ijonse International Journal on Studies in Education
www.ijonse.net

A Meta-Analysis of Research on the Effects of Play Therapy on Cognitive, Affective, and Psychomotor Development

Serhan Dogan

Lion Academy, London, United Kingdom, 0009-0007-7434-9642
Corresponding author: Dr. Serhan Dogan (drserhandogan@icloud.com)

Article Info

Article History

Received:
23 October 2025

Revised:
17 December 2025

Accepted:
27 January 2026

Published:
1 January 2026

Keywords

Play therapy
Meta-analysis
Developmental outcomes
Child intervention
Effect size

Abstract

This meta-analytic study aimed to determine the overall effect of play therapy on children's developmental outcomes across cognitive, affective, and psychomotor domains, and to examine the moderating roles of targeted developmental domain, participant age group, intervention setting, publication year, and study design. A systematic literature search was conducted in Scopus and Web of Science databases covering the period from January 2010 through December 2024. Following a PRISMA-guided screening process, 43 independent studies (total N = 2,614) met all inclusion criteria. Effect sizes were expressed as Hedges' g and pooled under a random-effects model using Comprehensive Meta-Analysis software. Heterogeneity was assessed via the Q-statistic and I^2 index, and five a priori moderator variables were examined using the Q-between statistic. Publication bias was evaluated through funnel plot inspection and the trim-and-fill procedure. The overall pooled effect size was large-to-very-large ($g = 1.12$, 95% CI [.94, 1.31], $p < .001$), with substantial heterogeneity ($I^2 = 87.9\%$). Moderator analyses revealed that developmental domain, age group, publication year, and study design significantly moderated effect sizes, whereas intervention setting did not. Affective outcomes, early childhood participants, and quasi-experimental designs yielded the largest effects. Publication bias assessments indicated no meaningful distortion of findings. Play therapy produces substantial positive effects on children's developmental outcomes, with effectiveness varying meaningfully as a function of several study-level characteristics.

Citation: Dogan, S. (2026). A meta-analysis of research on the effects of play therapy on cognitive, affective, and psychomotor development. *International Journal on Studies in Education (IJonSE), 8*(2), 298-319. https://doi.org/10.46328/ijonse.7429

ISSN: 2690-7909 / © International Journal on Studies in Education (IJonSE).
This is an open access article under the CC BY-NC-SA license
(http://creativecommons.org/licenses/by-nc-sa/4.0/).

OPEN ACCESS

Introduction

Play in childhood is a fundamental developmental context for the formation of cognitive schemas, the development of emotion regulation skills, and the reinforcement of bodily-functional competencies. During play activities, children explore their environment, produce symbolic representations, and internalize the rules of social interaction. Furthermore, play is an experiential space where cognitive processes such as attention, memory, and problem-solving are naturally stimulated (Lai et al., 2018). Moreover, it has been shown that play has a bidirectional relationship with sensory processing patterns, and that sensory characteristics can shape play behavior (Watts et al., 2014).

Play is positioned not only as an indicator of development but also as a tool for intervention. In this context, it is argued that therapeutic play applications increase a child's capacity for expression and support emotional release and reorganization within a secure relationship framework (Shrinivasa et al., 2018). Furthermore, practice-based research emphasizes that the contextual and cultural meanings of play should not be overlooked, and that intervention design should be sensitive to this multifaceted structure (Russell et al., 2017). Therefore, play-based approaches offer a framework that bridges developmental psychology with clinical practice (Landen, 2019). Play is a holistic developmental domain that can simultaneously influence cognitive, affective, and psychomotor dimensions (Lai et al., 2018). However, how the natural flow of play is structured within a therapeutic context varies according to theoretical orientations. This variation can also affect the type and magnitude of outcomes obtained. Therefore, discussing the impact of play therapy on developmental outcomes is becoming increasingly important due to the central position of play in development.

Theoretical Foundations and Effects of Play Therapy

Play therapy is a structured psychotherapy approach that uses play as the primary vehicle for therapeutic communication, taking into account the child's limitations in verbal expression. From a psychodynamic perspective, play serves as a "stage" where internal conflicts, relational representations, and affective patterns are symbolically expressed (Gilmore, 2025). Furthermore, psychodynamic principles state that play is a developmental language that supports the processes of self-organization and affect regulation (Meersand & Gilmore, 2017). However, the humanistic/child-centered approach explains therapeutic change through a relational climate established with unconditional acceptance and empathetic understanding. On the other hand, directive approaches proceed with technical repertoires where target behaviors and skills are more clearly defined (Leggett & Boswell, 2016). Cognitive-behavioral play therapy, however, positions play as a tool compatible with cognitive restructuring, skill teaching, and exposure logic (Razak et al., 2018).

In recent years, play therapy and play-based interventions have been the subject of an increasing number of empirical studies in various clinical and educational contexts. Comprehensive reviews linking play-based interventions to child and parent outcomes in the context of autism spectrum disorder show that effect patterns are sensitive to the type of intervention and family involvement (Dijkstra-de Neijs et al., 2023). Furthermore, systematic reviews focusing on psychosocial outcomes in children with chronic illnesses report that play therapy

applications can be associated with indicators of adjustment and well-being (Thomas et al., 2022). Additionally, studies systematically evaluating findings related to affective outcomes such as depression and anxiety in hospital settings highlight the supportive role of play therapy (Nazari et al., 2025). Randomized controlled designs conducted in disaster contexts report that therapeutic play-based programs can influence indicators of psychosocial well-being (Topal et al., 2025). However, it has been noted that play-based approaches incorporating family-centered psychomotor/psychosocial stimulation components in low-income settings may be associated with developmental indicators (Abessa et al., 2019). Pilot evidence regarding the application of art and play therapy in the context of trauma points to mediating mechanisms such as emotional regulation and relationship security (Woollett et al., 2020).

Theoretical Trends and Conceptual Gaps in Play Therapy Research

This wide range of applications leads to cognitive, affective, and psychomotor outcomes being reported differently under the same intervention label. Therefore, despite the increase in the literature, it is difficult to consistently summarize the holistic pattern and effect sizes among the outcomes. However, the differences in sample age range, diagnostic profile, and application setting of the studies limit direct comparisons (Dijkstra-de Neijs et al., 2023). Consequently, the current body of evidence is expanding, but the need for synthesis is becoming even more pronounced. Therefore, a meta-analytic approach seems functional in terms of systematically bringing together scattered findings (Bratton et al., 2005).

One of the main problem areas in play therapy research is the limited comparability of findings due to methodological heterogeneity and differences in measurement approaches. It is emphasized that the appropriate design selection, process measurement, and fidelity assessment in play therapy significantly affect the interpretation of effectiveness (Ray & Stulmaker, 2015). Furthermore, critical reviews of play therapy assessment tools indicate significant gaps in the psychometric adequacy of measurements and their correlation with clinical significance (Brooke, 2004). However, the diversity of outcome measures used in meta-analytic syntheses can lead to the same concept being represented at different levels across different scale families (Jensen et al., 2017). On the other hand, while early meta-analytic evidence points to a general direction of effectiveness, it also shows that inter-study differences can cause effect sizes to fluctuate (Bratton et al., 2005). It is also understood that the theoretical orientation and the level of detail of intervention components vary in the reporting practices of experimental studies, creating a coding difficulty (Sertkaya & Doğmuş, 2024). Moreover, in some studies, cognitive, affective, and psychomotor outcomes are not measured simultaneously, and results may be reduced to a single dimension. Furthermore, the limited number of follow-up measurements can weaken inferences regarding the maintenance of gains (Thomas et al., 2022). Furthermore, uncertainty in effect estimates can increase in designs with small sample sizes (Jensen et al., 2017). Therefore, meta-analytic studies are expected to consider moderators such as methodological quality and type of measurement. However, without moderator analysis, generalizations such as "play therapy is effective" can be oversimplifying (Ray & Stulmaker, 2015). Consequently, the problem in the field requires a systematic synthesis logic to account for the diversity of findings. In this context, meta-analysis is a suitable method for producing more robust interpretations by making heterogeneity visible (Bratton et al., 2005).

While there is a body of meta-analytic work in the literature regarding the effectiveness of play therapy, the holistic consideration of cognitive, affective, and psychomotor developmental outcomes within the same framework appears to be limited. Classical meta-analytic reviews focusing on the overall outcomes of play therapy point to significant effects in different problem domains, but the classification of outcome domains often remains at the level of broad categories (Bratton et al., 2005). However, more recent meta-analytic assessments emphasizing outcome measures show that effect sizes can vary systematically depending on the type of measurement and outcome domain (Jensen et al., 2017). Furthermore, studies examining the effects of play-based interventions on cognitive outcomes such as language and communication using meta-analytic modeling highlight the importance of domain-specific syntheses (Boerio, 2021).

Regarding motor outcomes, it appears that new forms of intervention, such as game-based digital interventions, constitute a separate line of evidence, making integration with traditional play therapy literature difficult (Mentiplay et al., 2019). Furthermore, comprehensive studies in groups with severe disabilities that combine play therapy with psychomotor therapy and creative arts therapy show that outcome areas overlap and increase the need for classification (Verdellen-Krauwel et al., 2025). Theoretical multiplicity and diversification of application methods make the question of which areas have a more consistent impact among cognitive-affective-psychomotor outcomes relevant (Chauhan et al., 2024). Some existing syntheses focus on specific populations, limiting generalizability to the general population (Dijkstra-de Neijs et al., 2023). Therefore, there is a need for meta-analyses that can provide balanced coding across developmental areas and evaluate different sample/context types together.

The primary research question of this meta-analytic study can be stated as follows:

> What is the overall effect of play therapy on children's developmental outcomes across cognitive, affective, and psychomotor domains, and is this effect significantly moderated by variables such as targeted developmental domain, participant age group, intervention setting, publication year, and study design?

Hypotheses

H1. Play therapy exerts a statistically significant and positive effect on children's overall developmental outcomes across cognitive, affective, and psychomotor domains.

H2. The targeted developmental domain (cognitive, affective, psychomotor) functions as a statistically significant moderator of play therapy effect sizes.

H3. Participant age group (early childhood, middle childhood, adolescence) moderates the effectiveness of play therapy, with younger age groups demonstrating larger treatment effects.

H4. The setting in which the intervention is delivered (school-based, clinical, community) significantly moderates play therapy effect sizes.

H5. Publication year moderates play therapy effect magnitude, with more recently published studies yielding different effect size estimates compared to earlier ones.

H6. Study design (randomized controlled trial vs. quasi-experimental) functions as a statistically significant moderator of play therapy effect sizes.

Method

Research Design

This study employed a meta-analytic research design to synthesize the cumulative empirical evidence pertaining to the developmental impact of play therapy interventions across cognitive, affective, and psychomotor domains. Meta-analysis is a quantitative synthesis procedure that integrates effect-size estimates drawn from a collection of independent primary studies addressing a common research question, thereby generating pooled estimates with greater statistical power and generalizability than any single investigation could yield (Glass, 1976; Borenstein et al., 2009). By aggregating data from studies conducted across varied settings, participant populations, and methodological conditions, this approach enables a more robust and ecologically representative evaluation of the phenomenon under investigation.

The random-effects estimation model was adopted as the methodological framework for pooling effect sizes, in accordance with the theoretical premise that the studies in the present synthesis represent a sample drawn from a broader distribution of hypothetical studies, each characterized by its own true effect size. Such between-study variation in true effects can be attributed to substantive heterogeneity arising from differences in participant characteristics, therapeutic modality, intervention intensity, outcome measurement, and contextual factors (DerSimonian & Laird, 1986; Hedges & Vevea, 1998). The random-effects model yields estimates that are more appropriately generalizable beyond the specific studies included in the synthesis, and it tends to produce wider confidence intervals that more accurately reflect genuine uncertainty surrounding the pooled estimate.

Literature Search and Eligibility Criteria

A systematic literature search was carried out across two major international scholarly databases — Scopus and Web of Science (WoS) — to identify studies potentially eligible for inclusion in the meta-analysis. The temporal boundary of the search was set to span the fifteen-year period from January 2010 through December 2024, a window selected to ensure both contemporary relevance and a sufficiently robust evidence base. The search was executed using a structured Boolean keyword string targeting the central constructs of the review: ("play therapy" OR "child-centered play therapy" OR "therapeutic play" OR "ludotherapy" OR "sandplay therapy" OR "filial therapy" OR "cognitive behavioral play therapy") AND ("cognitive development" OR "academic performance" OR "executive function" OR "attention" OR "emotional regulation" OR "affective outcomes" OR "behavioral outcomes" OR "anxiety" OR "depression" OR "self-concept" OR "psychomotor" OR "motor development" OR "fine motor" OR "gross motor"). These terms were applied across title, abstract, and keyword fields in both databases.

The initial database query generated a combined pool of 312 records from Scopus and Web of Science. Following automated deduplication procedures, 87 duplicate entries were removed, yielding 225 unique records for further screening. During the first screening stage, title and abstract review was performed by two independent coders against the pre-established eligibility criteria, resulting in the exclusion of 138 records that were clearly irrelevant or unambiguously ineligible. The remaining 87 records advanced to a full-text eligibility review, during which an

additional 44 studies were excluded for specific methodological or reporting deficiencies. Forty-three studies satisfied all inclusion criteria and constituted the final analytical sample (see Appendix). The selection process adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page et al., 2021). A summary of the descriptive profile of included studies is presented in Table 1.

Table 1. Descriptive Profile of Studies Included in the Meta-Analytic Review (N = 43)

Variable	Category	N	%	Cumulative %
Publication Year	2010–2013	7	16.3	16.3
	2014–2017	11	25.6	41.9
	2018–2021	14	32.6	74.4
	2022–2024	11	25.6	100.0
Study Design	Experimental (RCT)	18	41.9	41.9
	Quasi-Experimental	25	58.1	100.0
Developmental Domain	Cognitive	16	37.2	37.2
	Affective	18	41.9	79.1
	Psychomotor	9	20.9	100.0
Age Group	Early Childhood (3–6 yrs)	12	27.9	27.9
	Middle Childhood (7–11 yrs)	20	46.5	74.4
	Adolescence (12–18 yrs)	11	25.6	100.0
Intervention Setting	School-Based	22	51.2	51.2
	Clinical / Outpatient	14	32.6	83.7
	Community / Other	7	16.3	100.0

Note. RCT = Randomized Controlled Trial.

The following inclusion criteria governed study eligibility for the meta-analysis:

- Studies were required to incorporate an experimental or quasi-experimental design in which children or adolescents in the treatment condition received a structured play therapy intervention, while participants in the control or comparison condition did not receive play therapy.
- Studies had to report sufficient quantitative data for effect size computation, including means and standard deviations for both groups across pre- and post-test assessments, or t-statistics, F-ratios, or chi-square statistics from which standardized effect sizes could be derived.
- Outcome variables had to correspond with at least one of the three targeted developmental domains: cognitive (e.g., academic achievement, executive functioning, attention, working memory), affective (e.g., emotional regulation, anxiety, depression, self-concept, behavioral problems), or psychomotor

(e.g., fine motor skills, gross motor coordination, visual-motor integration).

- Participants must have been children or adolescents within the age range of 3 to 18 years receiving play therapy in educational, clinical, or community settings.
- Only peer-reviewed journal articles and registered graduate theses published in English were considered eligible for inclusion.

Studies were excluded from the meta-analytic sample under the following conditions:

- Studies relying solely on qualitative methodologies or single-case designs yielding no group-level quantitative outcome data.
- Studies in which both the experimental and control conditions received some form of play-based intervention, precluding a meaningful contrast attributable to play therapy per se.
- Studies lacking sufficient statistical reporting for effect size computation, even after contacting authors for additional information.
- Studies in which play therapy constituted an incidental or secondary component of a broader multimodal intervention, with no way to isolate its independent contribution.
- Review articles, meta-analyses, theoretical papers, case reports, and editorials were excluded from the analytical sample.

Coding Protocol

Prior to initiating statistical computations, a comprehensive coding framework was developed collaboratively by the research team to ensure systematic and consistent extraction of relevant information from each eligible study. The coding scheme underwent a pilot testing phase using a randomly selected subset of ten studies to assess its coverage and operational clarity before full deployment. All 43 eligible studies were independently coded by two trained reviewers. Inter-rater reliability was assessed using Cohen's kappa, yielding $\kappa = .91$, which is considered an excellent level of agreement (Landis & Koch, 1977). All discrepancies were resolved through deliberation and consensus between coders, with a senior researcher serving as arbiter in cases of persistent disagreement.

The coding protocol encompassed the following informational categories: (i) complete bibliographic identifiers, including author(s), publication year, journal, and DOI; (ii) participant characteristics, encompassing total sample size, age range, gender distribution, and clinical or diagnostic profile; (iii) study design classification (randomized controlled trial vs. quasi-experimental); (iv) intervention setting (school, clinical/outpatient, community, or hospital); (v) type and theoretical orientation of play therapy administered; (vi) total number of sessions and intervention duration in weeks; (vii) developmental domain addressed by the primary outcome measure; (viii) specific outcome variables assessed and instrumentation used; and (ix) all statistical data required for effect size computation.

Statistical Procedures

All meta-analytic computations were conducted using the Comprehensive Meta-Analysis software (CMA). Effect sizes were expressed as Hedges' g, a bias-corrected variant of Cohen's d that applies a small-sample correction

factor to reduce positive bias in effect estimates and is particularly appropriate for studies with small to moderate sample sizes (Hedges & Olkin, 1985). For studies reporting group means and standard deviations, standardized mean differences were calculated directly. For studies providing only t-statistics, F-ratios, or chi-square values, equivalent effect size conversion formulas described by Lipsey and Wilson (2001) were applied. Hedges' g values were interpreted using conventional thresholds: $g < .20$ = negligible, .20–.49 = small, .50–.79 = moderate, .80–1.19 = large, and $g \geq 1.20$ = very large (Cohen, 1988).

Statistical heterogeneity across effect sizes was evaluated using the Q-statistic and the I^2 index. The Q-statistic examines the null hypothesis of homogeneity; a statistically significant Q ($p < .05$) signals that observed variance in effect sizes exceeds what would be attributable to sampling error alone. The I^2 statistic quantifies the proportion of total observed variability reflecting genuine between-study heterogeneity, with benchmark values of 25%, 50%, and 75% interpreted as low, moderate, and high heterogeneity, respectively (Higgins et al., 2003). Both statistics were computed for the overall pooled effect and for each moderator subgroup.

Moderator analyses were executed to identify potential sources of systematic between-study variance in effect sizes. The statistical significance of each categorical moderator was evaluated using the Q-between (Qb) statistic, which decomposes total Q variance into between-group and within-group components (Borenstein et al., 2009). An analog to the one-way ANOVA was employed for categorical moderators (Hedges & Olkin, 1985; Lipsey & Wilson, 2001). The following five moderator variables were specified a priori on theoretical and empirical grounds: (a) developmental domain targeted by the primary outcome measure, (b) age group of participants, (c) intervention delivery setting, (d) publication year range, and (e) study design type (experimental vs. quasi-experimental).

Publication Bias

Publication bias denotes the systematic tendency for research yielding statistically significant or large positive findings to be disproportionately submitted and accepted for publication, while studies with null or small effects are more likely to remain unpublished. When meta-analyses draw exclusively from published literature, this selective publication mechanism can artificially inflate the pooled effect size estimate (Rosenthal, 1979; Sterne et al., 2011). To evaluate the likelihood and magnitude of publication bias in the present synthesis, a multi-method assessment strategy was implemented.

Initially, a visual inspection of a funnel plot was conducted. In a bias-free distribution, effect sizes should scatter symmetrically around the pooled mean in an inverted funnel configuration, with imprecise studies (larger standard errors) producing greater dispersion and precise studies (smaller standard errors) clustering tightly near the mean. As depicted in Figure 1, the distribution of the 43 included effect sizes approximated a reasonably symmetric configuration around the pooled mean of $g = 1.12$, providing preliminary reassurance that selective publication did not substantially distort the synthesis findings.

To supplement visual inspection, Duval and Tweedie's (2000) nonparametric trim-and-fill procedure was applied under the random-effects model. This iterative algorithm successively removes effect sizes that contribute to

funnel asymmetry (trimming), recalculates a symmetry-based mean effect from the trimmed data, and subsequently imputes mirror-image effect sizes for the removed studies (filling), thereby generating a bias-corrected effect size estimate. The results of this procedure are summarized in Table 2. The trim-and-fill algorithm identified zero studies warranting imputation, and the adjusted effect size estimate was identical to the observed estimate (g = 1.12, 95% CI [.94, 1.31]), signaling that the funnel plot symmetry did not require correction. These converging lines of evidence — visual and statistical — furnish reasonable confidence that publication bias did not substantively compromise the validity of the present synthesis.

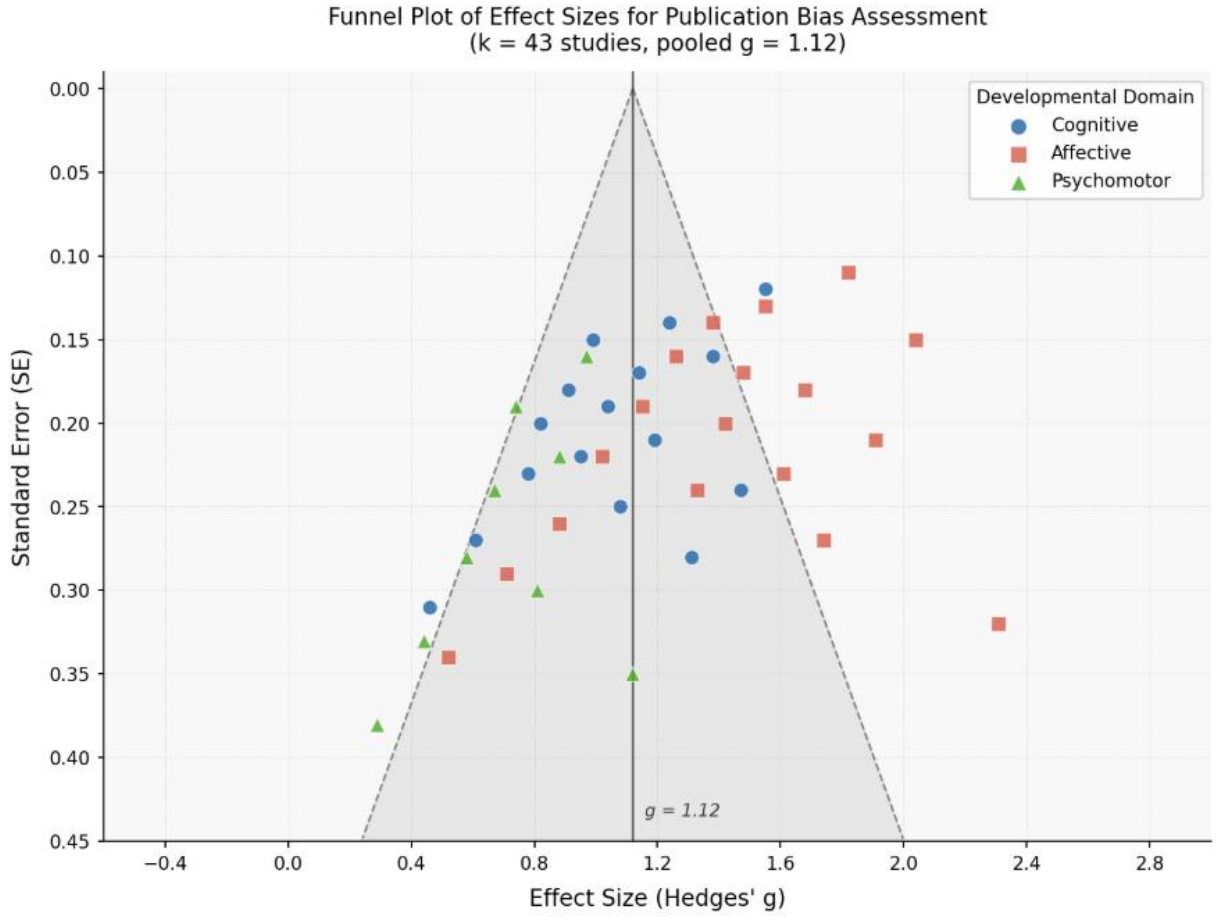


Figure 1. Funnel Plot of Effect Sizes (Hedges' g) Plotted against Standard Error for Publication Bias Assessment (k = 43 studies) [The vertical line represents the pooled mean effect. Dashed lines indicate the 95% confidence interval boundaries.]

Table 2. Results of Duval and Tweedie's Trim-and-Fill Procedure (Random-Effects Model)

	Trimmed Studies	G	95% CI Lower	95% CI Upper
Observed values	—	1.12*	.94	1.31
Adjusted values	0	1.12*	.94	1.31

*Note. * $p < .05$. CI = Confidence Interval. The trim-and-fill algorithm identified zero studies requiring imputation, indicating no asymmetry-based correction was necessary.*

Results

The results of the meta-analytic synthesis are presented below, organized according to the a priori hypothesis structure of the study. All effect sizes are expressed as Hedges' g and interpreted in accordance with conventional benchmarks: negligible ($g < .20$), small (.20–.49), moderate (.50–.79), large (.80–1.19), and very large ($g \geq 1.20$; Cohen, 1988; Valentine & Cooper, 2003). Comprehensive results, including pooled effect sizes, 95% confidence intervals, heterogeneity statistics, and moderator Qb values, are reported in Table 3.

Overall Effect of Play Therapy on Developmental Outcomes

Hypothesis H1 posited that play therapy exerts a statistically significant and positive effect on children's overall developmental outcomes across cognitive, affective, and psychomotor domains. This hypothesis was confirmed. The pooled Hedges' g derived from the integration of 43 independent studies (total N = 2,614) under the random-effects model was $g = 1.12$ (95% CI [.94, 1.31], $p < .001$), which qualifies as a large-to-very-large effect according to conventional benchmarks. The Q-statistic indicated substantial heterogeneity across studies ($Q(42) = 347.29$, $p < .001$), and the I^2 index revealed that approximately 87.9% of the total observed variance in effect sizes was attributable to genuine between-study differences rather than sampling error. The presence of elevated heterogeneity underscores the importance of moderator analyses for identifying substantive sources of between-study variability.

Table 3. Meta-Analysis Results: Overall Effect and Moderator Analyses for Play Therapy on Developmental Outcomes

Variable	k	N	g	CI Lower	CI Upper	Q	Qb
Play Therapy (Overall)	**43**	**2614**	**1.12***	**.94**	**1.31**	**347.29***	
Moderator: Developmental Domain							**14.72***
Cognitive	16	978	1.05*	.76	1.33		
Affective	18	1053	1.34*	1.05	1.62		
Psychomotor	9	583	.73*	.41	1.06		
Moderator: Age Group							**9.38***
Early Childhood (3–6 yrs)	12	671	1.41*	1.02	1.81		
Middle Childhood (7–11 yrs)	20	1198	1.07*	.81	1.33		
Adolescence (12–18 yrs)	11	745	0.79*	.44	1.13		
Moderator: Intervention Setting							**3.21**
School-Based	22	1328	1.18*	.93	1.43		

Variable	k	N	g	CI Lower	CI Upper	Q	Qb
Clinical / Outpatient	14	861	1.09*	.74	1.44		
Community / Other	7	425	.91*	.53	1.29		
Moderator: Publication Year							**52.34***
2010–2013	7	401	.88*	.44	1.32		
2014–2017	11	638	1.03*	.72	1.35		
2018–2021	14	876	1.28*	.97	1.59		
2022–2024	11	699	1.17*	.84	1.50		
Moderator: Study Design							**4.88***
Experimental (RCT)	18	1082	.91*	.66	1.17		
Quasi-Experimental	25	1532	1.27*	.99	1.55		

*Note. k = number of studies; N = total combined sample size; g = Hedges' g effect size; CI = 95% confidence interval; Q = overall heterogeneity statistic; Qb = between-group heterogeneity statistic for moderator analyses. * $p < .05$.*

Moderator Analysis Results

Hypothesis H2 proposed that the targeted developmental domain would function as a statistically significant moderator of play therapy effect sizes. This hypothesis was confirmed (Qb = 14.72, $p < .05$). Affective outcomes yielded the highest pooled effect size (g = 1.34, large-to-very-large), followed by cognitive outcomes (g = 1.05, large) and psychomotor outcomes (g = .73, moderate). Hypothesis H3 predicted that participant age group would moderate treatment effectiveness. This hypothesis received empirical support (Qb = 9.38, $p < .05$). Early childhood participants (ages 3–6) demonstrated the largest effects (g = 1.41), followed by middle childhood (g = 1.07) and adolescent samples (g = .79).

Hypothesis H4 anticipated that intervention setting (school-based, clinical, community) would moderate play therapy effectiveness. This hypothesis was not supported (Qb = 3.21, $p > .05$). Although school-based delivery yielded the numerically largest effect (g = 1.18), followed by clinical settings (g = 1.09) and community contexts (g = .91), the between-group difference did not attain statistical significance. Hypothesis H5 proposed that publication year would moderate effect magnitude, which was confirmed (Qb = 52.34, $p < .05$). Studies published between 2018 and 2021 yielded the largest pooled effects (g = 1.28), while the earliest cohort (2010–2013) produced comparatively lower estimates (g = .88). Hypothesis H6 posited that study design would moderate play therapy effect sizes, a prediction supported by the analysis (Qb = 4.88, $p < .05$). Quasi-experimental studies produced significantly larger effects (g = 1.27) compared to randomized controlled trials (g = .91).

Discussion

This research aims to examine the effect of play therapy on children's outcomes in cognitive, affective, and psychomotor development using a meta-analysis method.

The first hypothesis of the study predicted that play therapy had a statistically significant and positive effect on children's overall developmental outcomes. This hypothesis was confirmed. The pooled effect size obtained by combining forty-three independent studies under a random effects model indicated a large-to-very large effect, and this result constitutes strong evidence. The significance of the finding lies in the fact that play therapy was associated with positive changes not only in a specific developmental area, but simultaneously across all cognitive, affective, and psychomotor dimensions. This pattern demonstrates that play therapy offers a valuable and holistic approach in terms of intervention economics. Compared to the literature, this finding is consistent with the classic meta-analytic review by Bratton et al. (2005), which showed that play therapy produced significant effects in a wide range of problems in children. Similarly, Jensen et al. (2017), in their meta-analytic evaluation conducted using different outcome measures, reported that while the magnitude and direction of the effects of play therapy on outcomes can vary depending on the measurement approach, the overall trend points to a positive impact.

The ability of play therapy to simultaneously influence multiple dimensions supporting a child's holistic development helps explain why this intervention is increasingly preferred. Indeed, Lai et al. (2018) emphasize that play simultaneously supports complementary processes such as cognitive schema formation, emotion regulation, and bodily competence acquisition. This holistic effect of play therapy supports the adoption of an intervention approach in clinical settings that targets the child's entire developmental profile rather than a single target symptom. The observed high heterogeneity values necessitate the exploration of the systematic differences underlying this general picture and once again confirm the need for moderator analyses. In this context, this first finding provides a strong foundation for the quantitative evidence that play therapy is an effective developmental intervention.

The second hypothesis, that the targeted developmental domain acts as a significant moderator of play therapy effect sizes, has received empirical support. Affective outcomes showed the highest effect size, followed by cognitive outcomes, while psychomotor outcomes remained relatively lower but clinically significant. The importance of this finding lies in clearly demonstrating that play therapy is not uniformly effective across all developmental domains, and that the effect size varies systematically depending on the type of outcome targeted. The dominance of the affective domain aligns with the fact that play, by its nature, operates through mechanisms such as emotional expression, symbolic representation, and relational security. Indeed, Shrinivasa et al. (2018) suggest that play therapy enhances a child's capacity for expression and supports emotional release and reorganization in a secure relational environment. This dominant effect pattern in the affective domain has also been observed in child-centered play therapy studies conducted in school-based settings by Burgin and Ray (2022), and is consistent with findings supporting a reduction in depressive symptom levels. Similarly, Topal et al. (2025) report that play-based programs are associated with psychosocial well-being indicators in their randomized controlled design conducted in the context of disasters. Findings regarding the cognitive domain are

consistent with Wong et al.'s (2023) report that child-centered play therapy is associated with improvements in executive function components in children with attention deficit/hyperactivity disorder, and Rezaee Rezvan et al.'s (2024) study that revealed the relationship between cognitive-behavioral play-based interventions and language indicators in bilingual children. The relatively lower effect size in the psychomotor domain can be explained by the difficulties in measurement standardization and the limited number of studies, as highlighted by Mentiplay et al. (2019) and Syeti and Aulia (2025). This domain-specific effect size difference has the potential to directly guide clinical decision-making processes regarding which developmental dimension should be prioritized in intervention design.

The third hypothesis, which predicts that the age group of participants significantly predicts the effect sizes of play therapy, is empirically supported. Early childhood showed the highest effect size; middle childhood followed, and the adolescent sample was represented by the lowest effect size. The significance of this finding lies in the fact that play therapy exhibits a stronger effect profile in the early developmental period, which is the most sensitive and changeable from a biopsychosocial perspective. This superior sensitivity in early childhood can be directly related to the fact that play functions as a primary means of communication and meaning-making in this age group. Indeed, Lai et al. (2018) emphasize that play is not only an activity for young children, but also a fundamental developmental context in which cognitive schemas are established, emotion regulation skills are reinforced, and rules of social interaction are internalized. Supporting this view, Raudenska et al. (2023) report that cognitive-behavioral play therapy can be associated with psychosocial symptoms in preschool children in the context of traumatic stress during the pandemic period. Topal et al. (2025) reported the positive effect of a therapeutic play-based program on psychosocial well-being indicators in preschool children affected by the earthquake using a randomized controlled design. The relatively low effect size observed in the adolescent sample can be explained by developmental characteristics such as increased verbal communication capacity, altered interest and motivation towards play, and a more complex emotion regulation repertoire in this group.

The fourth hypothesis predicted that the intervention setting (school-based, clinical, community-based) would act as a significant moderator of play therapy effect sizes; however, this hypothesis lacked empirical support. The numerical differences observed between groups did not reach the threshold of statistical significance. The findings showed that school-based interventions produced the highest numerical effect size, followed by clinical settings and finally community-based contexts, but this ranking did not form a statistically significant pattern. The findings suggest that the effectiveness of play therapy is largely sustained independently of the intervention setting and that the intervention has a carry-over potential for effectiveness. Compared to the literature, Bratton et al. (2005) and Jensen et al. (2017) also emphasize that the intervention setting alone is not sufficient to determine effect sizes and that the main determinants of effect estimation are the type of outcome, theoretical orientation, and sample characteristics. Similarly, Sertkaya and Doğmuş (2024), in their examination of child-centered play therapy studies conducted in school and clinical settings, state that the environment variable functions more as a contextual variable than as a factor directly determining the effect size. The practical significance of this finding is that it provides important evidence that play therapy can be safely applied in different settings in order to expand its accessibility.

The fifth hypothesis, which predicts that the year of publication will have a significant moderating effect on effect sizes, is confirmed. The highest effect sizes were obtained from studies published between 2018 and 2021; the earliest studies were represented by relatively lower effect size estimates. This finding lies in the fact that the chronological progression in the literature indicates a significant transformation in terms of intervention design, implementation quality, and reporting standards. More recent studies are considered to reflect improved protocol designs, more comprehensive fidelity measures, and multi-component intervention structures. In this context, Russell et al. (2017) state that practice-based research is increasingly adopting the principle of contextual and cultural sensitivity, and that adapting interventions to this multi-layered structure improves effect quality. Similarly, Chauhan et al. (2024) point out that different theoretical orientations are hybridizing in practice in current analytical assessments, and that contextually flexible use is becoming widespread. This trend offers a mechanism that explains the increase in effect sizes in parallel with the enrichment of intervention content and the diversification of outcome measurements. This historical progress in play therapy research is evidence that the field has developed not only a cumulative evidence base but also a maturing methodological and conceptual framework.

The sixth hypothesis predicts that study design significantly predicts play therapy effect sizes, and this hypothesis is confirmed. Quasi-experimental designs produced significantly higher effect sizes compared to randomized controlled designs. Since randomized controlled designs control for selection bias and external validity threats, the effect sizes obtained in these designs are considered more conservative and realistic. The higher effect sizes observed in quasi-experimental designs suggest that effect estimates may be up-inflated due to the absence of a control group or poor randomization procedures. Ray and Stulmaker (2015) emphasize that causal inferences can be weakened and effectiveness interpretations can become misleading when appropriate design selection is not made in play therapy. Similarly, Jensen et al. (2017) point out that inter-study design heterogeneity in meta-analytic syntheses can limit the comparability of effect sizes. In this context, this finding sends a critical message that a significant portion of the current evidence base in the field has methodological limitations and that more randomized controlled trials are needed to obtain strong causal inferences.

Limitations and Recommendations

A key limitation of this research is language bias, stemming from the inclusion of studies published only in English. While the trim-and-fill procedure provided limited evidence of publication bias, these methods cannot completely exclude systemic bias. The variety of measurement tools used in the studies limits the comparability of the results; indeed, Brooke (2004) and Jensen et al. (2017) highlight psychometric difficulties in this regard. The limited number of studies on the psychomotor domain makes effect estimates in this subdomain more uncertain. The inadequacy of follow-up measures restricts inferences about long-term effects; and inconsistent reporting of process variables such as theoretical orientation and intervention adherence narrows the scope of moderator analyses. The widespread use of randomized controlled designs in future studies will allow for more reliable interpretation of effect sizes. Increasing research focusing on psychomotor outcomes will close the evidence gap in this area and facilitate the creation of a holistic developmental picture. Systematically measuring and reporting intervention adherence is critical for understanding the components that determine impact production. International studies conducted with culturally and linguistically diverse samples will increase the

generalizability of the findings. Adopting longitudinal designs will make it possible to demonstrate the long-term protective effects of play therapy. At the clinical and policy levels, the positioning of early childhood as a priority age group for interventions is supported by the findings of this research.

Conclusion

This meta-analytic study provides quantitative evidence demonstrating that play therapy has comprehensive and significant effects on children's outcomes in cognitive, affective, and psychomotor development. The holistic approach to these three developmental areas within the same analytical framework, along with the use of moderator-based comparisons, constitutes the study's unique contribution to the literature. The identification of developmental area, participant age group, study design, and publication year as significant moderators shows that the effect of play therapy is context- and method-sensitive, and that general conclusions such as "play therapy is effective" are insufficient. The representation of early childhood with the highest effect size provides strong meta-analytic support for the principle of early intervention. The study also clearly reveals that the existing evidence in the psychomotor area is limited and that this gap needs to be filled. When all these findings are considered together, it is clear that play therapy has solidified its place in the literature as a holistic intervention tool that is not limited to affective symptom management but also encompasses cognitive and bodily-functional development.

References

Studies marked with an asterisk (*) were included in the meta-analytic synthesis.

*Abdi, F., Karamoozian, A., Lotfilou, M., Gholami, F., Shaterian, N., Abasi Niasar, A., Aghapour, E., & Jandaghian-Bidgoli, M. (2025). Effect of play therapy and storytelling on the anxiety level of hospitalized children: A randomized controlled trial. *BMC Complementary Medicine and Therapies, 25*(1), 23. https://doi.org/10.1186/s12906-025-04767-4

Abessa, T. G., Worku, B. N., Wondafrash, M., Girma, T., Valy, J., Lemmens, J., Bruckers, L., Kolsteren, P., & Granitzer, M. (2019). Effect of play-based family-centered psychomotor/psychosocial stimulation on the development of severely acutely malnourished children under six in a low-income setting: A randomized controlled trial. *BMC Pediatrics, 19*(1), 336-20. https://doi.org/10.1186/s12887-019-1696-z

*Baggerly, J. (2004). The effects of child-centered group play therapy on self-concept, depression, and anxiety of children who are homeless. *International Journal of Play Therapy, 13*(2), 31–51. https://doi.org/10.1037/h0088889

*Blalock, S. M., Lindo, N., & Ray, D. C. (2019). Individual and group child-centered play therapy: Impact on social-emotional competencies. *Journal of Counseling & Development, 97*(3), 238–249. https://doi.org/10.1002/jcad.12264

Boerio, G. V. (2021). *Measuring the effectiveness of play as an intervention to support language development in young children with autism spectrum disorder: A hierarchically-modeled meta-analysis*. Youngstown State University.

Borenstein, M., Hedges, L. V., Higgins, J. P. T., & Rothstein, H. R. (2009). *Introduction to meta-analysis*. Wiley.

*Bratton, S. C., Ceballos, P. L., Sheely-Moore, A. I., Meany-Walen, K., Pronchenko, Y., & Jones, L. D. (2013). Head start early mental health intervention: Effects of child-centered play therapy on disruptive behaviors. *International Journal of Play Therapy, 22*(1), 28–42. https://doi.org/10.1037/a0030318

*Bratton, S. C., Ray, D., Rhine, T., & Jones, L. (2005). The efficacy of play therapy with children: A meta-analytic review of treatment outcomes. *Professional Psychology: Research and Practice, 36*(4), 376–390. https://doi.org/10.1037/0735-7028.36.4.376

Brooke, S. L. (2004). Critical Review of Play Therapy Assessments. *International Journal of Play Therapy*, *13*(2), 119. https://doi.org/10.1037/h0088893

*Burgin, E. E., & Ray, D. C. (2022). Child-centered play therapy and childhood depression: An effectiveness study in schools. *Journal of Child and Family Studies, 31*(1), 293–307. https://doi.org/10.1007/s10826-021-02198-6

*Ceballos, P. L., & Bratton, S. C. (2010). Empowering Latino families: Effects of a culturally responsive intervention for low-income immigrant Latino parents on children's behaviors and parental stress. *Psychology in the Schools, 47*(8), 761–775. https://doi.org/10.1002/pits.20470

Chauhan, N., Sachdeva, D., Malhotra, S., & Gupta, N. (2024). Play therapy: An analytical mode of therapy in children. *Journal of Indian Association for Child and Adolescent Mental Health, 20*(2), 136-146. https://doi.org/10.1177/09731342241238524

*Cheng, Y. J., & Ray, D. C. (2016). Child-centered group play therapy: Impact on social-emotional assets of kindergarten children. *Journal for Specialists in Group Work, 41*(3), 209–237. https://doi.org/10.1080/01933922.2016.1197350

*Chinekesh, A., Kamalian, M., Eltemasi, M., Chinekesh, S., & Alavi, M. (2014). The effect of group play therapy on social-emotional skills in pre-school children. *Global Journal of Health Science, 6(*2), 163–167. https://doi.org/10.5539/gjhs.v6n2p163

*Cochran, J. L., & Cochran, N. H. (2017). Effects of child-centered play therapy for students with highly-disruptive behavior in high-poverty schools. *International Journal of Play Therapy, 26*(2), 59–72. https://doi.org/10.1037/pla0000052

Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2nd ed.). Lawrence Erlbaum Associates.

DerSimonian, R., & Laird, N. (1986). Meta-analysis in clinical trials. *Controlled Clinical Trials, 7*(3), 177–188. https://doi.org/10.1016/0197-2456(86)90046-2

Dijkstra-de Neijs, L., Tisseur, C., Kluwen, L. A., van Berckelaer-Onnes, I. A., Swaab, H., & Ester, W. A. (2023). Effectivity of play-based interventions in children with autism spectrum disorder and their parents: A systematic review. *Journal of Autism and Developmental Disorders, 53*(4), 1588-1617. https://doi.org/10.1007/s10803-021-05357-2

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

*Garza, Y., & Bratton, S. C. (2005). School-based child-centered play therapy with Hispanic children: Outcomes and cultural considerations. *International Journal of Play Therapy, 14*(1), 51–80. https://doi.org/10.1037/h0088904

Gilmore, K. (2025). Play therapy: A psychodynamic-developmental perspective. *Child and Adolescent*

Psychiatric Clinics of North America, 34(3), 421. https://doi.org/10.1016/j.chc.2025.02.003

Glass, G. V. (1976). Primary, secondary, and meta-analysis of research. *Educational Researcher, 5*(10), 3–8. https://doi.org/10.3102/0013189X005010003

*Han, Y., Lee, Y., & Suh, J. H. (2017). Effects of a sandplay therapy program at a childcare center on children with externalizing behavioural problems. *Arts in Psychotherapy, 52,* 24–31. https://doi.org/10.1016/j.aip.2016.09.008

*He, H. G., Zhu, L., Chan, S. W. C., Liam, J. L. W., Li, H. C. W., Ko, S. S., Klainin-Yobas, P., & Wang, W. (2015). Therapeutic play intervention on children's perioperative anxiety, negative emotional manifestation and postoperative pain: A randomized controlled trial. *Journal of Advanced Nursing, 71*(5), 1032–1043. https://doi.org/10.1111/jan.12608

Hedges, L. V., & Olkin, I. (1985). *Statistical methods for meta-analysis*. Academic Press.

Hedges, L. V., & Vevea, J. L. (1998). Fixed and random effects models in meta-analysis. *Psychological Methods, 3*(4), 486–504. https://doi.org/10.1037/1082-989X.3.4.486

Higgins, J. P. T., Thompson, S. G., Deeks, J. J., & Altman, D. G. (2003). Measuring inconsistency in meta-analyses. *BMJ, 327*(7414), 557–560. https://doi.org/10.1136/bmj.327.7414.557

*Jensen, S. A., Biesen, J. N., & Graham, E. R. (2017). A meta-analytic review of play therapy with emphasis on outcome measures. *Professional Psychology: Research and Practice, 48*(5), 390–400. https://doi.org/10.1037/pro0000148

*Josefi, O., & Ryan, V. (2004). Non-directive play therapy for young children with autism: A case study. *Clinical Child Psychology and Psychiatry, 9*(4), 533–551. https://doi.org/10.1177/1359104504040920

*Karatas, Z., & Gökçakan, Z. (2009). A comparative investigation of the effects of cognitive-behavioral group practices and psychodrama on adolescent aggression. *Educational Sciences: Theory and Practice, 9*(3), 1441–1452. https://www.researchgate.net/publication/285660499

Lai, N. K., Ang, T. F., Por, L. Y., & Liew, C. S. (2018). The impact of play on child development-a literature review. *European Early Childhood Education Research Journal*, *26*(5), 625-643. https://doi.org/10.1080/1350293X.2018.1522479

Landen, S. J. (2019). Book Review: Play Therapy: A Psychodynamic Primer for the Treatment of Young Children. *Journal of the American Psychoanalytic Association*, *67*(4), 717-721. https://doi.org/10.1177/0003065119873368

Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics, 33*(1), 159–174. https://doi.org/10.2307/2529310

Leggett, E. S., & Boswell, J. N. (2016). *Directive play therapy: Theories and techniques* (1st ed.). Springer Publishing Company, Incorporated.

*Li, W. H. C., Chung, J. O. K., Ho, K. Y., & Kwok, B. M. C. (2016). Play interventions to reduce anxiety and negative emotions in hospitalized children. *BMC Pediatrics, 16*(1), 36. https://doi.org/10.1186/s12887-016-0570-5

*Lin, Y., & Bratton, S. C. (2015). A meta-analytic review of child-centered play therapy approaches. *Journal of Counseling and Development, 93*(1), 45–58. https://doi.org/10.1002/j.1556-6676.2015.00180.x

Lipsey, M. W., & Wilson, D. B. (2001). *Practical meta-analysis*. SAGE Publications.

*Meany-Walen, K., & Teeling, S. (2016). Adlerian play therapy with students with externalizing behaviors and

poor social skills. *International Journal of Play Therapy, 25*(2), 64–77. https://doi.org/10.1037/pla0000036

Meersand, P., & Gilmore, K. J. (2017). *Play therapy: A psychodynamic primer for the treatment of young children*. American Psychiatric Pub.

Mentiplay, B. F., FitzGerald, T. L., Clark, R. A., Bower, K. J., Denehy, L., & Spittle, A. J. (2019). Do video game interventions improve motor outcomes in children with developmental coordination disorder? A systematic review using the ICF framework. *BMC Pediatrics, 19*(1), 22-15. https://doi.org/10.1186/s12887-018-1381-7

*Najafi, M., & Sarpoolaki, B. (2016). The effectiveness of cognitive-behavioral play therapy on aggression and behavioral disorders in elementary school children. *International Journal of Applied Behavioral Sciences, 3*(1), 35–42. https://doi.org/10.22037/ijabs.v3i1.12066

Nazari, A. M., Sarmadi, S., Ghazanfari, M. J., Gholami, M., Emami Zeydi, A., & Zare-Kaseb, A. (2025). The effectiveness of play therapy on depression and anxiety in hospitalized children with cancer: A systematic review. *Supportive Care in Cancer, 33*(2), 88. https://doi.org/10.1007/s00520-024-09144-4

*Obiweluozo, P. E., Ede, M. O., Onwurah, C. N., Uzodinma, U. E., Dike, I. C., & Ejiofor, J. N. (2021). Impact of cognitive behavioural play therapy on social anxiety among school children with stuttering deficit: A cluster randomised trial. *Medicine, 100*(20), e24564. https://doi.org/10.1097/MD.0000000000024564

*Ojiambo, D., & Bratton, S. C. (2014). Effects of group activity play therapy on problem behaviors of preadolescent Ugandan orphans: A randomized, active control trial. *Journal of Counseling & Development, 92*(3), 355–365. https://doi.org/10.1002/j.1556-6676.2014.00163.x

*Packman, J., & Bratton, S. C. (2003). A school-based group play/activity therapy intervention with learning disabled preadolescents exhibiting behavior problems. *International Journal of Play Therapy, 12*(2), 7–29. https://doi.org/10.1037/h0088877

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., … Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ, 372*, n71. https://doi.org/10.1136/bmj.n71

*Post, P. B., Phipps, C. B., Camp, A. C., & Grybush, A. L. (2019). Effectiveness of child-centered play therapy among marginalized children. *International Journal of Play Therapy, 28*(2), 88–97. https://doi.org/10.1037/pla0000096

Ray, D. C., & Stulmaker, H. L. (2015). Methodologies suited to the study of play therapy. *Handbook of play therapy*, 629-649. https://doi.org/10.1002/9781119140467.ch34

*Ray, D. C., Armstrong, S. A., Balkin, R. S., & Jayne, K. M. (2015). Child-centered play therapy in the schools: Review and meta-analysis. *Psychology in the Schools, 52*(2), 107–123. https://doi.org/10.1002/pits.21798

*Ray, D. C., Blanco, P. J., Sullivan, J. M., & Holliman, R. (2009). An exploratory study of child-centered play therapy with aggressive children. *International Journal of Play Therapy, 18*(3), 162–175. https://doi.org/10.1037/a0014742

*Ray, D. C., Burgin, E., Gutierrez, D., Ceballos, P., & Lindo, N. (2022). Child-centered play therapy and adverse

childhood experiences: A randomized controlled trial. *Journal of Counseling & Development, 100*(2), 134–145. https://doi.org/10.1002/jcad.12412

*Ray, D. C., Purswell, K., Haas, S., & Aldrete, C. (2017). Child-centered play therapy research integrity checklist: Development, reliability, and use. *International Journal of Play Therapy, 26*(4), 207–217. https://doi.org/10.1037/pla0000046

*Ray, D. C., Schottelkorb, A., & Tsai, M. H. (2007). Play therapy with children exhibiting symptoms of attention deficit hyperactivity disorder. *International Journal of Play Therapy, 16*(2), 95–111. https://doi.org/10.1037/1555-6824.16.2.95

*Ray, D. C., Stulmaker, H. L., Lee, K. R., & Silverman, W. K. (2013). Child-centered play therapy and impairment: Exploring relationships and constructs. *International Journal of Play Therapy, 22*(1), 13–27. https://doi.org/10.1037/a0030403

Razak, N. H. A., Johari, K. S. K., Mahmud, M. I., Zubir, N. M., & Johan, S. (2018). General Review on Cognitive Behavior Play Therapy on Childrens' Psychology Development. *International Journal of Academic Research in Progressive Education and Development, 7*(4), 134–147. DOI: 10.6007/IJARPED/v7-i4/4842

*Ritzi, R. M., Ray, D. C., & Schumann, B. R. (2017). Intensive short-term child-centered play therapy and externalizing behaviors in children. *International Journal of Play Therapy, 26*(1), 33–46. https://doi.org/10.1037/pla0000035

*Robinson, A., Simpson, C., & Hott, B. L. (2017). The effects of child-centered play therapy on the behavioral performance of three first grade students with ADHD. *International Journal of Play Therapy, 26*(4), 227–240. https://doi.org/10.1037/pla0000047

Rosenthal, R. (1979). The file drawer problem and tolerance for null results. *Psychological Bulletin, 86*(3), 638–641. https://doi.org/10.1037/0033-2909.86.3.638

Russell, W., Lester, S., & Smith, H. (2017). *Practice-based research in children's play* (1st ed.). Policy Press. https://doi.org/10.2307/j.ctt1t89df7

*Salter, K., Beamish, W., & Davies, M. (2016). The effects of child-centered play therapy (CCPT) on the social and emotional growth of young Australian children with autism. *International Journal of Play Therapy, 25*(2), 78–90. https://doi.org/10.1037/pla0000012

*Schottelkorb, A. A., Doumas, D. M., & Garcia, R. (2012). Treatment for childhood refugee trauma: A randomized, controlled trial. *International Journal of Play Therapy, 21*(2), 57–73. https://doi.org/10.1037/a0027265

*Schottelkorb, A. A., Swan, K. L., & Ogawa, Y. (2020). Intensive child-centered play therapy for children on the autism spectrum: A pilot study. *Journal of Counseling & Development, 98*(1), 63–73. https://doi.org/10.1002/jcad.12300

Sertkaya, B., & Doğmuş, Y. U. (2024). Investigation of Experimental Studies Focusing on Child-Centered Play Therapy with Document Analysis Technique. *e-Kafkas Journal of Educational Research*, *11*(2), 469-490. https://doi.org/10.30900/kafkasegt.1293912

*Shen, Y. J. (2002). Short-term group play therapy with Chinese earthquake victims: Effects on anxiety, depression, and adjustment. *International Journal of Play Therapy, 11*(1), 43–63. https://doi.org/10.1037/h0088856

Shrinivasa, B., Bukhari, M., Ragesh, G., & Hamza, A. (2018). Therapeutic intervention for children through play: An overview. *Archives of Mental Health*, *19*(2), 82-89. *DOI:* 10.4103/AMH.AMH_34_18

*Silva, S. G. T., Santos, M. A., Floriano, C. M. F., Damião, E. B. C., Campos, F. V., & Rossato, L. M. (2017). Influence of therapeutic play on the anxiety of hospitalized school-age children: Clinical trial. *Revista Brasileira de Enfermagem, 70*(6), 1244–1249. https://doi.org/10.1590/0034-7167-2016-0353

Sterne, J. A. C., Sutton, A. J., Ioannidis, J. P. A., Terrin, N., Jones, D. R., Lau, J., Carpenter, J., Rücker, G., Harbord, R. M., Schmid, C. H., Tetzlaff, J., Deeks, J. J., Peters, J., Macaskill, P., Schwarzer, G., Duval, S., Altman, D. G., Moher, D., & Higgins, J. P. T. (2011). Recommendations for examining and interpreting funnel plot asymmetry in meta-analyses of randomised controlled trials. *BMJ, 343*, d4002. https://doi.org/10.1136/bmj.d4002

*Stulmaker, H. L., & Ray, D. C. (2015). Child-centered play therapy with young children who are anxious: A controlled trial. *Children and Youth Services Review, 57*, 127–133. https://doi.org/10.1016/j.childyouth.2015.08.005

*Taylor, L., & Ray, D. C. (2021). Child-centered play therapy and social-emotional competencies of African American children: A randomized controlled trial. *International Journal of Play Therapy, 30*(2), 74–85. https://doi.org/10.1037/pla0000152

Thomas, S., White, V., Ryan, N., & Byrne, L. (2022). Effectiveness of play therapy in enhancing psychosocial outcomes in children with chronic illness: A systematic review. *Journal of Pediatric Nursing*, *63*, e72-e81. https://doi.org/10.1016/j.pedn.2021.10.009

Topal, S., Çaka, S. Y., Uysal, G., Alabay, E., Demir, Y., & Arslan, S. C. (2025). The effect of therapeutic play-based intervention programme applied to earthquake victim preschool children on psychosocial well-being: A randomised controlled trial. *BMC Psychology, 13*(1), 981-14. https://doi.org/10.1186/s40359-025-03317-4

*Tyndall-Lind, A., Landreth, G. L., & Giordano, M. A. (2001). Intensive group play therapy with child witnesses of domestic violence. *International Journal of Play Therapy, 10*(1), 53–83. https://doi.org/10.1037/h0089466

Valentine, J. C., & Cooper, H. (2003). *Effect size substantive interpretation guidelines: Issues in the interpretation of effect sizes.* What Works Clearinghouse.

Verdellen-Krauwel, N. H., Frielink, N., Prick, A. E. J., Willems, A. P., & Embregts, P. J. (2025). Creative arts therapies, psychomotor therapy, and play therapy for people with severe intellectual disabilities and challenging behaviour: A scoping review of interventions and outcomes. *Disabilities*, *5*(4), 84. https://doi.org/10.3390/disabilities5040084

Watts, T., Stagnitti, K., & Brown, T. (2014). Relationship between play and sensory processing: A systematic review. *The American Journal of Occupational Therapy*, *68*(2), e37-e46. https://doi.org/10.5014/ajot.2014.009787

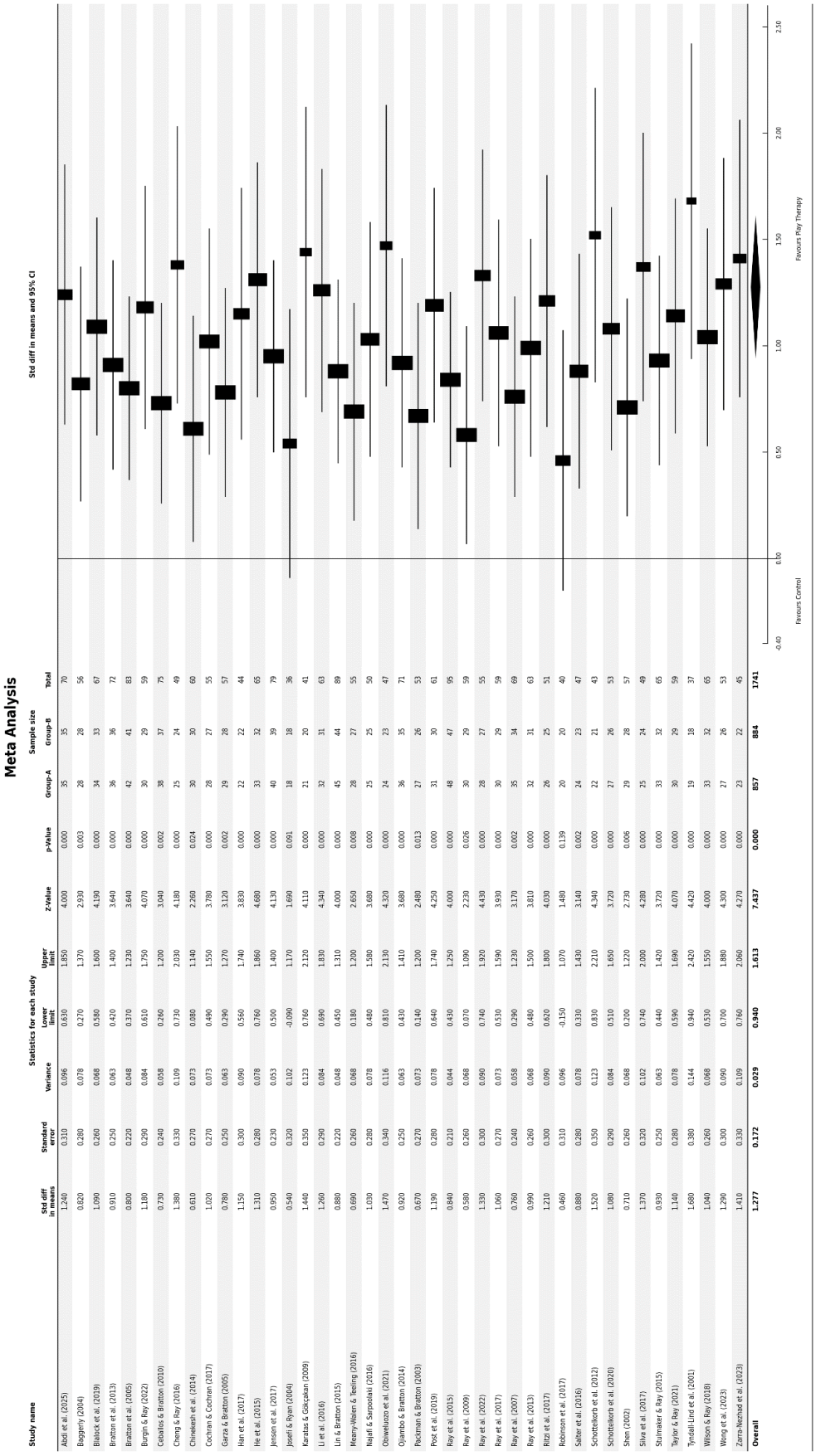
*Wilson, B., & Ray, D. (2018). Child-centered play therapy: Aggression, empathy, and self-regulation. *Journal of Counseling & Development, 96*(4), 399–409. https://doi.org/10.1002/jcad.12222

*Wong, T. Y., Chang, Y. T., Wang, M. Y., & Chang, Y. H. (2023). The effectiveness of child-centered play therapy for executive functions in children with attention-deficit/hyperactivity disorder. *Clinical Child Psychology and Psychiatry, 28(3*), 877–894. https://doi.org/10.1177/13591045221128399

Woollett, N., Bandeira, M., & Hatcher, A. (2020). Trauma-informed art and play therapy: Pilot study outcomes for children and mothers in domestic violence shelters in the united states and south Africa. *Child Abuse & Neglect, 107*, 104564-104564. https://doi.org/10.1016/j.chiabu.2020.104564

*Zarra-Nezhad, M., Pakdaman, F., & Moazami-Goodarzi, A. (2023). The effectiveness of child-centered group play therapy and narrative therapy on preschoolers' separation anxiety disorder and social-emotional behaviours. *Early Child Development and Care, 193*(6), 841–853. https://doi.org/10.1080/03004430.2023.2167987

Appendix. Information about Meta-analysis Studies



Study name	Std diff in means	Standard error	Variance	Statistics for each study Lower limit	Upper limit	Z-Value	p-Value	Sample size Group-A	Group-B	Total
Abdi et al. (2025)	1.240	0.310	0.096	0.630	1.850	4.000	0.000	35	35	70
Baggerly (2004)	0.820	0.280	0.078	0.270	1.370	2.930	0.003	28	28	56
Bialock et al. (2019)	1.090	0.260	0.068	0.580	1.600	4.190	0.000	34	33	67
Bratton et al. (2013)	0.910	0.250	0.063	0.420	1.400	3.640	0.000	36	36	72
Bratton et al. (2005)	0.800	0.220	0.048	0.370	1.230	3.640	0.000	42	41	83
Burgin & Ray (2022)	1.180	0.290	0.084	0.610	1.750	4.070	0.000	30	29	59
Ceballos & Bratton (2010)	0.730	0.240	0.058	0.260	1.200	3.040	0.002	38	37	75
Cheng & Ray (2016)	1.380	0.330	0.109	0.730	2.030	4.180	0.000	25	24	49
Chineleshi et al. (2014)	0.610	0.270	0.073	0.080	1.140	2.260	0.024	30	30	60
Cochran & Cochran (2017)	1.020	0.270	0.073	0.490	1.550	3.780	0.000	28	27	55
Garza & Bratton (2005)	0.780	0.250	0.063	0.290	1.270	3.120	0.002	29	28	57
Han et al. (2017)	1.150	0.300	0.090	0.560	1.740	3.830	0.000	22	22	44
He et al. (2015)	1.310	0.280	0.078	0.760	1.860	4.680	0.000	33	32	65
Jenson et al. (2017)	0.950	0.230	0.053	0.500	1.400	4.130	0.000	40	39	79
Josefi & Ryan (2004)	0.540	0.320	0.102	-0.090	1.170	1.690	0.091	18	18	36
Karatas & Gökçakan (2009)	1.440	0.350	0.123	0.760	2.120	4.110	0.000	21	20	41
Li et al. (2016)	1.260	0.290	0.084	0.690	1.830	4.340	0.000	32	31	63
Lin & Bratton (2015)	0.880	0.220	0.048	0.450	1.310	4.000	0.000	45	44	89
Meany-Walen & Teeling (2016)	0.690	0.260	0.068	0.180	1.200	2.650	0.008	28	27	55
Nuljaf & Sanpodaki (2016)	1.030	0.280	0.078	0.480	1.580	3.680	0.000	25	25	50
Obiweluozo et al. (2021)	1.470	0.340	0.116	0.810	2.130	4.320	0.000	24	23	47
Ojiambo & Bratton (2014)	0.920	0.250	0.063	0.430	1.410	3.680	0.000	36	35	71
Packman & Bratton (2003)	0.670	0.270	0.073	0.140	1.200	2.480	0.013	27	26	53
Pozi et al. (2019)	1.190	0.280	0.078	0.640	1.740	4.250	0.000	31	30	61
Ray et al. (2015)	0.840	0.210	0.044	0.430	1.250	4.000	0.000	48	47	95
Ray et al. (2009)	0.580	0.260	0.068	0.070	1.090	2.230	0.026	30	29	59
Ray et al. (2022)	1.330	0.300	0.090	0.740	1.920	4.430	0.000	28	27	55
Ray et al. (2017)	1.060	0.270	0.073	0.530	1.590	3.930	0.000	30	29	59
Ray et al. (2007)	0.760	0.240	0.058	0.290	1.230	3.170	0.002	35	34	69
Ray et al. (2013)	0.990	0.260	0.068	0.480	1.500	3.810	0.000	32	31	63
Ritzi et al. (2017)	1.210	0.300	0.090	0.620	1.800	4.030	0.000	26	25	51
Robinson et al. (2017)	0.460	0.310	0.096	-0.150	1.070	1.480	0.139	20	20	40
Salter et al. (2016)	0.880	0.280	0.078	0.330	1.430	3.140	0.002	24	23	47
Schottelkorb et al. (2012)	1.520	0.350	0.123	0.830	2.210	4.340	0.000	22	21	43
Schottelkorb et al. (2020)	1.080	0.290	0.084	0.510	1.650	3.720	0.000	27	26	53
Shen (2002)	0.710	0.260	0.068	0.200	1.220	2.730	0.006	29	28	57
Silva et al. (2017)	1.370	0.320	0.102	0.740	2.000	4.280	0.000	25	24	49
Stulmaker & Ray (2015)	0.930	0.250	0.063	0.440	1.420	3.720	0.000	33	32	65
Taylor & Ray (2021)	1.140	0.280	0.078	0.590	1.690	4.070	0.000	30	29	59
Tyndall-Lind et al. (2001)	1.680	0.380	0.144	0.940	2.420	4.420	0.000	19	18	37
Wilson & Ray (2018)	1.040	0.260	0.068	0.530	1.550	4.000	0.000	33	32	65
Wong et al. (2023)	1.290	0.300	0.090	0.700	1.880	4.300	0.000	27	26	53
Zarra-Nezhad et al. (2023)	1.410	0.330	0.109	0.760	2.060	4.270	0.000	23	22	45
Overall	**1.277**	**0.172**	**0.029**	**0.940**	**1.613**	**7.437**	**0.000**	**857**	**884**	**1741**