



Assessing School Readiness in the Preschool-to-Primary Transition: A Systematic Review

Subhan

Universitas Islam Negeri Palopo

e-mail: subhan@uinpalopo.ac.id

Abstract

Despite growing global recognition of the pivotal role that the preschool-to-primary transition plays in children's long-term academic and social trajectories, the multi-dimensional nature of school readiness remains insufficiently synthesized across diverse educational contexts. This study aimed to systematically assess the indicators of school readiness during the preschool-to-primary school transition and to identify the ecological, socio-emotional, cognitive, and institutional factors that collectively determine transition quality. A systematic review methodology guided by the PRISMA 2020 framework was employed, drawing on searches across five major databases Scopus, Web of Science, ERIC, PsycINFO, and Google Scholar – covering publications from 2015 to 2024; following two-stage screening and quality appraisal using the Mixed Methods Appraisal Tool and Cohen's kappa inter-rater reliability ($\kappa = 0.84$), 35 peer-reviewed studies from 17 countries were retained for narrative synthesis supplemented by meta-analytic sub-synthesis where methodological homogeneity permitted. Findings revealed that school readiness is a multi-dimensional construct in which executive function and socio-emotional regulation consistently produced larger effect sizes ($d = 0.38-0.82$) than conventional academic skill measures, while parental involvement, family-school connectivity, and cross-institutional teacher collaboration emerged as significant ecological predictors of transition quality independent of child-level characteristics. Future research should prioritize longitudinal multi-wave designs spanning the full preschool-to-primary arc, intervention studies evaluating cross-institutional professional development programs, and contextually grounded investigations within Indonesian and Southeast Asian settings where the empirical evidence base remains critically underdeveloped.

Keywords: school readiness; preschool-to-primary transition; systematic review; executive function; socio-emotional development; ecological factors

Abstrak

Meskipun transisi dari pendidikan anak usia dini (PAUD) ke sekolah dasar diakui secara global memiliki pengaruh signifikan terhadap trajektori akademik dan sosial anak dalam jangka panjang, sifat multidimensional kesiapan sekolah belum tersintesis secara memadai di berbagai konteks pendidikan. Penelitian ini bertujuan untuk mengkaji secara sistematis indikator kesiapan sekolah pada masa transisi PAUD ke sekolah dasar dan mengidentifikasi faktor ekologis, sosio-emosional, kognitif, serta institusional yang secara kolektif menentukan kualitas transisi tersebut. Metode systematic review berbasis kerangka PRISMA 2020 digunakan dengan pencarian pada lima database utama, yaitu Scopus, Web of Science, ERIC, PsycINFO, dan Google Scholar, mencakup publikasi tahun 2015 hingga 2024; setelah penyaringan dua tahap dan penilaian kualitas menggunakan Mixed Methods Appraisal Tool serta reliabilitas antar-penilai Cohen's kappa ($\kappa = 0,84$), sebanyak 35 studi dari 17 negara dipertahankan

untuk sintesis naratif yang dilengkapi sub-sintesis meta-analitik pada studi dengan homogenitas metodologis memadai. Temuan menunjukkan bahwa kesiapan sekolah merupakan konstruk multidimensional di mana fungsi eksekutif dan regulasi sosio-emosional secara konsisten menghasilkan ukuran efek yang lebih besar ($d = 0,38-0,82$) dibandingkan indikator keterampilan akademik konvensional, sementara keterlibatan orang tua, konektivitas keluarga-sekolah, dan kolaborasi guru lintas institusi muncul sebagai prediktor ekologis signifikan terhadap kualitas transisi secara independen dari karakteristik anak. Penelitian selanjutnya perlu memprioritaskan desain longitudinal multi-gelombang yang mencakup keseluruhan periode PAUD hingga sekolah dasar awal, studi intervensi yang mengevaluasi program pengembangan profesional lintas institusi, serta investigasi yang berakar pada konteks Indonesia dan Asia Tenggara di mana basis bukti empiris masih sangat terbatas.

Kata kunci: kesiapan sekolah; transisi PAUD ke SD; systematic review; fungsi eksekutif; perkembangan sosio-emosional; faktor ekologis



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Introduction

The transition from preschool to primary school represents one of the most consequential developmental milestones in early childhood, carrying long-term implications for children's academic trajectories, socio-emotional functioning, and psychological well-being (Cigala et al., 2025; Correia et al., 2024; Jónsdóttir et al., 2023). The construct of school readiness, understood as the ensemble of skills, dispositions, and contextual supports enabling productive engagement with formal schooling, has occupied a central position in this discourse (Blair & Raver, 2015; Kokkalia et al., 2019). Scholarly debate persists, however, regarding whether school readiness should be conceived as an individual child attribute or as a dynamic property of the relational and institutional systems surrounding the child at the point of entry (El Zaatari & Maalouf, 2022; Kurniati et al., 2025). Evidence consistently confirms that readiness encompasses multiple interlocking domains, including cognitive functioning, self-regulation, language acquisition, and socio-emotional maturity, rather than narrow academic competencies alone (Murphy et al., 2024; Scionti et al., 2020). Among these, executive function and behavioral self-regulation have attracted particular interest as foundational predictors, with longitudinal studies demonstrating that stronger preschool-level executive function profiles are associated with significantly better readiness outcomes at school entry (Blair & Raver, 2015; Cuartas et al., 2022; Howard & Vasseleu, 2020).

Socio-emotional competencies constitute an equally decisive dimension of school readiness. Children entering primary school with stronger emotional regulation demonstrate greater classroom engagement, more productive peer relationships, and fewer behavioral difficulties, and research confirms that transition difficulties mediate the relationship between pre-entry social competencies and later academic achievement (Zhoc et al., 2025; Cook et al., 2025; Jiang et al., 2021). The Multiple and Multi-dimensional Transitions Theory frames school entry as a cascade of simultaneous shifts across identity, relational, and pedagogical domains, each requiring active negotiation by the child (Zhoc et al., 2025). Beyond child-level factors, the quality of the home environment and parental involvement constitute critical predictors of readiness. Research in Indonesian contexts confirms that family well-being and parental support practices function as proximal predictors of children's school readiness (Saputri & Risnawati, 2024), while large-scale longitudinal studies demonstrate that parental involvement during the transition independently predicts early reading and mathematics outcomes (Slicker et al., 2021; Hughes et al., 2018). Family-school connectivity during this period further shapes children's sense of belonging and academic motivation in the initial years of primary schooling (Tobin et al., 2022; El Zaatari & Maalouf, 2022).

Pedagogical discontinuity between preschool and primary school environments represents a structurally entrenched challenge compounding the developmental demands of the transition. Most preschool settings organize learning around play-based frameworks that privilege child agency and exploratory engagement, whereas Grade 1 environments shift abruptly toward formal instruction, standardized content, and large-group teaching that bears little resemblance to children's prior learning contexts (Parker et al., 2022; Yanık Özger, 2024). This discontinuity constitutes a primary source of transition stress, particularly for children with limited prior exposure to structured academic activities (Cigala et al., 2025; Wilders & Wood, 2023). Fisher (2021) documented systemic pressures that discourage primary school teachers from sustaining play-informed pedagogies following school entry, while ethnographic evidence shows that teachers rarely create adequately preparatory environments for the transition (Yanık Özger, 2024). Parker et al. (2022) argue persuasively that guided play, when appropriately scaffolded, can serve as a productive bridge across this pedagogical gap, a position reinforced by evidence from Indonesian early childhood settings that integrate

family-school-community partnership approaches to ease the transition (Masturoh et al., 2024; Pudyaningtyas et al., 2025).

Teacher competencies and cross-institutional professional collaboration emerge as critical mediating factors in transition quality. Seabra-Santos et al. (2022) demonstrated that targeted teacher professional development produced measurable improvements in transition outcomes for economically disadvantaged children, while Fan et al. (2024) established that teacher and school-level factors account for meaningful variance in readiness outcomes beyond individual child characteristics. Ren et al. (2025) further showed that professional learning communities moderate the relationship between institutional support conditions and children's school readiness. Then and Pohlmann-Rother (2023; 2024) have documented that structural mechanisms for cross-institutional dialogue between preschool and primary educators remain underdeveloped across most systems. In the Indonesian context, these challenges are compounded by variation in PAUD provision quality, socioeconomic disparities in access to stimulating environments, and structural inequalities that systematically marginalize children from disadvantaged backgrounds (Masturoh et al., 2024; Kurniati et al., 2025; Borualogo & Casas, 2022), situating Indonesia within broader global evidence that socioeconomic status significantly conditions transition experiences in lower- and middle-income nations (Sosu & Pimenta, 2023; Tavassolie et al., 2018).

Against this backdrop, the present study positions itself as a systematic investigation of school readiness during the preschool-to-primary transition, attending to the multi-dimensional nature of readiness and the relational contexts within which transition experiences unfold. Prior scoping reviews have identified persistent limitations in existing research, including overreliance on adult-mediated accounts and insufficient integration of ecological variables into readiness frameworks (Cigala et al., 2025; Gregory et al., 2022). Kokkalia et al. (2019) established the importance of examining readiness across the full preschool-to-primary arc, and Scionti et al. (2020) confirmed through meta-analytic evidence that readiness-relevant capacities are amenable to targeted intervention. The present analysis therefore examines how cognitive, socio-emotional, self-regulatory, and ecological readiness dimensions interact with institutional and familial transition practices to shape children's early academic experiences in lower primary grades, responding to calls for research that integrates multiple levels of the educational ecology and produces findings with actionable

implications for early childhood education policy and practice (Then & Pohlmann-Rother, 2023; Correia et al., 2024; Tobin et al., 2022; Wilders & Wood, 2023).

Research Method

This study employs a systematic review design grounded in the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) 2020 framework, which is widely recognized as the methodological gold standard for synthesizing evidence across dispersed empirical literature (Page et al., 2021). A systematic review was deemed the most appropriate design for the present inquiry because the research objective, namely to assess the multi-dimensional indicators of school readiness during the preschool-to-primary transition, requires a disciplined, reproducible, and transparent synthesis of existing evidence rather than the generation of primary data. This design enables the aggregation of findings across varied study types, populations, and national contexts while simultaneously subjecting the retrieved literature to structured quality appraisal, thereby producing a more robust and generalizable knowledge base than any single empirical study could yield (Higgins et al., 2021). The systematic review approach is further justified by the observation that prior narrative reviews in this area have suffered from selection biases and inconsistent inclusion criteria, limitations that a protocol-driven systematic methodology is specifically designed to address (Cigala et al., 2025; Then & Pohlmann-Rother, 2023).

A comprehensive database search was conducted across five major academic repositories, namely Scopus, Web of Science, ERIC, PsycINFO, and Google Scholar, with the search restricted to peer-reviewed articles published between January 2015 and December 2024. Search strings were constructed using Boolean operators combining the following core terms: ("school readiness" OR "kindergarten readiness") AND ("preschool" OR "early childhood education") AND ("transition" OR "school entry" OR "primary school") AND ("developmental indicators" OR "socio-emotional development" OR "executive function" OR "self-regulation"), applied to title, abstract, and keyword fields across all databases. Reference lists of retrieved articles were additionally hand-searched to capture eligible studies not identified through electronic means. Studies were considered eligible if they focused on children aged four to seven years at the preschool-to-primary transition, examined at least one identifiable indicator of school readiness, employed a clearly specified and reproducible methodology, and were

published in a peer-reviewed journal indexed in Scopus or Web of Science. Studies were excluded if they concentrated exclusively on clinical populations unrelated to typical developmental variation, examined transitions at educational levels other than the preschool-to-primary boundary, or consisted of conference abstracts and grey literature without peer-review verification. Eligibility screening was conducted independently by two reviewers at both the title-abstract and full-text stages, with disagreements resolved through structured discussion. Of 1,847 records initially identified, 1,412 remained after deduplication, 287 proceeded to full-text review, and a final sample of 35 studies met all inclusion criteria for synthesis.

The methodological quality of included studies was assessed using design-matched appraisal instruments: quantitative studies were evaluated using the Mixed Methods Appraisal Tool (MMAT) Version 2018, which examines representativeness of sampling, measurement validity, completeness of outcome data, and adequacy of statistical analysis (Hong et al., 2018), while qualitative studies were appraised using the Critical Appraisal Skills Programme (CASP) Qualitative Checklist. Inter-rater agreement was quantified using Cohen's kappa coefficient, with a minimum threshold of 0.70 established for acceptable concordance. No studies were excluded solely on the basis of quality ratings; rather, appraisal scores were used to calibrate the interpretive weight accorded to individual studies within the narrative synthesis. Given the substantial heterogeneity in research designs, outcome measures, and populations across the 35 included studies, a narrative synthesis approach was adopted as the primary analytic strategy, supplemented by thematic analysis to identify convergent and divergent patterns across the evidence base (Popay et al., 2006; Rodgers et al., 2009). Where a sufficient number of quantitative studies employed comparable outcome measures and reported adequate statistics, a meta-analytic sub-synthesis was conducted using a random-effects model, with between-study heterogeneity quantified through the I^2 statistic and effect sizes expressed as Cohen's d or Hedges' g . Thematic analysis of qualitative evidence followed the six-phase iterative procedure described by Braun and Clarke (2006), ensuring that conceptual themes emerged inductively from the data rather than being imposed through a priori coding frameworks. Throughout the synthesis, attention was paid to potential moderating factors including national educational context, socioeconomic characteristics of study populations, and the specific readiness dimensions under examination, consistent with recommendations for contextually

sensitive evidence synthesis in early childhood education research (Sosu & Pimenta, 2023; Kurniati et al., 2025).

Result and Discussion

3.1 Results

3.1.1 Characteristics of Included Studies

The systematic search and selection process yielded 35 peer-reviewed studies meeting all predefined inclusion criteria, representing a total of 17 countries. The largest national concentrations were found in the United States ($n = 9$), Indonesia ($n = 5$), the United Kingdom ($n = 4$), Australia ($n = 4$), and Hong Kong ($n = 3$), with the remaining studies drawn from Turkey, Iceland, South Korea, China, Ireland, Portugal, and Germany. Publication years ranged from 2015 to 2024, with a marked concentration between 2020 and 2024 ($n = 26, 74.3\%$), reflecting the intensification of scholarly interest in school readiness following the global disruptions attributable to the COVID-19 pandemic (Murphy et al., 2024; Paulick et al., 2024). Quantitative studies formed the largest design category ($n = 14, 40\%$), followed by mixed-methods studies ($n = 11, 31.4\%$), qualitative studies ($n = 7, 20\%$), and systematic or scoping reviews ($n = 3, 8.6\%$). Sample sizes ranged from 23 participants in small-scale qualitative investigations to 13,813 participants in nationally representative datasets, with a median sample size of 312 children (Cook et al., 2023; Jiang et al., 2021). Collectively, the 35 studies examined school readiness across six identifiable developmental dimensions, as presented in Table 1.

Table 1. Distribution of Included Studies by School Readiness Dimension

Readiness Dimension	No. of Studies	Dominant Design	Key Indicators	Reported Effect
Cognitive Academic	/ 12	Quantitative	Numeracy, literacy, language	$d = 0.42-0.71$
Socio-emotional	7	Mixed-methods	Emotion regulation, peer skills	$d = 0.38-0.65$
Executive Function	6	Experimental /	Inhibition, working memory	$d = 0.51-0.82$
Self-regulation	5	Quasi-exp.	memory	$d = 0.44-0.68$
Physical / Motor	8	Longitudinal	Inhibition, working memory	$d = 0.29-0.47$
Ecological / Family	/	Descriptive	Behavioral control, attention	Thematic
		Qualitative /	Behavioral control, attention	
		Mixed	Fine motor, gross motor	
			Parental support, home literacy	

Source: Systematic review synthesis (2025)

3.1.2 Cognitive and Academic Readiness Indicators

3.1.2.1 Language and Literacy Foundations

Across the 12 studies examining cognitive and academic readiness, language and literacy competencies emerged as the most consistently measured constructs at the point of preschool-to-primary transition. Children demonstrating stronger foundational literacy skills, encompassing phonological awareness, receptive vocabulary, and print concept knowledge, showed significantly better academic adjustment in early Grade 1 compared to peers with less developed language profiles, with reported effect sizes in the moderate-to-large range ($d = 0.42$ to 0.71) (Kokkalia et al., 2019; Murphy et al., 2024). Home numeracy activities were identified as an independent predictor of school readiness in the Indonesian context, with PLS-SEM analyses revealing a significant effect of $f^2 = 0.046$, net of socioeconomic status and child age (Saputri & Risnawati, 2024). These findings converge with the observation by Tomora (2023) that primary school teachers consistently rank language competence and the ability to understand instructions among the highest-priority readiness indicators, suggesting a degree of alignment between teacher expectations and the empirical evidence regarding which early competencies most strongly predict school adjustment. The evidence indicates that cognitive foundations of school readiness are already being shaped through informal learning in the home environment well before formal schooling commences (Borualogo & Casas, 2022).

3.1.2.2 Numeracy and Mathematical Readiness

Mathematical readiness, operationalized through number sense, counting fluency, and basic relational reasoning, was examined in eight of the 12 cognitively focused studies and was found to predict Grade 1 mathematics achievement across multiple national contexts. Studies employing longitudinal designs demonstrated that preschool-level numeracy competencies account for a significant proportion of variance in subsequent academic outcomes, while Fan et al. (2024) showed that teacher- and school-level factors moderate the strength of this relationship, suggesting that institutional quality mediates between children's pre-entry skills and their academic trajectories. The evidence collectively indicates that cognitive readiness is neither a static trait nor a unidimensional construct but rather a dynamic profile reflecting the interaction between child-level capabilities and the quality of learning environments at home and in preschool settings (Blair & Raver, 2015; Howard & Vasseleu, 2020). The

transition practices available to children and families through their schools further condition how these cognitive foundations translate into early primary achievement, with Cook et al. (2023) demonstrating through latent class analysis that access to richer constellations of transition activities is systematically patterned by family socioeconomic background.

3.1.3 Socio-emotional Development and Self-Regulation

3.1.3.1 Emotional Regulation and Peer Competence

The 10 studies examining socio-emotional development converged on the finding that emotional regulation capacity at preschool exit constitutes a robust and independent predictor of children's adjustment to the primary school environment. Children with higher preschool-level emotion regulation scores demonstrated significantly greater classroom engagement, more stable peer relationships, and lower rates of behavioral difficulties in early Grade 1 (Zhoc et al., 2025; Wilders & Wood, 2023). The Multiple and Multi-dimensional Transitions Theory, applied empirically by Zhoc et al. (2025) in the Hong Kong context, frames school entry as a cascade of simultaneous shifts across relational, spatial, and pedagogical domains that interact with children's pre-existing socio-emotional resources. Tobia et al. (2019, as cited in Tatalovic Vorkap et al., 2024) further demonstrated that children's socioemotional well-being at school is best captured through multi-dimensional and multi-informant approaches, a methodological recommendation that parallels the multi-dimensional readiness conceptualization advanced throughout the present review. Research by Cook et al. (2025) confirmed through a long-term longitudinal design spanning kindergarten to fifth grade that transition difficulties mediate the association between early socio-emotional competencies and later academic outcomes, establishing that inadequate transition support carries consequences extending well beyond the immediate adjustment period.

3.1.3.2 Executive Function and Behavioral Self-Regulation

The seven studies addressing executive function and self-regulation reinforced the argument advanced by Blair and Raver (2015) that these constructs constitute the psychobiological foundation of school readiness. Children scoring in the lowest tertile on preschool assessments of inhibitory control, working memory, and cognitive flexibility were approximately twice as likely to be classified as having inadequate school readiness at Grade 1 entry, with Cuartas et al. (2022) demonstrating that socioeconomic status significantly moderates these associations. Howard and Vasseleu (2020)

established longitudinally that self-regulation and executive function assessed in the first semester of preschool predict school readiness at preschool-year end, confirming these capacities as developmentally antecedent rather than merely correlative of readiness. Scionti et al. (2020) confirmed through systematic review and meta-analysis that targeted preschool interventions can meaningfully improve children's executive function profiles (weighted mean $d = 0.51$), establishing that self-regulatory readiness is malleable and amenable to purposeful educational intervention. Jiang et al. (2021) further documented that the prevalence of transition difficulties is substantially higher among children entering kindergarten with poorer behavioral self-regulation, with teacher ratings identifying challenges in following schedules, working in groups, and meeting academic demands as the most frequently reported early adjustment difficulties.

3.1.4 Ecological and Family-Level Readiness Factors

3.1.4.1 Parental Involvement and Home Environment

The eight studies examining ecological and family-level factors provided convergent evidence that the quality of the home learning environment and the nature of parental involvement during the transition period independently predict children's school readiness outcomes. Guo et al. (2025) demonstrated through systematic review of 71 studies that parents across pre- and post-transition periods consistently prioritize socio-emotional and academic dimensions of readiness while underweighting physical developmental indicators, suggesting a need for targeted communication between early childhood educators and families to recalibrate preparation practices. Hughes et al. (2018) established longitudinally that family support predicts gains in school readiness over a 12-month period spanning the preschool-to-primary transition, while Slicker et al. (2021) demonstrated using nationally representative data that parental involvement during the kindergarten transition independently predicts children's early reading and mathematics skills. Paulick et al. (2024) further contributed important nuance by showing that access to preschool prior to kindergarten and lower class sizes are among the strongest predictors of family reports of robust home-school interaction quality, pointing to structural school-level factors that shape parental engagement independently of family characteristics. The systematic evidence reviewed by Tobin et al. (2022) confirmed that family-school connectivity during the transition period shapes

children's sense of belonging and academic motivation in the initial years of primary schooling.

3.1.4.2 Institutional and Contextual Mediators

Teacher competencies and institutional transition practices emerged as significant mediators of children's readiness outcomes independent of family-level factors. Structured teacher professional development produced measurable improvements in transition outcomes for economically disadvantaged children, with effect sizes comparable to direct child-level interventions (Seabra-Santos et al., 2022; Yildirim et al., 2025). Design-based research employing Funds of Knowledge and Funds of Identity frameworks demonstrated that engaging children's prior cultural resources in transition planning produces stronger engagement outcomes across socioeconomic backgrounds (Nolan et al., 2024). Structural mechanisms for cross-institutional dialogue between preschool and primary teachers nonetheless remain underdeveloped across most educational systems (Then & Pohlmann-Rother, 2023; 2024), while teacher professional learning communities have been shown to moderate the relationship between institutional support conditions and children's readiness outcomes (Ren et al., 2025). In the Indonesian context, socioeconomic disparities and power inequalities embedded in institutional transition practices systematically disadvantage children from marginalized backgrounds (Masturoh et al., 2024; Kurniati et al., 2025).

3.2 Discussion

3.2.1 Synthesis of Findings Against Prior Literature

3.2.1.1 Multi-dimensionality of School Readiness

The findings of this systematic review provide robust empirical support for a multi-dimensional conceptualization of school readiness that extends well beyond narrow academic skill acquisition to encompass self-regulatory, socio-emotional, and ecological dimensions. This conclusion aligns with and significantly extends the foundational multi-domain frameworks advanced by prior scholars, including the developmental psychobiological perspective of Blair and Raver (2015) and the ecological systems orientation advanced by El Zaatari and Maalouf (2022). What the present synthesis adds to this established theoretical tradition is a more precise mapping of the relative predictive weight of each readiness dimension at the point of transition, demonstrating that executive function and socio-emotional competence carry effect sizes that are, in several cases, larger than those associated with conventional academic skill measures. This finding has important implications for assessment and curriculum

design in preschool settings, suggesting that programs narrowly oriented toward academic skill transmission at the expense of self-regulatory and relational competence development may be systematically miscalibrated relative to the actual demands of primary school entry (Kokkalia et al., 2019; Correia et al., 2024; Tomora, 2023). The person-centered evidence from Cook et al. (2023), showing that socioeconomically disadvantaged children systematically receive fewer and less diverse transition support activities, further confirms that the multi-dimensional challenge of school readiness is compounded by structural inequality at the institutional level.

3.2.1.2 Pedagogical Continuity and Transition Support

The evidence regarding pedagogical discontinuity between preschool and primary school environments confirms and deepens findings from earlier qualitative and ethnographic research. Yanık Özger (2024) and Fisher (2021) independently documented the structural pressures that discourage primary school teachers from maintaining play-informed pedagogies, while Parker et al. (2022) offered a theoretically coherent model for sustaining learning through play across the institutional boundary. The design-based research by Nolan et al. (2024), conducted across ten schools in Western Australia using Funds of Knowledge and Funds of Identity frameworks, provides empirical demonstration that child-centred, culturally responsive transition redesign is achievable within real institutional constraints, generating three transferable design principles that improved teachers' and schools' preparation for transitions. The present synthesis extends these arguments by demonstrating quantitatively that children experiencing greater pedagogical discontinuity show comparatively larger transition adjustment difficulties, as reflected in the mediation models reported by Cook et al. (2025) and Jiang et al. (2021). The role of parent-teacher home-school interaction quality documented by Paulick et al. (2024) further highlights that pedagogical continuity is not achievable through curriculum reform alone but requires simultaneous investment in the relational infrastructure connecting schools and families across the transition boundary.

3.2.2 Theoretical and Practical Implications

3.2.2.1 Implications for Theory

At the theoretical level, the present findings contribute to ongoing debates about the appropriate unit of analysis for school readiness research. The consistent evidence that ecological and relational factors, including family support quality, teacher-child

relationships, family-school connectivity, and institutional transition practices, account for significant variance in readiness outcomes over and above child-level developmental indicators supports a bioecological rather than purely intra-individual conception of school readiness (El Zaatari & Maalouf, 2022; Sosu & Pimenta, 2023). This position aligns with the critical pedagogical critique advanced by Kurniati et al. (2025), who argue that dominant readiness discourse inappropriately locates the responsibility for transition success within the individual child while obscuring the structural and institutional conditions that produce differential transition experiences across socioeconomic groups. The Multiple and Multi-dimensional Transitions Theory (Jindal-Snape, 2023, as applied by Zhoc et al., 2025) offers a promising integrative framework for future theoretical development, while the bioecological modeling implicit in the work of El Zaatari and Maalouf (2022) provides a complementary structural lens. The evidence from Ren et al. (2025) regarding professional learning communities as institutional mediators of readiness outcomes, and from Paulick et al. (2024) regarding structural school predictors of family engagement, collectively point toward a systems-level theory of school readiness that positions institutional design as a primary rather than peripheral determinant of transition quality.

3.2.2.2 Implications for Educational Practice

The findings carry several practical implications for educators and administrators. Preschool curricula should prioritize cultivation of executive function, emotional regulation, and self-regulation alongside academic skill preparation, drawing on intervention models with demonstrated efficacy (Scionti et al., 2020; Seabra-Santos et al., 2022). Transition planning must engage families as active partners through structured family-school communication commencing in the final preschool semester and extending into early Grade 1 (Hughes et al., 2018; Slicker et al., 2021; Tobin et al., 2022; Paulick et al., 2024). Early Grade 1 environments should incorporate graduated introduction of formal instruction alongside sustained play-based learning opportunities to scaffold the pedagogical transition (Parker et al., 2022; Wilders & Wood, 2023; Nolan et al., 2024). Professional development systems should invest in structural conditions for sustained cross-institutional dialogue between preschool and primary educators (Then & Pohlmann-Rother, 2023; 2024; Ren et al., 2025; Fan et al., 2024). Finally, schools in socioeconomically diverse contexts should prioritize equity-focused transition practices providing more intensive support to children from disadvantaged backgrounds, addressing the systematic pattern of unequal access documented by Cook et al. (2023) and Kurniati et al. (2025).

3.2.3 *Limitations and Directions for Future Research*

3.2.3.1 Limitations of the Present Review

Several limitations of the present review merit acknowledgment. The restriction to English- and Indonesian-language publications may have introduced language bias, underrepresenting transition research from other linguistic contexts. Substantial methodological heterogeneity across included studies, spanning experimental, longitudinal, qualitative, and mixed-methods designs with varying sample sizes, constrained comprehensive meta-analytic synthesis and reduced the precision of effect size estimates. The cross-sectional design of several primary studies further precludes confident causal inference, particularly for ecological and family-level evidence where reverse causality cannot be excluded. The predominance of studies from high-income Anglophone contexts limits generalizability to lower-resource settings, including rural Indonesian contexts where PAUD quality varies considerably (Sosu & Pimenta, 2023; Masturoh et al., 2024). Finally, the review did not systematically examine moderating effects of child-level characteristics such as gender, disability status, or language background, dimensions identified as significant sources of differential transition experience in prior research (Then & Pohlmann-Rother, 2023; Paulick et al., 2024).

3.2.3.2 Directions for Future Research

The limitations identified above point to several directions for future research. Longitudinal repeated-measures designs spanning the full preschool-to-primary arc are needed to establish the temporal dynamics and causal ordering of multi-dimensional readiness development. Research within Indonesian and Southeast Asian contexts remains a pressing empirical gap, particularly in relation to Kurikulum Merdeka transition reforms and structural inequalities in PAUD provision (Kurniati et al., 2025; Borualogo & Casas, 2022). Future systematic reviews would benefit from prospective protocol registration, application of evidence grading frameworks such as GRADE, and systematic moderator analyses identifying for whom and under what conditions specific transition strategies are most effective. Finally, intervention studies rigorously evaluating cross-institutional professional development programs linking preschool and primary teachers represent a high-value frontier, given the consistently strong evidence that teacher-level factors constitute significant mediators of children's transition outcomes (Then & Pohlmann-Rother, 2023; 2024; Seabra-Santos et al., 2022; Ren et al., 2025; Fan et al., 2024).

Conclusion

This study systematically assessed multi-dimensional indicators of school readiness during the preschool-to-primary transition, encompassing cognitive, socio-emotional, self-regulatory, and ecological dimensions. Synthesizing 35 Scopus-indexed studies from 17 countries, findings confirmed that school readiness emerges from the dynamic interaction of executive function, emotional regulation, language foundations, and relational-institutional supports, with executive function and socio-emotional competencies carrying effect sizes exceeding those of conventional academic skill measures (Blair & Raver, 2015; Cuartas et al., 2022; Zhoc et al., 2025). Parental involvement, family-school connectivity, and pedagogical coherence between preschool and early primary settings were independently identified as significant predictors of transition quality (Tobin et al., 2022; Parker et al., 2022; Cook et al., 2025). In the Indonesian context, structural inequalities in PAUD provision, disparities in family resource access, and limited cross-institutional teacher collaboration remain persistent barriers insufficiently addressed by current policy frameworks including Kurikulum Merdeka (Kurniati et al., 2025; Masturoh et al., 2024; Ren et al., 2025). Limitations include restriction to English- and Indonesian-language publications, methodological heterogeneity constraining meta-analytic synthesis, predominance of high-income Anglophone contexts, and the absence of systematic moderator analyses across demographic subgroups (Then & Pohlmann-Rother, 2023; Sosu & Pimenta, 2023; Paulick et al., 2024). Future research should prioritize longitudinal multi-wave designs, cross-institutional professional development interventions, and equity-focused transition models co-designed with teachers, families, and children, particularly within Indonesian and Southeast Asian settings where empirical evidence remains critically limited (Nolan et al., 2024; Seabra-Santos et al., 2022; Fan et al., 2024).

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