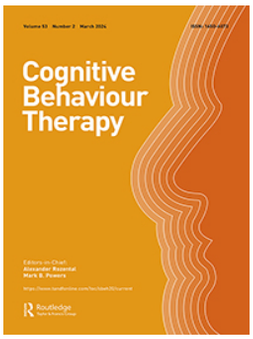

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The relationships between perfectionism and symptoms of depression, anxiety and obsessive-compulsive disorder in adults: a systematic review and meta-analysis

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ABSTRACT

Perfectionism is a transdiagnostic process associated with depression, anxiety, and obsessive-compulsive disorder (OCD). The focus of this systematic review and meta-analysis was to examine evidence for the association between perfectionistic strivings and perfectionistic concerns with symptoms of depression, general anxiety, social anxiety, task anxiety, and OCD in adults. A total of 416 studies were included, with 113,118 participants aged 17 to 90 years ($M = 23.83$). Perfectionistic concerns had significant medium correlations with anxiety, OCD and depressive symptoms (pooled $r = .38$ to $.43$). Perfectionistic strivings had significant, small correlations with OCD, depression and all anxiety outcomes (pooled $r = .10$ to $.21$), except social anxiety where there was no association. Results demonstrate perfectionistic concerns have a stronger relationship with psychological distress than perfectionistic strivings, but strivings are significantly related to distress. Future research should examine the causal relationships between perfectionism dimensions and psychopathology.

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Perfectionism; depression; anxiety; OCD; meta-analysis

Perfectionism is a transdiagnostic process across psychological disorders (Egan et al., 2011). Perfectionism has predominately been measured with the Multidimensional Perfectionism Scales (FMPS; Frost et al., 1990; HMPS; Hewitt & Flett, 1991). Factor analyses have found a consistent two-factor model of perfectionistic strivings; striving towards standards, and perfectionistic concerns; worry over mistakes and believing others expect perfection (Smith & Saklofske, 2017). Clinical perfectionism is defined as self-esteem based on striving to achieve standards despite negative consequences (Shafran et al., 2002). The definition of clinical perfectionism has guided cognitive behavioural therapy for perfectionism (CBT-P), which has demonstrated efficacy in reducing symptoms of depression, anxiety, and eating disorders (see Galloway et al., 2022).

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Perfectionistic concerns have a consistent positive association with psychopathology. Limburg et al. (2017) found in a meta-analysis with adult samples medium, positive correlations between perfectionistic concerns and symptoms of depression (clinical samples $r = .40$, non-clinical samples $r = .39$), anxiety (clinical samples $r = .30$, non-clinical samples $r = .35$), and obsessive-compulsive disorder (OCD) (clinical samples $r = .35$, non-clinical samples $r = .30$). Similarly, Lunn et al. (2023) demonstrated in a meta-analysis with young people (mean age 17.70 years), that perfectionistic concerns had significant moderate correlations with symptoms of depression ($r = .40$), anxiety ($r = .37$–$.41$) and OCD ($r = .42$).

There has also been a significant association found between perfectionistic strivings and psychopathology in previous reviews, although the pooled correlations have been smaller (Limburg et al., 2017; Lunn et al., 2023; Smith et al., 2021). For example, in meta-analyses by Limburg et al. (2017), and Smith et al. (2021), perfectionistic strivings had significant, albeit small, positive relationships with symptoms of depression (clinical samples $r = .18$, non-clinical samples $r = .11$), anxiety (clinical samples $r = .07$, non-clinical samples $r = .14$), and OCD (clinical samples $r = .11$, non-clinical samples $r = .14$). Similar small, but significant, relationships have also been found in young people (anxiety; $r = .05$–$.19$; Lunn et al., 2023).

The objective of this systematic review and meta-analysis was to provide up to date evidence of the association between perfectionism dimensions and psychopathology in adults and to address limitations of previous reviews. Previous meta-analyses on the association between perfectionism, anxiety (Smith et al., 2017) and depression (Smith et al., 2021) were useful, however did not disaggregate by age and included children, adolescents, and adults. Providing a pooled correlation across all age categories means any differences between children and adults cannot be determined. Further, given the comorbidity between anxiety, depression, and OCD, it is useful for clinicians to have data within a single meta-analysis, similar to the meta-analysis by Limburg et al. (2017) in adults. However, the evidence requires updating in adults given that the Limburg et al. (2017) review included literature only until mid-2013. Whilst Lunn et al. (2023) conducted a recent meta-analysis on the relationship between perfectionism and symptoms of depression, anxiety, and OCD in young people, the results cannot be generalised to adults. Understanding the associations between dimensions of perfectionism and psychopathology is important to inform future research on the treatment of perfectionism.

The aim of this review was to examine the association between perfectionism and symptoms of depression, anxiety (including subtypes of general, social and task anxiety), and OCD in adult clinical, and non-clinical samples. It was predicted: (1) there would be significant, positive pooled correlations between perfectionistic concerns and strivings with depression, anxiety subtypes, and OCD, and (2) there would be a stronger pooled association between perfectionistic concerns than perfectionistic strivings, with psychopathology.

Method

The search terms of this systematic review, and meta-analysis was registered on PROSPERO (ID: CRD42022327326) on 10th May 2022, prior to literature searches commencing. The 2020 PRISMA guidelines (Page et al., 2021), were followed.

Inclusion and exclusion criteria

Inclusion criteria were: (1) a correlation coefficient, or convertible effect size between a standardised self-report measure of perfectionism, and at least one standardised self-report measure of depression, general anxiety, social anxiety, task anxiety, or OCD, (2) mean age of the sample is 18 years or higher, or minimum age of 18 in the age range where mean is not available, (3) journal articles published in peer-reviewed journals, in English, and (4) articles published between January 1980, and November 2022. Articles were excluded if perfectionism dimensions were reported only as a global perfectionism score.

Search strategy and selection process

A search was conducted on Web of Science, Medline, Scopus, and ProQuest on November 8th, 2022. Search terms were; perfectionis* AND depress* OR major depress* OR depress* disorder OR MDD OR dysthemia OR anxi* OR generali* anxiety OR social anxiety OR panic disorder OR mood disorder OR obsessive-compulsive OR OCD OR psychopathology OR mental health OR post- traumatic stress OR PTSD. The primary researcher (TC) screened 100% of articles at title and abstract, and full-text level, and a secondary researcher (JL) screened a random selection of 30% of studies at title and abstract ($N = 1122$), and full-text level ($N = 488$). TC and JL were trained by the senior author (SE) in how to perform article screening, worked independently, and were blind to the others ratings. A Kappa coefficient was calculated in SPSS (Version 28; IBM Corp, 2021), to calculate inter-rater reliability. Landis and Koch (1977) indicate Kappa coefficients of 0 = no agreement, .10–.20 is "slight" agreement, .21–.40 is "fair" agreement, .41–.60 is "moderate" agreement, .61–.80 is "substantial" agreement, .81–.99 is "near perfect" agreement, and 1 is "perfect" agreement. Discrepancies in study qualification were assessed by SE until consensus was reached.

Data extraction and management

The primary researcher (TC) worked independently to extract data. The preferred effect size for extraction was a correlation coefficient. In cases where this was not reported, effect sizes were converted to correlations. In studies comparing samples, means and standard deviations were used to convert effect size to correlation coefficients. When extracting data from longitudinal studies, only relationships at baseline were extracted. If studies used appropriate measures though did not report a useable effect size, TC contacted the author to obtain data. In addition, standard error was calculated, sample location (country), measures used, mean age, and sample size were extracted. Anxiety symptoms were classified into the outcomes of (1) general anxiety, including diagnoses of Generalised Anxiety Disorder (GAD) and sub-clinical groups of measures of general anxiety (e.g. Depression Anxiety Stress Scales (Lovibond & Lovibond, 1995); State Trait Anxiety Inventory (Spielberger, 1983), (2) social anxiety, and (3) task anxiety, which included test anxiety, sport performance anxiety, and music performance anxiety.

Risk of bias

Bias was assessed using the National Institutes of Health (NIH) quality assessment measure (NIH, 2014). Answering 14 items for each study, bias is determined by the number of "yes" responses divided by the total of items considered applicable. Assessment scores below 50% indicate "poor" quality, between 51 and 74.99% indicate "fair" quality, and 75% and above indicate good quality.

Data synthesis, sensitivity analysis, and assessment of heterogeneity

Data was analysed using JASP (JASP Team, 2020). Effect sizes are presented as a pooled correlation between each dimension of perfectionism and each criterion of psychopathology (depression, anxiety subtypes, and OCD) in adult clinical and non-clinical samples. To calculate pooled correlations, a Hedges random effects model (Hedges & Olkin, 1985) was used as this is recommended in datasets expected to contain high heterogeneity, as predicted based on a previous review (Limburg et al., 2017). Pooled correlations were interpreted using Cohen's (1992) conventions: small effect $r = .10$, medium effect $r = .30$, and large effect $r = >.50$. Cooper et al. (2009) recommend sensitivity analysis when handling outlier effect sizes within a meta-analysis. We conducted a sensitivity analysis using JASP without outliers to establish whether meaningful change took place, and decide whether studies would be retained or excluded.

Heterogeneity was assessed using Cochran's Q statistics (Higgins et al., 2003). In addition, I^2 was used to establish a percentage of variation across studies, where values 25–49% are considered "low", values 50–74% are "moderate", and values > 75% are considered "high" heterogeneity (Higgins et al., 2003).

Publication bias and certainty assessment

We accounted for publication bias through Egger's test for plot asymmetry (Egger et al., 1997). Plot tests were significant ($p < .05$) indicating plot asymmetry, and publication bias concern (Egger et al., 1997). A final judgement of the reliability, and validity of results was based on the following outcomes; National Institutes of Health (2014) study quality assessment tool, reporting of confidence intervals, tests of heterogeneity, meta-regression, sensitivity analysis, and reporting of Egger's test for plot asymmetry in determining publication bias (Egger et al., 1997).

Results

According to Landis and Koch (1977) conventions, inter-rater agreement of article inclusion was considered substantial at title and abstract level (K = .75), and near perfect at full-text level of screening (K = .93).

Study characteristics

There were 416 studies included in the meta-analysis (see Appendix in supplementary materials for table of study characteristics, and Figure 1.) Studies were

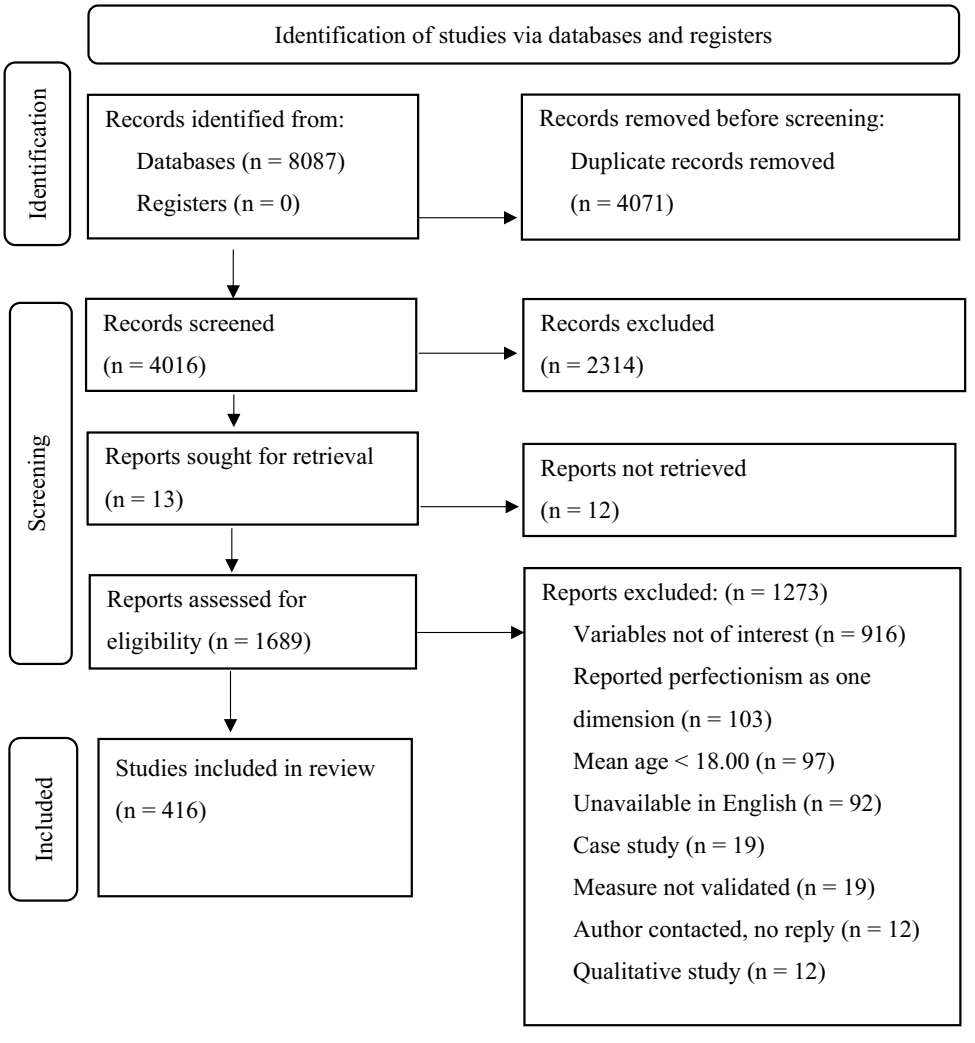

Figure 1. Study selection flow chart. *Note:* The structure of this flow diagram is in adherence with PRISMA guidelines (Page et al., 2021).

conducted between 1989 and 2022 across 37 countries. Of the 416 studies accumulating 113,118 participants, most were conducted in the United States of America (34%), followed by Canada (26%), Europe (14.90%), Australia (7%), United Kingdom (7%), China (3%), the Middle East (3%), Asia/South East Asia (3%) and South America (1.68%). The countries represented may be biased by only studies published in English were included. Of the 16% of studies that included clinical samples, the most common diagnostic groups were depression (57.4%), generalised anxiety (18.1%), OCD (14.9%), and social anxiety (9.6%). The mean age was 23.83 years, and most participants (69.12%) were female. Samples sizes ranged from $n = 21$ to $n = 3352$, with the average sample size $n = 272$.

Risk of bias

Quality scores ranged from "poor" (37.5%) to "good" (83.33%) (Appendix 1). The overall quality score was 67.72% (*SD* = 6.87). This score indicates "fair" quality, most-likely due to the cross-sectional, correlational nature of most studies resulting in a lower quality rating.

Publication bias

Publication bias was of concern across five outcomes tested (see Table 1).

Pooled correlations between perfectionistic concerns and psychopathology

Pooled correlations between perfectionistic concerns and psychopathology are presented in Table 2. In clinical samples, significant, medium positive correlations were observed between perfectionistic concerns and symptoms of depression ($r = .43$, 95% CI [.39–.46], $p = < .001$), general anxiety ($r = .39$, 95% CI [.32–.46], $p = < .001$), social anxiety ($r = .43$, 95% CI [.33–.52], $p = < .001$), and OCD ($r = .43$, 95% CI [.32–.55], $p = < .001$). Similarly, in non-clinical samples, significant medium positive correlations were observed between perfectionistic concerns and symptoms of depression ($r = .41$, 95% CI [.39–.42], $p = < .001$), general anxiety ($r = .38$, 95% CI [.36–.41], $p = < .001$), social anxiety ($r = .41$, 95% CI [.37–.46], $p = < .001$), task anxiety ($r = .38$, 95% CI [.33–.43], $p = < .001$), and OCD ($r = .39$, 95% CI [.37–.42], $p = < .001$).

Pooled correlations between perfectionistic strivings and psychopathology

Pooled correlations between perfectionistic strivings and psychopathology outcomes are presented in Table 3. In clinical samples significant, small positive relationships were observed between perfectionistic strivings and symptoms of depression ($r = .21$, 95% CI [.17–.24], $p = < .001$), general anxiety ($r = .12$, 95% CI [.03–.21], $p = < .01$), and OCD ($r = .16$, 95% CI [.06–.26], $p = < .05$). No relationship was observed between perfectionistic strivings and symptoms of social anxiety in clinical samples ($r = .07$, 95% CI = [–.02–.15], $p = > .05$). In non-clinical samples, significant small positive relationships were observed between perfectionistic strivings and symptoms of general anxiety ($r = .10$, 95% CI [.07–.12], $p = < .001$), task anxiety ($r = .11$, 95% CI [.06–.16], $p = < .001$), and OCD

Table 1. Results for Egger's test for asymmetry.

		Concerns		Strivings	
Sample		z	*p*	z	*p*
Clinical	Depression	−2.674	.007	−1.086	.277
	General Anxiety	−1.920	.055	.475	.635
	Social Anxiety	−1.621	.105	.122	.903
	OCD	−4.343	< .001	−2.336	.019
Non-Clinical	Depression	−4.859	< .001	.499	.617
	General Anxiety	−4.130	< .001	−.628	.530
	Social Anxiety	−1.500	.134	1.139	.255
	Task Anxiety	−1.887	.059	0.280	.779
	OCD	−1.514	.130	0.681	.496

Note: z = score from Egger's test for asymmetry.

Table 2. Pooled correlations for perfectionistic concerns and psychopathology.

		Perfectionistic Concerns			
Sample		*k*	*r*	Lower Limit	Upper Limit
Clinical	Depression	55	.43***	.39	.46
	General Anxiety	18	.39***	.32	.46
	Social Anxiety	10	.43***	.33	.52
	OCD	15	.43***	.32	.55
Non-Clinical	Depression	267	.41***	.39	.42
	General Anxiety	121	.38***	.36	.41
	Social Anxiety	33	.41***	.37	.46
	Task Anxiety	28	.38***	.33	.43
	OCD	25	.39***	.37	.42

Note: k = number of studies included in effect size, r = pooled association, ***p = < .001, **p = .01, *p = .05, k = number of studies included in effect size, Lower limit = lower limit of 95% confidence interval, Upper Limit = upper limit of 95% confidence interval.

Table 3. Pooled correlations for perfectionistic strivings and psychopathology.

		Perfectionistic Strivings			
Sample		*k*	*r*	Lower Limit	Upper Limit
Clinical	Depression	44	.21***	.17	.24
	General Anxiety	13	.12**	.03	.21
	Social Anxiety	6	.07	−.02	.15
	OCD	13	.16*	.06	.26
Non-Clinical	Depression	216	.07***	.05	.09
	General Anxiety	104	.10***	.07	.12
	Social Anxiety	24	.04	−.01	.08
	Task Anxiety	25	.11***	.06	.16
	OCD	19	.19***	.15	.23

Note: k = number of studies included in effect size, r = pooled association, ***p = < .001, **p = .01, *p = .05, k = number of studies included in effect size, Lower limit = lower limit of 95% confidence interval, Upper Limit = upper limit of 95% confidence interval.

(r = .19, 95% CI [.15–.23], p = < .001). A significant positive relationship was observed between perfectionistic strivings and symptoms of depression; however, effect size could not be qualitatively interpreted (r = .07, 95% CI [.05–.09], p = < .001). No relationship was observed between perfectionistic strivings and symptoms of social anxiety in non-clinical samples (r = .04, 95% CI [−.01–.08], p = >.05).

Sensitivity analysis

DiBartolo et al. (2008) was found to be an influential outlier when assessing perfectionistic strivings in social anxiety in a non-clinical sample, reporting r = .31. This study was removed to conduct a sensitivity analysis which indicated removal did not impact results, as the effect size was moved by .01, confidence in the estimate was moved by .03, and the relationship remained significant (r = .04 [.01–.07], p = .04). Hence, this study was retained.

Heterogeneity

Heterogeneity results are presented in Table 4, indicating it was moderate to high (I^2 above 50%) across most outcomes (Higgins et al., 2003). Heterogeneity was considered low (I^2 below 50%) in perfectionistic strivings and clinical social anxiety, perfectionistic

Table 4. Results of heterogeneity testing.

		Concerns		Striving	
Sample		I^2 (%)	Q *p*	I^2 (%)	Q *p*
Clinical	Depression	62.03	< .001	21.27	< .001
	General Anxiety	80.25	< .001	67.86	< .001
	Social Anxiety	84.34	< .001	0.00	.72
	OCD	90.37	< .001	64.70	< .001
Non-Clinical	Depression	88.72	< .001	80.29	< .001
	General Anxiety	88.95	< .001	82.23	< .001
	Social Anxiety	87.77	< .001	73.13	< .001
	Task Anxiety	82.65	< .001	64.24	< .001
	OCD	37.19	< .001	47.76	< .001

Note: I^2 = estimate percentage of heterogeneity in dataset, Q *p* = Cochrane's Q statistic for heterogeneity significance result.

strivings and clinical depression, and perfectionistic strivings and non-clinical OCD (Higgins et al., 2003). Outcomes indicating high heterogeneity indicate wide variance in findings of primary studies.

Discussion

The aim of this meta-analysis was to examine in adults the association between perfectionism dimensions and psychopathology. Consistent with previous meta-analyses (Limburg et al., 2017; Lunn et al., 2023; Smith et al., 2017, 2021), perfectionistic concerns had a medium, positive pooled correlation with symptoms of depression, anxiety subtypes and OCD. This large review provides strong support that perfectionistic concerns are transdiagnostic and relevant to a wide range of psychopathology (Egan et al., 2011). This is important as it suggests that clinicians should be aware of and assess for perfectionistic concerns in clinical practice given it is a common process which could be targeted across disorders (Egan et al., 2011, 2014).

While our results confirmed previous meta-analyses that perfectionistic concerns were more strongly related to psychopathology than strivings (Limburg et al., 2017; Lunn et al., 2023; Smith et al., 2017, 2021), strivings were significantly associated with all outcomes, except social anxiety. It should be noted there were only a small number of studies which included clinical samples of social anxiety ($n = 5$). The same pooled correlation ($r = .07$) was found between strivings and symptoms of depression in non-clinical samples, but was significant due to the large number of studies ($n = 216$). Hence, the interpretation there is no relationship between strivings and social anxiety should be viewed with caution. Overall, the pattern of associations we observed was similar across non-clinical and clinical samples. Medium positive relationships between perfectionistic concerns and psychopathology were observed in both clinical ($r = .39$–$.43$) and non-clinical groups ($r = .38$–$.41$). While perfectionistic strivings had a stronger relationship with depressive symptoms in clinical ($r = .21$) versus non-clinical ($r = .07$) samples, the remaining outcomes were similar for symptoms of anxiety and OCD (clinical $r = .07$–$.16$; non-clinical $r = .04$ to $.19$). These findings suggest whether one has a clinical diagnosis or not, perfectionism is associated with psychopathology.

The finding of a significant, positive association between perfectionistic strivings and symptoms of depression, anxiety, and OCD is consistent with previous meta-analyses

(Limburg et al., 2017; Lunn et al., 2023). Our results are important since the nature of perfectionistic strivings have been debated in the literature, for example with some authors arguing perfectionistic strivings represent "healthy" aspects of perfectionism (Stoeber et al., 2020). Adopting a meta focus has clarified that perfectionistic strivings are associated, although to a smaller extent than concerns, with psychopathology. Our results suggest that to some extent, all aspects of perfectionism are related to psychopathology. This follows given that there is a high degree of overlap between strivings and concerns (Smith & Saklofske, 2017; Stoeber & Otto, 2006; Stoeber et al., 2020). We suggest researchers opt for the term "perfectionistic strivings" instead of terms such as "healthy" perfectionism. Particularly, without an understanding of causal mechanisms, it is not clear if there is a causal relationship between perfectionism and psychopathology. An important finding of this review was that perfectionistic strivings are associated with aspects of psychopathology (Limburg et al., 2017; Lunn et al., 2023). The findings of a larger association between perfectionistic concerns than perfectionistic strivings suggest that in treatment of perfectionism, reducing perfectionistic concerns should be the focus.

A novel aspect of this review was the examination of task anxiety. Experiencing task anxiety is positively associated with exhaustion (Strack et al., 2015). Shafran et al. (2002) discussed that individuals typically persevere in the pursuit of perfection, despite adverse outcomes, including exhaustion and burnout. A previous meta-analysis reported positive associations between perfectionistic strivings and burnout (Hill & Curran, 2016). One hypothesis is that engaging in perfectionistic strivings has a personal "cost" for the individual. Future longitudinal research should examine whether strivings lead to burnout and exhaustion over time (Hill & Curran, 2016).

Clinical implications

The findings of this meta-analysis demonstrating the association between perfectionism and a range of psychological symptoms underscores the importance of clinicians addressing perfectionism when it is the primary problem or a maintaining process of another psychological disorder and interfering with treatment for that disorder. Given perfectionism may be a shared maintaining process across multiple disorders (Egan et al., 2011), and as outlined in this review is linked to many different symptoms, CBT-P may be an effective transdiagnostic treatment for perfectionism and symptoms of anxiety, depression and eating disorders (Galloway et al., 2022). However, as Shafran et al. (2023) have highlighted, further research is required in trials comparing CBT-P to standard evidence-based treatments for psychological disorders, given a small number of head-to-head comparisons to date. We recommend that the standard evidence-based treatment for psychological disorders is used first, but if perfectionism is interfering with treatment progress, or the client presents specifically for the treatment of perfectionism, then CBT-P should be implemented (see Egan et al., 2014 for further details of treatment formulation and planning). The results of larger associations between perfectionistic concerns than perfectionistic strivings also support the aim of CBT-P, where reducing striving to meet standards is not the goal of treatment, rather it is about changing self-worth being overly dependent on striving and self-criticism over meeting standards (Egan et al., 2014; Shafran et al., 2018).

Strengths and limitations

A strength of this meta-analysis was the large scale of the review, with over 400 studies and narrow confidence intervals, we can be confident in the estimates of pooled correlations in this large body of literature. There were several limitations. First, due to time constraints, we did not include unpublished literature and dissertations. Second, we did not conduct inter-rater reliability on quality assessment. Third, the data was cross-sectional, and causation cannot be determined. Hummel et al. (2022) found in an experimental study a causal relationship where perfectionistic concerns led to an increase in negative affect in adults with high perfectionistic concerns. Despite this recent evidence, there are few studies that have examined causal relationships between perfectionism and psychopathology. Experimental studies are required to advance understanding of whether there is a causal link between perfectionism and psychopathology. Particularly, it would be helpful to further examine the nuances of the relationships between perfectionistic concerns, strivings, and psychopathology in experimental studies to determine the causality and impact of the different perfectionism dimensions. For example, it would be helpful to understand whether early interventions for perfectionism should assess for and intervene only with perfectionistic concerns or whether there is a role for psychoeducation in a young person around the role of striving in psychopathology, without necessarily reducing striving to meet standards.

Conclusion

This meta-analysis found in adults both perfectionistic strivings and perfectionistic concerns are associated with psychopathology, although strivings had a smaller association. Future research should focus on examining causality between perfectionism and psychopathology.

Disclosure statement

Sarah Egan and Roz Shafran receive royalties for the books *Cognitive-behavioral treatment of perfectionism* and *Overcoming perfectionism: A self-help guide using scientifically supported cognitive behavioural techniques, second edition.*

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