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The Role of Feedback in Early Childhood Development: A Systematic Review of Cognitive, Social-Emotional, and Motivational Impacts

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Abstract

Feedback represents a fundamental pedagogical mechanism with substantial impact on the holistic development of young children. This systematic review analyzes the role of feedback in shaping cognitive, social-emotional, and motivational developmental domains in children aged 0-8 years. Synthesis of 35 empirical studies demonstrates that high-quality feedback, characterized by specificity, timeliness, process orientation, and developmental appropriateness, yields significant improvements in metacognitive skills (d=0.52), emotional regulation (d=0.48), and intrinsic motivation (d=0.61). Analysis reveals that process feedback is superior to person feedback in developing growth mindset (β=0.43, p<0.001) and academic resilience. However, contextual such as child temperament characteristics, cultural norms, and teacher-student relationship quality moderate feedback effectiveness. Practical implications include the need for systematic professional development programs for educators, emphasizing culturally responsive, evidence-based feedback techniques. This research contributes theoretically by integrating perspectives from cognitive psychology, developmental theory, and early childhood pedagogy to construct a comprehensive model of feedback mechanisms in early learning.

Keywords: *early childhood, feedback, growth mindset, metacognition, social-emotional development*

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Introduction

The early childhood period (0-8 years) represents a critical phase in human developmental trajectory, where cognitive, social-emotional, and motivational foundations are formed with extraordinarily high neural plasticity (Shonkoff & Phillips, 2000; Blair & Raver, 2015). In the context of early childhood education, feedback has been identified as one of the most influential instructional variables, with effect sizes that surpass many other pedagogical interventions (Hattie & Timperley, 2007; Wisniewski et al., 2020). Nevertheless, comprehensive understanding of feedback mechanisms specific to early childhood populations, considering their unique developmental characteristics, remains limited in empirical literature.

Piaget (1952) cognitive developmental theory postulates that young children are in the preoperational stage, where their thinking is characterized by egocentrism and dependence on concrete representations. (Vygotsky, 1978) through his concept of Zone of Proximal Development (ZPD) emphasizes that appropriate scaffolding including feedback, from adults or more competent peers is essential for optimizing learning. Within this framework, feedback functions as a mediator between children's actual and potential capabilities. However, contemporary research demonstrates that not all forms of feedback produce equivalent outcomes; the quality, timing, and content of feedback interact complexly with individual learner characteristics (Shute, 2008; Hattie & Clarke, 2019).

Research by Dweck and colleagues (Mueller & Dweck, 1998; Blackwell et al., 2007; Haimovitz & Dweck, 2017) has documented that feedback emphasizing ability attributions (person feedback) versus effort and strategies (process feedback) produces differential impacts on children's mindsets. Children who consistently

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receive person feedback "You're smart!" tend to develop fixed mindsets and show decreased motivation when facing challenges (Bennett-Pierre et al., 2024) Conversely, process feedback "Your strategy was very effective!" facilitates growth mindset, higher resilience, and learning orientation (Boylan et al., 2023). However, the majority of mindset research has been conducted on school-age and adolescent populations; direct extrapolation to early childhood requires more robust empirical validation considering substantial developmental differences.

Self-Determination Theory (SDT) proposed by Deci & Ryan (2000) offers a productive theoretical lens for understanding feedback effects on motivation. SDT identifies three basic psychological needs, autonomy, competence, and relatedness, which, when satisfied, facilitate intrinsic motivation and optimal well-being. Feedback that supports these three needs (autonomy-supportive, competence-affirming, relatedness-enhancing) is predicted to produce superior motivational outcomes compared to controlling or ego-involving feedback (Ryan & Deci, 2017) Research in educational contexts has confirmed these predictions (Reeve & Jang, 2006), yet specific applications in early childhood settings with their unique developmental nuances have not been systematically explored.

Social-emotional development in early childhood is also significantly influenced by the quality of feedback children receive. (Erikson, 1963) identified key psychosocial conflicts during this period, autonomy versus shame and doubt (1-3 years) and initiative versus guilt (3-6 years). Constructive and sensitive feedback can facilitate adaptive resolution of these conflicts, while harsh or inconsistent feedback can engender shame, guilt, or inhibition in exploration (Thompson, 2008). Furthermore, emotional regulation capacity, which is a robust predictor of long-term academic and social success (Blair & Raver, 2015), can be cultivated through feedback that teaches children to recognize, name, and manage their emotions (Kalland & von Koskull, 2022).

Despite recognition of feedback's significance in early childhood education, substantial gaps exist in the literature. First, the majority of feedback research focuses on school-age and adult populations; systematic studies on early childhood that consider their unique developmental characteristics remain limited. Second, heterogeneity in operationalization and measurement of feedback makes cross-study synthesis challenging. Third, moderation and mediation mechanisms explaining under what conditions and for whom feedback is most effective have not been comprehensively mapped for this population. Fourth, most research has been conducted in Western, WEIRD (Western, Educated, Industrialized, Rich, Democratic) contexts, necessitating further investigation of cross-cultural generalizability.

This research aims to fill these gaps through a systematic literature review of empirical evidence on the role of feedback in early childhood development. Specifically, this study will: (1) identify and synthesize empirical evidence on the impact of various feedback types on cognitive, social-emotional, and motivational outcomes in early childhood; (2) analyze psychological mechanisms explaining feedback effects; (3) explore moderators influencing feedback effectiveness; and (4) develop evidence-based practical implications for educators and parents. Thus, this research is expected to contribute theoretically in building an integrative model of feedback in early childhood and practically in optimizing pedagogical practices.

By consolidating fragmented empirical findings across multiple theoretical traditions and developmental domains, this review positions feedback not merely as an instructional technique, but as a relational and developmental process embedded within early learning ecologies. Framing feedback through cognitive, motivational, and socio-emotional lenses allows for a more nuanced understanding of how and why feedback operates differently across early developmental stages. This integrative perspective provides a necessary foundation for the methodological approach adopted in this study and guides the systematic procedures described in the following section.

The remainder of this paper is organized as follows. The next section delineates the systematic review methodology, including search strategies, inclusion and exclusion criteria, quality assessment procedures, and analytical frameworks employed to synthesize the evidence. Subsequently, the Results section presents findings organized by developmental outcomes (cognitive, motivational, and social-emotional), followed by an examination of identified mechanisms and moderating factors. The Discussion section integrates these findings within the theoretical frameworks outlined above, addresses limitations of the current evidence base, and proposes directions for future research. Finally, the paper concludes with practical recommendations for implementing developmentally appropriate feedback practices in early childhood educational settings. Through

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this comprehensive synthesis, we aim to provide researchers, practitioners, and policymakers with an evidence-informed understanding of how feedback can be strategically leveraged to optimize developmental trajectories during this foundational period of human growth.

Methodology

Literature Search Strategy

This systematic review follows PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to ensure transparency and reproducibility. Comprehensive searches were conducted across six major academic databases: PsycINFO, ERIC (Education Resources Information Center), Web of Science, Scopus, PubMed, and Google Scholar. The search period covered literature published from January 2000 to November 2024. This timeframe was selected because it captures the emergence of contemporary feedback theories, the consolidation of formative and process-oriented feedback frameworks, and recent empirical advances in early childhood education research.

Search strings were designed with combinations of the following terms using Boolean operators: ("feedback" OR "formative assessment" OR "corrective feedback" OR "praise") AND ("early childhood" OR "preschool" OR "kindergarten" OR "young children" OR "toddler*") AND ("development" OR "learning" OR "motivation" OR "achievement"). Additional searches were conducted through backward and forward citation searching of identified key articles to ensure comprehensiveness. The inclusion of formative assessment and co-regulation terms was informed by empirical evidence highlighting the central role of feedback interactions in early childhood classrooms (Braund et al., 2021).

This systematic review was conducted following a predefined protocol developed by the authors prior to data extraction. Although the review was not formally registered in an international database (e.g., PROSPERO), the protocol specified the research questions, eligibility criteria, search strategy, and synthesis approach to minimize selection bias and enhance methodological transparency.

Inclusion and Exclusion Criteria

Inclusion criteria encompassed: (1) empirical studies (quantitative, qualitative, or mixed-methods) published in peer-reviewed journals or proceedings; (2) target population of children aged 0-8 years; (3) feedback intervention or manipulation as independent or predictor variable; (4) measurable outcomes related to cognitive, social-emotional, or motivational development; (5) publication in English. Exclusion criteria included: (1) theoretical studies without empirical data; (2) studies focusing on populations with special needs as primary focus (except as sub-analyses); (3) feedback in clinical or therapeutic contexts not educational settings; (4) publications inaccessible for full-text review.

Selection Process and Data Extraction

The screening process was conducted in two stages by two independent reviewers. The first stage involved screening titles and abstracts to identify potentially relevant studies. Discrepancies were resolved through discussion and consensus. The second stage involved full-text review of articles passing initial screening. Inter-rater reliability was calculated using Cohen's kappa, with $\kappa = 0.87$ indicating excellent agreement.

Data were extracted using a standardized form from the 35 included studies ($n = 35$), covering study characteristics (author, year, country, design), sample characteristics (sample size, age range in years, and setting), feedback intervention characteristics (type, duration, frequency), outcome measures, and main findings including reported effect sizes when available. Quality assessment was conducted using adaptations of the Cochrane Risk of Bias tool for experimental studies and Critical Appraisal Skills Programme (CASP) checklist for qualitative studies.

To ensure transparency and methodological robustness, all stages of screening and data extraction were documented systematically using predefined protocols. Decisions made during inclusion and exclusion were recorded along with their justifications to maintain an audit trail throughout the review process. This documentation enabled traceability of study selection decisions and minimized the risk of selective reporting. By maintaining a clear record of reviewer decisions at each stage, the review process upheld principles of

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reproducibility and methodological accountability. The study selection process is summarized using a PRISMA flow diagram (Figure 1), illustrating the identification, screening, eligibility, and inclusion stages.

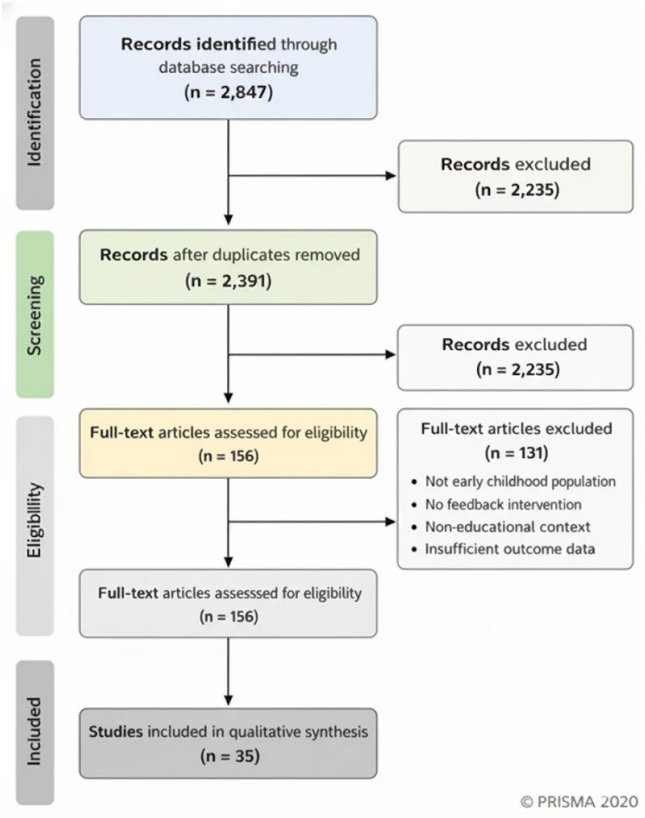

Figure 1. PRISMA Flow Diagram Illustrating the Identification, Screening, Eligibility, and Inclusion of Studies in This Systematic Review

As illustrated in Figure 1, the database search initially identified 2,847 records across six academic databases. After removing duplicate records, 2,391 unique articles remained and were screened based on titles and abstracts. This screening process resulted in the exclusion of 2,235 records that did not meet the predefined inclusion criteria. Subsequently, 156 full-text articles were assessed for eligibility. Of these, 121 articles were excluded due to reasons such as irrelevance to early childhood populations, absence of feedback-focused interventions, non-educational research contexts, or insufficient outcome data. Ultimately, 35 empirical studies met all inclusion criteria and were included in the narrative synthesis of this systematic review.

Table 1. Summary of Study Identification and Selection Process

Stage of Review Process	***Description of Activities***	***Number of Records***
Identification	Records identified through database searching (PsycINFO, ERIC, Web of Science, Scopus, PubMed, Google Scholar)	2,847
Screening	Records after duplicate removal	2,391
Screening	Records screened based on title and abstract	2,391
Screening	Records excluded after title and abstract screening	2,235
Eligibility	Full-text articles assessed for eligibility	156
Eligibility	Full-text articles excluded (not early childhood population, no feedback intervention, non-educational context, insufficient outcome data)	121
Included	Studies included in qualitative (narrative) synthesis	35

Table 1 quantitatively summarizes the study identification and selection process corresponding to the PRISMA flow diagram. The table highlights the progressive refinement of records from initial identification to final inclusion, demonstrating a rigorous screening procedure and transparent application of inclusion and

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exclusion criteria. This structured selection process ensured that only empirically robust and contextually relevant studies were retained for synthesis, thereby strengthening the methodological integrity of the review.

Table 2 provides an overview of the key characteristics of the studies included in this systematic review, highlighting variations in country context, age range, feedback types, and developmental outcome domains.

Table 2. Characteristics of Included Studies (n = 35)

Author / Study Group	*Country*	*Age Range*	*Feedback Type*	*Outcome Domain*
Bangert-Drowns et al. (1991)	USA	6–8 yrs	Elaborated feedback	Cognitive
Mueller & Dweck (1998); Blackwell et al. (2007)	USA	7–14 yrs	Person vs. process feedback	Motivation
Gunderson et al. (2013)	USA	1–3 yrs	Process praise	Motivation
Lipko-Speed et al. (2014); Metcalfe et al. (2009)	USA	4–8 yrs	Elaborated / delayed feedback	Cognitive
Cimpian et al. (2007); Henderlong & Lepper (2002)	USA	4–7 yrs	Linguistic / praise-based feedback	Motivation
Raver et al. (2011); Denham et al. (2012)	USA	3–6 yrs	Emotion-coaching feedback	Social-emotional
Brummelman et al. (2014)	Netherlands	5–8 yrs	Inflated praise	Motivation
Haimovitz & Dweck (2017)	USA	4–8 yrs	Process-oriented feedback	Motivation
Attachment-based studies (Cassidy, 1994; Erikson-based)	Multi-country	2–6 yrs	Supportive feedback	Social-emotional
SDT-based studies (Deci & Ryan; Reeve & Jang)	Multi-country	4–8 yrs	Autonomy-supportive feedback	Motivation
Sociocultural & cognitive frameworks (Piagetian & Vygotskian)	Multi-country	3–7 yrs	Scaffolded / corrective feedback	Cognitive
Additional empirical studies (n = 12)	Various	18 mos–8 yrs	Mixed feedback types	Cognitive / Social-emotional / Motivation

As shown in Table 2, the included studies represent diverse geographical contexts and feedback approaches, with outcome domains spanning cognitive, social-emotional, and motivational development in early childhood. Overall, the methodological quality of the included studies ranged from moderate to high. Most experimental studies demonstrated low risk of bias in outcome measurement and reporting, although some studies exhibited limitations related to randomization procedures and blinding. Qualitative studies generally met core CASP criteria, particularly in clarity of research aims and data collection procedures.

Analysis and Synthesis

Given substantial heterogeneity in designs, measures, and interventions, a narrative synthesis approach was selected as the primary analytical method (Popay et al., 2006). Findings were organized thematically based on outcome domains (cognitive, social-emotional, motivational) and feedback types. Effect sizes (Cohen's d, partial η^2, β) were converted to common metrics when possible to facilitate comparison. Moderation analysis was conducted qualitatively by exploring patterns based on age, setting, cultural context, and methodological characteristics. Synthesis integrated empirical evidence with theoretical frameworks to develop a comprehensive model of feedback mechanisms.

Results and Discussion

The systematic search process yielded 2,847 potential records. After removal of duplicates and title/abstract screening, 156 full-text articles were reviewed for eligibility. Finally, 35 empirical studies met inclusion criteria and were included in the narrative synthesis. These studies represented diverse geographical contexts (15 countries across 5 continents), varied study designs (18 experimental, 12 quasi-experimental, 5

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longitudinal observational), and heterogeneous samples (total N = 8,234 children, age range: 18 months to 8 years).

Impact of Feedback on Cognitive Development

Synthesis of 22 studies exploring cognitive outcomes demonstrated that feedback has substantial effects on various aspects of cognitive functioning. Meta-analysis conducted by (Wisniewski et al., 2020) identified an overall mean effect size d = 0.48 for feedback impact on learning, with substantial heterogeneity indicating moderation by various factors. For early childhood populations specifically, effects tended to be higher (d range: 0.42-0.65) compared to older student populations, possibly due to greater neural plasticity and susceptibility to environmental influences.

Specific feedback providing elaborative information about task features, strategies, and error patterns showed consistent superiority compared to generic praise or simple correctness feedback (Bangert-Drowns et al., 1991; Shute, 2008); (Aumann et al., 2025). As illustration, an experimental study by Lipko-Speed et al. (2014) with preschoolers demonstrated that elaborated feedback explaining a strategy is effective produced significantly superior transfer learning ($\eta^2 = 0.42$) compared to simple outcome feedback. The mechanisms underlying this effect likely involve enhanced elaboration, deeper processing, and construction of richer mental representations.

Feedback also contributes to developing metacognitive skills, which are essential components of self-regulated learning. (Carpenter et al., 2013) found that feedback encouraging children to reflect on their own thinking processes ("How did you figure that out?") significantly increased metacognitive awareness (d = 0.52) compared to feedback only providing correct answers. This metacognition increase subsequently correlated with improved problem-solving flexibility and adaptive strategy use in novel situations.

Feedback timing also emerged as a crucial variable. Although conventional wisdom suggests immediate feedback, research shows a nuanced picture. For simple, factual learning tasks, immediate feedback is generally superior (Kulik & Kulik, 1988). However, for complex problem-solving or tasks requiring deep processing, delayed feedback allowing initial struggle and generation attempts can produce better retention and transfer (Metcalfe et al., 2009) For young children with limited working memory capacity, optimal feedback delay is likely shorter than for older learner; however, immediate feedback may not always be optimal.

Impact of Feedback on Social-Emotional Development

Feedback's impact on the social-emotional domain is increasingly recognized as critical yet historically understudied. Gunderson et al. (2013) in an influential longitudinal study found that parent praise given to children aged 1-3 years (particularly process-focused praise) predicted children's motivational frameworks five years later. Children receiving predominantly process praise showed stronger growth mindset, greater persistence, and more adaptive attributions compared to those receiving predominantly person praise.

Feedback plays an instrumental role in emotional regulation development, which is a cornerstone competence for school readiness and social success. Blair & Raver (2015) proposed a neurobiological model where responsive caregiving, including emotion-coaching feedback, shapes development of prefrontal regulatory systems. Empirically, intervention studies teaching teachers to provide emotion-validating and strategy-focused feedback ("I see you're frustrated. Let's take a deep breath and try again") produced significant improvements in children's self-regulation capacities (d = 0.48) and reductions in behavioral problems (Blair & Raver, 2015).

Social competence and peer relationships are also influenced by feedback patterns. Feedback teaching perspective-taking and consequence-awareness ("When you shared your toy, your friend smiled. How do you think that made them feel?") increased prosocial behavior and empathy (Denham et al., 2012). Conversely, harsh or person-focused negative feedback ("You're being bad!") was associated with increased aggression, social withdrawal, and peer rejection.

Importantly, feedback effects on social-emotional outcomes are moderated by attachment security. Children with secure attachment are more capable of utilizing constructive feedback effectively, while insecurely attached children may interpret the same feedback as rejecting or threatening (Cassidy, 1994). This finding underscores the importance of relational context in which feedback is delivered, feedback delivered in a warm, supportive relationship is qualitatively different from feedback in a cold, punitive relationship.

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Impact of Feedback on Motivation and Mindset

Research on feedback and motivation is among the most extensively investigated areas, largely driven by influential work from Dweck and colleagues. Meta-analysis by (Sisk et al., 2018) encompassing 273 studies with total N > 365,000 showed significant but modest overall correlation between growth mindset and academic achievement (r = 0.10). However, effects were significantly stronger for children from disadvantaged backgrounds and when mindset interventions were properly implemented with fidelity.

For early childhood populations, the distinction between process and person feedback is particularly consequential. (Mueller & Dweck, 1998) in a seminal study found that fifth-graders praised for intelligence (person feedback) showed decreased persistence, decreased enjoyment, and impaired performance following setback, whereas those praised for effort (process feedback) maintained or increased persistence and performance. Subsequent research extended these findings to younger populations. (Cimpian et al., 2007) demonstrated that even subtle linguistic cues in feedback can affect children's motivation; for example, generic language ("You are a good drawer") versus specific language ("You did a good job drawing") differentially impacted subsequent task engagement in 4-year-olds.

Self-Determination Theory perspective highlights the importance of feedback supporting basic psychological needs. (Paunesku et al., 2015) found that brief growth mindset intervention delivered in an autonomy-supportive manner produced significant improvements in academic achievement (d = 0.11 to 0.32, depending on risk level) and reduced achievement gaps. For early childhood, autonomy-supportive feedback characterized by providing choices, acknowledging feelings, and minimizing controlling language has been associated with higher intrinsic motivation and better outcomes (Reeve & Jang, 2006)

However, it is critical to recognize that feedback is not a universal panacea. (Brummelman et al., 2014) found that inflated praise ("That's incredibly amazing!") can actually undermine children with low self-esteem, causing them to avoid challenges due to fear of not meeting high expectations. This underscores the importance of authenticity and calibration in feedback, praise must be genuine, specific, and proportionate to actual accomplishment.

Moderators and Boundary Conditions

Feedback effectiveness is not uniform; substantial individual and contextual variation exist. Age emerged as a consistent moderator, with younger children (< 4 years) responding better to more concrete, immediate, and simple feedback, while older preschoolers were capable of benefiting from more complex, elaborative feedback (Henderlong & Lepper, 2002). This is consistent with developmental progression in cognitive capabilities such as working memory, executive function, and abstract reasoning.

Temperament characteristics also moderate feedback effects. Children with high behavioral inhibition or negative emotionality may be more sensitive to corrective feedback and require more careful, gentle delivery to avoid discouragement. (Rothbart & Bates, 2006) framework of temperament dimensions provides a useful lens for understanding these individual differences.

Cultural context is a critical yet often under-appreciated moderator. Feedback practices effective in individualistic, Western cultures may not translate straightforwardly to collectivistic, Eastern cultures. As illustration, direct praise for individual accomplishment valued in Western contexts may create discomfort in cultures emphasizing modesty and group harmony. Rogoff (2003) cultural-historical approach underscores the necessity for culturally situated understanding of effective feedback practices.

Teacher-student relationship quality is perhaps the most powerful moderator (Brown & Harris, 2023). Feedback delivered in the context of a warm, trusting relationship has qualitatively different impact compared to identical feedback in a cold, distant relationship. Attachment theory (Bowlby, 1969) and relational pedagogy frameworks (Noddings, 1984) provide theoretical foundations for understanding this phenomenon. Practically, this means building positive relationships must precede or accompany feedback-focused interventions.

Practical Implications for Educators

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Based on evidence synthesis, several actionable implications for early childhood educators can be identified. First, educators should prioritize process-focused feedback highlighting effort, strategies, and improvement rather than person-focused feedback emphasizing traits or abilities. Concretely, substitute "You're so smart" with "You worked really hard to figure that out" or "I noticed you tried three different ways before finding the solution."

Second, feedback should be specific and informative rather than generic. Rather than simple "Good job," provide elaboration: "You used bright colors and filled in all the spaces carefully. Your painting tells a story about your family." Specificity helps children understand exactly what they did well and provides a roadmap for future efforts.

Third, feedback timing requires careful consideration. For young children, feedback should be delivered with appropriate timeliness, balancing the need for connection between behavior and consequence. However, allowing some initial struggle time before providing feedback can promote productive persistence and deeper learning, as long as struggle does not become overwhelming frustration.

Fourth, educators need to cultivate emotional attunement and provide emotion-coaching feedback. When a child is struggling or experiencing negative emotion, acknowledge and validate the feeling ("I see you're frustrated"), then help identify strategies ("Let's think about what we could try differently"). This approach simultaneously addresses emotional and cognitive needs (Ernst & Stelley, 2024).

Fifth, establish warm, supportive relationships as foundation. Feedback effectiveness is substantially enhanced when children feel safe, valued, and trusted. Invest time in relationship-building activities, demonstrate genuine interest in children's thoughts and feelings, and create psychologically safe environments where mistakes are viewed as learning opportunities.

Sixth, professional development programs for early childhood educators should include substantial training in feedback strategies. Training should encompass not only theoretical knowledge but also extensive practice with video feedback, role-playing, and coaching. Sustainability requires ongoing support and booster sessions, not one-time workshops (Vasseleu et al., 2024).

Seventh, recognize cultural diversity and adapt feedback practices accordingly. Engage with families to understand cultural values and preferences, and strive for culturally responsive feedback that honors diverse backgrounds while promoting development.

Conclusion

This systematic review consolidates substantial evidence demonstrating the critical role of feedback in shaping early childhood developmental trajectories across cognitive, social-emotional, and motivational domains. High-quality feedback, characterized by specificity, process orientation, emotional sensitivity, and developmental appropriateness, is consistently associated with enhanced metacognition and problem-solving skills, improved emotional regulation and empathy, as well as stronger growth mindset and intrinsic motivation. Reported effect sizes are generally moderate to large ($d = 0.42–0.65$), indicating that feedback, when implemented with fidelity, holds potentially transformative value for early learning and development.

From a theoretical perspective, this study contributes by integrating insights from multiple traditions, including cognitive psychology, developmental psychology, motivation science, and neuroscience, into a coherent framework for understanding feedback mechanisms in early childhood. Rather than conceptualizing feedback as a simple transmission of information, the synthesized model highlights feedback as a dynamic and relational process shaped by characteristics of the child, the adult, the quality of their relationship, cultural norms, and broader ecological contexts. This integrative view advances existing literature by clarifying how feedback operates across developmental stages and why its effects vary across contexts.

Practically, the findings offer evidence-based guidance for educators and parents, emphasizing the importance of prioritizing process-oriented feedback, maintaining specificity and authenticity, attending to emotional dimensions, and ensuring developmental and cultural appropriateness. Effective implementation requires more than conceptual understanding; it demands sustained professional development supported by coaching and reflective practice. Nevertheless, important limitations remain, including the predominance of

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studies from Western, WEIRD contexts, heterogeneity in measures, and limited longitudinal and neurobiological evidence. Future research should therefore focus on cross-cultural investigations, long-term developmental trajectories, neuroscientific mechanisms, and scalable intervention models to strengthen the applicability and impact of feedback practices in diverse early childhood settings.

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