

Transdiagnostic Interventions in Prediagnostic Youth With Elevated Distress: A Meta-Analysis of Outcomes

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Objective: The current systematic review and meta-analysis identified nonpharmacological outpatient interventions with transdiagnostic effects in youth with elevated psychological distress who do not meet the diagnostic criteria. We examined common elements that may be associated with treatment effects. **Method:** Of the 10,208 studies identified, $k = 68$ were included involving 10,805 individuals with a M_{age} of 16.96 years ($SD = 1.80$; 66.67% female). We examined changes in depression, anxiety, suicidality, disordered eating, and quality of life using random-effects models in the *R meta* package. **Results:** Cohen's d effect sizes (95% CIs) were 0.21 [0.11, 0.32] for depression ($k = 64$), 0.20 [0.11, 0.29] for anxiety ($k = 57$), and 0.11 [0.01, 0.21] for quality of life ($k = 19$). Heterogeneity was present (I^2 ranging from 6.73 to 16.95%). Due to limited studies for eating ($k = 5$) and suicidality ($k = 4$), meta-analyses were not feasible for these outcomes. Moderator analyses indicated that adolescents (vs. children and emerging adults) derived significant benefits. Cognitive behavioral therapy was indicated as an effective transdiagnostic approach for depression and anxiety. The most frequent common elements across cognitive behavioral therapy approaches included cognitive literacy, emotional literacy, psychoeducation, goal setting, and problem solving. **Conclusions:** These results provide the first quantitative test of transdiagnostic intervention approaches that can improve mental health in vulnerable, symptomatic youth. Further attention is required to outcomes related to disordered eating and suicidality given their prevalence and serious consequences in youth. Dismantling studies of cognitive behavioral therapy are required to identify effective common elements that can drive better mental health outcomes in youth.

What is the public health significance of this article?

Transdiagnostic intervention approaches can improve mental health outcomes (depression, anxiety, and quality of life) in vulnerable youth with elevated psychological distress who do not meet the diagnostic criteria. Cognitive behavioral therapy, with elements such as cognitive and emotional literacy, psychoeducation, and problem solving, shows promise in addressing symptoms of depression and anxiety in this population. This review highlights the need for further research on disordered eating and suicidality outcomes to ensure comprehensive, effective support for youth mental health.

Keywords: transdiagnostic, mental health intervention, eating disorders, suicidality, youth

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Marcela Radunz and Catherine Johnson share first authorship. This review has been preregistered with PROSPERO (Registration Number: CRD42023402249). The data that support the findings of this study are publicly available on the Open Science Framework at <https://osf.io/rtzv3/>. The data reported in this article have not been previously published. The

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Marcela Radunz played a lead role in project administration and an equal

continued

Early intervention in youth mental health can be universal—aimed at all young people—or can target populations displaying the early signs and symptoms of a mental health problem and at risk of progression for the first time into a diagnosable disorder (Mental Health and Special Programs Branch, 2000). Our focus in the current review is on the latter approach and includes youth aged 25 years and under. While many early interventions strategies target specific symptom clusters of potential disorders, transdiagnostic interventions address the underlying factors across multiple symptom domains, potentially offering a more efficient response to the often complex and overlapping nature of mental health concerns in youth.

Transdiagnostic interventions have targeted what have been considered the most common mental health concerns among youth, including anxiety, depression, conduct, or attention-deficit/hyperactivity disorder (e.g., Weisz & Kazdin, 2017). Despite the high levels of comorbidity between mood and anxiety disorders (Udo & Grilo, 2019), eating disorders (EDs) have not historically been included in these common concerns. The evidence of their high prevalence, however, is compelling. Late childhood, adolescence, and emerging youth are the peak risk periods for ED emergence. For example, in a nationally representative U.S. survey, 78% of participants with a lifetime diagnosis of anorexia nervosa reported emergence before age 25 (Grilo & Udo, 2021). Most disorders were onset during emerging youth (48.6%), followed by adolescence (39.6%), with 11.8% on-set in childhood (Grilo & Udo, 2021). The pre-COVID lifetime prevalence of *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition, EDs in youth was 17.9% for females and 2.4% for males (Silén et al., 2020). The pandemic then saw a disproportionate increase in EDs in adolescents compared with other mental health problems such as depression and anxiety (Bilu et al., 2023).

One widely utilized transdiagnostic approach is the *Unified Protocol for Transdiagnostic Treatment of Emotional Disorders* (UP; Barlow et al., 2020), a one-size-fits-all approach wherein all clients receive the same set of five therapeutic elements that have been selected to have the broadest applicability across diagnoses: emotional awareness, cognitive reappraisal, emotional avoidance, awareness, and tolerance of physical sensation, interoceptive, and situational exposure. UP was designed to treat negative affective processes thought to underlie various disorders across the lifespan, most typically, anxiety, and depression, but was also seen to be suitable for dissociative, somatoform, and EDs, in which emotional dysregulation plays a significant role in the development and maintenance of the disease. A meta-analysis found enough RCTs with depression and anxiety as outcomes to conclude an overall effect size advantage of UP over control of 0.452 (95% confidence interval, CI [0.267, 0.638]; Carlucci et al., 2021), combining samples of children, adolescents, and adults.

The Wellcome Trust is also pursuing the development of transdiagnostic interventions, but from the perspective of identifying *transdiagnostic targets*, experiences that are shared across different

mental health diagnoses and negatively impact health and function. Their most recent review (The Wellcome Trust, 2024) explicitly includes only diagnoses related to anxiety, depression, and psychosis. The key targets are depersonalization and derealization, emotion regulation, worry and rumination, altered perceptual experiences, depressed mood, cognition, suicidal ideation and/or attempt, interoception, and disorders of the self.

The transdiagnostic approaches outlined above focus primarily on populations wherein a diagnosis exists that provides entry to treatment. However, there has been an increased application of transdiagnostic interventions for youth with elevated psychological distress wherein a diagnosable disorder has not yet manifested. Our first aim therefore was to conduct a systematic review to identify these nonpharmacological outpatient interventions intended to have transdiagnostic effects in youth with elevated psychological distress that have been evaluated in randomized controlled trial (RCT) designs. We will synthesize the data to meta-analyze outcomes related to depression, anxiety, disordered eating, quality of life, and suicidality. We will also examine whether transdiagnostic common elements can be identified across effective interventions. Our second aim was to conduct moderator analyses of the impact of specific types of similarly themed interventions for each outcome. In this way we aimed to develop testable hypotheses for future early intervention research that can inform a common elements approach.

Method

Search Strategy and Selection Criteria

The present study was conducted and reported in line with the evidence-based guidelines for reporting systematic reviews and meta-analyses (Moher et al., 2009; Page et al., 2021) and registered with PROSPERO (CRD42023402249; registered on February 16, 2023). The primary outcome variables were specified as suicidality and self-harm with secondary outcomes including depression, anxiety, and disordered eating. Full search terms for the three databases (APA PsycInfo, Medline, and Scopus) are provided in [Supplemental Box S1](#). Studies that met the following criteria were included: (1) peer reviewed articles, (2) quantitative outcomes from a RCT involving nonpharmacological outpatient intervention delivered to youth (25 years or younger) intended to have transdiagnostic effects on mental health (i.e., targeting more than one mental health concern such as anxiety and depression rather than focusing on a single disorder), (3) inclusion of youth without a confirmed diagnosis but with elevated transdiagnostic psychopathology, as indicated by the presence of at least two valid subscale measures (e.g., inclusion of a sample with subclinical depression and anxiety), and (4) written in the English language. The inclusion criteria outlined in the PROSPERO preregistration (i.e., “inclusion of at-risk youth with elevated distress, representing mixed mental health problems”) were revised as per inclusion Criteria 3 to capture the transdiagnostic target of the current review.

role in data curation, formal analysis, methodology, and writing—original draft. Catherine Johnson played a supporting role in project administration and an equal role in data curation, formal analysis, methodology, and writing—original draft. Tim Dalgleish played a supporting role in writing—review and editing. Roz Shafraan played a supporting role in writing—review and editing. Tracey D. Wade played a lead role in conceptualization, funding

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Studies were excluded if they met the following criteria: (a) reviews, meta-analyses, commentaries, editorials, case presentations, study protocols, (b) secondary articles investigating predictors/moderators of treatment, (c) inclusion of only one diagnostic group, (d) experimental study or a nonpsychological intervention (i.e., yoga, art therapy, physical exercise), (e) inpatient populations, (f) intervention not delivered to youth (delivered to parents, carers, health workers for youth with mental health problems), and (g) mean age (plus one standard deviation) of participants in the trial was over 25.

Studies retrieved from the three electronic databases were downloaded, and duplicates were subsequently removed. Two independent assessors screened study titles and abstracts (managed by Covidence) to examine whether they related broadly to the question of interest. The full texts of all remaining articles were examined by two reviewers (MR and CJ) to assess eligibility for inclusion in the systematic review and meta-analysis. The interrater reliability measured by Cohen's κ at title and abstract was .55 and at full-text screening .59, indicating moderate interrater reliability during the study selection process.

Data Extraction

Two authors (MR and CJ) independently extracted information required for the qualitative synthesis and meta-analysis. The following information was extracted: author; publication year; country; sample size; participant demographic including mean age, gender, socioeconomic status, and ethnicity; as well as mental health concerns targeted (i.e., anxiety, depression, eating concerns, suicidality/self-harm); the latter were determined from studies' inclusion criteria. Additionally, details were extracted regarding the treatment intervention (therapeutic framework, therapeutic format, intervention duration, intervention components, and mode of delivery), referring to [Supplemental Materials](#) if necessary and available. Coding of intervention approaches was based on authors' descriptions of interventions (e.g., mindfulness based), supplemented by our examination of intervention components if unclear. CBT approaches were interrogated further to identify the frequency with which common elements were included within this broad approach. Element categories were coded by one author (CJ) after discussions regarding groupings with the senior author, an experienced clinical psychologist (TDW). Psychological outcomes for depression, anxiety, disordered eating, and quality of life were extracted, regardless of disorder targets, to most comprehensively measure transdiagnostic effects. Both youth self-reported and parent-reported measures were extracted. In cases wherein self-reported data were not available, parent- or teacher-reported data were extracted instead. For the control intervention, information was extracted to ascertain whether the comparator was an active control, treatment as usual, or wait-list control intervention. Specifically, to calculate effect sizes, the sample sizes, means, and standard deviations were extracted for the intervention and control group for each eligible study at baseline and end of treatment.

Quality Assessment

The quality of studies was assessed using 10 items selected from the 25-item Consolidated Standards of Reporting Trials (CONSORT) checklist ([Schulz et al., 2010](#)) that were of relevance across most

articles included in the review (i.e., RCTs). The ten items were chosen by the authors and included eligibility criteria for participants (Item 4a); settings and locations wherein the data were collected (Item 4b); the interventions for each group with sufficient details to allow replication, including how and when they were assessed (Item 5); completely defined prespecified primary and secondary outcome measures, including how and when they were administered (Item 6a); how sample size was determined (Item 7a); method used to generate randomization reported (item 8a); statistical methods used to compare groups for the primary outcome (item 12a); for each group, the numbers of participants who were randomly assigned, received intended treatment, and were analyzed for the primary outcome (Item 13a); for each group, losses and exclusions after randomization, together with reasons (Item 13b); and a table showing baseline demographic and clinical characteristics for each group (Item 15). Items were scored "Y" when completely conforming with the criteria, "N" when not fully conforming with the criteria, and "P" when partially conforming to the CONSORT criteria.

Calculation of Effect Sizes and Meta-Analyses

Between-group effect sizes were precalculated using the online Campbell Collaboration tool (<https://www.campbellcollaboration.org/calculator/>), inputting mean and standard deviation gains between baseline and end of treatment, sample size, as well as the r coefficient for pre-post for each group (treatment and control). All meta-analyses were conducted using the *R* statistical software program using the *metafor* package ([Viechtbauer, 2010](#)). Multilevel meta-analyses were conducted to account for nonindependence of effect sizes wherein more than one effect was reported from a single sample (i.e., studies reporting on two active interventions against a control condition), using the approach outlined by [Harrer et al. \(2021\)](#). A total of five multilevel meta-analyses were conducted for the following outcomes: depression, anxiety, quality of life, disordered eating, and suicidality/self-harm. Forest plots were produced using Cohen's d values and 95% confidence intervals.

Subgroup Analyses

Subgroup analyses were conducted to investigate the effect of age, mode of intervention delivery (online vs. face-to-face), and informant source (self-report vs. parent/teacher report) on all studies reporting anxiety and depression outcomes. Age was entered as a categorical moderator, with studies wherein the M_{age} was below 12 coded as "child," those with a M_{age} between 12 and 17 were coded as "adolescent," and studies with a M_{age} above 18 coded as "young adult." Subgroup analyses were also conducted to examine the effect of different therapeutic approaches on depression and anxiety outcomes. Interventions with five or more studies per outcome were included. We ran subgroup analyses according to the steps outlined by [Harrer et al. \(2021\)](#), using the *metafor* package ([Viechtbauer, 2010](#)).

Heterogeneity

Heterogeneity denotes whether the variability in effect sizes across studies is greater than what would be expected due to random error alone ([Cuijpers, 2016](#)). The heterogeneity of the data was evaluated using Q and I^2 statistics. The Q statistic is a measure of

weighted squared deviation around the weighted mean effect size, with a significant result suggesting that variability is unlikely to be due to chance (Laird et al., 2017). The I^2 statistic is a measure of the proportion of total study variation that is due to heterogeneity. A value of 0 indicates no variance between study estimates due to heterogeneity, values of 30 or less indicate mild heterogeneity, whereas values above 50 are indicative of notable heterogeneity (Higgins & Thompson, 2002).

Publication Bias

Egger's regression intercept was used to evaluate the presence of publication bias (Egger et al., 1997). This method involves examining the correlation between effect sizes and standard errors of effect sizes to determine if there is a significant association between study effect size and study precision. A regression intercept of zero is expected if there is no publication bias, with significant results suggesting the presence of publication bias.

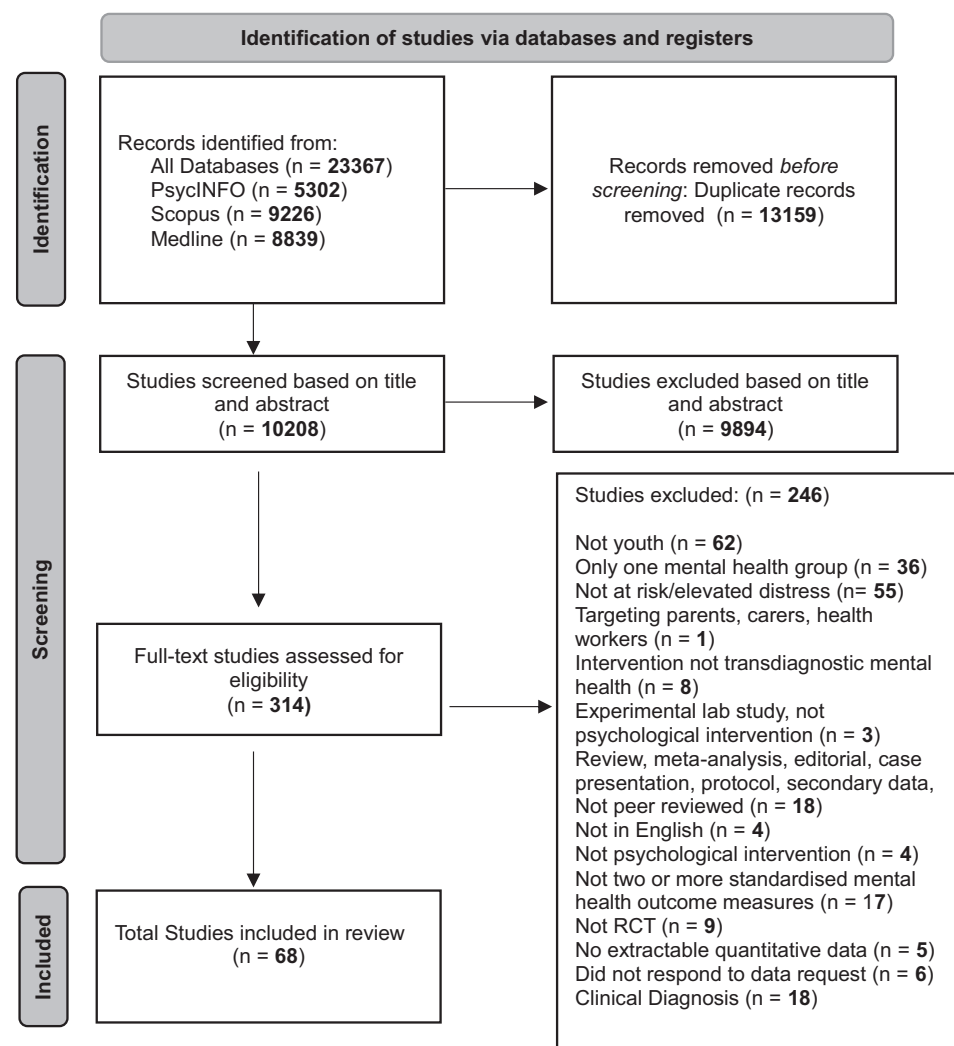
Results

Description of Included Studies

The initial search (February 16, 2023) produced 6,877 studies, with updated searches on December 7, 2023; February 8, 2024; and September 8, 2024, yielding a further 11,112; 1,933; and 793 studies, respectively. After removal of duplicates, 10,208 studies remained (Figure 1). Two authors (MR and CJ) screened titles and abstracts, excluding 9,894 studies. The same two authors screened full text of the remaining 314 studies. The key reasons for exclusion were the adult age group, targeting only one diagnostic group, no elevated symptoms. For a list of excluded studies with reasons, please see Supplemental Table S1. Any discrepancies were resolved by discussion between MR, CJ, and senior author TDW.

The sample for the systematic review consisted of $k = 68$ studies with $N = 10,805$ individuals with a M_{age} of 16.96 years ($SD = 1.80$; 66.67% female, Supplemental Table S2). Research was most

Figure 1
Preferred Reporting Items for Systematic Reviews and Meta-Analyses Diagram of Study Selection Process



Note. RCT = randomized controlled trial.

frequently conducted in the United States ($n = 15$; 22.06%) but with a broad spread including Asia ($n = 12$; 17.65%), the Netherlands ($n = 10$; 14.71%), Australia ($n = 8$; 11.76%), the United Kingdom ($n = 5$; 7.35%), Scandinavia ($n = 3$; 4.41%), Africa ($n = 3$; 4.41%), Canada ($n = 3$; 4.41%), and the Middle East ($n = 2$; 2.94%). Lower-middle-income countries were represented in 14 studies (20.58%).

Transdiagnostic Targets and Intervention Approaches

The most common transdiagnostic targets were anxiety and depression ($k = 35$; 51.5%) followed by elevated distress ($k = 15$; 22.1%). The next most frequent targets, in various combinations, were behavioral/emotional difficulties ($k = 6$; 8.8%), perfectionism ($k = 5$; 7.4%), and substance abuse ($k = 5$; 7.4%). Only one study (1.5%) targeted eating concerns (bulimic symptoms, in conjunction with depression or substance abuse).

Elevation of desirable outcomes was measured in 18 studies (26.5%), split across well-being/positive affect ($k = 8$; 11.8%), and quality of life ($n = 10$; 14.7%). Decrease in adverse outcome measures was most frequently measured for depression ($k = 63$; 92.6%) and anxiety ($k = 55$; 80.9%), followed by stress ($k = 9$; 13.2%) and eating or body image concerns ($k = 6$; 8.8%).

Intervention approaches are summarized in Table 1. CBT was the most common approach, utilized in 31 studies (45.6%), with two variations of CBT appearing in further five studies (CBT targeting perfectionism, $k = 4$, 5.9%; UP, $n = 1$, 1.5%). The next most common were mindfulness interventions ($k = 5$, 7.4%) and mixed approaches ($k = 7$ studies, 10.3%).

Meta-Analyses

Overall, three meta-analyses were conducted for the following key outcomes: depression ($k = 64$), anxiety ($k = 57$), and quality of life ($k = 19$). Postintervention data were used for all meta-analyses; follow-up measures were only collected in 46 studies over varying time points (67.6%; range = 1–18 months), with three studies using

parent-report questionnaires and a further two studies (Martinsen et al., 2019; Orgilés et al., 2023) reporting both self-report and parent outcome measures. Results appear in Table 2, showing a significant effect of transdiagnostic interventions on depression (Cohen's $d = 0.25$; 95% CI [0.16, 0.35]), $p \leq .001$), anxiety (Cohen's $d = 0.22$; 95% CI [0.13, 0.32], $p < .001$), and quality of life (Cohen's $d = 0.11$; 95% CI [0.01, 0.21]), with small effect sizes. Forest plots for pooled effects (pre–post differences across intervention–control groups) for each study appear in Figure 2 (depression), Figure 3 (anxiety), and Figure 4 (quality of life). Egger's test revealed publication bias for depression (funnel plot; see Supplemental Figure S1), but not for other significant outcomes. Notable heterogeneity was present for depression, but not for other outcomes (Table 2).

Moderator Analyses

To better understand the sources of any heterogeneity, we conducted three moderator analyses. First, we examined the effect of different age categories (child, adolescent, and young adult) on depression and anxiety outcomes. Adolescent studies were the only age category to emerge as significant for both depression (Cohen's $d = 0.28$; 95% CI [0.11, 0.45]) and anxiety (Cohen's $d = 0.21$; 95% CI [0.06, 0.36]). Heterogeneity was still present for depression, but not for anxiety.

Second, an examination of mode of intervention delivery (face-to-face vs. online) was conducted across 39 studies reporting face-to-face delivery and 29 studies reporting online delivery. Face-to-face interventions emerged as producing significant improvements across depression (Cohen's $d = 0.32$; 95% CI [0.19, 0.46]) and anxiety (Cohen's $d = 0.27$; 95% CI [0.13, 0.42]), but online interventions did not.

Third, moderator analyses exploring the effects of informant source (self-report vs. parent report) on depression and anxiety outcomes revealed a significant moderating effect of parent- self-report on depression (Cohen's $d = 0.48$; 95% CI [0.19, 0.76]) and anxiety (Cohen's $d = 0.54$; 95% CI [0.22, 0.86]), with child self-report studies also producing a significant but smaller effect for anxiety (Cohen's $d = 0.19$; 95% CI [–0.48, 0.85]).

The type of psychological intervention was tested as a moderator of depression and anxiety outcomes. Interventions with five or more studies were included; thus, the two meta-analyses were repeated, inputting only these studies (Table 3). CBT showed a significant small effect for depression (Cohen's $d = 0.25$; 95% CI [0.14, 0.35]) and anxiety (Cohen's $d = 0.31$; 95% CI [0.16, 0.46]) compared with mindfulness-based intervention, the only other intervention approach to have five or more studies.

We also examined CBT approaches further to identify the frequency with which common elements were included within this intervention approach (Figure 5). Descriptions of categories, where not self-explanatory, appear below Figure 5. Across all CBT variations, cognitive and emotional literacy/regulation were the most frequently included elements (described in >80% of studies), while goal setting/motivation/behavioral activation, problem solving, and psychoeducation were reported in >50% of studies.

Narrative Synthesis

The low number of included studies for suicidality/self-harm ($k = 4$) and eating concerns ($k = 5$) precluded our ability to conduct

Table 1
Frequency of Intervention Approaches

Approach	Number of studies	%
Acceptance and commitment therapy	2	2.9
Cognitive bias modification	2	2.9
CBT	32	47.1
CBT (targeting perfectionism)	4	5.9
CBT (unified protocol)	1	1.5
Cognitive remediation therapy	1	1.5
Dialectical behavior therapy	1	1.5
Family treatment	1	1.5
Growth mindset/gratitude/values	2	2.9
Mindfulness	5	7.4
Mentorship (community adult volunteer)	1	1.5
Mentorship (peer)	1	1.5
Mixed approach	7	10.3
Motivational interviewing	1	1.5
Positive visualization/self-efficacy	1	1.5
Problem-solving therapy	4	5.9
Self-compassion letter writing	1	1.5
Social skills training	1	1.5

Note. CBT = cognitive behavioral therapy.

Table 2

Summary of Meta-Analysis Results for Mental Health Outcomes and Moderator Analyses by Age and Intervention Modality for Depression and Anxiety Outcomes

Outcome	<i>k</i> studies	Effect size [95% CI]	<i>p</i>	Total <i>I</i> ²	Cochran's <i>Q</i> , <i>p</i>	Eggers' test <i>p</i>
Depression	64	.25 [.16, .35]*	<.001	13.12%	121.97, <i>p</i> = .001	<.01
Depression by age					119.99, <i>p</i> = .001	
Child	12	.26 [−.19, .69]	.85			
Adolescent	28	.28 [.11, .45]*	.01*			
Young adult	24	.24 [−.17, .65]	.72			
Depression by mode of delivery					119.35, <i>p</i> = .001	
Face-to-face	36	.32 [.19, .46]*	<.001*			
Online	28	.17 [−.17, .51]	.14			
Depression by informant type					75.11, <i>p</i> = .001	
Child self-report	37	.22 [−.39, .82]	.10			
Parent report	5	.48 [.19, .76]*	<.001*			
Anxiety	57	.22 [.13, .32]*	<.001	10.76%	53.67, <i>p</i> = .64	<.96
Anxiety by age					50.90, <i>p</i> = .67	
Child	9	.34 [−.09, .78]	.35			
Adolescent	22	.21 [.06, .36]*	<.001*			
Young adult	26	.18 [−.17, .54]	.79			
Anxiety by mode of delivery					53.09, <i>p</i> = .62	
Face-to-face	26	.27 [.13, .42]*	<.001*			
Online	31	.19 [−.15, .53]	.37			
Anxiety by informant type					28.14, <i>p</i> = .51	
Child self-report		.19 [−.48, .85]*	.05*			
Parent report		.54 [.22, .86]*	<.001*			
Quality of life	19	.11 [.01, .21]*	.04	6.73%	16.18, <i>p</i> = .58	.61

Note. Effect size = Cohen's *d*. CI = confidence interval.

* *p* < .05.

meta-analyses; thus, a narrative synthesis is provided for these outcomes. Suicidality studies had relatively small sample sizes (66–218 participants) with effect sizes ranging from Cohen's *d* = −0.01 to 4.88. The largest effect (*d* = 4.88; 95% CI [3.72, 6.05]) was observed in a problem-solving intervention (Xavier et al., 2019), while the smallest (*d* = −0.01; 95% CI [−0.32, 0.29]) was found in a community mentorship intervention (King et al., 2018). Other interventions showed varying effects: family treatment (*d* = 0.97; 95% CI [0.26, 1.56]; Diamond et al., 2010) and motivational interviewing (*d* = 0.22; 95% CI [−0.43, 0.88]; King et al., 2015). Regarding eating concerns (*k* = 5), sample sizes ranged from 70 to 167 participants. CBT interventions showed small effect sizes (*d* = 0.16–0.25; Burton et al., 2007; Shu et al., 2019; Topper et al., 2017), whereas acceptance and commitment therapy (*d* = 0.04; 95% CI [−0.41, 0.49]; Levin et al., 2017) and cognitive bias modification (*d* = −0.06; 95% CI [−0.37, 0.24]; Dodd et al., 2022) displayed negligible effects.

Quality Assessment

Supplemental Figure S2 illustrates the frequency of studies that fully, partially, or did not meet the CONSORT quality criteria. Quality data for each individual study appear in Supplemental Table S3. Overall, only 20 studies (28.9%) were rated as high quality (meeting ≥8 of 10 criteria). Across studies, the top three criteria with highest compliance were description of eligibility criteria (85.5% compliance; *k* = 59 studies), followed by description of method used to generate randomization (75.3% compliance; *k* = 52 studies) and report of number of participants who received treatment and were analyzed for the primary outcome (75.3% compliance; *k* = 52 studies). The criteria with the lowest compliance

were sufficient description of the intervention to allow replication (39.1% did not comply; *k* = 27), and sufficient description of how the sample size was derived, such as power analysis (34.7% did not comply; *k* = 24).

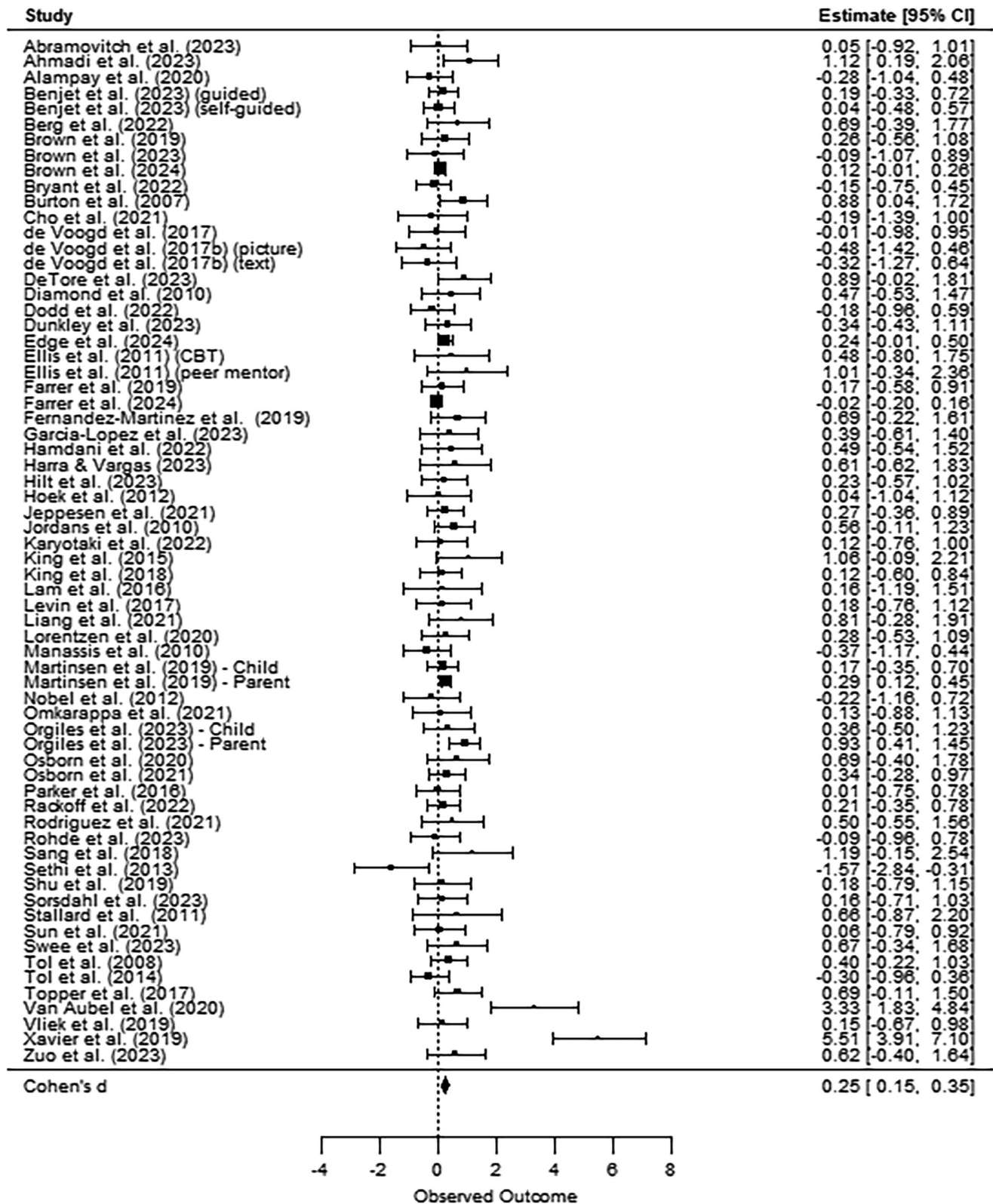
Discussion

This systematic review and meta-analysis present important findings for the field of early interventions for youth with elevated psychological distress related to depression, anxiety, quality of life, disordered eating, and suicidality. Where there were sufficient studies to draw conclusions for depression and anxiety, we found that CBT was superior to control in producing significant reductions in symptomatology. Our analysis of the common elements reported in the interventions suggested that the use of the following may be most influential on outcomes: cognitive literacy (identifying link between thoughts, feelings, and behavior; recognizing, challenging, and modifying unhelpful thoughts), emotional literacy (identifying emotions, identifying physical correlates, regulation strategies), psychoeducation, goal setting, and problem solving. These CBT elements were shown to be slightly more effective overall with anxiety compared with depression, which may suggest that the mechanisms of action are focused on modification of unhelpful beliefs rather than behavioral activation. Notably missing, also, are elements related to exposure, a common oversight when working with young people (Teunisse et al., 2022). Inclusion of more behavioral elements may be expected to further enhance outcomes for distressed youth.

Dismantling studies are required to verify the relative effectiveness of each of these elements. Some of these elements have been identified previously in transdiagnostic therapies (e.g., *Principle-Guided Psychotherapy for Children and Adolescents* [FIRST], i.e.,

Figure 2

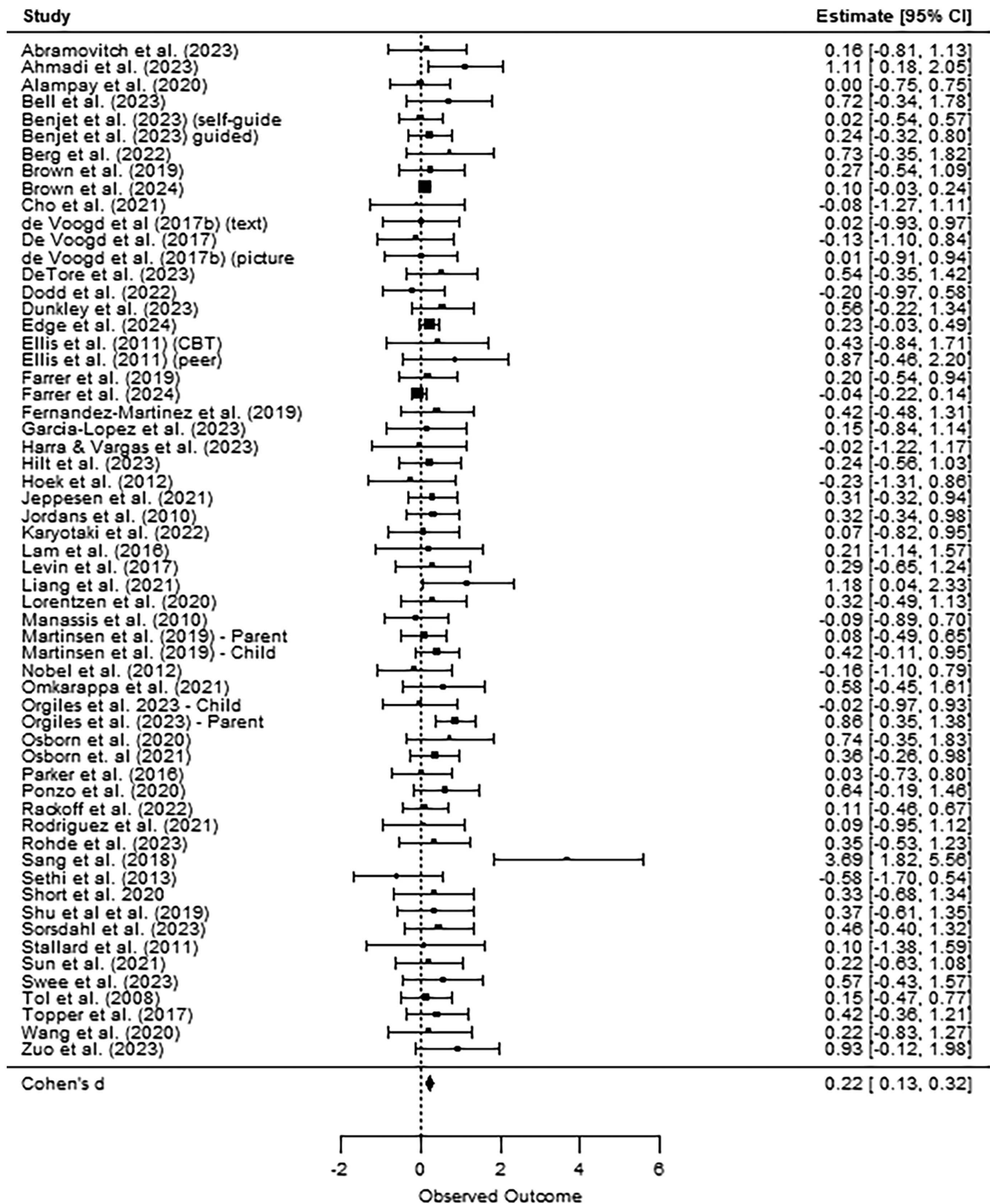
Forest Plot for Depression Meta-Analysis



Note. CI = confidence interval.

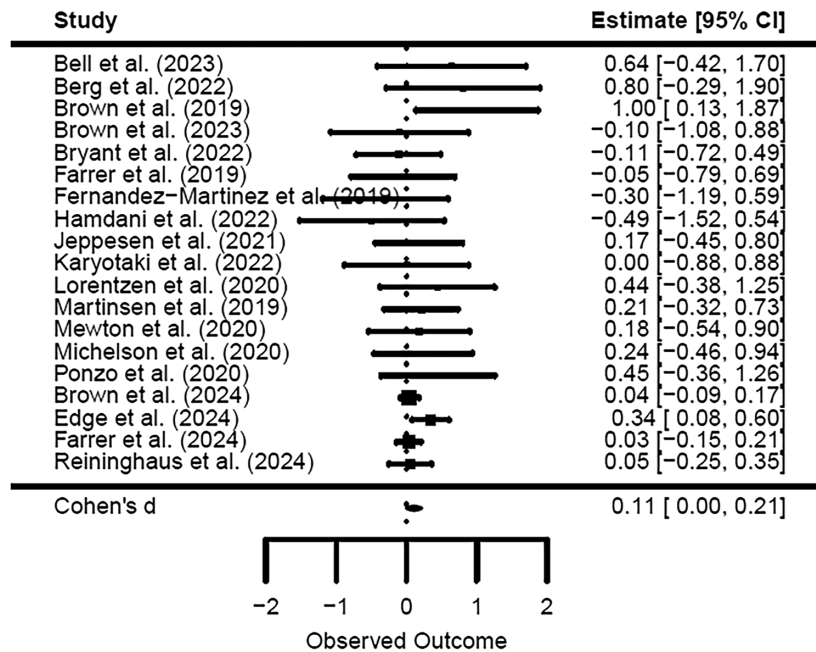
Figure 3

Forest Plot of Anxiety Meta-Analysis



Note. CI = confidence interval.

Figure 4
Forest Plot for Quality-of-Life Meta-Analysis



Note. CI = confidence interval.

feeling calm, repairing thoughts, solving problems; Bailin et al., 2023). There is also overlap with UP elements (Barlow et al., 2020): emotional awareness, cognitive reappraisal, emotional avoidance, and awareness of physical sensation. The role of goal setting and problem solving may require further elevation in these protocols, in the form of mental contrasting, where evidence suggests that thinking about positive future outcomes decreases goal-relevant efforts, while imagining a positive future and thinking about current obstacles that impede the realization of wishes results in a greater likelihood of behavior change (Cross & Sheffield, 2019; G. Wang, Wang, & Gai, 2021).

Adolescence was the only age category showing significant effects for both depression and anxiety outcomes, suggesting that this group may be most responsive to early intervention. This may be due to the unique characteristics of adolescence—a period marked by significant life transitions and social pressures—which make

interventions particularly timely and relevant. By contrast, the lack of effect observed in children may be due to the exclusion of parent-based interventions in the present study or an overreliance on child self-report. However, we note that superior outcomes have not been found to date for family-based interventions given the small body of evidence (Eckstain et al., 2023). Young adults, on the other hand, may have had more exposure to interventions and are therefore somewhat more “inoculated” against treatments, in addition to moving to a developmental period wherein there are less support and structure offered by family. This potentially indicates a need for more tailored interventions to address the specific challenges of emerging adults.

While studies of youth typically measure depression and anxiety, and to a lesser extent quality of life, this work highlights how few studies have measured outcomes related to disordered eating and suicidality. Both are increasingly problematic in youth, justifying urgent attention. Pediatric emergency department visits for attempted

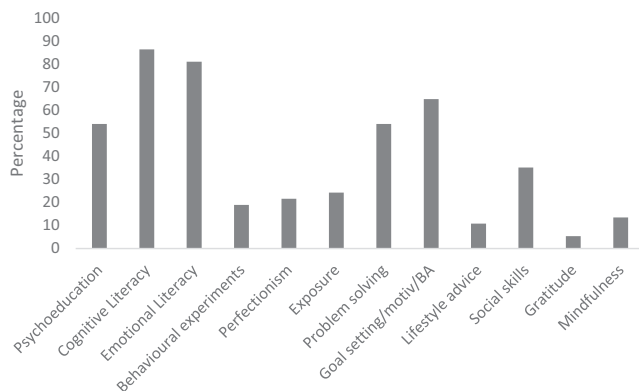
Table 3
Summary of Meta-Analysis Results for Interventions With >5 Studies by Intervention Approach

Intervention category	k studies	Effect size [95% CI]	p	Total I ²	Cochrane's Q	Egger's test
Depression	41	0.24 [.14, .33]*	<.01*			p = .52
Depression by intervention						
CBT	36	0.25 [.14, .35]*	<.01*			
MBI	5	0.09 [-.47, .65]	.48			
Anxiety	33	0.29 [.15, .43]*	<.01*	0.0%	28.73, p = .72	p = .24
Anxiety by intervention						
CBT	28	0.31 [.16, .46]*	<.01*			
MBI	5	0.14 [-.45, .73]	.44			

Note. Effect size = Cohen's d. CBT = cognitive behavioral therapy; MBI = mindfulness-based intervention; CI = confidence interval.

*p < .05.

Figure 5
Frequency of Common Elements Across Cognitive Behavioral Therapy Studies



Note. $N = 36$. Cognitive behavioral therapy (including cognitive behavioral therapy—unified protocol and cognitive behavioral therapy for perfectionism); psychoeducation = provision of knowledge about a mental health concern; cognitive literacy = identifying link between thoughts, feelings, and behaviors; recognizing, challenging, and modifying unhelpful thoughts; self-schema; emotional literacy = identifying emotions, physical correlates, and regulation strategies; behavioural experiments = testing one's beliefs and predictions using real-life exercises to promote cognitive and behavioral change; perfectionism = includes working with self-compassion/self-criticism, dealing with mistakes/comparisons; exposure = repeated exposure to feared situations or stimuli with the aim of reducing anxiety or avoidance over time (graded or inhibitory learning approach); problem solving: strategies on identifying, addressing, and resolving life's challenges and stressors; goal setting = includes interventions aiming to develop specific, measurable, and achievable goals; motivational interviewing = enhancing individual's motivation and commitment to change specific behaviors; BA = behavioural activation; behavioral activation = engaging in activities that provide a sense of meaning and achievement to improve mood; lifestyle advice = includes advice on sleep or exercise; social skills = includes development of effective communication, relationship-building skills, and perspective taking; gratitude = identifying positive aspects of life by journaling; mindfulness = cultivating nonjudgmental awareness of the present moment to reduce stress and enhance emotion regulation.

suicide and suicidal ideation increased significantly over COVID-19 in girls (1.39, 1.04–1.88), and self-harm among youth ($M_{age} = 16.3$ years) has also increased significantly (Madigan et al., 2023). The global prevalence of EDs recorded annually doubled between 2000 and 2018 from 3.4% to 7.8% (Galmiche et al., 2019), and the estimated overall incidence of EDs has increased further by 15.3% since the emergence of COVID-19 (Taquet et al., 2022). While the incidence of anorexia nervosa has not increased significantly across the general population, it has significantly increased among girls aged 10–14 from 8.6 to 38.6 per 100,000 person-years (van Eeden et al., 2023). Additionally, suicide attempts are elevated across the different EDs (Mandelli et al., 2019). For these reasons, future research in at-risk youth should include a wider range of pertinent outcomes, including disordered eating and suicidality.

There were only seven studies of specific forms of CBT (perfectionism and UP) for this population, and the former was shown to produce significantly better outcomes for anxiety. Given the incorporation of exposure and mindfulness in the UP, and the finding that reduction of anxiety symptoms further benefited from interventions that

utilized behavioral therapy and mindfulness, further evaluation of the UP in this population seems warranted. This suggestion is further supported by the findings of a randomized trial, which showed that internet treatments for perfectionism and the UP had commensurate impacts on decreasing perfectionism, depression, and anxiety (Rozental et al., 2024).

We found that significant moderating effects of informant source with parent or teacher reports of depression and anxiety in the child were substantially larger than child self-report, consistent with previous findings in demonstrating informant discrepancies in reported outcomes (Weisz et al., 1987, 1995, 2017). However, the direction of the moderating effects in our review, which found larger effects for parent report than child self-report, differs from previous depression treatment meta-analyses, which often report larger child self-report outcomes (Eckshtain et al., 2020; Weisz et al., 2006, 2017). A key limitation, both in the present sample and broader measurement literature, is the limited use of multi-informant outcome data. Despite the established informant source moderating effects in the literature, most included studies provided self-report data only, with only five studies providing parent-report data, with no studies including other informants such as teachers. Future research should aim to include multi-informant outcomes to allow for a more comprehensive and direct comparison of intervention effects to enable robust moderator analyses of informant effects.

The results of the present study should be interpreted in the context of the following limitations. Apart from outcomes for depression, anxiety, and quality of life, there were insufficient studies examining other outcomes—disordered eating and suicidality—to identify effectiveness. The smaller sample sizes also precluded delineation of possible common elements for quality of life, disordered eating, and suicidality. Only one fifth of the included studies were rated as high quality across our 10 indicators, and unpublished data were not included, showing potential for high risk of bias. Publication bias was present for studies examining depression as an outcome, and the heterogeneity of these studies was particularly high. Given our search strategy followed best practice reporting standards, such as requiring articles to include a reference to RCT in the title, as per the CONSORT (Hopewell et al., 2025) statement (Item 1a), it is possible that some eligible studies were missed if they did not comply with these reporting standards. One example of such article is that of Siu (2007), which met our inclusion criteria but was not retrieved in the search due to lacking relevant keywords in the title and abstract. The strengths of this work are the high number of studies for our depression and anxiety outcomes, and the differential outcomes between depression and anxiety, which suggest the ability to eventually inform common elements in transdiagnostic interventions. A further strength is that this research addresses an important and sorely neglected clinical question, about the common elements that can be used in interventions wherein comorbidity exists across different psychological disorders.

One of the major research implications arising from our findings is the paucity of studies examining approaches that are not CBT or mindfulness for protecting at-risk youth from poor mental health outcomes. Within CBT, there has been no work to identify the elements of CBT that are more effective for reducing adverse outcomes. To facilitate pragmatic use of intervention elements and thus improve scalable translation to those most in need, it would be helpful to prioritize attention in at-risk youth to broader transdiagnostic outcomes, more diverse interventions, and designs that better facilitate identification of common elements rather than broad

approaches. Broader transdiagnostic outcomes may include EDs given their increased prevalence in youth and high comorbidity with common mental health concerns, including depression and anxiety disorders.

In terms of clinical implications, while the effect size decreases for depression and anxiety were small (ranging from 0.20 to 0.30), this compares well with meta-analyses of psychotherapy for depressed youth, which show posttreatment effect size decreases between 0.33 and 0.36 (Eckshtain et al., 2020, 2023). Given we expect decreases to be smaller in prediagnostic populations (i.e., due to the existence of a floor effect), these decreases seem consistent with the conclusion that selective and indicated prevention are “probably effective” (Cuijpers, 2024). These results suggest that effectiveness can be maximized in various ways when working with youth with elevated distress, using CBT, focusing on adolescents, and face-to-face interventions. This group of youth has been termed the “missing middle” (McGorry, 2022): requiring expert interventions to deal with evolving and ambiguous symptomatology, substantial comorbidity, and associated social and vocational impairment. The use of disorder-specific interventions in this group may be inefficient, while service providers in these settings may lack the expertise to use specialist therapies. Future research should compare disorder-specific interventions to transdiagnostic interventions on comorbidity to examine whether transdiagnostic approaches are superior. Overall, however, we note that the intervention literature in this area requires more time to mature to allow for more controlled trials to be conducted from which common elements can be identified and targeted to effectively decrease a range of psychopathologies and are scalable. This need is especially urgent for adolescents wherein these interventions seem most effective.

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