Review

The effectiveness of psychological interventions for parents of school-aged children with typical development: A review of current research evidence

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Abstract: Parenting stress tends to adversely affect the psychological well-being of parents and children. This systematic review examines psychological interventions specifically designed to reduce stress in parents of typically developing children aged 6 to 12 years. We reviewed 16 interventions from 2000 to 2025 regarding their effectiveness in reducing parental stress and ameliorating parental well-being. Study quality was assessed using the Delphi score questionnaire. A random-effects meta-analysis of 15 studies revealed a significant reduction in parental stress (Hedges' g = 0.363, 95% CI [0.226, 0.499], $p < 0.001$), with even stronger effects at follow-up (g = 0.866) across six studies. Intervention components significantly moderated outcomes (Q_m = 50.880, $p < 0.001$), with programs combining behavioral strategies and CBT ($\beta = -2.038$, $p < 0.001$), as well as CBT combined with relational elements ($\beta = -2.999$, $p < 0.001$), reporting the greatest benefit. A leave-one-out sensitivity analysis confirmed the robustness of findings. However, substantial attrition was observed, particularly among highly stressed parents and fathers, depicting the need for more inclusive and adaptive delivery protocols. While a vast array of interventions was deemed effective, the type and coherence of components appeared more critical than the quantity of modules. Future research should examine mechanisms of change, address paternal participation, parent attrition rates, and explore further the role of couple dynamics. Parenting interventions hold promise not only for reducing stress but also for strengthening parent-child relationships and promoting long-term family well-being.

Keywords: interventions; family empowerment; mental health; stress; school-aged children

1. Introduction

Parental stress, a multifaceted and bidirectional phenomenon, emerges from the perceived challenges of parenting and significantly impacts the parent-child interaction and family well-being. Stressors related to child characteristics, parental functioning, and socioeconomic factors contribute to the complex landscape of parental stress (Costa et al., 2020; Fernández-Sogorb et al., 2021; Ward and Lee, 2020).

Furthermore, the parent-related stress is unique and differentiated from other life stresses (e.g., occupational stress) as it directly impacts parent-child relationships, parent role satisfaction and competence, and child psychosocial development (Chiang and Bai, 2023).

It is well established that parental stress is a central mechanism leading to inconsistent discipline, negative expectations regarding child and parental coping abilities, over-criticism, overprotection, and low affective responsiveness, which ultimately may adversely affect a child's cognitive, emotional, and social development and contribute to the rising numbers of childhood (5–11 years) anxiety and depressive

disorders (Alvarez and Szücs, 2023). Additionally, it has been noted that parents experiencing high levels of parenting stress are more prone to evaluate as dysfunctional and overestimate children's externalizing and internalizing symptoms, exacerbating their stress (Kochanova et al., 2022). Moreover, neuroscience studies reveal epigenetics's importance, especially in critical periods such as early to middle childhood. These studies state that experiences like environmental stressors, including parental stress, can sculpt brain development and increase vulnerability to future psychopathology (Ribas et al., 2024).

Parenting interventions have shown promise in alleviating parental stress and improving child-rearing practices (Barlow et al., 2002; Barroso et al., 2018; Tehrani et al., 2024). These interventions often draw on established theoretical models, such as Behavioral Theory, Social Learning Theory, Mindfulness, and Cognitive-Behavioral Theory (CBT). Behavioral and social learning theories emphasize skill acquisition through modeling and reinforcement (Buchanan-Pascall et al., 2023; Forehand et al., 2013; Stormshak et al., 2020). Cognitive-behavioral models target maladaptive thinking patterns contributing to parental stress and promote healthier cognitive-emotional responses (Ajilchi et al., 2011; Ajilchi and Kargar, 2013; Fisak et al., 2018). A small number of studies drew from Adlerian theory and Erikson's developmental perspective, which highlight the importance of social roles, parenting style, and developmental transitions in shaping parent behavior (Feliciana, 2005). Furthermore, mindfulness-based approaches have emerged, which emphasize nonjudgmental awareness, emotional regulation, and improved parent-child attunement (Burgdorf et al., 2019; Lo et al., 2019). Moreover, Attachment theory suggests that parents and children establish an emotional and physical bond, with primary caregivers acting as external regulators for children's emotional and behavioral functions (Kohlhoff et al., 2022). However, while valuable, the effectiveness and long-term sustainability of these interventions remain areas of active research (Barlow et al., 2014; McGoron and Ondersma, 2015; Porzig-Drummond et al, 2015; Shaffer et al., 2019). In particular, parental stress is highlighted as a mediator and moderator for participation rates, behavior change, psychosocial outcomes, and maintenance of intervention effects.

This review presents several novel contributions to the existing literature on parental stress. First, while most reviews focus on children's well-being, parental practices, or parental psychopathology (e.g., parents with depression) (Constantini et al., 2023; Weissman et al., 2016), this review explicitly emphasizes parental stress and not parent health in general. Recent studies have begun to address this gap (Jones et al., 2021; Rusu et al., 2025; Ward and Lee, 2020), but comprehensive syntheses focusing explicitly on parental stress remain limited. By highlighting this dimension, the present review advances a more balanced understanding of parent-child relationships and family dynamics.

Second, prior reviews and meta-analyses include a wide age range from preschool through adolescence (Colalillo and Johnston, 2016; Furlong et al., 2013; Ling et al., 2021) or include children with developmental or clinical diagnoses (Caporali et al., 2020; Cheng and Lai, 2023; Dekkers et al., 2022); this review focuses on the experience of parental stress among parents of typically developing, school-

aged children. This developmental stage is particularly critical but underrepresented in the literature, although the transition to elementary school is characterized by substantial changes in daily routines, increased academic and social responsibilities, and evolving parent–child dynamics that may amplify the potential impact of parental stress (Costa et al., 2020; Fernández-Sogorb et al., 2021; Masiran et al., 2022; Ward and Lee, 2020). It is of note that in the study of Alvarez and Szücs (2023), a negative relationship was found between parental stress, math achievement, and receptive vocabulary, highlighting some important challenges during this stage. This developmental milestone invites parents to further enhance their caregiving roles by providing emotional stability, supporting more complex autonomy, guiding social and academic competence, and providing behavioral support. Moreover, this is a critical stage for the emergence of internalizing and externalizing symptoms that shape children's long-term psychosocial trajectories and well-being (Beckmeyer et al., 2022; Constantini et al., 2023; Rusu et al., 2025).

Furthermore, by addressing typically developing children, this review aims to highlight preventive and cost-effective interventions that target parental stress even before clinical thresholds are met, an approach aligned with public health and early intervention goals. In this scope, we will address potential moderators such as parent gender, study quality, follow-up effects, and intervention components that may contribute to and enhance short- and long-term maintenance of intervention effects. Regarding gender, we aspire to offer a better understanding of the differences between mothers and fathers in stress response, participation adherence, and intervention effects, an aspect often overlooked in previous syntheses. Fathers, in particular, are frequently underrepresented in intervention research, even though their experiences of stress can differ markedly from those of mothers. Thus, understanding which stress-reduction components are more effective at this stage can help inoculate the family system and increase resilience against future dysfunction.

This systematic review and meta-analysis directly aspires to address these gaps by (1) focusing exclusively on Randomized Controlled Trials (RCT) or Quasi-experimental studies implemented between 2000 and 2025 in families of typically developing children aged 6–12, (2) treating stress as a distinct and central outcome, and (3) examining potential moderators such as parent demographics and intervention components.

2. Methods

This systematic review and meta-analysis were conducted following the guidelines of PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) (Moher et al., 2009). The review protocol was not registered.

2.1. Data collection

A comprehensive literature search for relevant studies was conducted in September 2022, with an updated search in April 2025 to include any new publications. The following electronic databases were systematically searched: PubMed, ScienceDirect, Google Scholar, Web of Science, and PsychINFO. The timeframe (2000–2025) ensures coverage of recent research trends, methodological

advancements, and evolving practices in the field, providing a comprehensive and up-to-date synthesis of the evidence on parent interventions. The search strategy employed a combination of Medical Subject Headings (MeSH) and keywords, including the following terms: Parents (parent* or famil* or mother or father or caregiver), Children (child* or schoolchild or elementary school children or school-aged children), Intervention (intervention or group or program* or training or stress management or psychoeducation or mindfulness), Parents ("parent only" or "parent based" or "parent focused" or "parent training" or "parent deliver*" or "parent involve*" or "parent targeted" or "parent particip*"), Stress/Anxiety/Depression (parent stress or stress* or anx* or parent anxiety or parent depression or depress* or parent distress or distress).

Boolean operators (AND/OR) were used to capture studies that met the inclusion criteria. Reference lists from relevant research articles, reviews, and meta-analyses were also examined to include relevant studies.

2.2. Eligibility criteria

An intervention study was included in this review if it met the following criteria: 1) aimed to directly affect parental stress (in mothers, fathers, or caregivers), 2) included a control or comparison group (e.g., waiting list, no treatment, treatment as usual, or a different parent program) or pre-post comparison in single-group studies, 3) included a standardized self-report measure of the parent stress (e.g., PSI-SF, PSS, DASS-21), 4) children 6–12 years old (families with children 5–13 years old were not excluded), 5) parents and children did not meet diagnostic criteria for a mental, developmental, emotional, or physical disorder that could exacerbate stress in the family (those meeting DSM V diagnostic criteria at initial assessment were also excluded), 6) written in English.

2.3. Exclusion criteria

Studies were excluded if interventions 1) were delivered solely to children or most sessions focused on children, 2) included children younger than 5 years old or adolescents, and 3) used an individual case series or qualitative design.

Publications were selected based on titles and abstracts aligned with the review's aim. Full access to selected studies was obtained via open-access journal sites or the university's library.

2.4. Coding process

The first author conducted the literature search, study selection process, and extraction of studies. In cases where inclusion or exclusion could not be determined by title or abstract, the entire article was examined by all authors. All authors also participated in the appraisal of the selected studies and agreed in case of inclusion uncertainty.

2.5. Data extraction

A standardized coding was used to extract data on study author, location, sample size, child and parent demographics, study design, intervention type and components,

duration, outcome measures (e.g., PSI-SF, PSS), study outcomes, follow-up (where available), pre/post means (SD), Hedges' *g*, and Delphi score. The flowchart, following the principles of the PRISMA statement, outlines the procedure from record identification to inclusion (Moher et al., 2009).

2.6. Quality control

To evaluate the quality of the reviewed studies, we used the Delphi list questionnaire, a 9-item checklist developed by Verhagen et al. (1998). Delphi quality ratings were independently conducted by the first author, a PhD candidate psychologist, and the second author, an experienced clinical psychologist and academic supervisor, to ensure methodological and clinical relevance in appraisal. This questionnaire assesses the quality of a study based on various parameters related to its design and implementation, encompassing aspects of internal validity, external validity, and statistical considerations. Each item was scored as 1 (yes/adequate) or 0 (no/unclear), producing a total score from 0 to 9. Studies ≥ 5 were treated as high quality. Delphi scores were included descriptively and as a moderator in subgroup analyses.

2.7. Intervention classification

Interventions were grouped into the following categories and coded based on their theoretical orientation and core components as described in the included studies (e.g., CBT + RL, CBT + MB).

- Cognitive-Behavioral (CBT-based programs): CBT
- Behavioral (e.g., Triple P, Incredible Years): B
- Mindfulness-Based (e.g., MBSR, MBCT): MB
- Attachment-based: AT
- Relaxation Techniques: RL
- Relational: RLN
- System Theory: ST

2.8. Data synthesis and analysis

A narrative synthesis was initially conducted to summarize the key study characteristics, theoretical underpinnings, and outcomes. Studies reporting sufficient quantitative data were included in the meta-analyses, which were performed using JASP (version 0.19.3). For the purposes of the current study, we employed a random-effects model based on Restricted Maximum Likelihood Estimation (REML) to account for variability across studies and provide more generalizable estimates of effect sizes (Borenstein et al., 2010).

Regarding heterogeneity, that is, how consistent the results are across the analysis, we used both the *Q*-statistic and the I^2 index, with values of 25%, 50%, and 75% interpreted as indicating low, moderate, and high heterogeneity, respectively. To explore potential sources of heterogeneity, subgroup analyses were conducted using *Q*-tests for homogeneity within random-effects models. Moderator analyses were performed, including intervention components, Delphi-based quality ratings, and parental gender, when data availability permitted.

Effect sizes were calculated and reported as Hedges' g. We made this selection since it adjusts for small sample bias and is commonly used in meta-analyses of psychological and behavioral interventions. Following conventional benchmarks (Cohen, 1988), Hedges' g values of 0.2, 0.5, and 0.8 were interpreted as representing small, moderate, and large effects, respectively. In cases where other statistical outputs were available (e.g., partial eta-squared values, F-values from ANOVA), effect sizes were estimated using conversion formulas to obtain Hedges' g. For studies reporting multiple outcomes, they were included in the narrative synthesis but not the analysis. A negative Hedges' g indicates that the intervention group experienced a greater reduction in parental stress compared to the control group.

Publication bias was employed using Jamovi v.2.3.28 to assess potential small-study effects both visually with a funnel plot that inspected for asymmetry and with Egger's regression test (see Appendix) (Egger et al., 1997). A $p < 0.05$ indicated bias in the analysis performed.

3. Results

3.1. Study selection

Based on the predefined criteria of this systematic review, articles were identified in Web of Science, PubMed, ScienceDirect, Google Scholar and PsychInfo databases from which 16 full-text articles were selected through careful screening. A PRISMA diagram is provided in **Figure 1**. **Table 1** summarizes an overview of the selected studies. The scoring of all studies according to the Delphi list is presented in detail in **Table 2**. Based on the predefined criteria of this review, 21.336 studies were potentially eligible. After screening for intervention studies, 12.409 articles were identified in Web of Science, Science Direct, PsycINFO, Google Scholar, and PubMed databases, from which 16 full-text articles were selected through careful screening of titles and abstracts. The process for selecting eligible studies is presented in **Figure 1**.

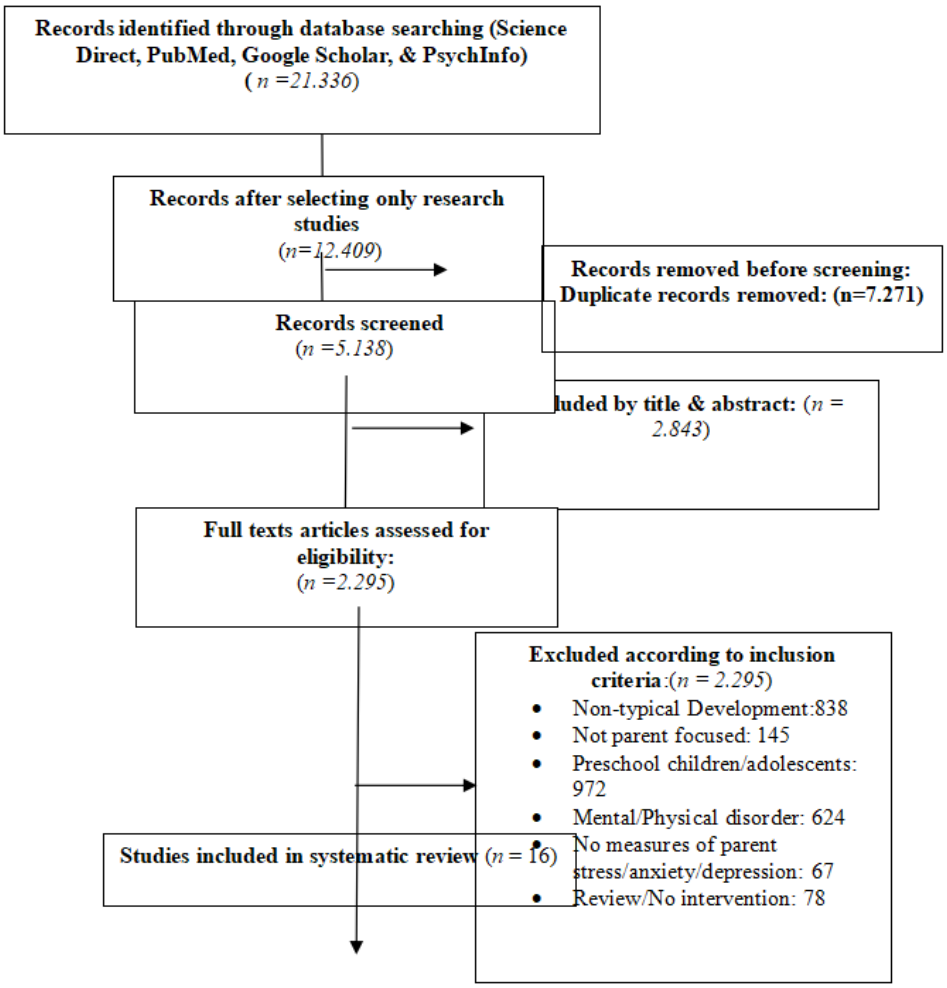

Figure 1. Process of selecting eligible articles.

3.2. Study characteristics

Among the 16 studies, four were conducted in the USA (Feliciana, 2005; Javier et al., 2016; Javier et al., 2023; Stormshak et al., 2020) and five in Hong Kong, China (Cheung et al., 2023; Lau et al., 2011; Li et al., 2013; Lo et al., 2019; Mak et al., 2024). Two in Iran (Ajilchi et al., 2011; Ajilchi and Kargar, 2013), one in Canada (Olthuis et al., 2018), one in the UK (Sangawi et al., 2018), one in Malaysia (Masiran et al., 2022), and two in Australia (Buchanan-Pascall et al., 2023; Fisak et al., 2018). Researchers delivering the intervention were a multidisciplinary team, e.g., physicians, psychologists, and social workers.

Interventions (n = 16) included group meetings of 60–90 min, with durations ranging from 4–38. Sample sizes ranged from 18 to 248 parents. In the majority of the studies, mothers were either the main participants or overrepresented in the sample (e.g., 89.7% in Lau et al. (2011), 93.1% in Lo et al. (2019), 92.8% mothers in Mak (2023), 82% mothers in Javier et al. (2023)) or analyzed due to low paternal attendance (Ajilchi et al., 2011; Ajilchi and Kargar, 2013; Buchanan-Pascal et al., 2023; Feliciana, 2005; Javier et al., 2016; Olthuis et al., 2018; Sangawi et al., 2018; Stormshak et al., 2020). Results from both parents were possible in three studies, although only one provided outcomes for mothers and fathers (Buchanan-Pascal et al., 2023; Fisak et al., 2018; Li et al., 2013). The study of Javier et al. (2016) also included grandmothers.

It is of note that in five studies (41.6%), the attendance rate for the intervention group was approximately 50% (Ajilchi et al., 2011; Ajilchi and Kargar, 2013; Javier et al., 2016; Li et al., 2013; Olthuis et al., 2018). More specifically, in Li et al. (2013), participation in the intervention group was 48.6%, from which 42.9% were absent from 1 to 3 sessions. In two studies, out of 80 eligible mothers, the participants were 38 (47.5%) (Ajilchi et al., 2011; Ajilchi and Kargar, 2013). Javier et al. (2016) reported a 50% refusal rate for the intervention, eventually rising to 79% when considering the drop-out rate. In the study by Olthuis et al. (2018), 53.4% completed the 12 telephone sessions. Five studies (38%) reported a relatively large participation rate: Lau et al. (2011) had 79.6% of parents present in at least ten of the fourteen sessions; Fisak et al. (2018) reported a 95% completion rate pre-post-intervention; Buchanan-Pascal et al., (2023), described a participation rate exceeding 80%; Lo et al. (2020) had a participation rate for both groups of 83.66%; and Stormshak et al. (2020) reported 92% in the intervention group.

Children's ages ranged from 5–13 years and outcomes were assessed in five studies (Ajilchi et al., 2011; Ajilchi and Kargar, 2013; Fisak et al., 2018; Javier et al., 2016; Lo et al., 2019). Parental stress, behavior, style, coping strategies and psychological variables were assessed in the selected studies by a variety of tools. Assessments took place at baseline and post-intervention, and in seven studies there was a 3-to-22-month follow-up.

Table 1. Overview of selected studies.

Study	Sample	Sample size	Parenting components	Intervention	Duration	Measures used	Outcome	Follow-up	Delphi score
Ajilchi et al. (2011)	Mothers	38	CBT + RL	Parenting Skills + Relaxation Techniques	8 weeks	PSI-SF	↓ Maternal stress	No	2
Ajilchi and Kargar (2013)	Mothers	38	CBT + RL	Parenting Skills + Relaxation Techniques	8 weeks	PSI-SF	↓ Maternal stress	No	3
Buchanan-Pascal et al. (2023)	Both Parents	136	CBT + RLN	Exploring Together (ET) and ET-Adapted program	9 sessions	PSI-SF	↓ No sig. stress (short and long-term)	Yes	3
Cheung et al. (2023)	Mothers	45	AT + ST	Resilience		DASS-21	↓ Stress (short-term)	Yes	5
Feliciana (2005)	Mothers	60	B	Multimodal	5 weeks	PSS	No sig. Stress	No	4
Fisak et al. (2018)	Both Parents	178	CBT + MB + RL	Strong not tough:	>10 sessions	PSI-SF, DASS-21	↓ Stress (short-term)	No	3
Javier et al. (2016)	Mothers and grandmothers	22	B	Incredible years	12/2 hour, weekly sessions	PSI	↓ Stress (short-term)	No	3
Javier et al. (2023)	Mothers	49	B	Incredible years	12 sessions	PSI	↓ Stress (short-term)	Yes	4
Lau et al. (2011)	Mothers	54	B + CBT	Incredible Years + Cognitive Restructuring	14 sessions, 5 specialized	PSI-SF	No sig. stress (short-term and long term)	Yes	5
Li et al. (2013)	Both	142	B	HAPA	4 weeks	PSS	↓ Stress (regardless of intervention)	Yes	3
Lo et al. (2019)	Mothers	102	MB	Mindfulness	8 sessions	PSI	↓ Stress (short-term)	Yes	6
Masiran et al. (2022)	Mothers	70	B	CBT	14 sessions	PSS	↓ Stress (short-term)	No	5
Olthuis et al. (2018)	Mothers	88	B	Strongest families	12 sessions	DASS-21	↓ Stress (I.G and C.G) No sig. stress at 22 months	Yes	4
Sangawi et al. (2018)	Mothers	17	B	STEPS	7 weeks	PSS	↓ stress (short-and long term)	Yes	4
Stormshak et al. (2020)	Mostly mothers	321	B	FCU	0 to 22 Tailored sessions	PSS	↑ Treatment gains for parents with elevated stress		4
Mak et al. (2024)	Mothers	250	MB	Resilience	5 sessions	DASS-21	↓ Stress (short-term)	Yes	5

3.3. Contents of intervention

Three studies were identified, which incorporated Cognitive Behavioral Theory (Ajilchi et al., 2011; Ajilchi and Kargar, 2013; Buchanan-Pascal et al., 2023). Relaxation techniques were an additional component in three studies (Ajilchi et al., 2011; Ajilchi and Kargar, 2013; Fisak et al., 2018). Behavioral orientation was evident in nine studies (Feliciana, 2005; Javier et al., 2016; Javier et al., 2023; Lau et al., 2011; Li et al., 2013; Masiran et al., 2022; Olthuis et al., 2018; Sangawi et al., 2016; Stormshak et al., 2020).

One study included utilized a combination of Attachment theory and System Theory (Cheung et al., 2023). Regarding mindfulness-based interventions, we identified two studies (Lo et al., 2019; Mak et al., 2024).

3.4. Quantitative evaluation

A comprehensive meta-analysis was conducted on 15 studies evaluating the effectiveness of parenting interventions in reducing parental stress. One study was excluded due to insufficient data (Stormshak et al., 2020). The overall pooled effect size across studies, calculated using a random-effects model, was Hedges' $g = 0.363$ (CI = 0.226–0.499, $p < 0.001$), indicating a small to moderate effect in favor of the interventions. The 95% prediction interval was 0.226 to 0.499. These results support the effectiveness of parenting interventions in mitigating stress levels among parents. **Table 2** served as the basis for the meta-analysis calculations.

To assess the robustness of the pooled effect size, we performed a leave-one-out sensitivity analysis using OpenMeta [Analyst]. In the analysis, we sequentially removed each study and recalculated the overall effect size. The Hedges' g effect size remained stable (0.422 to 0.474), with standard errors consistently being below 0.051. The analysis revealed that no individual study significantly altered the direction or magnitude of the effect. These results support the reliability and robustness of the observed effect of parenting interventions on parental stress.

Table 2. Summary of within-group effects on parental stress.

Author	Timepoint	Sample size (n)	Intervention pre (SD)	Intervention post (SD)	Hedges' *g* (within) [95% CI]	SE
Ajilchi et al. (2011)	Post	38	NR	NR	1.37, 95% CI = [0.68, 2.07]	0.3547
Ajilchi and Kargar (2013)	Post	38	156.31 (19.33)	129.47 (20.30)	1.34, 95% CI = [0.85, 1.83]	0.2518
Buchanan-Pascal et al. (2023)	Post	ET:62	ET:81.90 (2.39)	ET:79.89 (2.52)	0.81, 95% CI = [0.43, 1.20]	0.1965
	Follow-up (12m)	ET:23		ET:76.83 (3.46)	1.85, 95% CI = [1.30, 2.40]	0.2805
Cheung et al. (2023)	Post	45	49.44 (9.09)	46.44 (8.52)	0.33, 95% CI [−0.07, 0.75]	0.2105
	Follow-up	45		46.56 (8.86)	0.31, 95% CI [−0.09, 0.73]	0.2104
Feliciana, (2005)	Post	30	220.07 (29.42)	219.80 (25.78)	0.009, 95% CI [−0.4, 0.50]	0.2548
Fisak et al. (2018)	Post	178 (99/56)	Mothers: 85.61 (20.33) Fathers: 78.43 (21.14)	Mothers: 76.36 (18.87) Fathers: 73.11 (17.06)	Mothers: 0.47, 95% CI [0.19, 0.75] Fathers: 0.27, 95% CI: [−0.09, 0.64]	0.1435 0.1886
Javier et al. (2016)	Post	12	60.27 (14.9)	51.14 11.32)	0.66, 95% CI [−0.129, 1.46]	0.4057
	Follow up	12	NR	NR	NR	
Javier et al. (2023)	Post	22	81.6 (23)	72.2 (17.3)	0.45, 95% CI: [−0.13, 1.04]	0.3
Lau et al. (2011)	Post	29	47.2 (6.9)	58.4 (7.1)	−1.58, 95% CI [−2.16, -0.99]	0.2977
Li et al. (2013)	Post	72	67.54 (6.34)		0.90, [0.55, 1.24]	0.1753
Lo et al. (2019)	Post	51	105.29 (22.76)	99.41 (22.11)	0.26, 95% CI [−0.12, 0.65].	0.1974
	Follow-up	51	100.18 (19.42)	NR	0.24, 95% CI [−0.14, 0.62].	0.1973
Masiran et al. (2022)	Post	35	NR	NR	0.45,95% CI [1.84, 4.30]	1.57
	Follow-up (12m)	35	NR	NR	−0.112, 95% CI [−3.07, 2.72]	1.48
Olthuis et al. (2018)	Post	88	27.2 (7.08)	18.2 (7.84)	1.19, 95% CI = [0.88, 1.51]	0.1632
	Follow up (22m)	59		15.6 (8.72)	1.48, 95% CI = [1.11, 1.85]	0.1884
Sangawi et al. (2018)	Post	9	50.5 (7.1)	45.7 (7.1)	0.64, 95% CI = [−0.260, 1.55]	0.4616
	Follow-Up	8	NR	46.1 (6.8)	0.60, 95% CI = [−0.33, 1.53]	0.472
Mak et al. (2024)	Post	250	52.68 (11.25)	50.47 (10.97)	0.20 [0.02, 0.37]	0.0895

3.4.1. Heterogeneity

The heterogeneity among studies was assessed using the Q statistic and I^2 index. From the analysis emerged a significant level of heterogeneity (Q_e = 10.734, df = 3, p = 0.013), indicating substantial variability in effect sizes that warranted further moderator analysis. **Figure 2** presents the forest plot displaying the individual study effect sizes (Hedges' g), along with their 95% confidence intervals, and study weights (%).

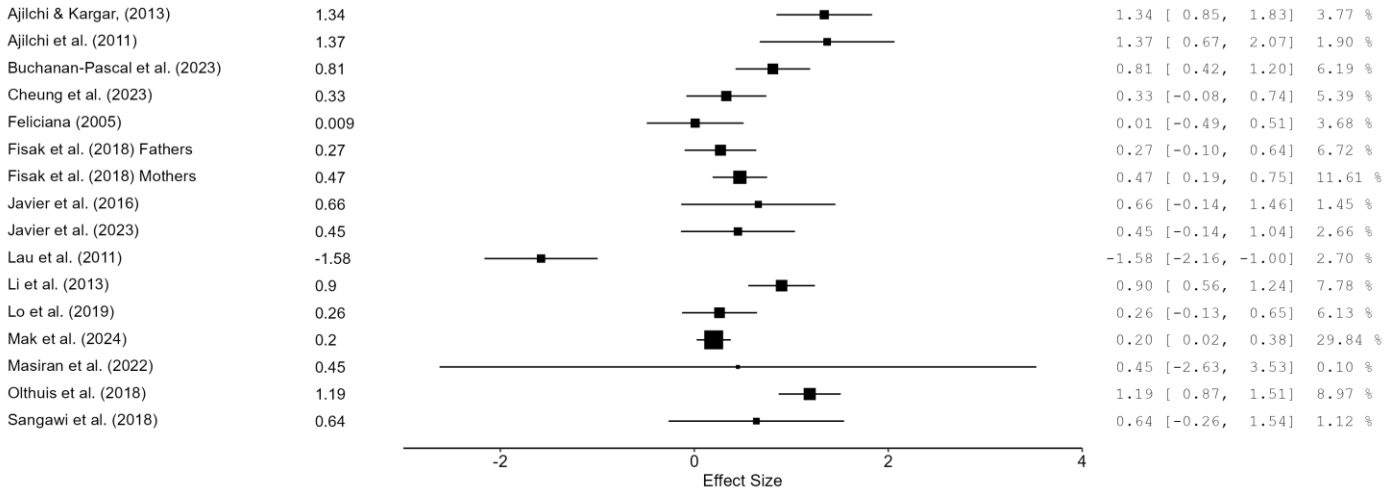

Figure 2. Forest plot post study effects.

3.4.2. Moderator analyses

To explore sources of heterogeneity, a series of meta-regression analyses were conducted using potential study moderators, including parent gender, Delphi quality scores, intervention components, and study sample size. An omnibus test for moderators was performed to determine whether these moderators could collectively affect variability in effect sizes. The test revealed a significant result (Q_m(12) = 98.891, df = 12, p < 0.001), reflecting that heterogeneity may partially be explained by study characteristics, such as intervention type, study quality (Delphi score), and parental gender.

Intervention type:

Intervention components appeared as a significant predictor of outcomes (Q_m = 50.880, df = 6, p < 0.001). The meta-regression analysis revealed that Behavioral interventions combined with CBT showed significantly stronger effects (β = −2.038, p < 0.001), as well as CBT combined with relational elements (β = −2.999, p < 0.001), compared to behavioral-only formats (β = −2.036, p = 0.882), CBT combined with mindfulness and relaxation (β = −2.567, p = 0.013), and mindfulness-only interventions (β = −3.109, p = 0.005). CBT combined with relaxation techniques (Ajilci et al., 2011; Ajilchi and Kargar, 2013) was not proved of statistically significance (β = −1.810, p = 0.103), although their findings reported a large intervention effect (g = 1.34, 95% CI: [0.85, 1.83]). Similarly, Fisak et al. (2018) found a moderate, significant effect (g = 0.47, 95% CI: [0.19, 0.75]). Conversely, Cheung et al., (2023), employing a mindfulness-based approach informed by attachment and systems theory, reported a smaller and non-significant effect (g = 0.33, 95% CI:

[−0.07, 0.75]).

Parent gender:

The meta-regression performed indicated that parent gender was not a significant moderator of intervention effectiveness (Q_m = 1.831, df = 2, p = 0.40). It is of note that studies including only or predominantly mothers did not show significant differences in effect size (β = −0.425, p = 0.194). One study (Sangawi et al., 2018) involving both mothers and grandmothers approached significance (β = −0.704, p = 0.059), suggesting a possible trend but with insufficient evidence to draw a robust effect. Similarly, studies that included both parents did not significantly differ from the reference group (β = −1.191, p = 0.429). These results may highlight that, while gender may shape program participation and delivery logistics, it does not seem to independently predict variation in stress-related outcomes across related studies.

Study quality

Study quality, as assessed using the Delphi checklist, significantly moderated effect sizes (Q_m = 59.116, df = 5, p < 0.001). Higher Delphi-rated studies tended to report smaller, more conservative effects, consistent with findings from Rusu et al. (2025), highlighting that methodological rigor helps mitigate effect size inflation. Higher quality scores were associated with lower effect sizes, most notably for Delphi score 5 (β = −2.952, p = 0.006), aligning with previous findings that rigorous studies often report more conservative effects.

Sample size:

Larger sample sizes were associated with stronger intervention effects (β = 0.015, p = 0.006), suggesting that smaller studies may underestimate intervention efficacy.

Follow-up:

A separate analysis was conducted on six studies reporting follow-up outcomes to assess the sustainability of parenting intervention effects on parental stress (Buchanan-Pascall et al., 2023; Cheung et al., 2023; Lo et al., 2019; Masiran et al., 2022; Olthuis et al., 2018; Sangawi et al., 2018). We selected the largest follow-up point in each study to assess intervention gain maintenance. The pooled effect size was Hedges' g = 0.861 (95% CI: 0.659 to 1.063), which is substantially larger than the immediate post-intervention effect. This indicates a large and statistically significant long-term benefit of parenting interventions (z = 8.389, p < 0.001).

Importantly, the 95% prediction interval (0.659 to 1.063) suggests that similar long-term effects may be observed in future studies, thus reinforcing the reliability of the sustained impact.

However, the analysis also revealed a significant residual heterogeneity (Q_e = 40.806, df = 5, p < 0.001), which indicates a considerable variability across relevant studies. This may be due to differences in intervention duration, study number, follow-up length, adherence rates, or contextual variables that influence long-term outcomes. These findings emphasize that while parenting interventions can lead to robust and enduring reductions in stress, the degree to which benefits are sustained varies significantly across settings and implementation strategies. Future studies should explore which program characteristics and delivery contexts most effectively support long-term gains. **Figure 3** presents the effect sizes (Hedges' g), 95% confidence intervals, and study weights (%) for the six studies that included follow-up assessments in their intervention.

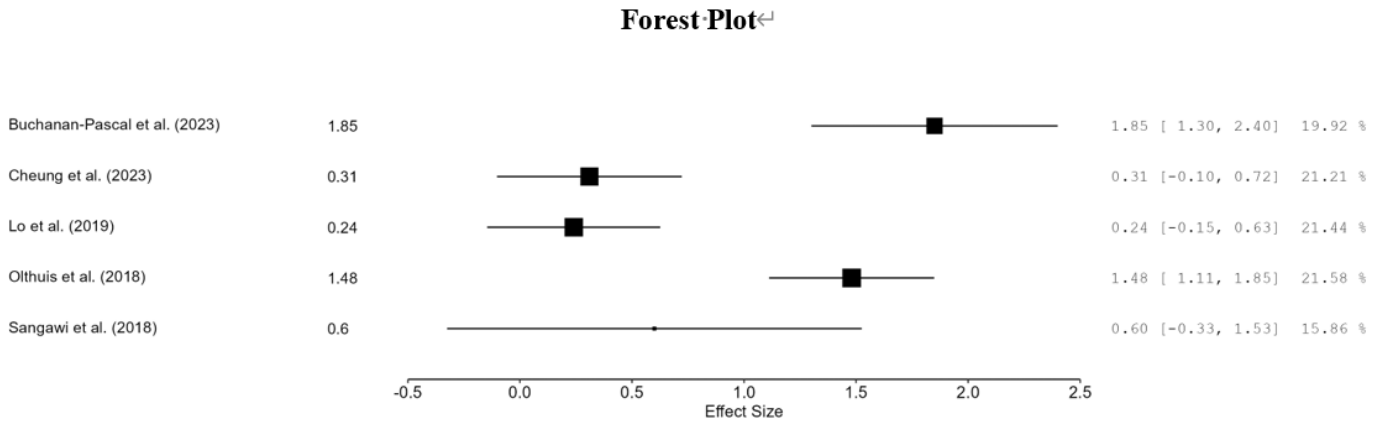

Figure 3. Forest plot of follow-up studies.

Publication bias:

To assess the potential for publication bias, Egger's regression test was conducted. The regression yielded a non-significant result ($\beta = -0.232$, $p = 0.817$), suggesting no evidence of small-study effects or publication bias in the current sample. This suggests that the pooled effect estimates from the included studies are unlikely to be inflated by publication bias. The symmetry of effect sizes, as confirmed by this test, supports the robustness of the observed intervention effects.

3.5. Limitations of reviewed studies

While the selected studies showed promising effects on both parent and child outcomes, several limitations should be considered, which could facilitate future research. First, the small number of studies meeting the inclusion criteria designates the need for additional research on stress management interventions for parents of typical school-aged children. Indeed, most studies focused either on preschool children, children from 3–12 years, or 6–18 years, which we find a vast group with different developmental characteristics and needs for both parents and children (Baker and Sanders, 2017; Hautman et al., 2018; Porzig-Drummond et al., 2015).

Second, the majority of studies focused primarily on mothers, and one study analyzed only mothers due to fathers' absences. It is of note that, even in studies where results from both parents were available, the percentage of data obtained only by mothers was twice that of both parents (total sample of mothers $N = 100$) (Fisak et al., 2018). An explanation may be that they provide the majority of care to their children (Magill-Evans et al., 2006; Sangawi et al., 2018). Crnic et al. (2005) hypothesize that mothers experiencing elevated stress may interpret their children's behavior as more negative and/or challenging and thus may be more prone to participate. Future research could consider this and enhance programs with elements that identify and meet the different needs of mothers and fathers regarding stress.

The third limitation was the small sample size and attrition rate observed in the reviewed studies. Either in the form of paternal absence or parental attrition, non-participation has been a major concern in interventions, even in those recompensing parents (Javier et al., 2016; Olthuis et al., 2018). A vast body of literature has focused on identifying barriers that may lead to parent attrition in parental and family-centered programs. Non-participation may be expressed not only quantitatively, in low levels

of attendance, but also qualitatively, in engagement with the group and the therapist when present (Orrell-Valente et al. 1999).

Furthermore, variations in intervention duration and parental variables across studies complicate the endeavor to conclude on optimal intervention length and specific parental outcomes.

4. Discussion

This systematic review and meta-analysis of interventions for parental stress of typically developing school-aged children contributes new evidence by denoting that parenting programs aiming at reducing stress can have a significant effect, with a pooled effect size of Hedges' $g = 0.363$ (<0.001). Notably, these effects persisted in their statistical significance, with a follow-up effect size of $g = 0.861$ (<0.001), a finding that offers new insight into the maintenance of results, which in some cases was somewhat understudied.

When placed in the context of the broader literature of parental interventions, our findings diverge somewhat from the conclusions of prior meta-analyses. The meta-analysis of Tehrani et al. (2024) emphasized that parenting programs grounded in Behavior Management (BM) and Relationship Enhancement (RE) were particularly effective. Whilst our results support the efficacy of behavioral content, we found that besides CBT with Relational components ($\beta = -2.999$, $p < 0.001$), also behavioral programs combined with CBT produced the strongest stress-reduction outcomes ($\beta = -2.038$, $p < 0.001$). Behavioral-only interventions ($\beta = -2.036$, $p = 0.882$) and other content combinations (e.g., CBT + Mindfulness + Relaxation: $\beta = -2.567$, $p = 0.013$), revealed a diminished efficacy in stress-related outcomes.

This pattern reflects a growing discussion about the value of the "less is more" versus "more is less" principle in intervention component design. In our opinion, it is worth studying whether it is merely the number of components that determines intervention effectiveness and maintenance of gains or the coherence and relevance of those components (Dekkers et al., 2022; Tehrani et al., 2024). Even interventions grounded in broader theoretical frameworks, such as Cheung et al., (2023) mindfulness-based group program, produced a small, non-significant effect on stress ($g = 0.33$, 95% CI: [−0.07, 0.75]), and Lo et al. (2019) reported modest short-term stress reduction ($g = 0.26$), aligning with Burgdorf et al. (2019) broader meta-analytic findings ($g = 0.44$). This may underpin that simplicity alone may not be the sole answer. More importantly, Dekkers et al. (2022) concluded that teaching parents to proactively manage their behavior appeared more effective in improving general parent mental health. These findings may suggest that overly comprehensive or diffuse programs could overload, especially highly stressed parents, affecting their engagement and retention rates. These findings highlight that it is not only how much content is delivered, but what kind and, particularly, whether it is behaviorally stress-specific, that determines intervention effectiveness.

Despite the overall effectiveness of interventions, our analysis revealed significant heterogeneity ($Q_e = 10.734$, $p = 0.013$), stating the need for a deeper look into moderating factors. Study quality, as depicted in Delphi scores, significantly influenced effect size, as higher-quality studies reported more conservative results (β

= −2.952, p = 0.006). These studies typically employed blinding, follow-up assessments, and validated outcome measures. In contrast, lower-scoring studies (≤3), including Ajilchi et al. (2011) and Buchanan-Pascal et al. (2023), often lacked follow-up data or had mixed results, likely due to small sample sizes, absence of control groups, or methodological limitations. This finding is consistent with findings from Rusu et al. (2025) (r = −0.40).

One surprising finding was the non-significant effect regarding parent gender (Q_m = 2.193, p = 0.533). However, this result should be interpreted with caution, as most studies included or analyzed mothers, often due to low paternal enrollment (e.g., 93.1% mothers in Lo et al. (2019); 89.7% in Lau et al. (2011)). The underrepresentation of fathers not only hinders generalizability but may obscure gender-specific responses to stress and intervention content. This gap is addressed by Jeong et al. (2023), who emphasize that paternal stress appears to be qualitatively distinct, often linked to role ambiguity, work-life conflict, or social norms around emotional expression.

Furthermore, long-term follow-up results from six studies revealed significant and sustained improvements (g = 0.861, p < 0.001), suggesting that the benefits of parenting interventions may even amplify over time, especially when programs foster booster sessions (Buchanan-Pascall et al., 2023; Olthuis et al., 2018). This finding aligns with previous research by Lundahl et al. (2006), who reported stronger follow-up than immediately post-intervention effects of parenting programs on stress reduction. The results, albeit, challenge earlier reviews (Ling et al., 2021), which found no significant long-term gains in disadvantaged populations (g = −0.12, p = 0.155).

One of the most consistent challenges observed in current literature and previous research is the high attrition rate in parental interventions, particularly those involving fathers or highly stressed parents. In our study, fewer than half of the eligible participants completed the program, resulting in high drop-out rates and hindering program efficacy. While individual characteristics such as time availability or parenting stress levels may contribute to dropout, relational dynamics, such as the quality of the couple relationship, should also be considered as a "risk" factor. High-conflict co-parenting relationships, or lack of partner support, may impair one parent's ability to participate meaningfully. Yet few studies evaluated how these factors influence engagement. This highlights a critical gap in intervention research, as we need to address not only the efficient components of an intervention but also how to address both parents in an efficient way.

Although this meta-analysis focused specifically on parental stress, several of the included studies also reported amelioration in parental anxiety and depression symptoms. For example, Lo et al. (2019) and Fisak et al. (2018) observed significant declines in mood symptoms in addition to stress reductions. This may suggest that these interventions could yield broader mental health benefits for parents.

In addition, a number of studies reported positive changes in child outcomes, particularly regarding internalizing symptoms, behavior and self-regulation. The studies of Ajilchi and Kargar (2013), Fisak et al. (2018), and Lo et al. (2019) revealed that as parental stress diminished, children exhibited improvements in mood, behavior, or executive functioning. Although children were not the intervention targets, these

findings reinforce the bidirectional nature of the parent-child relationship and emphasize that supporting parents can serve as a pathway to enhancing child and overall family well-being.

In conclusion, parenting interventions targeting stress and parenting behaviors appear to hold promise for improving both parental and child outcomes. However, future research must continue to explore the specific mechanisms and components that drive long-term effectiveness. Emphasizing the inclusion of both parents, accounting for relational dynamics, and refining intervention designs to meet diverse needs will be critical for optimizing family well-being.

Methodological rigor varied across the studies reviewed, as reflected in Delphi scores ranging from 2 to 6.

5. Implications

The findings of this review offer several important implications for clinical practice, program design, and policy development. First, we should focus more on how and why the intervention components work by identifying psychological or behavioral mechanisms that may exacerbate or ameliorate parental stress and aid long-term efficacy. Interventions that meaningfully reduce stress not only enhance parental functioning but also support healthier developmental pathways for children, making stress reduction a public health priority.

Second, the persistent underrepresentation of fathers across studies calls for the adoption of gender-sensitive recruitment strategies and the development of interventions that are more inclusive to paternal needs and experiences. Addressing barriers specific to fathers, such as perceptions of parenting roles, work-related constraints, and emotional expressiveness, could lead to greater engagement and improved outcomes for families. Programs should also consider strategies to increase retention among high-stress parents, such as shorter formats, digital access, or embedded motivational supports. Moreover, studies should also explore couple and co-parenting dynamics as potential moderators of both participation and outcome, given the likelihood that stress and relational conflict are intertwined.

From a preventative standpoint, offering low-intensity, accessible interventions to families with typically developing children may help reduce parental stress before it escalates to clinical levels. This proactive approach has the potential to strengthen family resilience and promote positive developmental trajectories for children. Practitioners should also be attuned to practical and relational barriers to participation—including time limitations, stigma, and couple dynamics—and adapt delivery formats (e.g., flexible scheduling, online modules, individual vs. group formats) to meet the diverse needs of families.

Future research should also address the consistent issue of attrition, particularly among fathers and high-stress families. Programs may benefit from gender-sensitive design, flexible delivery formats, or motivational components that address the relational and logistical barriers to sustained participation.

6. Conclusion

This review and meta-analysis provide compelling evidence that parenting

interventions, can significantly reduce parental stress and positively influence parenting behaviors. Importantly, the sustained effects over time, as depicted by follow-up data, underscore the significant value of well-structured programs, especially when they include booster sessions and/or ongoing support.

The findings also highlight the critical gaps of paternal underrepresentation in the existing literature, and also the limited focus on couple relation dynamics, not only as possibly contributing to participation and retention rates, but also at shaping family well-being and at program efficacy and maintenance of gains.

To maximize impact, future research should aim to identify the most effective components of parenting programs, examine mechanisms of change, and expand access to families across diverse contexts. Interventions that are proactive, accessible, and tailored to both parents' needs and experiences can play a pivotal role in promoting long-term family well-being.

In sum, parenting interventions hold significant promise not only as a means of alleviating parental stress but also for strengthening the parent-child relationship and supporting healthier developmental trajectories for the whole family.

7. Limitations of the study

The findings of this systematic review should be interpreted in light of several limitations. First, the review included a relatively small number of studies (n = 16), primarily due to the exclusion of interventions that combined preschool and school-aged populations. While this approach helped focus the analysis, it may have resulted in the omission of potentially effective and relevant interventions, thereby narrowing the scope of the review. Additionally, the age range selected for inclusion (5–13 years) was intended to encompass the elementary school period; however, it may have further limited the number of eligible studies.

Second, there remains a notable lack of empirical research focused specifically on stress management interventions for parents of typically developing school-aged children. This gap underscores the need for further investigation to determine which intervention components are most effective and under what conditions they yield optimal outcomes.

Another key limitation involves the predominant focus on mothers in the majority of included studies. The absence or limited involvement of fathers restricts our understanding of the full spectrum of parental stress experiences. Future research should prioritize the inclusion of both parents to explore gender-specific needs related to stress, emotional regulation, role efficacy, communication, and the parent-child relationship.

Moreover, the methodological heterogeneity across studies, including variability in assessment tools, intervention goals, and delivery formats, posed challenges for comparative analysis. This diversity complicated the ability to draw firm conclusions about intervention efficacy. At the same time, the variety of tools and approaches reflects the field's flexibility and creativity, offering useful insights for designing future research and interventions.

In sum, while the review highlights promising evidence for parenting interventions, these limitations indicate the need for more comprehensive, inclusive,

and methodologically consistent studies to strengthen the evidence base and guide effective practice.

Conflict of interest: The authors declare no conflict of interest.

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Appendix

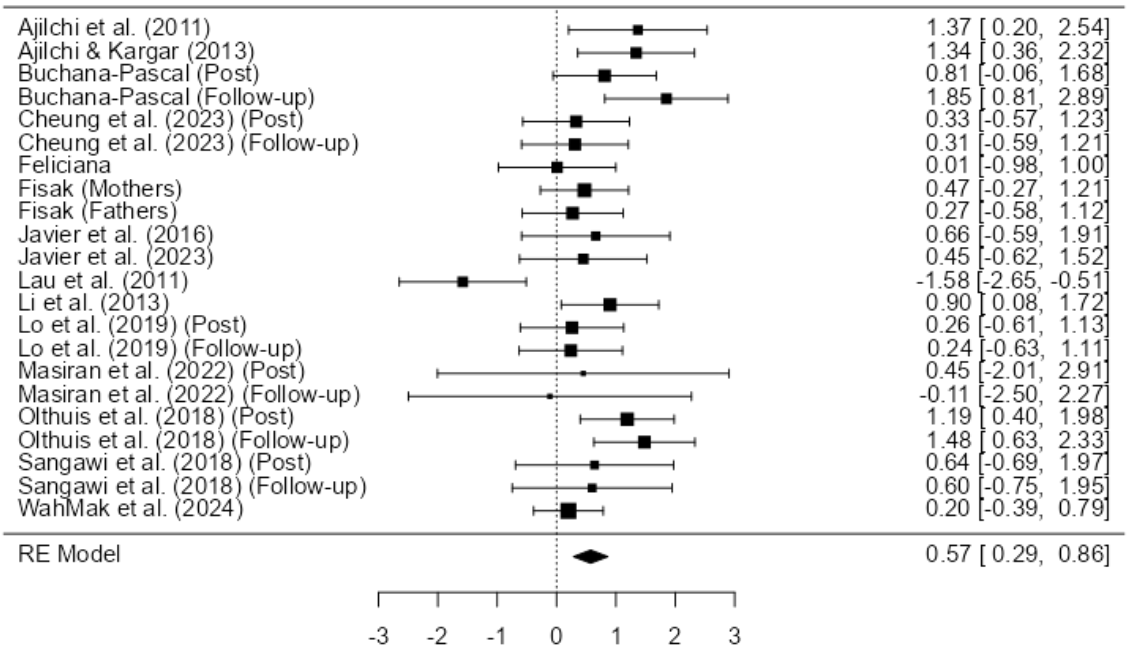

Figure A1. Forest plot post and follow-up.

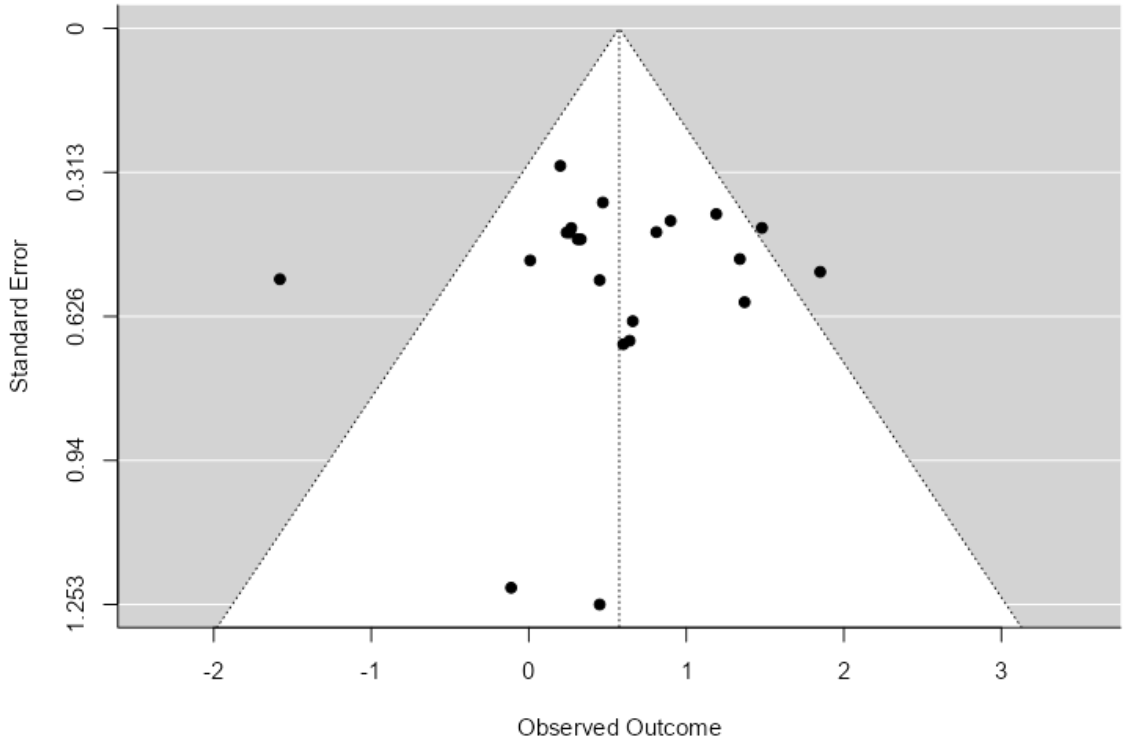

Figure A2. Funnel plot Egger's test.