatment tolerability

operationalized as the proportion of all-cause treatment dropout relative to the proportion of all-

cause control group dropout (Cristea et al., 2017; Cuijpers, Noma et al., 2019). Finally, we test

the sensitivity of our findings to the pre-treatment correction used, the operationalization of

dropout used, and outliers.

Method

Selection of Studies

We included all RCTs on perfectionism listed in Galloway et al. (2022), Robinson and

Wade (2021), and Suh et al. (2019). No RCT for perfectionism included in Galloway et al.

(2022), Robinson and Wade (2021), and Suh et al. (2019) were excluded[1]. As our manuscript is a

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[1]There was no selective reporting of outcomes, and no relevant finding from any RCT included in Galloway et al.
(2022), Robinson and Wade (2021), and Suh et al. (2019) were omitted from our manuscript or any of the analyses.
We were unable to include data from James and Rimes (2018) as this study did not have a non-CBT condition. We
also note that calculating risk ratios for reliable improvement and deterioration at follow-up requires the presence of

re-analysis and extension of three published meta-analyses, pre-registering was not required.

Coding of Studies

The first and seventh authors coded studies based on mean age, mean percentage female, dropout % (intervention), dropout % (control), treatment (face-to-face or self-help), primary outcomes (i.e., measures of perfectionism used), and secondary outcomes (i.e., measures of depression, anxiety, self-esteem, satisfaction with life, and/or eating disorder symptoms used). For dropout, we used a standard method for analyzing intention-to-treat data in which dropout is operationalized as the proportion of randomized participants not completing post-control measures regardless of whether they started treatment or the reason for dropout (see Cristea et al., 2017; Cuijpers, Pineda et al., 2021).

Meta-Analytic Procedure

Random effects meta-analyses with maximum likelihood estimation were conducted for all analyses using Comprehensive Meta-Analysis (Version 3; Borenstein et al., 2005). To calculate pooled standardized mean differences (Hedges' g) for treatment versus control, we used the means and standard deviations of outcomes (see Table 2) at post-treatment and follow-up. When possible, we preferred intention-to-treat data over completers-only data, as intention-to-treat data is the more widely accepted approach for analyzing data from randomized controlled trials (Cuijpers, 2016). Unlike intention-to-treat analysis, completers-only analysis disregards data from non-completers who may have discontinued treatment due to a lack of perceived change. Furthermore, completers-only analysis tends to push the treatment and control means further apart, thereby increasing the likelihood of rejecting the null hypothesis. In

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a control group at follow-up, which many studies did not have. Lastly, we could only impute reliable improvement and deterioration for studies that reported pre- and post-means and standard deviations on outcomes for both the treatment and control conditions.

contrast, intention-to-treat analysis tends to push the treatment and control means closer together, making it more difficult to reject the null hypothesis. Accordingly, relative to a completers-only analysis, an intention-to-treat analysis provides a more stringent test of efficacy (Cuijpers, 2016).

We also corrected potential pre-treatment differences between treatment and control conditions using Klauer's (2001) correction. Klauer's (2001) correction involves calculating within-group effect sizes for conditions separately and then subtracting them. Likewise, we tested the sensitivity of our findings to the pre-treatment correction used by reporting results obtained with no pre-treatment correction and using Morris's (2008) alternative pre-treatment correction (see Supplemental Material B). Morris's pre-treatment correction uses the pooled pretest standard deviation for weighting the differences of the pre-post means. Consistent with the Cochrane handbook for systematic reviews, for studies in which standard errors but not standard deviations are reported (e.g., Grieve et al., 2021), we calculated the standard deviation by multiplying the standard error by the square root of the sample size (Higgins et al., 2019). Additionally, we used the Knapp-Hartung adjustments (Knapp & Hartung, 2003) for pooled effects involving three or more RCTs to correct the standard error. Simulation studies (e.g., Langan et al., 2019) imply that Knapp-Hartung adjustments reduce the probability of false positives, particularly when the number of included traits is small (Borenstein et al., 2021). We also inspected the data for outliers and considered any study with a 95% confidence interval outside the 95% confidence interval for the weighted pooled estimate to be an outlier. To enhance the ease with which readers can evaluate the clinical relevance of findings, we reported numbers-needed-to-treat (NNTs) for all SMDs using the formula provided by Kraemer and Kupfer (2006). NNTs indicate the number of participants who would need to receive treatment before finding one additional person who improved and would not have improved if provided

with the minimal-to-no-treatment control. Homogeneity was evaluated by inspecting Q_T (the overall heterogeneity among weighted mean effects) and I^2 (the percentage of variance across studies attributable to heterogeneity). To test for potential differences between face-to-face CBT and self-help CBT, when Q_T was significant ($p < .05$), we stipulated a categorical structure to the data and calculated the proportion of heterogeneity explained by Q_B. As we have only two categories, a significant Q_B ($p < .05$) would suggest significant differences between face-to-face and self-help CBT. Likewise, given that the minimum number of studies required for a meta-analysis is two (Card, 2012), we did not report effects for outcomes with only one study. For all weighted mean effects, we examined publication bias by visually inspecting funnel plots (see Supplemental Material C). Symmetry near the top of the funnel plot and asymmetry near the bottom suggest publication bias. Likewise, we computed effect sizes after correcting for publication bias using the trim-and-fill procedure (Duval & Tweedie, 2000) and inspected Egger's test of regression to the intercept (see Table 2). A significant Egger's regression coefficient implies the presence of publication bias.

We calculated pooled weighted event rates to determine the mean percentage of participants in the treatment condition who experienced reliable improvements in outcomes, as well as the mean percentage of those who experienced reliable deteriorations in outcomes. Crucially, for studies that did not report reliable improvement or reliable deterioration, we imputed estimates using the means, standard deviations, and N at pre-treatment, post-treatment, and follow-up to determine the number of participants scoring above or below a cut-off assuming a normal distribution (Furukawa et al., 2005). This imputation technique is well-validated (Furukawa et al., 2005) and widely used in psychotherapy research (Bighelli et al., 2018; Cuijpers, Karyotaki, Ciharova, Miguel, Noma, Furukawa et al., 2021; Cuijpers, Karyotaki,

Ciharova, Miguel, Noma, Stikkelbroek, et al., 2021).

Similarly, we calculated the pooled weighted point estimates for the proportion of participants in the treatment condition who dropped out. We operationalized dropout as all randomized participants who did not complete post-treatment measures regardless of whether they started treatment or the reason for dropout (see Cristea et al., 2017). Lastly, we computed risk ratios to determine the probability that a patient randomly assigned to the intervention group experiences reliable change, reliable deterioration, or dropout relative to the probability that a patient randomly assigned to the waitlist control experiences reliable change, reliable deterioration, or dropout. Compared to odds ratios, relative risk ratios are more intuitive as they are simply the probability of a dichotomous outcome occurring in the intervention group relative to the control group (Borenstein et al., 2009). All computations involving risk ratios were carried out using the log risk ratio and the standard error of the log risk ratio. These log transformations are necessary to maintain symmetry in the analysis (Borenstein et al., 2021).

Description of Studies

Studies were published between 2007 and 2022, with a median publication year of 2017. Overall, the mean age of participants was 29.8 years old ($SD = 7.3$). The majority of participants were female (80.0%; $SD = 14.5\%$). Seven of the 16 RCTs did not report the reliable change index. Seven RCTs studied participants with elevated concern over mistakes, three studied participants with self-referred perfectionism, two studied participants with elevated perfectionistic cognitions, two studied participants with elevated scores on clinician-administered interviews for eating disorders, one studied participants with elevated scores on an unpublished clinical interview, and one studied participants enrolled in a 5-day eating disorder day program. A total of 12 RCTs used a waiting list control, one used a no-treatment control, one used a

placebo control, and one used treatment-as-usual (i.e., a day treatment program for anorexia).

Only five RCTs evaluated face-to-face CBT, with the remainder involving self-help CBT

delivered via a book or online.

Regarding self-help CBT, the total sample size across treatment conditions was 436, with

a mean sample size of 36.5 (SD = 18.5; range = 17 to 78). The total sample size across control

conditions for self-help CBT was 396 (M = 33.0; SD = 18.8; range = 16 to 78). Self-help CBT

involved participants completing or reading between three to 13 online modules or book chapters

(M = 8.1; SD = 3.0). The proportion of participants who read all chapters or completed all

modules was 41.7% (SD = 25.7%; range = 6.5% to 67.1%).

Concerning face-to-face CBT, the total sample size across treatment conditions was 82,

with a mean of 17.0 (SD = 7.7; range = 10 to 28). The total sample size across control conditions

was 87, with a mean sample size of 17.4 (SD = 8.3; range = 9 to 29). Two studies involved

individual psychotherapy, and three involved group psychotherapy. The number of sessions

ranged from seven to ten (M = 8.2; SD = 1.1). Three of the five face-to-face RCTs involved

treatment administered by a student therapist. Only two out of the five face-to-face RCTs

assessed treatment adherence. Finally, all face-to-face RCTs were underpowered, with less than

35 participants per treatment and control group (see Teare et al., 2014).

Measures

Perfectionism was assessed using five self-report measures, depression was assessed

using six self-report measures, anxiety was assessed using five self-report measures, satisfaction

with life was assessed with two self-report measures, eating disorder symptoms were assessed

using one self-report measure and one semi-structured interview, and self-esteem was assessed

using one self-report measure (Table 1). Though the CPQ (Fairburn et al., 2003) is

multidimensional (Dickie et al., 2012; Stoeber & Damian, 2014), except for Shu et al. (2019),

total scores were reported.

Results

Standardized Mean Differences

Weighted pooled standardized mean differences for CBT for perfectionism relative to

minimal-to-no treatment controls are in Table 2. When the treatment format (i.e., face-to-face vs.

self-help) was ignored, results revealed that between-group post-treatment effects were non-

significant for self-oriented perfectionism ($g = -0.60$; 95% CI: $-1.96, 0.78$), other-oriented

perfectionism ($g = -0.36$; 95% CI: $-1.15, 0.43$), socially prescribed perfectionism ($g = -0.53$;

95% CI: $-1.58, 0.51$), perfectionistic cognitions ($g = -0.70$; 95% CI: $-1.57, 0.17$), discrepancy (g

$= -0.48$; 95% CI: $-1.83, 0.87$), satisfaction with life ($g = -0.59$; 95% CI: $-1.02, 0.01$), and self-

esteem ($g = -0.53$; 95% CI: $-1.25, 0.18$). In contrast, we found small significant post-treatment

effects favoring CBT for eating disorder symptoms ($g = -0.29$; 95% CI: $-0.56, -0.03$), high

standards ($g = -0.40$; 95% CI: $-0.78, -0.02$), doubts about actions ($g = -0.49$; 95% CI: $-0.84, -$

0.13), and personal standards ($g = -0.50$; 95% CI: $-0.67, -0.34$). Likewise, we found medium-

sized post-treatment effects favoring CBT for perfectionism for depression ($g = -0.62$; 95% CI: $-$

$0.91, -0.32$) and large effects favoring CBT for concern over mistakes ($g = -0.85$; 95% CI: $-$

$1.04, -0.66$) and clinical perfectionism ($g = -0.97$; 95% CI: $-1.19, -0.76$). Additionally, results

suggested medium-to-large levels of post-treatment between-study heterogeneity for self-

oriented perfectionism (67.5%), perfectionistic cognitions (77.3%), satisfaction with life

(57.8%), depression symptoms (53.2%), and self-esteem (76.2%). NNTs ranged from 2.0 for

clinical perfectionism to 6.2 for eating disorder symptoms.

Regarding face-to-face CBT, results indicated that post-treatment levels of life

satisfaction ($g = –0.34$; 95% CI: –0.78, 0.10) and eating disorder symptoms ($g = –0.21$; 95% CI: –1.18, 0.79) did not differ significantly across treatment and control conditions. In contrast, we found medium-to-large significant effects favoring CBT for concern over mistakes ($g = –1.28$; 95% CI: –2.26, –0.29), clinical perfectionism ($g = –0.76$; 95% CI: –1.37, –0.14), depression ($g = –1.02$; 95% CI: –1.87, –0.17), and self-esteem ($g = –1.41$; 95% CI: –2.56, –0.25). We also observed considerable heterogeneity for depression (59.6%) and self-esteem (81.6%). NNTs for face-to-face CBT ranged from 1.45 for self-esteem to 8.47 for eating disorder symptoms.

Turning to self-help CBT, post-treatment effects for self-oriented perfectionism ($g = –0.53$; 95% CI: –1.51, 0.45), other-oriented perfectionism ($g = –0.31$; 95% CI: –0.74, 0.11), socially prescribed perfectionism ($g = –0.55$; 95% CI: –1.30, 0.21), perfectionistic cognitions ($g = –0.70$; 95% CI: –1.57, 0.17), doubts about actions ($g = –0.44$; 95% CI: –0.92, 0.04), discrepancy ($g = –0.48$; 95% CI: –1.84, 0.87), satisfaction with life ($g = –0.65$; 95% CI: –1.57, 0.16), and self-esteem ($g = –0.28$; 95% CI: –0.60, 0.05) did not differ statistically between treatment and control groups. In contrast, we found small post-treatment effects favoring self-help CBT for eating disorder symptoms ($g = –0.34$; 95% CI: –0.66, –0.02), anxiety ($g = –0.36$; 95% CI: –0.61, –0.12), high standards ($g = –0.40$; 95% CI: –0.78, –0.02), and personal standards ($g = –0.47$; 95% CI: –0.67, –0.28). Also, we found medium-sized post-treatment effects favoring self-help CBT for depression ($g = –0.54$; 95% CI: –0.88, –0.24) and concern over mistakes ($g = –0.80$; 95% CI: –0.98, –0.61) and a large post-treatment effect favoring self-help CBT for clinical perfectionism ($g = –1.03$; 95% CI: –1.32, –0.75). Self-oriented perfectionism (83.0%), perfectionistic cognitions (77.3%), and discrepancy (73.7%) had medium-to-large post-treatment heterogeneity. NNTs ranged from 1.9 for clinical perfectionism to 6.4 for self-esteem. At follow-up, all effects favoring self-help CBT were non-significant.

Significant post-treatment differences between face-to-face and self-help CBT were observed. Namely, the between-group effect favoring face-to-face CBT for self-esteem was significantly larger than the between-group effect favoring self-help CBT for self-esteem: $Q_B = 11.58$, $p = .001$. In contrast, no significant between-group differences for face-to-face and self-help CBT were found for concern over mistakes ($Q_B = 3.89$, $p = .052$), personal standards ($Q_B = 1.03$, $p = .309$), clinical perfectionism ($Q_B = 1.58$, $p = .210$), depression ($Q_B = 2.14$, $p = .143$), satisfaction with life ($Q_B = 0.84$, $p = .358$), and eating disorder symptoms ($Q_B = 0.49$, $p = .484$).

Publication Bias

Funnel plots (Supplemental Material C) and Egger's regression to the intercept (Table 2) provided mixed evidence for publication bias. Egger's regression to the intercept was non-significant for all effects, whereas trim-and-fill estimates indicated the presence of publication bias for face-to-face CBT on post-treatment personal standards and self-help CBT on post-treatment and follow-up depressive symptoms and post-treatment anxiety symptoms. Additionally, the imputation of missing data via trim-and-fill substantially reduced the between-group effect favoring self-help CBT for depressive symptoms at post-treatment and follow-up and anxiety symptoms at post-treatment.

Reliable Improvement

The proportion of participants who experienced reliable improvements is in Table 3. Post-waitlist spontaneous reliable improvement ranged from 7.5% for other-oriented perfectionism to 24.5% for perfectionistic cognitions. When treatment type was ignored, findings regarding reliable changes in perfectionism outcomes at post-treatment revealed that 13.0% of participants experienced a reliable improvement in other-oriented perfectionism, 17.7% experienced a reliable improvement in doubts about actions, 19.7% experienced a reliable

improvement in socially prescribed perfectionism, 28.8% experienced a reliable improvement in personal standards, 29.6% experienced a reliable improvement in clinical perfectionism, 33.4% experienced a reliable improvement in self-oriented perfectionism, 48.3% experienced a reliable improvement in concern over mistakes, and 54.9% experienced a reliable improvement in perfectionistic cognitions. Likewise, concerning secondary outcomes at post-treatment, 28.7% of participants experienced a reliable improvement in self-esteem, 31.6% experienced a reliable improvement in depression symptoms, 32.7% experienced a reliable improvement in satisfaction with life, 33.9% experienced a reliable improvement in anxiety symptoms, and 35.1% experienced a reliable improvement in eating disorder symptoms.

Regarding face-to-face CBT, 28.1% of participants experienced a reliable improvement in personal standards, 34.8% experienced a reliable improvement in clinical perfectionism, and 51.5% experienced a reliable improvement in concern over mistakes. Additionally, 34.6% experienced a reliable improvement in depression symptoms, 38.0% experienced a reliable improvement in satisfaction with life, and 44.8% experienced a reliable improvement in eating disorder symptoms. At follow-up, 7.9% of participants reported a reliable improvement in clinical perfectionism, 17.7% reported a reliable improvement in personal standards, and 44.5% reported a reliable improvement in concern over mistakes.

For self-help CBT, at post-treatment, 11.6% of participants experienced a reliable improvement in other-oriented perfectionism, 13.0% experienced a reliable improvement in doubts about actions, 19.6% experienced a reliable improvement in socially prescribed perfectionism, 24.5% experienced a reliable improvement in clinical perfectionism, 27.6% experienced a reliable improvement in personal standards, 32.8% experienced a reliable improvement in self-oriented perfectionism, 35.4% experienced a reliable improvement in

discrepancy, and 45.8% experienced a reliable improvement in concern over mistakes. As well,

25.9% of participants experienced a reliable improvement in self-esteem, 30.4% experienced a

reliable improvement in satisfaction with life, 30.6 % experienced a reliable improvement in

depression, 32.0% experienced a reliable improvement in eating disorder symptoms, and 34.1%

experienced a reliable improvement in anxiety symptoms. At follow-up, 12.7% of participants

experienced a reliable improvement in clinical perfectionism, 27.1% experienced a reliable

improvement in eating disorder symptoms, and 38.0% experienced a reliable improvement in

concern over mistakes.

Differential risk ratios are in Table 4. When treatment type was ignored, participants who

received treatment were over three times as likely to report a reliable improvement in clinical

perfectionism than participants who received little-to-no treatment ($RR = 3.07$; 95% CI: 1.98,

4.75). Relative to participants who received little-to-no treatment, participants who received

treatment were also roughly twice as likely to experience a reliable improvement in concern over

mistakes ($RR = 2.36$; 95% CI: 1.57, 3.09) and depression symptoms ($RR = 1.87$; 95% CI: 1.27,

2.60) and roughly 1.7 times as likely to experience a reliable improvement in anxiety symptoms

($RR = 1.70$; 95% CI: 1.20, 2.40) and eating disorder symptoms ($RR = 1.70$; 95% CI: 1.20, 2.42).

For face-to-face CBT, risk ratios for reliable improvement were significant for concern

over mistakes ($RR = 10.73$; 95% CI: 3.14, 36.62), personal standards ($RR = 3.06$; 95% CI: 1.09,

8.56), and clinical perfectionism ($RR = 2.91$; 95% CI: 1.30, 6.52). For self-help CBT, risk ratios

for reliable improvement were significant for clinical perfectionism ($RR = 3.05$; 95% CI: 1.87,

5.00), concern over mistakes ($RR = 2.04$; 95% CI: 1.54, 2.69), depression symptoms ($RR = 1.78$;

95% CI: 1.21, 2.62), anxiety symptoms ($RR = 1.67$; 95% CI: 1.17, 2.37), and eating disorder

symptoms ($RR = 1.75$; 95% CI: 1.16, 2.64).

Subgroup analysis revealed that compared to self-help CBT, relative risk ratios for face-to-face CBT were significantly larger for concern over mistakes ($Q_B = 6.51$, $p = .011$). Conversely, the magnitude of relative risk ratios did not differ significantly across self-help and face-to-face CBT for personal standards ($Q_B = 1.71$, $p = .191$), clinical perfectionism ($Q_B = 0.02$, $p = .879$), anxiety symptoms ($Q_B = 0.38$, $p = .538$), satisfaction with life ($Q_B = 0.12$, $p = .734$), eating disorder symptoms ($Q_B = 0.07$, $p = .785$), or depression symptoms ($Q_B = 0.05$, $p = .826$).

Reliable Deterioration

Pooled event rates for the proportion of participants randomized to treatment and control conditions who reported a reliable deterioration across outcomes are in Table 5. At post-waitlist, spontaneous reliable deterioration ranged from 5.6% for satisfaction with life to 18.5% for eating disorder symptoms. When the treatment format was ignored, the pooled event rate for reliable deterioration at post-treatment ranged from 3.7% for clinical perfectionism to 12.6% for self-esteem. For face-to-face CBT, reliable deterioration ranged from 3% for personal standards and concern over mistakes to 11.3% for eating disorder symptoms. For self-help CBT, reliable deterioration ranged from 2.7% for clinical perfectionism to 14.2% for self-esteem at post-treatment. When treatment type was ignored, risk ratios indicated that the probability of a participant experiencing a reliable deterioration in depressive symptoms was significantly less in treatment conditions relative to little-to-no treatment conditions ($RR = 0.29$; 95% CI: 0.12; 0.65). All remaining reliable deterioration risk ratios were non-significant (see Table 6).

Dropout

When face-to-face and self-help CBT were analyzed together, the weighted pooled dropout rate was 27.0% (95% CI [20.3; 35.0], $k = 16$, $N = 512$, $Q_T = 42.8$, $I^2 = 64.92$). When analyzed individually, the weighted pooled dropout rate was 25.7% for face-to-face CBT (95%

CI [12.8; 44.8], $k = 5$, $N = 87$, $Q_T = 9.4$, $I^2 = 57.49$), 26.9% for self-help CBT (95% CI [19.5;

36.0], $k = 12$, $N = 425$, $Q_T = 33.35$, $I^2 = 67.02$), and 15.7% for control conditions (95% CI [11.2;

20.6], $k = 16$, $N = 469$, $Q_T = 22.6$, $I^2 = 33.6$). The dropout rate for face-to-face CBT (25.7%)

versus self-help CBT (26.9%) did not differ significantly: $Q_B = 0.66$, $p = .761$.

When face-to-face and self-help CBT were combined, the risk ratio for the probability

that a participant assigned to treatment would drop out relative to the probability that a

participant assigned to a little-to-no treatment condition would drop out was 1.78 (95% CI [1.39;

2.29], $p = .001$; $k = 16$, $N = 999$, $Q_T = 17.80$, $I^2 = 15.74$). Accordingly, participants who received

face-to-face or self-help CBT were 1.8 times more likely to drop out than participants who

received little-to-no treatment. When only self-help CBT was examined, the risk ratio was 1.89

(95% CI [1.37; 2.60], $p = .005$, $k = 12$, $N = 825$, $Q_T = 16.06$, $I^2 = 31.50$). In contrast, when only

face-to-face CBT was examined, the risk ratio was 1.44 (95% CI [0.77; 2.69], $p = .284$; $k = 5$, N

$= 174$, $Q_T = 1.30$, $I^2 = 0.00$). Even so, moderator analysis indicated the relative risk of dropout for

face-to-face CBT did not differ significantly from self-help CBT: $Q_B = 1.18$, $p = .555$.

Sensitivity Analyses

We tested the extent to which Klauer's (2001) pre-treatment correction impacted our

findings by re-running analyses using Morris's (2008) pre-treatment correction (see

Supplemental Material Table B1) and re-running analyses using no pre-treatment correction (see

Supplemental Material Table B2). When Morris's (2008) correction was used, findings largely

remained the same in terms of substantive implications. Nonetheless, when the treatment format

was ignored, a large between-group post-treatment effect favoring CBT for perfectionistic

cognitions ($g = -0.93$; 95% CI: -1.35, -0.52; $k = 2$) was found. Conversely, for face-to-face CBT,

substantially smaller between-group post-treatment effects were found for depression symptoms

($g = -0.73$; 95% CI: -0.83, -0.26; $k = 2$) and self-esteem ($g = -0.41$; 95% CI: -0.74, -0.07; $k =$

2). Overall, except for effects involving a small number of studies, our sensitivity analysis

suggests our findings were not substantively impacted by the pre-treatment correction used.

Regarding findings when no pre-treatment correction was used, 23 of the effects reported

in Table 2 decreased in magnitude, whereas 17 increased in magnitude. Likewise, between-study

heterogeneity increased for 18 effects and decreased for 13 effects, and trim-and-fill estimates

indicated publication bias for an additional eight effects. Hence, for most between-group effects,

Klauer's (2001) correction increased effect sizes and decreased heterogeneity and evidence for

publication bias. Lastly, results suggested the between-group post-treatment effect favoring CBT

reported by Handley et al. (2015) for self-esteem was an outlier, given that its 95% CI fell

outside the bounds of the weighted pooled estimate. Indeed, when we re-ran analyses for self-

esteem with Handley et al. (2015) omitted, heterogeneity dropped from 76.2% to 0%n and

results indicated a small, rather than medium, post-treatment effect favoring CBT: $g = -0.34$,

95% CI: -0.64, -0.03.

When dropout was operationalized as the proportion of participants who started but did

not finish treatment or, when unclear, failed to complete post-treatment measures, the following

results were found. After combining face-to-face and self-help CBT, the weighted pooled

dropout rate was 24.6% (95% CI [18.3; 32.2], $k = 16$, $N = 496$, $Q_T = 38.5$, $I^2 = 61.39$). When

analyzed individually, the weighted pooled dropout rate was 20.9% for face-to-face CBT (95%

CI [11.6; 34.8], $k = 5$, $N = 81$, $Q_T = 5.1$, $I^2 = 21.16$), and 25.5% for self-help CBT (95% CI [18.2;

34.5], $k = 12$, $N = 415$, $Q_T = 32.88$, $I^2 = 65.55$). Likewise, the dropout rate for face-to-face CBT

(22.7%) versus self-help CBT (25.5%) did not differ significantly: $Q_B = 1.05$, $p = .590$.

Furthermore, when face-to-face and self-help CBT were combined, the risk ratio for the

probability that a participant assigned to treatment would drop out relative to the probability that

a participant assigned to a minimal-to-not treatment condition would drop out was 1.66 (95% CI

[1.24; 2.21], $p < .001$; $k = 16$, $N = 981$, $Q_T = 16.45$, $I^2 = 8.83$). When only self-help CBT was

examined, the risk ratio was 1.79 (95% CI [1.22; 2.61], $p = .003$, $k = 12$, $N = 812$, $Q_T = 14.90$, $I^2 =$

26.20). When only face-to-face CBT was examined, the risk ratio was 1.16 (95% CI [0.62; 2.15],

$p = .644$; $k = 5$, $N = 168$, $Q_T = 0.11$, $I^2 = 0.00$). Finally, moderator analysis indicated that the

relative risk of dropout for face-to-face CBT did not differ significantly from self-help CBT: Q_B

$= 2.41$, $p = .299$. Overall, there were little-to-no substantive differences from our main analysis,

which used the more widely accepted operational definition of dropout as the proportion of

participants randomized to treatment who did not complete treatment regardless of whether they

started treatment (Cristea et al., 2017; Cuijpers, Pineda, et al., 2021).

Discussion

In the present study, we re-analyzed the 16 RCTs included in Galloway et al. (2022),

Robinson and Wade (2021), and Suh et al. (2019) to evaluate reliable improvement, reliable

deterioration, and dropout for CBT for perfectionism. Likewise, we tested the extent to which

benefits obtained by participants who received CBT for perfectionism were maintained at

follow-up. We also extended Galloway et al.'s (2022) meta-analysis by reporting meta-analytic

outcomes absent from their review. Congruent with prior meta-analyses (e.g., Galloway et al.,

2022; Suh et al., 2019), our results revealed large post-treatment between-group effects favoring

CBT for perfectionism for concern over mistakes and clinical perfectionism and a medium effect

for depression symptoms. In contrast, whereas Galloway et al. (2021) reported a medium post-

treatment effect favoring CBT for eating disorder symptoms, we found a small effect.

Additionally, Galloway et al. (2022) and Suh et al. (2019) found no significant differences

between face-to-face and self-help CBT, whereas our findings revealed that face-to-face CBT is more efficacious than self-help CBT for self-esteem. Furthermore, we found that the probability of a treated participant experiencing a reliable improvement in concern over mistakes compared to an untreated participant is greater for face-to-face CBT than for self-help CBT.

Novel Meta-Analytic Issues Addressed

Turning to questions not addressed in prior meta-analytic reviews, at post-treatment, we found a small between-group effect favoring self-help CBT for high standards. In contrast, self-oriented perfectionism, other-oriented perfectionism, socially prescribed perfectionism, perfectionistic cognitions, and satisfaction with life did not differ significantly across treatment and control conditions. Consequently, though standardized mean differences implied that CBT for perfectionism is efficacious for certain aspects of perfectionism (i.e., concern over mistakes and clinical perfectionism), there was insufficient evidence to arrive at a definitive conclusion regarding its efficacy for trait perfectionism dimensions (Hewitt & Flett, 1991), perfectionistic cognitions, and satisfaction with life. This is potentially concerning, given the destructiveness of socially prescribed perfectionism (see Flett et al., 2022 for review). Moreover, given that at follow-up all between-group outcomes were non-significant, the extent to which CBT for perfectionism leads to sustained change beyond that attributable to spontaneous improvement is unclear. Parenthetically, several included studies assessed participants at follow-up randomly allocated to treatment but not participants randomly allocated to minimal-to-no treatment controls (e.g., Egan et al., 2014; Hoiles et al., 2022; Riley et al., 2007). Additionally, congruent with Shu et al. (2019), our results suggest that CBT for perfectionism is effective for preventing reliable increases in depressive symptoms. And yet contrary to Shu et al. (2019), we found no evidence that CBT for perfectionism is effective in preventing reliable deterioration in eating

disorder symptoms or any perfectionism dimension or perfectionism-related attitude.

However, a perhaps more substantive issue is that results suggest only a modest proportion of treated participants experience reliable improvements in several key perfectionism outcomes. Indeed, though roughly 50% of treated participants experienced a reliable improvement in concern over mistakes, over 70% did not experience a reliable improvement in clinical perfectionism. Further, though the reliable improvement in control conditions was lower for clinical perfectionism (i.e., 12.2%), treatment's additional benefits over control conditions were still low. Relatedly, though risk ratios for reliable improvement at post-treatment were significant for concern over mistakes, clinical perfectionism, and perfectionistic cognitions, they were non-significant for self-oriented perfectionism, other-oriented perfectionism, socially prescribed perfectionism, doubts about actions, and personal standards. As such, for several vital aspects of perfectionism, treated participants fared no better than untreated participants[2]. This is not to say CBT for perfectionism is without merit, but rather that there is a need to develop and demonstrate more effective strategies for treating perfectionism. Moreover, we need research on when and why some perfectionistic individuals treated with CBT do not experience reliable improvements. One possibility proposed by Bruijniks et al. (2019) is that learning capacity may explain why CBT is effective for some, but not all, patients.

Our findings also indicate that participants who received CBT for perfectionism were 1.8 times more likely to drop out than patients who received little-to-no treatment. This implies that CBT for perfectionism is not well tolerated by many participants with perfectionism (Cristea et al., 2017), which is surprising for several reasons. First, the broader literature suggests the

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[2]An anonymous reviewer of a prior version of our manuscript claimed that treatment for perfectionism aims to prevent perfectionistic individuals from deteriorating and does not seek to improve their perfectionism. Yet, except for depression symptoms, findings relating to reliable deterioration do not support this contention.

probability of dropout is less for patients who receive CBT than for patients who receive little-to-no treatment (Cuijpers, Quero et al., 2021). Second, meta-analytic evidence indicates that when CBT is evaluated in populations with personality pathology, dropout does not differ substantively between treatment and control conditions (Cristea et al., 2017). Yet, one possible explanation for this finding is that it merely reflects the preponderance of RCTs evaluating self-help CBT, which meta-analytic research implies are less tolerable than waitlist for depression (Cuijpers, Noma et al., 2019). On the other hand, we found no evidence that the tolerability of CBT for perfectionism differs significantly across face-to-face and self-help CBT. Accordingly, we speculate that perfectionistic individuals might have attributes, such as social disconnection, that make them more likely to discontinue treatment prematurely, regardless of the psychotherapy provided (Hewitt et al., 2018; Zuroff et al., 2000). Narcissistic features combined with perfectionism may also complicate treatment (McCown & Carlson, 2004).

Finally, all outcomes at follow-up were non-significant. This finding could be a consequence of only one of the included face-to-face CBT studies assessing outcomes across treatment and control groups at follow-up (Handley et al., 2015). Alternatively, it may stem from the modest number of self-help CBT studies that reported follow-up outcomes in both treatment and control groups. Nonetheless, this finding is important as it underscores the lack of compelling meta-analytic evidence that CBT for perfectionism leads to enduring change beyond treatment and the need for additional data to arrive at a concrete conclusion.

Clinical Implications

Considering the large post-treatment effect observed for concern over mistakes alongside the finding that roughly half of treated participants experienced a reliable decrease, both face-to-face and self-help CBT appear effective for reducing this pernicious perfectionism-related

attitude. It is worth noting that the concern over mistakes subscale has items derived from a

measure developed by Weissman and Beck (1978) to measure depressogenic attitudes (i.e., the

Dysfunctional Attitude Scale; DAS). Hence, this finding aligns with the broader meta-analytic

literature suggesting CBT, and other therapies, such as interpersonal and psychodynamic

psychotherapy, have a moderate effect on dysfunctional thinking (see Cristea et al., 2015).

Additionally, our results suggest CBT may be effective for clinical perfectionism, with the

caveat that roughly two-thirds of participants do not experience reliable improvement. But *why*

does CBT for perfectionism appear effective for concern over mistakes and, to a lesser extent,

clinical perfectionism? Is it due to factors unique to CBT for perfectionism? And how much

variance is explained by common therapeutic factors like patient expectancy?

At present, we need more data to answer these critical questions. Indeed, except for Shu

et al. (2019) and James and Rimes (2018), RCTs on CBT for perfectionism use minimal-to-no-

treatment control conditions (i.e., waitlist, placebo, no treatment, and treatment-as-usual). RCTs

that involve minimal-to-no treatment controls allow researchers to test whether a treatment

'works' but not *why* a treatment works (Chambless & Hollon, 1998). Conversely, demonstrating

that a specific treatment outperforms or performs equally well to an alternative established

treatment (i.e., an active comparator RCT) provides substantially stronger evidence because it

controls for common therapeutic factors. Indeed, as Chambless and Hollon (1998) noted, unlike

minimal-to-no-treatment control RCTs, active comparison RCTs "have implications for theory,

because they increase confidence in the specific explanatory model on which the treatment is

based, but also for practice, because they suggest that particular kinds of training and experience

may be necessary to produce the desired effect" (p. 8).

Furthermore, though at first glance, Shu et al.'s (2019) findings appear to support the

relative efficacy of self-help CBT for perfectionism, "…the study did not have adequate statistical power" (p. 6). Also, an inspection of Shu et al.'s (2019) supplemental material reveals that 100% of participants in the CBT for perfectionism condition experienced no reliable pre-post change in perfectionistic concerns, and 91.7% experienced no reliable pre-post change in perfectionistic strivings. Additionally, James and Rimes (2018) randomized participants with elevated concern over mistakes to face-to-face mindfulness-based group CBT for perfectionism (MBCBT) and self-help CBT for perfectionism. Results showed that participants who received MBCBT found it significantly more helpful. Moreover, post-treatment levels of concern over mistakes, personal standards, and clinical perfectionism were significantly lower in the MBCBT condition than in the self-help CBT condition. Even so, a more robust test of the efficacy of MBCBT relative to face-to-face CBT for perfectionism is absent from the literature.

It also needs to be clarified why CBT for perfectionism appears ineffective for trait perfectionism dimensions. One possibility is that unlike concerns over mistakes, trait perfectionism dimensions reflect more deeply engrained ways of relating to the self and others that require a greater relational and supportive emphasis to effect meaningful change. In support, Hewitt et al. (in press) randomly assigned participants with clinically elevated perfectionism to 12 sessions of dynamic relational therapy for perfectionism (DRT) or 12 sessions of psychodynamic supportive therapy for perfectionism (PST). At post-treatment, 92%, 38%, and 49% of patients in DRT experienced reliable improvements in self-oriented, other-oriented, and socially prescribed perfectionism and 85%, 61%, and 39% of patients in PST experienced reliable improvements in self-oriented, other-oriented, and socially prescribed perfectionism. To this end, a sufficiently powered study in which patients were randomized to CBT for perfectionism, DRT for perfectionism, and PST for perfectionism should make a substantial

contribution to the literature.

Parenthetically, the notion that treating personality problems requires a greater relational focus than used for mood disorders is not a concept foreign to CBT. In fact, Beck et al. (2004) concluded that when working with patients with entrenched personality problems, "to take a strictly cognitive approach and try to logically separate patients from their distortions will not work…it is essential to address all three areas (cognitive, behavioral, and affective) and to use three components in treatment (cognitive, expressive, and relational)" (p. 7-8). Similarly, Beck et al. (2004) later noted that "with most personality-disordered patients, the therapeutic relationship requires more attention than an acute (Axis I) disorder such as anxiety or depression in which the patient has a stable and adaptive premorbid personality adjustment" (p. 92).

Limitations of the Literature and Future Directions

In the present meta-analytic review, we provide novel insights into the state of CBT-based treatment of perfectionism and, by doing so, clarify strengths as well as limitations and future directions. One limitation is that only five RCTs evaluated a face-to-face CBT intervention for perfectionism. And of these face-to-face RCTs, only two measured treatment adherence—an essential component of treatment fidelity required to gauge the extent to which the psychotherapy under study was administered as intended (Schoenwald & Garland, 2013). Furthermore, treatment adherence may moderate the efficacy of CBT such that studies with greater adherence yield superior outcomes (Shafran et al., 2009). Additionally, all trials evaluating face-to-face CBT involved sample sizes below 35 which may have prevented effective randomization (Hsu et al., 1989) and yielded imprecise estimates (Teare et al., 2014).

Perhaps the most significant limitation is that several trials included participants with modest levels of perfectionism. Indeed, most studies selected participants using scores on Frost

et al.'s (1990) concern over mistakes subscale (see Table 1). Specifically, Sadri et al. (2017),

Lowndes et al. (2019), and Hoiles et al. (2022) included participants with scores of 22 and

above; Handley et al. (2015) and Valentine et al. (2018) included participants with scores of 24.7

and above; Egan et al. (2014) included participants with scores 25 and above; and Shafran et al.

(2017) included participants with scores 29 and above. Frost et al.'s (1990) concern over

mistakes subscale has nine items rated on a 5-point scale from 1 (*strongly disagree*) to 5

(*strongly agree*). Hence, the mean item-level score used for concern over mistakes ranged from

2.4 (Hoiles et al., 2022; Lowndes et al., 2019; Sadri et al., 2017) to 3.2 (Egan et al., 2014),

suggesting that each of the studies mentioned had participants who, on average, responded

"neither agree nor disagree" across items. Thus, the degree to which these participants had

problematic levels of concern over mistakes is unclear, let alone whether they could be

appropriately considered "perfectionistic."

Limitations of the Present Study

Limitations in the literature translate to limitations of our meta-analysis. One limitation is

that the small number of studies on face-to-face CBT prevented a rigorous test of the extent to

which findings differ across face-to-face and self-help CBT. The overall small number of RCTs

included also prevented us from examining moderators that might have explained the medium-

to-high levels of heterogeneity observed for certain effects. Furthermore, the handful of studies

that reported reliable change used different cutoff scores for calculating clinical significance. As

such, the proportion of participants who experienced both reliable improvements and scores

within the normative range (i.e., clinically significant change) is unclear. Additionally, four

studies that assessed change in treatment conditions at follow-up did not have a corresponding

control condition at follow-up (Hoiles et al., 2022; Egan et al., 2014; Sadri et al., 2017; Valentine

et al., 2018). As such, we could not include these studies in our calculation of standardized mean differences at follow-up. Lastly, since 14 of the 16 studies involved one or more of the authors of Shafran, Egan, and Wade's (2010) self-help CBT book for perfectionism and/or Egan, Wade, Shafran, and Antony's (2016) CBT treatment manual for perfectionism we could not test for author allegiance effects that meta-analytic findings suggest can inflate estimates of efficacy (Cuijpers et al., 2019).

Concluding Remarks

Though self-help and face-to-face CBT for perfectionism appears efficacious for certain aspects of perfectionism, between 50% to 90% of participants receiving treatment did not report reliable post-treatment improvements, and data is lacking regarding the sustainability of change among those who do achieve improvement. Furthermore, over 10% of untreated participants experienced reliable improvement without treatment. Lastly, participants who receive CBT for perfectionism appear to drop out at 1.8 times the rate of participants who receive little-to-no treatment. Further research is needed, and enhancements to CBT for perfectionism seem essential given the sheer volume of perfectionistic people who stand to benefit from treatment and the documented costs and consequences of perfectionism.

References

Studies marked with an asterisk were included in the present meta-analysis

*Arpin-Cribbie, C., Irvine, J., & Ritvo, P. (2012). Web-based cognitive-behavioral therapy for

perfectionism: A randomized controlled trial. *Psychotherapy Research, 22*(2), 194-207.

https://doi.org/10.1080/10503307.2011.637242

Beck, A.T., Freeman, A., & Davis, D. D. (2004). *Cognitive Therapy of Personality Disorders*

(2nd ed). Guilford Press.

Beck, A. T., & Steer, R. (1993). *Beck Anxiety Inventory Manual*. Psychological Corporation.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck Depression Inventory-*

II. Psychological Corporation.

Bighelli, I., Huhn, M., Schneider-Thoma, J., Krause, M., Reitmeir, C., Wallis, S.,

Schwermann, F., Pitschel-Walz, G., Barbui, C., Furukawa, T. A., & Leucht, S. (2018).

Response rates in patients with schizophrenia and positive symptoms receiving

cognitive behavioural therapy: A systematic review and single-group meta-analysis.

BMC Psychiatry, 18(1), 380. https://doi.org/10.1186/s12888-018-1964-8

Borenstein, M. (2009). Effect sizes for continuous data. In H. Cooper, L. V. Hedges, & J. C.

Valentine (Eds.), *The handbook of research synthesis and meta-analysis* (pp. 221–235).

Russell Sage Foundation.

Borenstein, M., Hedges, L. V., Higgins, J. P. T., & Rothstein, H. R. (2005). *Comprehensive*

meta-analysis (Version 3). Biostat.

Borenstein, M., Hedges, L. V., Higgins, J. P. T., & Rothstein, H. R. (2021). *Introduction to*

meta-analysis. John Wiley & Sons.

Bruijniks, S. J. E., DeRubeis, R. J., Hollon, S. D., & Huibers, M. J. H. (2019). The potential

role of learning capacity in cognitive behavior therapy for depression: A systematic

review of the evidence and future directions for improving therapeutic learning.

Clinical Psychological Science, 7(4), 668-692.

https://doi.org/10.1177/2167702619830391

Card, N. A. (2012). *Applied meta-analysis for social science research*. Guilford Publications.

Chambless, D. L., & Hollon, S. D. (1998). Defining empirically supported therapies. *Journal

of Consulting and Clinical Psychology, 66*(1), 7-18. https://doi.org/10.1037/0022-

006X.66.1.7

Chen, C., Hewitt, P. L., Flett, G. L., & Roxborough, H. M. (2019). Multidimensional

perfectionism and borderline personality organization in emerging adults: A two-wave

longitudinal study. *Personality and Individual Differences, 146*, 143-148.

https://doi.org/10.1016/j.paid.2019.04.011

Chorpita, B. F., Yim, L., Moffitt, C., Umemoto, L. A., & Francis, S. E. (2000). Assessment of

symptoms of DSM-IV anxiety and depression in children: A revised child anxiety and

depression scale. *Behaviour Research and Therapy, 38*(8), 835-855.

https://doi.org/10.1016/S0005-7967(99)00130-8

Cox, J. L., Holden, J. M., & Sagovsky, R. (1987). Detection of postnatal depression:

Development of the 10-item Edinburgh Postnatal Depression Scale. *The British Journal

of Psychiatry, 150*(6), 782-786. https://doi.org/10.1192/bjp.150.6.782

Cristea, I. A., Gentili, C., Cotet, C. D., Palomba, D., Barbui, C., & Cuijpers, P. (2017).

Efficacy of psychotherapies for borderline personality disorder: A systematic review

and meta-analysis. *JAMA Psychiatry*, *74*(4), 319–328.

https://doi.org/10.1001/jamapsychiatry.2016.4287

Cristea, I. A., Huibers, M. J., David, D., Hollon, S. D., Andersson, G., & Cuijpers, P. (2015). The effects of cognitive behavior therapy for adult depression on dysfunctional thinking: A meta-analysis. *Clinical Psychology Review, 42*, 62–71. https://doi.org/10.1016/j.cpr.2015.08.003

Cuijpers, P. (2016). *Meta-analyses in mental health research: A practical guide*. Vrije Universiteit Amsterdam. http://bit.do/meta-analysis.

Cuijpers, P. (2021). Has the time come to stop using the "standardized mean difference"? *Clinical Psychology in Europe, 3*, e6835. https://doi.org/10.32872/cpe.6835

Cuijpers, P., Karyotaki, E., Ciharova, M., Miguel, C., Noma, H., & Furukawa, T. A. (2021). The effects of psychotherapies for depression on response, remission, reliable change, and deterioration: A meta-analysis. *Acta Psychiatrica Scandinavica, 144*(3), 288–299. https://doi.org/10.1111/acps.13335

Cuijpers, P., Karyotaki, E., Ciharova, M., Miguel, C., Noma, H., Stikkelbroek, Y., Weisz, J. R., & Furukawa, T. A. (2021). The effects of psychological treatments of depression in children and adolescents on response, reliable change, and deterioration: a systematic review and meta-analysis. *European Child & Adolescent Psychiatry*, 1-16. https://doi.org/10.1007/s00787-021-01884-6

Cuijpers, P., Karyotaki, E., Reijnders, M., & Ebert, D. D. (2019). Was Eysenck right after all? A reassessment of the effects of psychotherapy for adult depression. *Epidemiology and Psychiatric Sciences, 28*(1), 21-30. https://doi.org/10.1017/S2045796018000057

Cuijpers, P., Pineda, B. S., Ng, M. Y., Weisz, J. R., Muñoz, R. F., Gentili, C., Quero, S., & Karyotaki, E. (2021). A meta-analytic review: Psychological treatment of subthreshold depression in children and adolescents. *Journal of the American Academy of Child and*

Adolescent Psychiatry, 60(9), 1072–1084. https://doi.org/10.1016/j.jaac.2020.11.024

Cuijpers, P., Quero, S., Noma, H., Ciharova, M., Miguel, C., Karyotaki, E., Cipriani, A.,
   Cristea, I. A., & Furukawa, T. A. (2021). Psychotherapies for depression: A network
   meta-analysis covering efficacy, acceptability and long-term outcomes of all main
   treatment types. *World Psychiatry: Official Journal of the World Psychiatric
   Association*, *20*(2), 283–293. https://doi.org/10.1002/wps.20860

Curran, T., & Hill, A. P. (2019). Perfectionism is increasing over time: A meta-analysis of
   birth cohort differences from 1989 to 2016. *Psychological Bulletin, 145*(4), 410–429.
   https://doi.org/10.1037/bul0000138

Dang, S. S., Quesnel, D. A., Hewitt, P. L., Flett, G. L., & Deng, X. (2020). Perfectionistic traits
   and self-presentation are associated with negative attitudes and concerns about seeking
   professional psychological help. *Clinical Psychology & Psychotherapy, 27*(5), 621–
   629. https://doi.org/10.1002/cpp.2450

Dickie, L., Surgenor, L. J., Wilson, M., & McDowall, J. (2012). The structure and reliability of
   the Clinical Perfectionism Questionnaire. *Personality and Individual Differences,
   52*(8), 865-869. https://doi.org/10.1016/j.paid.2012.02.003

Dimidjian, S., Hollon, S. D. (2010). How would we know if psychotherapy were harmful?
   American Psychologist, 65, 21-33. https://doi.org/10.1037/a0017299

Duval, S., & Tweedie, R. (2000). Trim and fill: A simple funnel-plot–based method of testing
   and adjusting for publication bias in meta-analysis. *Biometrics, 56*(2), 455-463.
   https://doi.org/10.1111/j.0006-341X.2000.00455.x

*Egan, S. J., van Noort, E., Chee, A., Kane, R. T., Hoiles, K. J., Shafran, R., & Wade, T. D.
   (2014). A randomised controlled trial of face to face versus pure online self-help

cognitive behavioural treatment for perfectionism. *Behaviour Research and Therapy,*

    63, 107–113. https://doi.org/10.1016/j.brat.2014.09.009

Egan, S. J., Wade, T. D., Shafran, R., & Antony, M. M. (2016). *Cognitive-behavioral*

    treatment of perfectionism. Guilford Publications.

Fairburn, C. G., & Beglin, S. (1994). Assessment of eating disorders: Interview or self-report?

    International Journal of Eating Disorders, 16(4), 363-370.

    https://doi.org/10.1002/1098-108X(199412)16:4<363::AID-

    EAT2260160405>3.0.CO;2-%23

Fairburn, C. G., & Cooper, Z. (1993). The Eating Disorder Examination (12th edition). In C. G.

    Fairburn, & G. T. Wilson (Eds). *Binge eating: Nature, assessment, and treatment*. (pp.

    317-360). Guilford Press.

Fairburn, C. G., Cooper, Z., & Shafran, R. (2003). *The Clinical Perfectionism Questionnaire*

    [Unpublished manuscript]. Department of Psychology, University of Oxford.

Fernandez, E., Salem, D., Swift, J. K., & Ramtahal, N. (2015). Meta-analysis of dropout from

    cognitive behavioral therapy: Magnitude, timing, and moderators. *Journal of Consulting*

    and Clinical Psychology, 83(6), 1108–1122. https://doi.org/10.1037/ccp0000044

Flett, G. L., Hewitt, P. L., Blankstein, K. R., & Gray, L. (1998). Psychological distress and the

    frequency of perfectionistic thinking. *Journal of Personality and Social Psychology,*

    75(5), 1363-1381. https://doi.org/10.1037/0022-3514.75.5.1363

Flett, G. L., Hewitt, P. L., Nepon, T., Sherry S. B., & Smith, M. (2022). The destructiveness and

    public health significance of socially prescribed perfectionism: A review, analysis, and

    conceptual extension. *Clinical Psychology Review*, *93*, 102130.

    https://doi.org/10.1016/j.cpr.2022.102130

Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research, 14*(5), 449-468. https://doi.org/10.1007/BF01172967

Fry, P. S., & Debats, D. L. (2009). Perfectionism and the five-factor personality traits as predictors of mortality in older adults. *Journal of Health Psychology, 14*(4), 513–524. https://doi.org/10.1177/1359105309103571

Furukawa, T. A., Cipriani, A., Barbui, C., Brambilla, P., & Watanabe, N. (2005). Imputing response rates from means and standard deviations in meta-analyses. *International Clinical Psychopharmacology, 20*(1), 49–52. https://doi.org/10.1097/00004850-200501000-00010

Galloway, R., Watson, H., Greene, D., Shafran, R., & Egan, S. J. (2022). The efficacy of randomised controlled trials of cognitive behaviour therapy for perfectionism: A systematic review and meta-analysis. *Cognitive Behaviour Therapy*, 51, 170–184. https://doi.org/10.1080/16506073.2021.1952302

*Goldstein, M., Peters, L., Thornton, C. E., & Touyz, S. W. (2014). The treatment of perfectionism within the eating disorders: A pilot study. *European Eating Disorders Review, 22*(3), 217-221. https://doi.org/10.1002/erv.2281

*Grieve, P., Egan, S. J., Andersson, G., Carlbring, P., Shafran, R., & Wade, T. D. (2021). The impact of internet-based cognitive behaviour therapy for perfectionism on different measures of perfectionism: A randomised controlled trial. *Cognitive Behaviour Therapy*, *51*(2), 130–142. https://doi.org/10.1080/16506073.2021.1928276

*Handley, A. K., Egan, S. J., Kane, R. T., & Rees, C. S. (2015). A randomised controlled trial of group cognitive behavioural therapy for perfectionism. *Behaviour Research and Therapy*, *68*, 37–47. https://doi.org/10.1016/j.brat.2015.02.006

Haring, M., Hewitt, P. L., & Flett, G. L. (2003). Perfectionism, coping, and quality of intimate

      relationships. *Journal of Marriage and Family, 65*(1), 143-158.

      https://doi.org/10.1111/j.1741-3737.2003.00143.x

Hewitt, P. L., Chen, C., Smith, M. M., Zhang, L., Habke, M., Flett, G. L., & Mikail, S. F.

      (2021). Patient perfectionism and clinician impression formation during an initial

      interview. *Psychology and Psychotherapy: Theory, Research and Practice, 94*(1), 45–

      62. https://doi.org/10.1111/papt.12266

Hewitt, P. L., & Flett, G. L. (1991). Perfectionism in the self and social contexts:

      Conceptualization, assessment, and association with psychopathology. *Journal of

      Personality and Social Psychology, 60*(3), 456-470. https://doi.org/10.1037/0022-

      3514.60.3.456

Hewitt, P. L., & Flett, G. L. (2002). Perfectionism and stress processes in psychopathology. In G.

      L. Flett & P. L. Hewitt (Eds.), *Perfectionism: Theory, research, and treatment* (pp. 255–

      284). American Psychological Association. https://doi.org/10.1037/10458-011

Hewitt, P. L., Flett, G. L., Mikail, S. F., Kealy, D., & Zhnag, L. (2018). Perfectionism in the

      therapeutic context. In J. Stoeber (ed). *The psychology of perfectionism*. London:

      Routledge.

Hewitt, P. L., Kealy, D., Mikail, S. F., Smith, M. M., Ge, S., Chen, C., Sochting, I., Tasca, G.

      A., Flett, G. L., & Ko, A. (in press). The efficacy of group psychotherapy for adults

      with perfectionism: A randomized controlled trial of dynamic relational versus

      psychodynamic supportive treatment. *Journal of Consulting and Clinical Psychology*.

      https://doi.org/10.1037/ccp0000787

Hewitt, P. L., Mikail, S. F., Flett, G. L., Tasca, G. A., Flynn, C. A., Deng, X., Kaldas, J., &

Chen, C. (2015). Psychodynamic/interpersonal group psychotherapy for perfectionism: Evaluating the effectiveness of a short-term treatment. *Psychotherapy, 52*(2), 205–217. https://doi.org/10.1037/pst0000016

Hewitt, P. L., Smith, M. M., Deng, X., Chen, C., Ko, A., Flett, G. L., & Paterson, R. J. (2020). The perniciousness of perfectionism in group therapy for depression: A test of the perfectionism social disconnection model. *Psychotherapy, 57*(2), 206–218. https://doi.org/10.1037/pst0000281

Higgins, J. P., Thomas, J., Chandler, J., Cumpston, M., Li, T., Page, M. J., & Welch, V. A. (Eds.). (2019). *Cochrane handbook for systematic reviews of interventions*. John Wiley & Sons.

Hill, L. S., Reid, F., Morgan, J. F., & Lacey, J. H. (2010). SCOFF, the development of an eating disorder screening questionnaire. *The International Journal of Eating Dsorders, 43*(4), 344–351. https://doi.org/10.1002/eat.20679

*Hoiles, K., Rees, C. S., Kane, R. T., Howell, J., & Egan, S. J. (2022). A randomised control trial of guided online self-help treatment for clinical perfectionism: Impact on diagnostic status and comorbidity. *Journal of Behavior Therapy and Experimental Psychiatry, 76*, 101739. https://doi.org/10.1016/j.jbtep.2022.101739

Hollon, S. D., Stewart, M. O., & Strunk, D. (2006). Enduring effects for cognitive behavior therapy in the treatment of depression and anxiety. *Annual Review of Psychology, 57*, 285-315. https://doi.org/10.1146/annurev.psych.57.102904.190044

Hsu, L. M. (1989). Random sampling, randomization, and equivalence of contrasted groups in psychotherapy outcome research. *Journal of Consulting and Clinical Psychology*, *57*(1), 131–137. https://doi.org/10.1037/0022-006X.57.1.131

Jacobs, R. H., Silva, S. G., Reinecke, M. A., Curry, J. F., Ginsburg, G. S., Kratochvil, C. J., &
    March, J. S. (2009). Dysfunctional attitudes scale perfectionism: a predictor and partial
    mediator of acute treatment outcome among clinically depressed adolescents. *Journal
    of Clinical Child and Adolescent Psychology,* 38(6), 803–813.
    https://doi.org/10.1080/15374410903259031

James, K., & Rimes, K. A. (2018). Mindfulness-Based Cognitive Therapy versus Pure
    Cognitive Behavioural Self-Help for Perfectionism: A pilot randomised study.
    Mindfulness, 9(3), 801–814. https://doi.org/10.1007/s12671-017-0817-8

Klauer, K. J. (2001). *Handbuch kognitives Training*. Göttingen: Hogrefe

Knapp, G., & Hartung, J. (2003). Improved tests for a random effects meta-regression with a
    single covariate. *Statistics in Medicine, 22*(17), 2693-2710.
    https://doi.org/10.1002/sim.1482

*Kothari, R., Barker, C., Pistrang, N., Rozental, A., Egan, S., Wade, T., Allcott-Watson, H.,
    Andersson, G., & Shafran, R. (2019). A randomised controlled trial of guided internet-
    based cognitive behavioural therapy for perfectionism: Effects on psychopathology and
    transdiagnostic processes. *Journal of Behavior Therapy and Experimental
    Psychiatry*, *64*, 113–122. https://doi.org/10.1016/j.jbtep.2019.03.007

Kraemer, H. C., & Kupfer, D. J. (2006). Size of treatment effects and their importance to
    clinical research and practice. *Biological Psychiatry, 59*(11), 990-996.
    https://doi.org/10.1016/j.biopsych.2005.09.014

Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: Validity of a brief
    depression severity measure. *Journal of General Internal Medicine, 16*(9), 606–613.
    https://doi.org/10.1046/j.1525-1497.2001.016009606.x

Langan, D., Higgins, J., Jackson, D., Bowden, J., Veroniki, A. A., Kontopantelis, E.,

　　　Viechtbauer, W., & Simmonds, M. (2019). A comparison of heterogeneity variance

　　　estimators in simulated random-effects meta-analyses. *Research Synthesis*

　　　Methods, *10*(1), 83–98. https://doi.org/10.1002/jrsm.1316

Limburg, K., Watson, H. J., Hagger, M. S., & Egan, S. J. (2017). The relationship between

　　　perfectionism and psychopathology: A meta‐analysis. *Journal of Clinical Psychology,*

　　　73(10), 1301-1326. https://doi.org/10.1002/jclp.22435

Lindner, P., Frykheden, O., Forsstrom, D., Andersson, E., Ljotsson, B., Hedman, E.,

　　　Andersson, G., Carlbring, P. (2016). The Brunnsviken Brief Quality of life scale

　　　(BBQ): Development and psychometric evaluation. *Cognitive Behavior Therapy, 45*(3),

　　　182-195. https://doi.org/10.1080/16506073.2016.1143526

Lloyd, S., Schmidt, U., Khondoker, M., & Tchanturia, K. (2015). Can psychological

　　　interventions reduce perfectionism? A systematic review and meta-analysis. *Behavioral*

　　　and Cognitive Psychotherapy, *43*(6), 705–731.

　　　https://doi.org/10.1017/S1352465814000162

*Lowndes, T. A., Egan, S. J., & McEvoy, P. M. (2019). Efficacy of brief guided self-help

　　　cognitive behavioral treatment for perfectionism in reducing perinatal depression and

　　　anxiety: A randomized controlled trial. *Cognitive Behaviour Therapy*, *48*(2), 106–120.

　　　https://doi.org/10.1080/16506073.2018.1490810

Lovibond, S.H., & Lovibond, P.F. (1995). *Manual for the Depression Anxiety Stress Scales*

　　　(2nd ed.). Sydney: Psychology Foundation Monograph.

McCown, W. G., & Carlson, G. (2004). Narcissism, perfectionism and self-termination from

treatment in outpatient cocaine users. *Journal of Rational-Emotive & Cognitive-Behavior Therapy, 22*(4), 329–340. https://doi.org/10.1023/B:JORE.0000047314.90953.c9

Morris, S. B. (2008). Estimating effect sizes from pretest-posttest-control group designs. *Organizational Research Methods, 11*(2), 364–386. https://doi.org/10.1177/1094428106291059

Ong, C. W., Lee, E. B., & Twohig, M. P. (2018). A meta-analysis of dropout rates in acceptance and commitment therapy. *Behaviour Research and Therapy, 104*, 14-33. https://doi.org/10.1016/j.brat.2018.02.004

*Radhu, N., Daskalakis, Z. J., Arpin-Cribbie, C. A., Irvine, J., & Ritvo, P. (2012). Evaluating a web-based cognitive-behavioral therapy for maladaptive perfectionism in university students. *Journal of American College Health*, *60*(5), 357–366. https://doi.org/10.1080/07448481.2011.630703

Radloff, L. S. (1987). Center for Epidemiologic Studies: Depressed mood scale. In K. Corcoran & J. Fischer (Eds.), *Measures for clinical practice: A sourcebook* (pp. 118-119). Collier Macmillan Inc.

*Riley, C., Lee, M., Cooper, Z., Fairburn, C. G., & Shafran, R. (2007). A randomised controlled trial of cognitive-behaviour therapy for clinical perfectionism: A preliminary study. *Behaviour Research and Therapy*, *45*(9), 2221–2231. https://doi.org/10.1016/j.brat.2006.12.003

Ritsner, M., Kurs, R., Gibel. A., Ratner, Y., & Endicott, J. (2005). Validity of an abbreviated Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q-18) for schizophrenia, schizoaffective, and mood disorder patients. *Quality of Life Research, 14*(7), 1693-1703. https://doi.org/10.1007/s11136-005-2816-9

Robinson, K., & Wade, T. D. (2021). Perfectionism interventions targeting disordered eating: A systematic review and meta-analysis. *International Journal of Eating Disorders, 54*(4), 473-483. https://doi.org/10.1002/eat.23483

Rosenberg, M. (1965). *Society and the self-image*. Princeton University Press.

*Rozental, A., Shafran, R., Wade, T., Egan, S., Nordgren, L. B., Carlbring, P., Landström, A., Roos, S., Skoglund, M., Thelander, E., Trosell, L., Örtenholm, A., & Andersson, G. (2017). A randomized controlled trial of internet-based cognitive behavior therapy for perfectionism including an investigation of outcome predictors. *Behaviour Research and Therapy*, *95*, 79–86. https://doi.org/10.1016/j.brat.2017.05.015

*Sadri, S. K., Anderson, R. A., McEvoy, P. M., Kane, R. T., & Egan, S. J. (2017). A pilot investigation of cognitive behavioural therapy for clinical perfectionism in obsessive compulsive disorder. *Behavioural and Cognitive Psychotherapy*, *45*(3), 312-320. https://doi.org/10.1017/S1352465816000618

Salzman, L. (1980). *Treatment of obsessive personality*. New York: Jason Aronson.

Schoenwald, S. K., & Garland, A. F. (2013). A review of treatment adherence measurement methods. *Psychological Assessment, 25*(1), 146-156. https://doi.org/10.1037/a0029715

Scott, J., & Young, A. H. (2016). Psychotherapies should be assessed for both benefit and harm. *The British journal of Psychiatry*, *208*(3), 208–209. https://doi.org/10.1192/bjp.bp.115.169060

Shafran, R., Clark, D. M., Fairburn, C. G., Arntz, A., Barlow, D. H., Ehlers, A., Freeston, M., Garety, P. A., Hollon, S. D., Ost, L. G., Salkovskis, P. M., Williams, J. M. G., & Wilson, G. T. (2009). Mind the gap: Improving the dissemination of CBT. *Behaviour Research and Therapy, 47*(11), 902-909. https://doi.org/10.1016/j.brat.2009.07.003

Shafran, R., Cooper, Z., & Fairburn, C. G. (2002). Clinical perfectionism: A cognitive-
behavioural analysis. *Behaviour Research and Therapy, 40*(7), 773–791.
https://doi.org/10.1016/S0005-7967(01)00059-6

Shafran, R., Egan, S., & Wade, T. (2010). *Overcoming perfectionism: A self-help guide using
cognitive behavioral techniques.* Constable & Robinson.

Shafran, R., & Mansell, W. (2001). Perfectionism and psychopathology: A review of research
and treatment. *Clinical Psychology Review, 21*(6), 879–906.
https://doi.org/10.1016/S0272-7358(00)00072-6

*Shafran, R., Wade, T. D., Egan, S. J., Kothari, R., Allcott-Watson, H., Carlbring, P., Rozental,
A., & Andersson, G. (2017). Is the devil in the detail? A randomised controlled trial of
guided internet-based CBT for perfectionism. *Behavior Research and Therapy, 95*, 99–
106. https://doi.org/10.1016/j.brat.2017.05.014

Shahar, G., Blatt, S. J., Zuroff, D. C., Krupnick, J. L., & Sotsky, S. M. (2004). Perfectionism
impedes social relations and response to brief treatment for depression. *Journal of Social
and Clinical Psychology, 23*(2), 140-154. https://doi.org/10.1521/jscp.23.2.140.31017

*Shu, C. Y., Watson, H. J., Anderson, R. A., Wade, T. D., Kane, R. T., & Egan, S. J. (2019). A
randomized controlled trial of unguided internet cognitive behaviour therapy for
perfectionism in adolescents: Impact on risk for eating disorders. *Behaviour Research
and Therapy, 120*, 103429. https://doi.org/10.1016/j.brat.2019.103429

Slaney, R. B., Rice, K. G., Mobley, M., Trippi, J., & Ashby, J. S. (2001). The Revised Almost
Perfect Scale. *Measurement and Evaluation in Counseling and Development, 34*(3),
130-145. https://doi.org/10.1080/07481756.2002.12069030

Smith, M. M., Hewitt, P. L., Sherry, S. B., Flett, G. L., & Ray, C. (2022). Parenting

behaviors and trait perfectionism: A meta-analytic test of the social expectations and

social learning models. *Journal of Research in Personality, 92,* 104180.

https://doi.org/10.1016/j.jrp.2021.104180

Smith, M. M., Sherry, S. B., Chen, S., Saklofske, D. H., Mushquash, C., Flett, G. L., & Hewitt,

P. L. (2018). The perniciousness of perfectionism: A meta-analytic review of the

perfectionism–suicide relationship. *Journal of Personality, 86*(3), 522-542.

https://doi.org/10.1111/jopy.12333

Smith, M. M., Sherry, S. B., Ge, S. Y. J., Hewitt, P. L., Flett, G. L., & Baggley, D. L. (2022).

Multidimensional perfectionism turns 30: A review of known knowns and known

unknowns. *Canadian Psychology / Psychologie canadienne, 63(*1), 16–31.

https://doi.org/10.1037/cap0000288

Smith, M. M., Sherry, S. B., Ray, C., Hewitt, P. L., & Flett, G. L. (2021). Is perfectionism a

vulnerability factor for depressive symptoms, a complication of depressive symptoms,

or both? A meta-analytic test of 67 longitudinal studies. *Clinical Psychology*

Review, *84*, 101982. https://doi.org/10.1016/j.cpr.2021.101982

Smith, M. M., Sherry, S. B., Vidovic, V., Saklofske, D. H., Stoeber, J., & Benoit, A. (2019).

Perfectionism and the five-factor model of personality: A meta-analytic review.

Personality and Social Psychology Review, 23(4), 367-390.

https://doi.org/10.1177/1088868318814973

Spitzer, R. L., Kroenke, K., Williams, J. B., & Lowe, B. (2006). A brief measure for assessing

generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine, 166*(10),

1092-1097. https://doi.org/10.1001/archinte.166.10.1092

*Steele, A. L., & Wade, T. D. (2008). A randomised trial investigating guided self-help to reduce

perfectionism and its impact on bulimia nervosa: A pilot study. *Behaviour Research and Therapy, 46*(12), 1316–1323. https://doi.org/10.1016/j.brat.2008.09.006

Stoeber, J. (2014). How other-oriented perfectionism differs from self-oriented and socially prescribed perfectionism. *Journal of Psychopathology and Behavioral Assessment, 36*(2), 329–338. https://doi.org/10.1007/s10862-013-9397-7

Stoeber, J. (Ed.). (2017). *The psychology of perfectionism: Theory, research, applications*. Routledge.

Stoeber, J., & Damian, L. E. (2014). The Clinical Perfectionism Questionnaire: Further evidence for two factors capturing perfectionistic strivings and concerns. *Personality and Individual Differences, 61-62,* 38–42. https://doi.org/10.1016/j.paid.2014.01.003

Suh, H., Sohn, H., Kim, T., & Lee, D. G. (2019). A review and meta-analysis of perfectionism interventions: Comparing face-to-face with online modalities. *Journal of Counseling Psychology, 66*(4), 473-486. https://doi.org/10.1037/cou0000355

Teare, M. D., Dimairo, M., Shephard, N., Hayman, A., Whitehead, A., & Walters, S. J. (2014). Sample size requirements to estimate key design parameters from external pilot randomised controlled trials: A simulation study. *Trials, 15*, 264. https://doi.org/10.1186/1745-6215-15-264

*Valentine, E. G., Bodill, K. O., Watson, H. J., Hagger, M. S., Kane, R. T., Anderson, R. A., & Egan, S. J. (2018). A randomized controlled trial of unguided internet cognitive-behavioral treatment for perfectionism in individuals who engage in regular exercise. *The International Journal of Eating Disorders, 51*(8), 984–988. https://doi.org/10.1002/eat.22888

*Wade, T, D., Kay, E., Valle, M. K., Egan, S. J., Andersson, G., Carlbring, P., & Shafran, R.

(2019). Internet-based cognitive behaviour therapy for perfectionism: More is better but no need to be prescriptive. *Clinical Psychologist, 23*(3), 196-205. https://doi.org/10.1111/cp.12193

Weissman, A. N., & Beck, A. T. (1978, August-September). Development and validation of the Dysfunctional Attitude Scale: A preliminary investigation. Paper presented at the 86th Annual Convention of the American Psychological Association, Toronto, Canada.

Young, J. E., Klosko, J. S., & Weishaar, M. E. (2006). *Schema therapy: A practitioner's guide*. Guilford Press.

Zuroff, D. C., Blatt, S. J., Sotsky, S. M., Krupnick, J. L., Martin, D. J., Sanislow III, C. A., & Simmens, S. (2000). Relation of therapeutic alliance and perfectionism to outcome in brief outpatient treatment of depression. *Journal of Consulting and Clinical Psychology*, *68*(1), 114-124. https://doi.org/10.1037/0022-006X.68.1.114

Table 1

Characteristics of randomized controlled trials (RCTs) in meta-analysis

	N_T	N_c	Sample type	Mean age	Female %	Dropout % (Intervention)	Dropout % (Control)	Treatment	Number of sessions / modules	Primary Outcomes	Secondary Outcome
Arpin-Cribbie et al. (2012)	29	22	Participants with high PCI scores	20.1	70.0%	0%	12%	Self-help CBT (online)	13	APS-R-DIS FMPS-COM MPS-SOP MPS-OOP MPS-SPP PCI	BAI CESD
Egan et al. (2014) Sample 1[a]	16	18	Participants with high FMPS-COM scores	40.0	57.7%	12.5%	16.7%	Self-help CBT (online)	8	CPQ FMPS-COM FMPS-PS	DASS-21 EDE-Q RSES Q-LES-Q
Egan et al. (2014) Sample 2[a]	18	18	Participants with high FMPS-COM scores	40.0	57.7%	22.2%	16.7%	Face-to-face CBT (individual)	8	CPQ FMPS-COM FMPS-PS	DASS-21 EDE-Q RSES Q-LES-Q
Goldstein et al. (2014)	28	29	Patients admitted to an eating disorder day program	23.4	98.4%	32.1%	27.6%	Face-to-face CBT (group)	7	FMPS-COM[c] FMPS-DAA[c] FMPS-PS[c] MPS-SOP[c] MPS-OOP[c] MPS-SPP[c]	EDE-Q
Grieve et al. (2021)	41	48	Participants with self-referred perfectionism	24.7	89.0%	31.7%	8.3%	Self-help CBT (online)	8	APS-R-DIS APS-R-HS FMPS-COM FMPS-PS	DASS-21-A DASS-21-D

Handley et al. (2015)	21	21	Participants with high FMPS-COM scores	30.9	81.0%	9.5%	4.8%	Face-to-face CBT (group)	8	CPQ FMPS-COM FMPS-DAA FMPS-PS	BDI-II DASS-21-A EDE-Q RSES Q-LES-Q
Hoiles et al. (2022)	20	20	Participants with high FMPS-COM scores	35.4	70.0%	15.0%	10.0%	Self-help CBT (online)	8	FMPS-COM FMPS-PS	DASS-D DASS-A Q-LES-Q
Lowndes et al. (2019)	32	31	Participants with high FMPS-COM scores	32.4	100.0%	46.9%	16.1%	Self-help CBT (book)	4	FMPS-COM FMPS-PS	EPDS
Radhu et al. (2012)	28	30	Participants with high PCI scores	22.6	72.3%	21.4%	16.7%	Self-help CBT (online)	13	APS-R-DIS APS-R-HS FMPS-COM FMPS-DAA FMPS-PS MPS-SOP MPS-OOP MPS-SPP PCI	BAI CESD
Riley et al. (2007)	10	10	Participants with high CPE scores	29.0	90.0%	10.0%	10.0%	Face-to-face CBT (individual)	10	CPQ FMPS-COM[c] FMPS-PS[c] MPS-SOP MPS-OOP MPS-SPP	BAI BDI-II
Rozental et al. (2017)	78	78	Participants with self-referred perfectionism	34.1	86.5%	19.2%	10.3%	Self-help CBT (online)	8	FMPS-COM FMPS-DAA FMPS-PS CPQ	BBQ GAD-7 PHQ-9

Study	N_T	N_c	Sample					Intervention	Sessions	Perfectionism measures	Other measures
Sadri et al. (2017)	10	9	Participants with high FMPS-COM scores	40.0	72.0%	60.0%	22.2%	Face-to-face CBT (group)	8	FMPS-COM FMPS-PS CPQ	—
Shafran et al. (2017)	62	58	Participants with high FMPS-COM scores	28.9	81.7%	50.0%	27.6%	Self-help CBT (online)	8	FMPS-COM FMPS-DAA FMPS-PS CPQ	DASS-21 EDE-Q[b] RSES[b]
Shu et al. (2019)	36	24	Participants with self-referred perfectionism	16.5	100.0%	33.3%	8.3%	Self-help CBT (online)	8	CPQ-PS CPQ-PC	EDE-Q RCADS-D RCADS-A RSES
Steele & Wade (2008)	17	16	Participants diagnosed with Bulimia Nervosa based on unstructured interview	26.2	96.7	11.8%	37.5%	Self-help CBT (book)	8	FMPS-COM FMPS-PS	DASS-A DASS-D EDE RSES
Valentine et al. (2018)	38	29	Participants with high FMPS-COM scores	37.0	61.9%	23.7%	10.3%	Self-help CBT (online)	8	FMPS-COM CPQ	EDE-Q
Wade et al. (2019)	28	23	Participants with self-referred perfectionism	25.2	78.4%	35.7%	8.7%	Self-help CBT (online)	3	FMPS-COM FMPS-PS	GAD-7[c] PHQ-9[c]

Note. Intention-to-treat data preferred. N_T = number of participants in the treatment group. N_c = number of participants in the control group. **Drop-out % (Intervention)** = the percentage of randomized participants not completing treatment or, when unclear, post-treatment measures, regardless of whether they started treatment or the reason for drop-out. **Drop-out % (control)** = the percentage of randomized participants not completing post-waitlist measures; **FMPS** = Frost et al.'s (1990) Multidimensional Perfectionism Scale; **COM** = concern over mistakes; **DAA** = doubts about actions; **PS** = personal standards; **MPS** = Hewitt and Flett's (1991) Multidimensional Perfectionism Scale; **SOP** = self-oriented perfectionism; **OOP** = other-oriented perfectionism; **SPP** = socially prescribed perfectionism; **CPQ** = Fairburn et al.'s (2003) unpublished Clinical Perfectionism Questionnaire; **CPQ-PC** = Shu et al.'s (2019) perfectionistic concern subscale of the CPQ; **CPQ-PS** = Shu et al.'s (2019) perfectionistic striving subscale of the Clinical Perfectionism Questionnaire; **PCI** = Flett et al.'s

(1998) Perfectionistic Cognitions Inventory; **APS-R** = Slaney et al.'s (2001) Almost Perfect Scale-Revised; **DIS** = discrepancy; **HS** = high standards; **CESD** = Radloff's (1987) Center for Epidemiologic Studies Depression Scale; **BAI** = Beck and Steer's (1993) Beck Anxiety Inventory. **DASS-21** = Lovibond and Lovibond's (1995) Depression Anxiety Stress Scales; **D** = depression subscale; **A** = Anxiety subscale; **BDI-II** = Beck et al.'s (1996) Beck Depression Inventory, second edition; **EDE-Q** = Fairburn and Beglin's (1994) Eating Disorder Examination Questionnaire; **EDE** = Fairburn and Cooper's (1993) Eating Disorder Examination; **Q-LES-Q** = Ritsner et al.'s (2005) Quality of Enjoyment and Satisfaction Questionaire-18; **RSES** = Rosenberg's (1965) Rosenberg Self-Esteem Scale; **EPDS** = Cox et al.'s (1987) Edinburgh Postnatal Depression Scale; **PHQ-9** = Kroenke et al.'s (2001) Patient Health Questionnaire-nine items; **GAD-7** = Spitzer et al.'s (2006) Generalized Anxiety Disorder Assessment; **RCADS** = Chorpita et al.'s (2000) Revised Child Anxiety and Depression Scale. **BBQ** = Lindner et al.'s (2006) Brunnsviken Brief Quality of Life Scale; **SCOFF** = Hill et al.'s (2010) Eating Disorder Screening Questionnaire; **CPE** = Riley et al.'s (unpublished) Clinical Perfectionism Examination.

[a]Given both groups shared the same control group the average was taken for analysis in which face-to-face CBT and self-help CBT are combined.

[b]Data obtained from Kothari et al. (2019) which used the same data set as Shafran et al. (2017).

[c]Composite score reported.

Table 2

Summary of overall effect sizes for face-to-face and/or self-help cognitive-behavior therapy (CBT) and control

Variable	k	N_T	N_C	Hedges' g	95% CI	Q_T	I^2 (%)	Egger's intercept	95% CI	k^{TF}	"Trim and fill" estimates [95% CI]	NNT
Combined (Face-to-face and self-help CBT) Post-treatment												
Perfectionism - Hewitt and Flett (1991) and Flett et al. (1998)												
self-oriented perfectionism	3	61	57	-0.60	[-1.96; 0.78]	6.16*	67.52	-2.26	[-98.40; 93.88]	0	-0.59 [-1.27; 0.07]	3.09
other-oriented perfectionism	3	61	57	-0.36	[-1.15; 0.43]	1.43	0.00	-1.54	[-45.41; 42.33]	0	-0.36 [-0.76; 0.00]	5.00
socially prescribed perfectionism	3	61	57	-0.53	[-1.58; 0.51]	3.55	43.69	-0.04	[-79.44; 79.35]	0	-0.53 [-1.03; -0.04]	3.42
perfectionistic cognitions	2	51	47	-0.70	[-1.57; 0.17]	4.40*	77.25	—	—	—	—	2.63
Perfectionism - Frost et al. (1990)												
concern over mistakes	13	413	410	-0.85***	[-1.04; -0.66]	16.35	26.60	-0.79	[-3.37; 1.80]	1	-0.82 [-1.00; -0.63]	2.21
doubts about actions	4	175	175	-0.49*	[-0.84; -0.13]	3.22	0.00	0.09	[-10.08; 10.26]	0	-0.49 [-0.70; -0.27]	3.68
personal standards	11	355	362	-0.50***	[-0.67; -0.34]	9.96	0.00	0.40	[-2.02; 2.81]	0	-0.50 [-0.64; -0.38]	3.62
Perfectionism – Slaney et al. (2001)												
high standards	2	62	73	-0.40*	[-0.78; -0.02]	—	—	—	—	—	—	4.50
discrepancy	3	92	95	-0.48	[-1.83; 0.87]	7.63*	73.77	-5.02	[-113.71; 103.68]	0	-0.49 [-1.07; 0.09]	3.76
Perfectionism - Shafran et al. (2002)												
clinical perfectionism	8	274	260	-0.97***	[-1.19; -0.76]	6.37	0.00	0.76	[-1.79; 3.31]	0	-0.97 [-1.19; -0.76]	1.97
Secondary Outcomes												
depression symptoms	10	302	294	-0.62**	[-0.91; -0.32]	19.22*	53.18	-1.65	[-5.50; 2.20]	3	-0.44 [-0.71; -0.18]	2.96
anxiety symptoms	8	251	243	-0.35**	[-0.57; -0.12]	7.39	5.22	-0.20	[-3.12; 3.51]	0	-0.35 [-0.57; -0.12]	5.10
satisfaction with life	4	153	155	-0.59	[-1.02; 0.01]	7.10	57.75	0.54	[-14.07; 15.15]	0	-0.59 [-1.02; 0.01]	3.09
eating disorder symptoms[a]	7	226	209	-0.29*	[-0.56; -0.03]	7.61	21.20	-0.43	[-6.52; 5.66]	0	-0.29 [-0.56; -0.03]	6.17
self-esteem	6	196	178	-0.53	[-1.25; 0.18]	21.00	76.19	-0.11	[-6.24; 6.02]	0	-0.53 [-1.14; 0.18]	5.26
Face-to-face CBT Post-treatment												
Perfectionism - Frost et al. (1990)												
concern over mistakes[1]	3	43	46	-1.28*	[-2.26; -0.29]	1.00	0.00	1.42	[-24.80; 27.64]	0	-1.28 [-1.72; -0.83]	1.58
personal standards[1]	3	43	46	-0.71	[-1.62; 0.22]	0.05	0.00	-0.42	[-3.87; 3.04]	2	-0.66 [-1.00; -0.32]	2.60
Perfectionism - Shafran et al. (2002)												
clinical perfectionism[1]	4	53	56	-0.76*	[-1.37; -0.14]	0.98	0.00	-0.46	[-6.72; 5.81]	0	-0.76 [-1.13; -0.38]	3.55
Secondary Outcomes												
depression symptoms[1]	2	31	31	-1.02*	[-1.87; -0.17]	2.48	59.60	—	—	—	—	1.89
satisfaction with life[1]	2	39	39	-0.34	[-0.78; 0.10]	0.75	0.00	—	—	—	—	5.26
eating disorder symptoms[1]	3	68	67	-0.21	[-1.18; 0.79]	3.59	44.35	-9.96	[-53.31; 33.38]	0	-0.21 [-1.18; 0.79]	8.47
self-esteem[1]	2	39	39	-1.41*	[-2.56; -0.25]	5.48*	81.58	—	—	—	—	1.45
Self-help CBT Post-treatment												
Perfectionism - Hewitt and Flett (1991) and Flett et al. (1998)												

	k	N_T	N_C	g	CI	Q_T	I^2		CI	k^{TF}	g [CI]	NNT
self-oriented perfectionism	2	51	47	-0.53	[-1.51; 0.45]	5.87*	82.95	—	—	—	—	3.42
other-oriented perfectionism	2	51	47	-0.31	[-0.74; 0.11]	1.15	13.25	—	—	—	—	5.75
socially prescribed perfectionism	2	51	47	-0.55	[-1.30; 0.21]	3.55	71.81	—	—	—	—	3.31
perfectionistic cognitions	2	51	47	-0.70	[-1.57; 0.17]	4.40*	77.25	—	—	—	—	2.63
Perfectionism - Frost et al. (1990)												
concern over mistakes[1]	11	370	364	-0.80***	[-0.98; -0.61]	12.00	16.67	-0.89	[-3.88; 2.11]	0	-0.80 [-0.98; -0.61]	2.34
doubts about actions	3	162	161	-0.44	[-0.92; 0.04]	1.83	0.00	3.26	[-14.00; 21.05]	0	-0.44 [-0.66; -0.22]	4.10
personal standards[1]	9	312	316	-0.47**	[-0.67; -0.28]	8.90	10.08	-1.10	[-2.12; 4.32]	0	-0.47 [-0.67; -0.28]	3.85
Perfectionism – Slaney et al. (2001)												
high standards	2	63	72	-0.40*	[-0.78; -0.02]	1.22	18.32	—	—	—	—	4.50
discrepancy	3	92	95	-0.48	[-1.84; 0.87]	7.63*	73.77	-5.01	[-113.71; 103.70]	0	-0.49 [-1.07; 0.10]	3.76
Perfectionism - Shafran et al. (2002)												
clinical perfectionism[1]	5	221	204	-1.03***	[-1.32; -0.75]	3.85	0.00	1.56	[-4.08; 7.20]	0	-1.03 [-1.32; -0.75]	1.87
Secondary Outcomes												
depression symptoms[1]	8	271	263	-0.54**	[-0.83; -0.24]	12.84	45.49	-1.17	[-6.07; 3.73]	1	-0.48 [-0.73; -0.23]	3.36
anxiety symptoms[1]	7	241	233	-0.36*	[-0.61; -0.12]	6.95	13.66	-0.33	[-4.71; 4.05]	0	-0.36 [-0.61; -0.12]	5.00
satisfaction with life[1]	3	114	116	-0.65	[-1.57; 0.16]	4.46	55.16	1.50	[-40.56; 43.58]	0	-0.65 [-1.57; 0.16]	2.82
eating disorder symptoms[1]	5	158	142	-0.34*	[-0.66; -0.02]	3.72	0.00	-1.21	[-7.25; 4.83]	0	-0.34 [-0.66; -0.02]	5.26
self-esteem[2]	5	157	139	-0.28	[-0.60; 0.05]	1.44	0.00	2.24	[-1.11; 5.60]	0	-0.28 [-0.60; 0.05]	6.41
Self-help CBT Follow-Up												
Perfectionism - Frost et al. (1990)												
concern over mistakes	3	86	94	-0.58	[-1.27; 0.10]	2.21	9.46	4.41	[-14.60; 23.43]	0	-0.57 [-0.89; -0.26]	3.14
personal standards	3	86	94	-0.17	[-0.80; 0.47]	1.95	0.00	3.07	[-30.97; 37.11]	0	-0.17 [-0.46; 0.12]	10.42
Secondary Outcomes												
depression symptoms	4	122	118	-0.42	[-1.03; 0.21]	7.10	57.75	-6.07	[-18.21; 6.05]	1	-0.34 [-0.70; 0.01]	4.27
anxiety symptoms	3	92	88	-0.22	[-1.29; 0.84]	5.22	61.68	-0.81	[-83.95; 82.34]	0	-0.22 [-0.72; 0.28]	8.06
eating disorder symptoms	3	113	98	-0.28	[-1.22; 0.68]	4.79	58.28	-2.07	[-56.82; 52.69]	0	-0.28 [-1.22; 0.68]	6.41

Note. k = number of studies; N_T = total number of participants in treatment groups in the k samples; N_C = total number of participants in control groups in the k samples; CI = confidence interval for r_c^+; Q_T = measure of heterogeneity; I^2 = percentage of heterogeneity; k^{TF} = number of imputed studies as part of "trim and fill" method. **Hedges g** = Effects sizes for studies with three or more samples corrected using the Knapp-Hartung (2003) correction. **NNT** = Numbers-needed-to be treated. NNTs were calculated using the method provided by Kraemer and Kupfer (2006). Potential differences in pre-treatment outcomes were adjusted using Klauer's (2001) correction. Effects adjusted for pre-treatment differences using Morris et al. (2008) correction are in Supplemental Material Table B1. Effects not adjusted for pre-treatment differences are in Supplemental Material Table B2. Negative effects favor CBT. Outcomes with the same subscript do not differ significantly ($p < .05$) between treatment formats. *$p < .05$; **$p < .01$; ***$p < .001$.
[a]When Goldstein et al. (2014) is removed the weighted pooled effect is g = -0.35, 95% CI: -0.62; -0.08, I^2 = 2.79.

Table 3

Summary of overall pooled event rate for reliable change for face-to-face and/or self-help cognitive-behavioural therapy (CBT) and control

Variable	k	N	Reliable improvement (%)	95% CI	Q_T	I^2 (%)	Egger's intercept	95% CI	k^{TF}	"Trim and fill" estimates [95% CI]
Face-to-face and self-help CBT (post-treatment)										
Perfectionism - Hewitt and Flett (1991) and Flett et al. (1998)										
self-oriented perfectionism	3	61	33.4	[22.6; 46.4]	1.97	0.00	-2.23	[-35.22; 30.75]	0	33.4 [22.6; 46.4]
other-oriented perfectionism	3	61	13.0	[6.3; 25.0]	1.78	0.00	-1.91	[-14.57; 10.75]	0	13.0 [6.3; 25.0]
socially prescribed perfectionism	3	61	19.7	[11.5; 31.6]	0.05	0.00	-0.15	[-7.76; 7.45]	0	19.7 [11.5; 31.6]
perfectionistic cognitions	2	51	54.9	[41.2; 67.9]	0.00	0.00	—	—	—	—
Perfectionism - Frost et al. (1990)										
concern over mistakes	11	314	48.3	[41.4; 55.2]	13.88	27.97	-0.14	[-3.35; 3.07]	0	48.3 [41.4; 55.2]
doubts about action	3	119	17.7	[9.3; 31.0]	3.84	47.90	1.88	[-51.01; 54.77]	0	17.7 [9.3; 31.0]
personal standards	8	179	28.8	[19.3; 40.6]	15.59	55.10	-4.13	[-9.04; 0.78]	0	28.8 [19.3; 40.6]
Perfectionism - Shafran et al. (2002)										
clinical perfectionism	7	229	29.6	[17.8; 44.8]	21.88**	71.59	-3.07	[-6.36; 0.23]	0	29.6 [17.8; 44.8]
Secondary Outcomes										
depression	8	217	31.6	[22.1; 42.9]	15.32*	54.31	-0.12	[-4.12; 3.88]	0	31.6 [22.1; 42.9]
anxiety	7	198	33.9	[24.6; 44.6]	10.90	44.93	-1.49	[-5.03; 2.05]	0	33.9 [24.6; 44.6]
satisfaction with life	4	151	32.7	[23.0; 44.2]	5.17	41.94	1.73	[-10.53; 13.99]	1	28.5 [18.9; 40.5]
eating disorder symptoms	8	229	35.1	[26.0; 45.5]	14.42*	51.44	0.18	[-5.44; 5.80]	0	35.1 [26.0; 45.5]
self-esteem	4	124	28.7	[21.3; 37.4]	2.88	0.00	-0.67	[-9.03; 7.70]	0	28.7 [21.3; 37.4]
Face-to-face CBT (post-treatment)										
Perfectionism - Frost et al. (1990)										
concern over mistakes	3	48	51.5	[38.2; 64.7]	3.78	20.77	0.61	[-26.17; 27.39]	0	51.5 [38.2; 64.7]
personal standards	3	48	28.1	[17.0; 42.8]	1.84	0.00	-3.80	[-44.66; 37.06]	0	28.1 [17.0; 42.8]
Perfectionism - Shafran et al. (2002)										
clinical perfectionism	4	58	34.8	[22.0; 50.2]	3.59	16.31	-2.35	[-10.66; 5.97]	0	34.8 [22.0; 50.2]
Secondary Outcomes										
depression	2	29	34.6	[19.7; 53.3]	0.21	0.00	—	—	—	—
satisfaction with life	2	37	38.0	[18.3; 62.6]	2.15	53.43	—	—	—	—
eating disorder symptoms[1]	3	65	44.8	[18.2; 74.7]	10.66**	81.23	8.00	[-120.26; 136.25]	0	44.8 [18.2; 74.7]
Self-help CBT (post-treatment)										
Perfectionism – Hewitt & Flett (1991)										
self-oriented perfectionism	2	51	32.8	[17.3; 53.2]	1.91	47.68	—	—	—	—
other-oriented perfectionism	2	51	11.6	[0.03; 33.4]	1.69	40.81	—	—	—	—
socially prescribed perfectionism	2	51	19.6	[10.9; 32.8]	0.50	0.00	—	—	—	—
Perfectionism – Slaney et al. (2001)										

discrepancy	2	51	35.4	[23.5; 49.3]	0.20	0.00	—	—	—	—
Perfectionism - Frost et al. (1990)										
concern over mistakes	9	266	45.8	[37.5; 54.3]	13.74	41.76	-1.15	[-5.10; 2.79]	0	45.8 [37.5; 54.3]
doubts about action	2	100	13.0	[7.7; 21.1]	0.01	0.00	—	—	—	—
personal standards	6	131	27.6	[15.9; 43.4]	13.64*	63.33	-4.73	[-9.04; -0.43]	0	27.6 [15.9; 43.4]
Perfectionism - Shafran et al. (2002)										
clinical perfectionism	4	171	24.5	[0.9; 49.0]	19.08***	84.27	-4.91	[-9.50; -0.32]	0	24.5 [0.9; 49.0]
Secondary Outcomes										
depression	6	188	30.6	[19.1; 45.3]	15.00*	66.67	-0.44	[-6.57; 5.68]	0	30.6 [19.1; 45.3]
anxiety	6	188	34.1	[23.8; 46.0]	10.74	53.43	-1.67	[-6.52; 3.17]	1	30.0 [19.7; 42.7]
satisfaction with life	3	114	30.4	[21.1; 41.5]	2.51	20.40	2.97	[-7.34; 13.29]	2	24.4 [16.0; 35.3]
eating disorder symptoms	6	164	32.0	[20.8; 45.9]	12.52*	60.06	-0.53	[-7.19; 6.12]	0	32.0 [20.8; 45.9]
self-esteem	3	105	25.9	[18.4; 35.2]	0.88	0.00	-1.57	[-7.82; 4.69]	0	25.9 [18.4; 35.2]
Control (post-treatment)										
Perfectionism -Hewitt & Flett (1991) and Frost et al. (1990)										
self-oriented perfectionism	3	57	19.8	[11.3; 32.3]	0.79	0.00	-1.28	[-27.88; 25.31]	0	19.8 [11.3; 32.3]
other-oriented perfectionism	3	57	7.5	[2.9; 18.5]	0.60	0.00	-1.16	[-32.36; 30.04]	0	7.5 [2.9; 18.5]
socially prescribed perfectionism	3	57	14.2	[4.2; 38.5]	4.20	52.37	-2.82	[-14,51; 8.87]	0	14.2 [4.2; 38.5]
perfectionistic cognitions	2	47	24.5	[8.6; 52.7]	2.88	65.33	—	—	—	—
Perfectionism - Frost et al. (1990)										
concern over mistakes	11	283	17.9	[11.9; 26.0]	18.18	45.00	-2.15	[-3.65; -0.65]	0	17.9 [11.9; 26.0]
doubts about action	3	123	8.2	[3.5; 18.2]	3.15	36.46	-0.89	[-48.8; 47.1]	0	8.2 [3.5; 18.2]
personal standards	8	159	20.6	[14.1; 29.1]	8.22	14.86	-2.46	[-4.15; -0.77]	0	20.6 [14.1; 29.1]
Perfectionism – Slaney et al. (2001)										
discrepancy	2	47	19.2	[10.3; 32.9]	0.03	0.00	—	—	—	—
Perfectionism - Shafran et al. (2002)										
clinical perfectionism	7	204	12.2	[8.2; 17.7]	3.17	0.00	-0.80	[-2.46; 0.87]	0	12.2 [8.2; 17.7]
Secondary Outcomes										
depression symptoms	8	213	18.2	[12.9; 25.0]	7.75	9.68	-1.25	[-3.34; 0.86]	0	18.2 [12.9; 25.0]
anxiety	7	193	22.7	[14.8; 33.0]	9.63	37.75	-1.62	[-3.93; 0.67]	0	22.7 [14.8; 33.0]
satisfaction with life	4	136	17.1	[5.8; 41.0]	13.87**	78.36	-1.56	[-17.61; 14.48]	0	17.1 [5.8; 41.0]
eating disorder symptoms	8	205	19.6	[13.5; 27.6]	9.28	24.56	-1.86	[-4.41; 0.70]	0	19.6 [13.5; 27.6]
self-esteem	4	97	16.6	[10.6; 25.0]	2.69	0.00	-1.33	[-6.26; 3.61]	0	16.6 [10.6; 25.0]
Face-to-face and self-help CBT (follow-up)										
Perfectionism – Frost et al. (1990										
concern over mistakes	4	88	40.8	[30.7; 51.8]	2.96	0.00	-0.05	[-9.82; 9.72]	0	40.8 [30.7; 51.8]
personal standard	3	71	20.3	[12.4; 31.5]	0.20	0.00	-0.74	[-3.93; 2.44]	0	20.3 [12.4; 31.5]
Perfectionism - Shafran et al. (2002)										
clinical perfectionism	4	98	12.0	[3.4; 34.4]	9.51*	68.44	-3.67	[-14.55; 7.21]	0	12.0 [3.4; 34.4]
Secondary Outcomes										

	K	N		CI	Q_T	I^2		CI	k^{TF}	
eating disorder symptoms	6	181	29.0	[22.6; 36.3]	4.98	0.00	0.99	[-3.26; 5.24]	1	27.5 [20.4; 35.8]
Face-to-face CBT (follow-up)										
Perfectionism – Frost et al. (1990)										
concern over mistakes	2	25	44.5	[26.4; 64.2]	0.90	0.00	—	—	—	—
personal standards	2	46	17.7	[9.1; 31.6]	0.40	0.00	—	—	—	—
Perfectionism – Shafran et al. (2002)										
clinical perfectionism	2	25	7.9	[0.02; 32.3]	1.03	2.68	—	—	—	—
Secondary Outcomes										
eating disorder symptoms	2	46	32.7	[20.8; 47.5]	0.31	0.00	—	—	—	—
Self-help CBT (follow-up)										
Perfectionism – Frost et al. (1990)										
concern over mistakes	3	63	38.0	[19.8; 60.3]	5.26	61.98	-2.19	[-78.18; 73.80]	0	38.0 [19.8; 60.3]
Perfectionism – Shafran et al. (2002)										
clinical perfectionism	3	73	12.7	[2.6; 44.0]	7.42*	73.03	-3.40	[-39.72; 32.91]	0	12.7 [2.6; 44.0]
Secondary Outcomes										
eating disorder symptoms	5	135	27.1	[17.3; 39.8]	6.51	38.58	-0.52	[-5.58; 4.54]	0	27.1 [17.3; 39.8]

Note. K = number of studies; N = total number of participants in the k samples; CI = confidence interval; Q_T = measure of heterogeneity for r_c^+; I^2 = percentage of heterogeneity; k^{TF} = number of imputed studies as part of "trim and fill" method. Outcomes with the same subscript do not differ significantly (p < .05) between treatment formats, whereas outcomes with different subscripts do differ significantly ($p < .05$) across treatment formats.
$^*p < .05$; $^{**}p < .01$; $^{***}p < .001$.

Table 4

Summary of overall effect sizes for relative risk ratios of reliable change for face-to-face and/or self-help cognitive-behavioral therapy (CBT) versus control

Variable	k	N_T	N_C	Relative risk ratio (reliable change)	95% CI	Q_T	I^2 (%)	Egger's intercept	95% CI	k^{TF}	"Trim and fill" estimates r^+ [95% CI]
Face-to-face and self-help CBT (post-treatment)											
Perfectionism – Hewitt and Flett (1991)											
self-oriented perfectionism	3	61	57	1.59	[0.77; 3.30]	2.20	9.13	0.92	[-65.13; 66.97]	0	1.59 [0.77; 3.30]
other-oriented perfectionism	3	61	57	1.50	[0.46; 4.97]	0.22	0.00	-1.00	[-3.42; 1.43]	0	1.50 [0.46; 4.97]
socially prescribed perfectionism	3	61	57	1.36	[0.41; 4.55]	3.03	34.08	-2.81	[-13.26; 18.88]	2	0.65 [0.19; 2.24]
Perfectionism - Frost et al. (1990)											
concern over mistakes	11	297	283	2.36***	[1.57; 3.09]	12.48	19.88	1.73	[0.70; 2.76]	4	2.00 [1.34; 2.98]
doubts about action	3	119	123	2.06	[0.77; 5.55]	2.86	30.00	1.68	[-48.58; 51.93]	1	1.58 [0.89; 4.25]
personal standards	8	162	159	1.59	[0.86; 2.42]	6.94	13.52	0.57	[-2.06; 3.20]	2	1.32 [0.80; 2.17]
Perfectionism - Shafran et al. (2000)											
clinical perfectionism	7	188	180	3.07***	[1.98; 4.75]	1.09	0.00	-0.46	[-1.22; 0.31]	0	3.07 [1.98; 4.75]
Secondary Outcomes											
depression	8	217	213	1.87**	[1.23; 2.85]	2.82	0.00	0.54	[-0.72; 1.80]	3	1.75 [1.26; 2.42]
anxiety	7	198	193	1.57*	]1.05; 2.35]	2.90	0.00	0.70	[-0.61; 2.00]	2	1.47 [1.09; 1.99]
satisfaction with life	4	134	136	1.83	[0.63; 4.90]	5.07	40.83	2.05	[-5.57; 9.67]	1	1.66 [0.83; 3.33]
eating disorder symptoms	8	208	205	1.70**	[1.20; 2.42]	4.99	0.00	1.46	[-0.23; 3.16]	2	1.57 [1.12; 2.21]
self-esteem	4	124	117	1.59	[0.79; 3.22]	4.19	28.32	1.06	[-5.86; 7.99]	0	1.59 [0.79; 3.22]
Face-to-face CBT (post-treatment)											
Perfectionism - Frost et al. (1990)											
concern over mistakes	3	48	38	10.73***	[3.14; 36.62]	0.10	0.00	-1.14	[-5.91; 3.62]	0	10.73 [3.14; 36.62]
personal standards	3	48	20	3.06*	[1.09; 8.56]	0.53	0.00	1.00	[-2.23; 4.22]	2	2.46 [0.98; 6.15]
Perfectionism - Shafran et al. (2000)											
clinical perfectionism	4	58	55	2.91*	[1.30; 6.52]	0.43	0.00	0.19	[-2.99; 3.37]	0	2.91 [1.29; 6.52]
Secondary Outcomes											
depression	2	29	30	2.06	[0.80; 5.28]	0.00	0.00	—	—	—	—
satisfaction with life	2	37	18	2.60	[0.44; 15.37]	1.85	45.98	—	—	—	—
eating disorder symptoms	3	65	67	2.21	[0.81; 6.09]	5.14	61.09	2.37	[-36.18; 40.92]	2	1.04 [0.34; 3.15]
Self-help CBT (post-treatment)											
Perfectionism – Hewitt and Flett (1991) and Flett et al. (1998)											
self-oriented perfectionism	2	51	47	1.66	[0.53; 5.18]	2.20	54.43	—	—	—	—
other-oriented perfectionism	2	51	47	1.67	[0.44; 6.40]	0.10	0.00	—	—	—	—
socially prescribed perfectionism	2	51	47	1.41	[0.22; 9.11]	2.72	63.23	—	—	—	—
perfectionistic cognitions	2	51	47	1.46*	[1.08; 13.52]	1.90	47.45	—	—	—	—
Perfectionism - Frost et al. (1990)											

	k	N_T	N_C		CI	Q_T	I^2		CI	k^{TF}	
concern over mistakes	9	266	256	2.09***	[1.52; 2.87]	6.89	0.00	1.50	[0.12; 2.87]	2	1.96 [1.40; 2.77]
doubts about action	2	100	103	1.58	[0.56; 4.49]	1.41	29.00	—	—	—	—
personal standards	6	131	132	1.43	[0.74; 2.81]	6.57	23.85	-0.04	[-3.91; 3.82]	1	1.37 [0.80; 2.31]
Perfectionism – Slaney et al. (2001)											
discrepancy	2	51	47	2.08	[0.69; 6.21]	1.79	44.08	—	—	—	—
Perfectionism - Shafran et al. (2002)											
clinical perfectionism	4	147	143	3.05***	[1.87; 5.00]	1.00	0.00	-1.00	[-1.95; -0.04]	0	3.05 [1.87; 5.00]
Secondary Outcomes											
depression symptoms	6	188	183	1.84*	[1.12; 3.01]	2.77	0.00	0.57	[-1.35; 2.49]	2	1.73 [1.20; 2.48]
anxiety	6	188	183	1.55*	[1.01; 2.37]	0.51	0.00	0.61	[-1.21; 2.43]	2	2.00 [1.08; 2.00]
satisfaction with life	3	114	116	1.59	[0.37; 6.90]	3.66	45.30	2.71	[-269.54; 274.9]	0	1.59 [0.37; 6.90]
eating disorder symptoms	6	160	156	1.75**	[1.16; 2.64]	3.25	0.00	0.38	[-2.55; 3.31]	1	1.66 [1.11; 2.48]
self-esteem	3	105	97	1.45	[0.84; 2.51]	1.18	0.00	-1.94	[-17.20; 13.31]	0	1.45 [0.84; 2.51]

Note. k = number of studies; N_T = total number of participants in treatment groups in the k samples; N_C = total number of participants in control groups in the k samples; CI = confidence interval; Q_T = measure of heterogeneity; I^2 = percentage of heterogeneity; k^{TF} = number of imputed studies as part of "trim and fill" method.

*p < .05; **p < .01; ***p < .001.

Table 5

Summary of overall pooled event rate for reliable deterioration for face-to-face and/or self-help cognitive-behavioral therapy (CBT) and control

Variable	k	N	Reliable deterioration (%)	95% CI	Q_T	I^2 (%)	Egger's intercept	95% CI	k^{TF}	"Trim and fill" estimates [95% CI]
Face-to-face and self-help CBT (Post-treatment)										
Perfectionism - Hewitt et al. (1991)										
self-oriented perfectionism	3	61	10.7	[3.3; 29.7]	2.92	31.56	-2.44	[-13.58; 8.71]	0	10.7 [3.3; 29.7]
other-oriented perfectionism	3	61	5.0	[1.5; 16.0]	1.14	0.00	-3.49	[-37.62; 30.64]	0	5 [1.5; 16.0]
socially prescribed perfectionism	3	61	10.7	[3.3; 29.7]	2.92	31.56	-2.44	[-13.58; 8.71]	0	10.7 [3.3; 29.7]
perfectionistic cognitions	2	51	8.5	[2.3; 27.3]	1.55	35.65	—	—	—	—
Perfectionism - Frost et al. (1990)										
concern over mistakes	12	376	5.0	[3.1; 8.1]	4.89	0.00	-1.22	[-2.48; 0.04]	4	6.1 [3.9; 9.3]
doubts about action	3	119	2.4	[0.7; 8.0]	0.82	0.00	0.26	[-43.74; 44.25]	0	2.4 [0.7; 8.0]
personal standards	8	179	6.6	[3.6; 11.9]	4.66	0.00	-2.15	[-3.26; -1.04]	4	9.3 [5.5; 15.2]
Perfectionism - Shafran et al. (2002)										
clinical perfectionism	7	229	3.7	[1.8; 7.6]	3.11	0.00	-0.83	[-4.24; 2.59]	3	5.6 [3.0; 10.2]
Secondary Outcomes										
depression	8	217	6.5	[3.5; 11.5]	5.39	0.00	-2.58	[-5.71; 0.55]	3	9.0 [4.9; 15.7]
anxiety	7	198	10.8	[5.0; 21.9]	14.71	59.20	-3.53	[-7.26; 0.21]	2	16.5 [7.4; 32.6]
satisfaction with life	4	151	5.7	[2.0; 15.6]	5.10	41.17	-3.22	[-9.38; 2.94]	2	10.5 [3.6; 26.8]
eating disorder symptoms	8	229	11.6	[7.7; 16.9]	6.84	0.00	-2.02	[-3.03; -1.02]	0	11.6 [7.7; 16.9]
self-esteem	4	124	12.6	[6.0; 24.6]	5.50	45.47	-1.76	[-14.19; 10.66]	0	12.6 [6.0; 24.6]
Face-to-face CBT (post-treatment)										
Perfectionism - Frost et al. (1990)										
concern over mistakes	3	48	3.0	[0.6; 13.6]	0.82	0.00	42.17	[31.16; 53.17]	0	3.0 [0.6; 13.6]
doubts about action	2	47	14.9	[7.3; 28.2]	0.05	0.00	—	—	—	—
personal standards	3	48	3.0	[0.6; 13.5]	0.82	0.00	42.17	[31.16; 53.17]	0	3.0 [0.6; 13.5]
Perfectionism - Shafran et al. (2002)										
clinical perfectionism	4	58	5.6	[1.8; 16.0]	0.74	0.00	-2.12	[-7.32; 3.09]	2	7.4 [2.8; 18.0]
Secondary Outcomes										
depression	2	29	7.2	[1.8; 24.8]	0.22	0.00	—	—	—	—
satisfaction with life	2	37	5.4	[0.1; 19.2]	0.00	—	—	—	—	—
eating disorder symptoms	3	65	11.3	[5.3; 22.5]	1.43	0.00	-2.01	[-3.75; -0.28]	0	11.3 [5.3; 22.5]
Self-help CBT (post-treatment)										
Perfectionism – Hewitt et al. (1991)										
self-oriented perfectionism	2	51	7.9	[0.7; 49.5]	2.83	64.68	—	—	—	—
other-oriented perfectionism	2	51	3.2	[0.7; 14.6]	0.35	0.00	—	—	—	—
socially prescribed perfectionism	2	51	7.9	[0.7; 49.5]	2.83	64.68	—	—	—	—

	k	N		CI	Q_T	I^2		CI	k^{TF}	
Perfectionism - Frost et al. (1990)										
concern over mistakes	10	328	5.3	[3.2; 8.6]	3.36	0.00	-1.26	[-2.83; 0.31]	3	6.2 [3.9; 9.7]
personal standards	6	131	7.6	[3.9; 14.3]	3.42	0.00	-2.23	[-3.32; -1.15]	3	10.5 [5.9; 17.8]
Perfectionism - Shafran et al. (2002)										
clinical perfectionism	4	171	2.7	[1.0; 7.0]	1.44	0.00	59.40	[18.39; 100.40]	0	2.7 [1.0; 7.0]
Secondary Outcomes										
depression	6	188	6.3	[0.3; 12.0]	5.14	2.69	-3.24	[-7.19; 0.72]	2	8.5 [3.9; 17.7]
anxiety	6	188	9.6	[3.9; 21.8]	14.37[*]	65.19	-3.96	[-7.96; 0.05]	3	19.5 [8.1; 40.0]
satisfaction with life	3	114	5.8	[1.1; 26.1]	6.13	67.38	-5.74	[-39.99; 28.51]	2	18.8 [3.6; 58.9]
eating disorder symptoms	6	164	10.9	[6.4; 18.1]	5.41	7.66	-1.79	[-2.77; -0.82]	3	13.5 [7.2; 24.1]
self-esteem	3	105	14.2	[6.3; 29.1]	4.45	55.07	-0.11	[-114.96; 114.74]	0	14.2 [6.3; 29.1]
Control (post-treatment)										
Perfectionism – Hewitt et al. (1991) and Flett et al. (1998)										
self-oriented perfectionism	3	57	16.2	[8.6; 28.4]	0.65	0.00	-1.50	[-11.30; 8.29]	0	16.2 [8.6; 28.4]
other-oriented perfectionism	3	57	7.5	[2.9; 18.5]	0.60	0.00	-1.16	[-32.36; 30.04]	0	7.5 [2.9; 18.5]
socially prescribed perfectionism	3	57	14.2	[7.3; 25.9]	0.22	0.00	-1.03	[-5.04; 2.98]	0	14.2 [7.3; 25.9]
perfectionistic cognitions	2	47	14.9	[7.3; 28.2]	0.05	0.00	—	—	—	—
Perfectionism - Frost et al. (1990)										
concern over mistakes	12	341	10.5	[7.5; 14.5]	8.38	0.00	-1.34	[-2.68; -0.01]	5	13.2 [9.4; 18.0]
doubts about action	3	123	9.2	[4.6; 17.5]	2.51	20.39	9.88	[-3.91; 23.66]	0	9.2 [4.6; 17.5]
personal standards	8	159	13.8	[8.8; 20.9]	7.12	1.74	-2.20	[-3.44; -0.95]	3	15.4 [9.5; 24.0]
Perfectionism - Shafran et al. (2002)										
clinical perfectionism	7	204	6.3	[3.5; 11.1]	3.75	0.00	-0.79	[-2.47; 0.90]	2	7.6 [4.4; 12.8]
Secondary Outcomes										
depression symptoms	8	213	20.6	[13.4; 30.2]	12.20	42.64	-0.92	[-4.35; 2.51]	1	21.9 [13.9; 32.7]
anxiety symptoms	7	193	22.0	[15.2; 30.6]	8.51	29.50	0.26	[-4.14; 4.68]	0	22.0 [15.2; 30.6]
satisfaction with life	4	136	11.0	[2.6; 36.1]	16.36	81.66	-4.61	[-21.65; 12.43]	1	16.0 [4.8; 42.0]
eating disorder symptoms	8	205	12.1	[7.7; 18.7]	7.96	12.02	-1.75	[-3.83; 0.33]	2	13.3 [8.2; 20.9]
self-esteem	4	117	14.5	[7.3; 26.6]	5.19	42.23	-1.32	[-14.42; 11.77]	0	14.5 [7.3; 26.6]

Note. **k** = number of studies; **CI** = confidence interval; **Q_T** = measure of heterogeneity; **I^2** = percentage of heterogeneity[+]; **k^{TF}** = number of imputed studies as part of "trim and fill" method.

[*]$p < .05$; [**]$p < .01$; [***]$p < .001$.

Table 6

Summary of overall effect sizes for relative risk ratios of reliable deterioration for face-to-face and/or self-help cognitive-behavioral therapy (CBT) versus control

Variable	k	N_T	N_C	Relative Risk Ratio (reliable deterioration)	95% CI	Q_T	I^2 (%)	Egger's intercept	95% CI	k^{TF}	"Trim and fill" estimates r^+ [95% CI]
Face-to-face and self-help CBT (post-treatment)											
Perfectionism – Hewitt and Flett (1991)											
self-oriented perfectionism	3	61	57	0.71	[0.26; 1.97]	1.81	0.00	-1.27	[-19.94; 17.40]	0	0.71 [0.26; 1.97]
other-oriented perfectionism	3	61	57	0.61	[0.12; 3.02]	1.16	0.00	-11.11	[-54.71; 32.48]	0	0.61 [0.12; 3.02]
socially prescribed perfectionism	3	61	57	0.79	[0.26; 2.44]	2.11	5.37	-1.64	[-21.12; 17.84]	0	0.79 [0.26; 2.44]
perfectionistic cognitions	2	51	47	0.60	[0.19; 1.94]	0.84	0.00	—	—	—	—
Perfectionism – Frost et al. (1990)											
concern over mistakes	10	331	316	0.52	[0.25; 2.00]	4.39	0.00	-0.85	[-2.82; 1.11]	0	0.52 [0.25; 2.00]
doubts about action	3	119	123	0.26	[0.07; 1.02]	0.25	0.00	-1.91	[-17.96; 14.14]	0	0.26 [0.07; 1.02]
personal standards	5	115	114	0.46	[0.15; 1.43]	0.39	0.00	-0.53	[-1.89; 0.83]	0	0.46 [0.15; 1.43]
Perfectionism – Shafran et al. (2002)											
clinical perfectionism	4	134	131	0.61	[0.17; 2.18]	2.58	0.00	5.35	[2.62; 8.07]	1	0.46 [13.9; 1.49]
Secondary Outcomes											
depression symptoms	7	193	191	0.29*	[0.12; 0.65]	1.85	0.00	0.16	[-2.83; 3.15]	0	0.29 [0.12; 0.65]
anxiety symptoms	6	188	183	0.51	[0.25; 1.04]	4.94	0.00	-1.87	[-4.67; 0.92]	0	0.51 [0.25; 1.04]
satisfaction with life	4	134	136	0.39	[0.06; 2.37]	2.89	0.00	10.57	[2.05; 19.10]	0	0.39 [0.06; 2.37]
eating disorder symptoms	7	195	187	1.03	[0.56; 1.87]	5.69	0.00	-0.70	[-3.26; 1.88]	0	1.03 [0.56; 1.87]
Face-to-face CBT (post-treatment)											
Perfectionism – Shafran et al. (2002)											
clinical perfectionism	2	28	28	1.00	[0.15; 6.56]	0.00	0.00	—	—	—	—
Secondary Outcomes											
depression symptoms	2	29	30	0.51	[0.10; 2.56]	0.00	0.00	—	—	—	—
satisfaction with life	2	37	38	0.69	[0.12; 4.01]	0.13	0.00	—	—	—	—
eating disorder symptoms	2	47	49	1.76	[0.50; 0.38]	0.63	0.00	—	—	—	—
Self-help CBT (post-treatment)											
Perfectionism - Frost et al. (1990)											
concern over mistakes	9	312	608	0.53	[0.25; 1.12]	4.33	0.00	-0.92	[1.04; -3.37]	0	0.53 [0.25; 1.12]
personal standards	5	114	229	0.46	[0.15; 1.43]	0.39	0.00	-0.53	[-1.84; 0.84]	0	0.46 [0.15; 1.43]
Secondary Outcomes											
depression symptoms	5	164	161	0.25*	[0.09; 0.71]	1.24	0.00	-1.91	[-6.32; 2.49]	0	0.25 [0.09; 0.71]
anxiety	6	188	183	0.51	[0.25; 1.04]	4.95	0.00	-1.87	[-4.67; 0.91]	0	0.51 [0.25; 1.04]
satisfaction with life	3	114	114	0.51	[0.01; 34.0]	5.00	59.98	13.44	[-255.38; 282.26]	0	0.51 [0.01; 34.0]
eating disorder symptoms	5	148	138	0.86	[0.42; 1.70]	4.17	3.98	-1.67	[-4.64; 1.30]	0	0.86 [0.42; 1.70]

Note. k = number of studies; N_T = total number of participants in treatment groups in the k samples; N_C = total number of participants in control groups in the k samples; CI = confidence interval; Q_T = measure of heterogeneity; I^2 = percentage of heterogeneity; k^{TF} = number of imputed studies as part of "trim and fill" method.

$^*p < .05$; $^{**}p < .01$; $^{***}p < .001$.