

Exploring the Assumptions Shaping Autistic Children's Play Research in Early Childhood Education: A Systematic Review

Ziyu Yang

Faculty of Education, University of Cambridge, 184 Hills Road, Cambridge, CB2 8PQ, United Kingdom

Abstract: *Play is foundational to learning and development in the early years, yet the assumptions shaping how autistic children's play is researched have received limited critical attention. Most empirical studies measure autistic play against neurotypical standards, treating difference as deficit before a single outcome has been collected. This systematic review examines how solitary, parallel, and pretend play are interpreted in the literature on autistic children in early childhood education, and what assumptions about autistic development underpin those interpretations. Guided by the neurodiversity paradigm and Milton's (2012) double empathy problem, the review adopted a theory informed design. Searches across ERIC, PsycINFO, and Scopus identified six eligible empirical studies, synthesised narratively. Deficit framing was analysed across five dimensions: language, intervention aim, measurement standard, theoretical orientation, and child positioning. Two consistent findings emerged. First, pretend play functioned as a participation-focused intervention context, with autistic children positioned as subjects to be moved toward neurotypical social behaviour. Second, solitary and parallel play were consistently positioned as behaviours requiring redirection toward more socially complex forms, with limited consideration of their potential developmental functions. Self-regulation was absent from all outcome measures, and engagement with neurodiversity-affirming frameworks was absent across all analytical dimensions. The findings also revealed an unacknowledged pattern: solitary and parallel play appeared to function as enabling conditions for participation rather than obstacles to it. The peer ecology, not the play form, emerged as the primary driver of pretend play outcomes. The review concludes that deficit assumptions are embedded in measurement design, not merely in language. Future research should prioritise regulatory outcomes, autistic-referenced measures, and the inclusion of autistic children's own perspectives.*

Keywords: Autistic children; Early childhood education; Deficit framing; Neurodiversity; Play-based learning.

1. Introduction

In the early years, play comes before formal instruction. Long before children sit down to learn in any structured sense, they are actively picking up objects and transforming them symbolically, claiming corners of the room as castles or kitchens, and moving in and out of play with others and independently (Parten, 1932; Vygotsky, 1933/2016). This is not just enjoyable; it is educationally significant. Research shows that both unstructured play and pretend play are linked to stronger self-regulation in young children (Bredikyte & Brandisauskiene, 2023; Colliver et al., 2022). Play, therefore, is not a break from learning in the early years but rather one of the primary ways that learning happens. The same is true for autistic children, who are not a marginal exception to the story of early childhood play but a significant and growing part of it. Approximately one in every 36 children receives an autism diagnosis

in early childhood (Maenner et al., 2023), and the majority spend at least part of their day in inclusive or specialist early years provision.

Although autistic children are increasingly educated in mainstream early childhood settings, two gaps in the research base persist. First, studies examining how autistic children participate through play remain scarce. Second, those that do exist tend to measure participation against neurotypical standards, asking how closely autistic children's play resembles that of their peers. Whether play supports their learning, regulation, or wellbeing on their own developmental terms remains largely unexamined (Miller, 2017).

When research treats neurotypical participation patterns as the default standard, autistic children can appear to be failing before a single outcome has been measured. What looks like evidence about autistic play may, in fact, be evidence about distance from a norm that was never designed with autistic children in mind. The gaps this review addresses are not primarily empirical. More studies alone will not resolve them. They are conceptual, concerning the assumptions built into how autistic children's play has been framed, measured, and interpreted. The review is therefore guided by two research questions:

Research question 1: How are solitary, parallel, and pretend play interpreted in empirical studies on autistic children within early childhood education settings?

Research question 2: What assumptions about autistic development underpin the ways these play types are described?

Focusing on solitary, parallel, and pretend play was a deliberate methodological choice. Examining social play as an outcome reproduces the assumption that autistic children should play like neurotypical children, framing difference as deficit from the outset (Milton, 2012). By examining what solitary, parallel, and pretend play do developmentally, this review asks a different question: not how far autistic children fall short of a social norm, but what these play forms contribute to their learning, regulation, and participation on their own terms (Pritchard-Rowe et al., 2024).

Answering both requires a theoretical framework capable of naming those assumptions and offering an alternative. That framework is developed in the following section.

2. Theoretical Framework: The Neurodiversity Paradigm and the Double Empathy Problem

The neurodiversity paradigm begins with a deceptively simple premise: neurological difference is a natural feature of human variation, not a pathology requiring correction (Singer, 1999; Armstrong, 2010). Its implications for research, however, are far-reaching. Rather than asking whether autistic children develop in the way neurotypical children do, a neurodiversity-informed approach asks whether the environments, measures, and assumptions surrounding them are capable of recognising the developmental value of what they do. In early childhood education, where play is the primary medium of learning, this reorientation has direct consequences for how participation and self-regulation are observed, measured, and understood.

Milton's (2012) double empathy problem gives this reorientation its sharpest edge. The framework moves away from locating social difficulty within the autistic child, proposing that misunderstanding between autistic and non-autistic people is bidirectional. It is a product of two different interactional styles encountering each other, not one style falling short of the other. On this account, what appears as

a social deficit in autistic play is not an absence of social or communicative intent; it is a mismatch between styles, neither of which holds an inherent developmental advantage over the other. Empirical support for this account is emerging. Crompton et al. (2020) found that autistic dyads transferred information as effectively as non-autistic dyads, suggesting that social difficulty may be a product of neurotype mismatch rather than autistic social capacity alone. The implications for how autistic children's play is observed and measured in educational settings are taken up in the discussion.

If autistic play reflects interactional difference rather than deficit, the outcomes worth measuring are those that capture what play actually does for autistic children's development, not how closely it approximates neurotypical behaviour. Two outcomes are particularly meaningful here. Self-regulation, the ability to manage attention, emotion, and behaviour in response to context, is foundational to learning and develops through play in early childhood (Blair & Raver, 2015; Zelazo & Carlson, 2012). Participation, understood not as social performance but as meaningful engagement in classroom activities and routines, captures whether autistic children can access the educational environment on their own terms (Humphrey & Symes, 2011; Messiou, 2006). These outcomes reframe the central question: not whether autistic children play like neurotypical children, but whether play supports their learning and participation (See Figure 1).

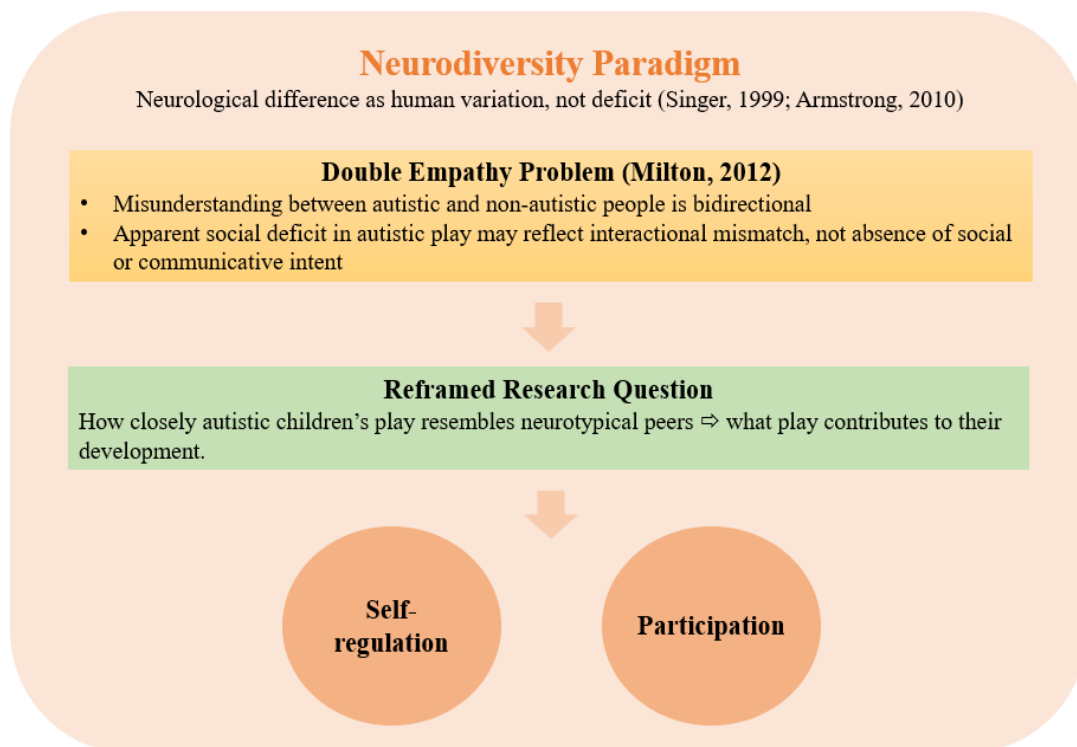


Figure 1: Theoretical framework for autistic play research in early childhood education

3. Methods

This review adopts a theory-informed systematic review design, guided by the neurodiversity paradigm and the double empathy problem outlined in the preceding section. These frameworks shaped not only how findings were interpreted but also how the review was designed: if the existing literature systematically measures autistic children's play against neurotypical standards, treating difference as absence, then reporting those findings uncritically would risk reproducing the very assumptions this review seeks to examine. A neurodiversity-affirming perspective therefore informed

both the inclusion criteria and the interpretive approach taken during synthesis. Where studies used deficit-oriented language, this was noted and reframed accordingly.

3.1 Search Strategy

Searches were conducted across three electronic databases: ERIC, PsycINFO, and Scopus, chosen for their coverage of educational, psychological, and interdisciplinary research relevant to this review. Reference lists of included studies and relevant review articles were also checked to identify any additional sources not captured by the database searches. Studies published between 2010 and 2026 were eligible for inclusion, reflecting a focus on contemporary empirical work while remaining broad enough to capture the range of relevant literature.

The search combined terms relating to autism, play type, early childhood education, and the two focal outcomes of self-regulation and participation. Search strings were adapted to the indexing conventions and syntax of each database. The final search string took the following form:

(autis OR ASD OR "Asperger") AND ("pretend play" OR "symbolic play" OR "dramatic play" OR "fantasy play" OR "parallel play" OR "solitary play") AND ("early childhood education" OR preschool OR nursery OR kindergarten OR "early years") AND ("self-regulation" OR participation OR inclusion OR "social participation")*

All retrieved citations were exported to Zotero for deduplication. Searches identified 32 records, and 25 remained after deduplication. Title and abstract screening excluded 9 records, leaving 16 for full-text retrieval. After removing irretrievable full texts, 14 records remained for eligibility assessment.

3.2 Eligibility criteria

Eligibility criteria were established using the Sample, Phenomenon of Interest, Design, Evaluation, Research type (SPIDER) framework. To be eligible, studies were required to meet the criteria outlined in Table 1:

Table 1: SPIDER framework

Components of SPIDER	Definition
Sample	Autistic children aged 2–8 years in early childhood educational settings
Phenomenon of Interest	Solitary, parallel, or pretend play as a primary focus
Design	Empirical studies using quantitative, qualitative, or mixed methods designs
Evaluation	Self-regulation and participation
Research Type	Primary empirical research published in peer-reviewed journals between 2010 and 2026.

In addition to the core criteria, several exclusion criteria were implemented to ensure the conceptual and methodological relevance of included studies:

- 1) Non-autistic participants: studies focused exclusively on non-autistic populations, or included mixed samples where autistic children's data were not reported separately.
- 2) Non-pedagogical or play-based therapy: studies conducted in clinical, home, or therapeutic settings with no educational component.
- 3) Intervention not aligned with the review focus: studies that did not treat play as primary focus.
- 4) Outcome not aligned with the review focus: studies reported no reference to self-regulation or participation in any form.

5) Non-primary research: theoretical papers, literature reviews, opinion pieces, and grey literature.

Studies were not excluded on the grounds of deficit framing. Where included studies described autistic play using deficit language, this was noted and addressed during synthesis rather than used as a basis for exclusion. Each study was then evaluated against the predefined inclusion and exclusion criteria. At this stage, 8 records were excluded for the following reasons:

- 1) Outcomes were unrelated to self-regulation or participation: (n = 3)
- 2) Study design was not empirical primary research: (n = 3)
- 3) Sample did not involve autistic children: (n = 2)

Following this process, six empirical studies met the inclusion criteria and were included in the final synthesis. Although six studies represent a small evidence base, this is not uncommon in systematic reviews where eligibility criteria are conceptually precise rather than broadly inclusive (Petticrew & Roberts, 2006). The review therefore prioritises depth of synthesis over breadth of coverage. The study selection procedure is visually represented in the PRISMA flow diagram below.

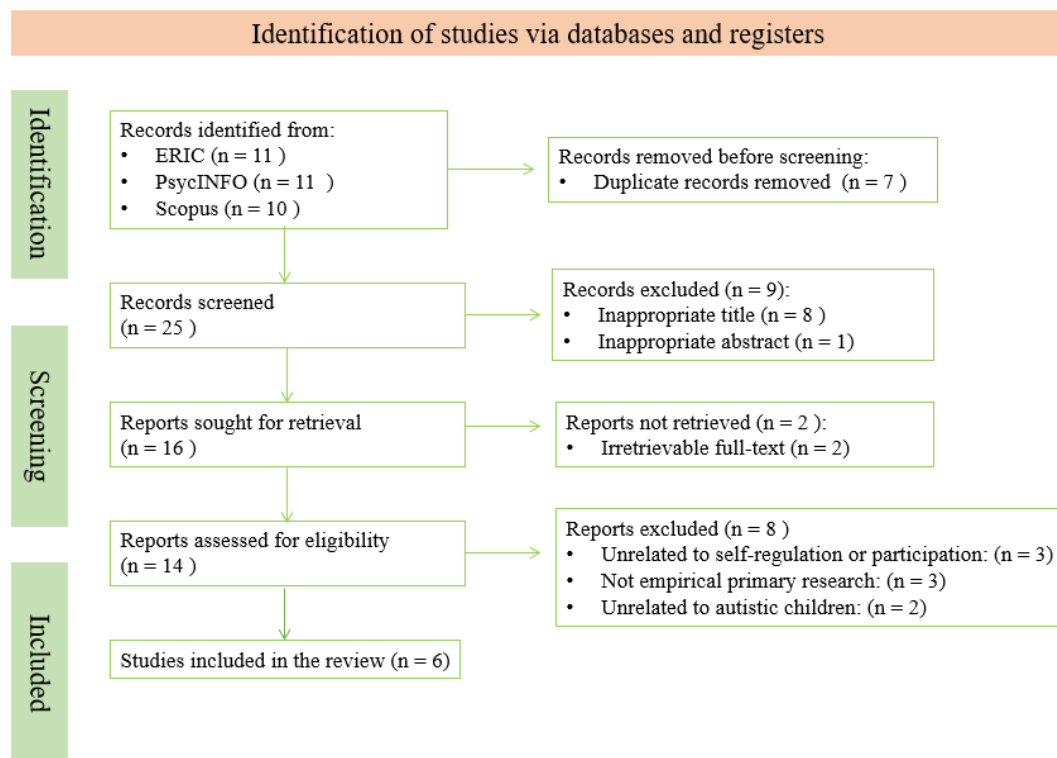


Figure 2: Flowchart of included studies in the review

3.3 Data Extraction

Data extraction was conducted using a pre-specified standardised form to ensure consistency and completeness across studies. For each study, data were recorded on: (1) first author and year of publication; (2) setting; (3) sample; (4) play form(s) studied; (5) outcome measurement; (6) key findings; and (7) contextual factors (see Table 3). Deficit framing was analysed separately across five dimensions and is presented in Table 3 at the start of the findings section. These dimensions enabled systematic comparison of how different play forms were operationalised and contextualised across studies, and critical examination of the ideological assumptions shaping how autistic children's play was described and targeted for intervention.

Rather than assigning each study a single global rating, deficit framing was analysed across five dimensions, reflecting the recognition that assumptions about autistic development can operate differently across language, intervention logic, measurement, theoretical orientation, and child positioning within the same study. Table 2 presents the coding framework applied to each included study.

Table 2: Deficit Framing Coding Framework

Dimension	Deficit-oriented	Transitional	Neurodiversity-affirming
Language	Play described as impaired, absent, or deficient	Neutral or descriptive language; difference implied but not named	Difference acknowledged as valid; strengths-based language used
Intervention aim	Normalisation toward neurotypical standards	Skill-building without explicit normalisation goal	Child-led, regulatory, or participation-focused outcomes
Measurement standard	Neurotypical peer behaviour as benchmark	Mixed or unstated benchmark	Autistic-referenced outcomes; child's own terms
Theoretical orientation	Deficit model; no engagement with neurodiversity	Implicit developmental framing; neurodiversity unaddressed	Explicit engagement with neurodiversity or strengths-based perspectives
Child positioning	Child as subject of intervention	Child as participant with limited agency	Child as active agent; voice and preference centred

Each study was coded independently across all five dimensions. This multi-dimensional approach acknowledges that deficit framing is rarely uniform: a study may use neutral descriptive language while still measuring outcomes against neurotypical norms or adopt a child-led intervention aim while remaining theoretically unengaged with neurodiversity. Capturing this variation at the level of individual dimensions, and not collapsing it into a single label, enabled more precise identification of where and how assumptions about autistic development shaped the research. Inter-rater reliability was established through independent coding of a randomly selected subset of studies (20%), with disagreements resolved through discussion until consensus was reached.

Table 3: Data Extraction Form

Study	Setting	Sample	Play form(s)	Outcome measures	Key findings	Contextual factors
Krier & Lambros (2021)	ASD-specific preschool classroom; S. California, USA	3 autistic children (2M, 1F); aged 3;10–5;4; limited verbal communication	Solitary & parallel play (primary DVs); common focus play; adapted Parten hierarchy	Participation via % time in play type; joint attention frequency; self-regulation not measured	Solitary play decreased; parallel & common focus increased; JA large effect sizes (PND=100%)	Cross-age peer interventionists; outside regular routine; low IOA (54–56%).
Hume et al. (2019)	23 LEAP-model inclusive preschool classrooms; FL, CO & MN, USA	53 autistic preschoolers (79% male); mean age 3.93 yrs; ADOS-confirmed	Pretend/sociodramatic play as primary area; CASPER III at 10-s intervals	Peer social interaction (primary); positive/negative behaviours; odds ratios; Bonferroni-adjusted $p < .002$	3% of intervals had peer interaction; pretend play 5× more likely than creative arts; small group 3× more likely; adult involvement halved odds (OR=0.46)	High-fidelity LEAP classrooms only; 1 time-point.
Panganiban et al. (2022)	12 urban public-school special ed	49 autistic students (95% male); ages 3–5; ADOS-2	JASPER strategies; symbolic/pretend play as	Peer engagement (primary); jointly on task	JASPER: 64% peer-engaged vs 37% control (OR=5.27); higher teacher	Teacher coaching (avg 28hrs); rolling recruitment.

	preschool classrooms; Los Angeles, USA	confirmed; 81% Hispanic/Latinx; moderate-severe disability	mechanism; routine-based structured activities	(secondary); teacher JASPER implementation; IJA & IBR; language via MSEL	fidelity → higher engagement; no group differences for IJA, IBR or language	
Locke et al. (2016)	7 public elementary schools; inclusive classrooms (80%+); playground recess; Los Angeles, USA	51 autistic children (42M, 9F); mean age 8.12 yrs; IQ≥65; ADOS-2; 51 matched TD peers	Solitary/unengaged play; joint engagement; social network centrality; POPE timed-interval coding	% time solitary & jointly engaged; initiation & response rates	~30% recess solitary vs ~9% TD (d=0.94); ~40% jointly engaged vs ~70% TD (d=1.04); 9 autistic children at/above TD mean; no correlation with age, IQ, or ADOS severity	Naturalistic observation only. Deficit framing: transitional — TD benchmark throughout; discussion acknowledges solitary play preference; intervention should not be automatic
Briet et al. (2023)	Two ordinary schools with ASD units; western France; quiet room adjacent to classroom	7 minimally verbal autistic children (6M, 1F); ages 3;2–8;9; all comorbid ID (DQ<70); 14 TD peer coaches	Functional/symbolic & parallel/interactive play (primary DVs); IPG model; Tau-U effect sizes	% time functional/symbolic play; % time parallel & interactive; motor imitation rate per minute	4/7 increased functional/symbolic play (Tau-U=0.73); 6/7 improved interactive play (Tau-U=0.93); maintenance variable (3–4/7); peer coaching quality moderated outcomes	Neutral room; single-sex groupings; peer coaching moderated outcomes.
Fedewa et al. (2025)	Private inclusive preschool; southeastern USA; playground for generalisation on probes	4 autistic children (3M/1F); ages 4–6; ADOS-2; comorbidities incl. ADHD; all had IEP play goals; 4 TD male peers	Solitary, parallel & interactive play (DVs); verbal initiations; 10-s MTS; concurrent multiple baseline across 4 dyads	% intervals in each play type; verbal initiations; SMD effect sizes; generalisation & maintenance probes	Interactive play increased all 4 dyads (SMD=2.78–5.62); solitary play decreased; gains maintained 3- & 6-week; Sara (Dyad 4): parallel play emerged before interactive play	Cascading coaching; child-led play menu; COVID-19 gap for Dyad 3.

Note. DVs = dependent variables; TD = typically developing; IOA = interobserver agreement; ADOS = Autism Diagnostic Observation Schedule; MSEL = Mullen Scales of Early Learning; IJA = initiating joint attention; IBR = initiating behavioural requests; IPG = Integrated Play Group; POPE = Playground Observation of Peer Engagement; MTS = momentary time sampling; SMD = standardised mean difference; JASPER = Joint Attention, Symbolic Play, Engagement and Regulation; ID = intellectual disability.

3.4 Quality Appraisal

Given that the included studies varied in quantitative design, quality appraisal was conducted using the Mixed Methods Appraisal Tool (Hong et al., 2018) (MMAT). The MMAT was selected because it accommodates methodological heterogeneity within a single framework, applying design-specific criteria while enabling consistent comparison across studies.

4. Findings

4.1 Overview of Included Studies

A total of six studies met the inclusion criteria, forming a small but methodologically heterogeneous evidence base, with sample sizes ranging from 3 to 53 participants. All included studies employed quantitative methods. The absence of qualitative studies in the final sample is itself notable, suggesting that autistic children's own perspectives and experiences of play remain largely unrepresented in the educational literature meeting these criteria (Brewer et al., 2024; Pritchard-Rowe et al., 2023).

Five of the six studies were conducted in the United States, with one study based in western France (Briet et al., 2023), limiting the geographic diversity of the evidence base. Settings included ASD-specific special day classrooms, inclusive general education classrooms, and LEAP model preschool programmes, with one study conducting observations during recess on school playgrounds (Locke et al., 2016). Deficit framing was present across all six studies, though to varying degrees. Table 4 provides an overview of how deficit framing operates across the included studies, coded along five dimensions outlined in Table 2. No study was coded as neurodiversity-affirming across any dimension, a pattern that is itself a central finding of this review and one that shapes the interpretation of evidence presented throughout this section.

Table 4: Deficit framing analysis of included studies across five dimensions

Study	Language	Intervention aim	Measurement standard	Theoretical orientation	Child positioning
Krier & Lambros (2021)	Deficit-oriented	Normalisation	Neurotypical benchmark	Deficit model	Subject of intervention
Hume et al. (2019)	Transitional	Skill-building	Mixed/unstated	Neurodiversity unaddressed	Limited agency
Panganiban et al. (2022)	Transitional	Skill-building	Mixed/unstated	Deficit model	Limited agency
Locke et al. (2016)	Transitional	Normalisation (implicit)	Neurotypical benchmark	Neurodiversity unaddressed	Preferences noted
Briet et al. (2023)	Deficit-oriented	Normalisation	Neurotypical benchmark	Deficit model	Subject of intervention
Fedewa et al. (2025)	Transitional	Normalisation (implicit)	Neurotypical benchmark	Neurodiversity unaddressed	Preferences noted

4.2 Pretend Play

Three studies examined pretend or symbolic play as a primary focus or intervention mechanism (Briet et al., 2023; Hume et al., 2019; Panganiban et al., 2022). Across all three, pretend play functioned in the literature as a participation-focused intervention context, a setting in which autistic children could be supported to engage more like their typically developing peers. Notably, all three framed autistic differences as targets for intervention rather than as valid alternative forms of engagement.

4.3 Social Ecology

The variable most consistently shaping participation outcomes across all three studies was the social ecology surrounding the child rather than pretend play itself. Hume et al. (2019) established this pattern at the broadest level. Contextual arrangements, specifically peer group size and adult proximity, determined whether pretend play areas yielded social interaction at all. Direct adult involvement halved interaction odds regardless of the play context (OR=0.46).

Panganiban et al. (2022) extended this finding into an intervention context, showing that even when symbolic play was embedded as a core mechanism, it was teacher implementation fidelity rather than

the play content itself that predicted peer engagement outcomes (OR=1.06 per fidelity unit). Briet et al. (2023) refined this further still, demonstrating that within individual play sessions, the quality of peer coaching, not the play form, was the primary moderator of whether functional and symbolic play gains occurred.

4.4 Conditional Gains

If pretend play were truly the active ingredient, gains would be expected to be stronger and more lasting. Across all three studies, however, the evidence tells a different story. Hume et al. (2019) found peer social interaction in just 3% of observed intervals, even in LEAP classrooms, which represent near-optimal conditions for inclusive education. If interaction was this rare even under optimal conditions, it is unlikely to be more common in everyday classrooms.

Panganiban et al. (2022) reported strong peer engagement gains at exit (OR=5.27), yet children's joint attention and language did not improve alongside them. This suggests the gains were specific to the intervention context rather than reflecting genuine broader development. Briet et al. (2023) extend this finding in an important direction: gains do not spread across time either. The study found that while most children improved during the intervention, only three to four of seven participants held onto their improvements at follow-up, and maintenance appeared to depend on the same peer coaching quality that had driven initial progress. These findings reinforce the pattern identified in the above section: where ecological conditions were strong, participation improved; where they weakened or were withdrawn, gains narrowed or disappeared.

4.5 Deficit Framing

A third pattern emerging across all three studies is that deficit framing was embedded in the design of outcome measures rather than confined to descriptive language. Across all three studies, what counted as improvement was defined by neurotypical standards: more time in sociodramatic play (Hume et al., 2019), higher peer engagement rates (Panganiban et al., 2022), and increased functional and symbolic play (Briet et al., 2023). The framing converged on the same endpoint: autistic pretend play differences were problems to be corrected, not variations to be understood.

This pattern held even where surface language appeared neutral. Hume et al. (2019) and Panganiban et al. (2022) were coded as transitional on language and child positioning; neither study used overtly impairment-focused vocabulary, and both acknowledged environmental and contextual factors. Yet both were coded as deficit-oriented on measurement standard and theoretical orientation: the assumption that autistic children should play more like neurotypical children remained unexamined in the design and discussion of either study. Briet et al. (2023) presented the most consistent deficit orientation across all five dimensions, describing participants through impairment-focused language, framing the intervention as targeting the most severely affected children, and positioning participants as subjects of remediation throughout.

4.6 Solitary and Parallel Play

Three studies focused on solitary and parallel play (Fedewa et al., 2025; Krier & Lambros, 2021; Locke et al., 2016). They are grouped together here because all three studies treated solitary and parallel play not as distinct phenomena but as adjacent positions on a shared developmental continuum, with parallel play occupying an intermediate point between solitary engagement and fuller social interaction. Progress, in each case, meant moving away from solitary, toward interactive play. All three studies

therefore treated solitary play as a behaviour to be reduced and replaced with more socially complex forms. Yet within this shared deficit logic, each study found something the intervention logic did not anticipate: that solitary and parallel play are not obstacles to participation but conditions that make it possible.

4.7 Participation as Target

Across all three studies, the intervention logic was the same: solitary play was the starting point to move away from, and more socially complex play was the destination to move toward. Locke et al. (2016) established what was being moved away from. Across 51 autistic children on inclusive school playgrounds, solitary play occupied approximately 30% of recess time compared to 9% for typically developing peers, confirming that solitary play is the more naturally preferred mode for autistic children in school settings.

Krier and Lambros (2021) then demonstrated that this preference could be redirected through intervention: targeting solitary play for reduction and parallel and common focus play for increase, the peer-mediated approach worked as designed, with joint attention showing large effect sizes ($PND = 100\%$) alongside the play shifts. Fedewa et al. (2025) extended this further, showing that gains were not only achievable but durable. Interactive play increased across all four dyads with large-to-very-large effect sizes ($SMD = 2.78\text{--}5.62$), generalising to playground settings and maintained at three- and six-week follow-up.

4.8 Enabling Conditions

The participation-as-target logic underlying all three studies assumes that solitary play is the problem and interactive play is the solution. Yet the same studies contain evidence that these play forms may function differently than the intervention logic assumes, not as obstacles to participation, but as conditions that make participation possible.

If solitary play were straightforwardly a deficit, one would expect severity measures to predict participation outcomes. Locke et al. (2016)'s naturalistic data, however, revealed considerable within-group heterogeneity: nine autistic children met or exceeded the typically developing peer mean for joint engagement, and participation patterns showed no correlation with age, IQ, or ADOS severity. The second comes from Fedewa et al. (2025), whose Dyad 4 participant, Sara, showed a distinct sequential pattern that the other dyads did not: parallel play increased substantially before interactive play emerged. This trajectory was not targeted by the intervention, but it arose naturally within the data.

4.9 Deficit Framing

In the solitary and parallel play studies, the reduction of solitary play was treated as a goal that required no justification. The neurotypical developmental hierarchy on which it rested was never questioned. Across all three studies, measurement standard was coded as deficit-oriented: improvement was defined as movement away from solitary and parallel play toward interactive engagement with neurotypical peers, with no autistic-referenced outcome considered.

This assumption operated most consistently in Krier and Lambros (2021), which was coded as deficit-oriented across all five dimensions. Solitary play was framed as a deficit to be corrected throughout, impairment-focused language was central rather than incidental, and the child was positioned as a

subject of intervention with no acknowledgement of the regulatory or developmental functions that solitary play may serve.

Fedewa et al. (2024) and Locke et al. (2016) presented a more complex picture, coded as transitional on language and child positioning; both acknowledged, in their discussion sections, what their designs had already assumed away. Fedewa et al. (2024) recognised the emotional regulation value of solitary and parallel play for neurodiverse children; Locke et al. (2016) stated explicitly that some autistic children may prefer solitary play and should not automatically receive intervention, drawing a deliberate distinction between solitary play and solitude. Yet in both cases, theoretical orientation and intervention aim remained deficit-oriented — neither acknowledgement reached the outcome measures, and neurotypical peer behaviour remained the organising benchmark throughout.

5. Discussion

Across six included studies, two patterns emerged consistently. First, pretend play was consistently framed as a participation-focused intervention context. It is a setting in which autistic children are supported to engage more like their typically developing peers. Second, solitary and parallel play were consistently positioned as deficit targets rather than as developmentally meaningful activities in their own right. These patterns suggest that two assumptions ran through every study: that neurotypical participation patterns are the appropriate standard, and that autistic play differences are problems requiring correction. The cumulative effect of these assumptions is a measurement gap in which the regulatory functions of all three play forms are rendered empirically invisible before any data are collected.

The findings extend previous work on pretend play and participation (Humphrey & Symes, 2011; Messiou, 2006), showing that the peer ecology appeared to drive outcomes instead of the play form itself. Going beyond the existing critiques of deficit framing (Miller, 2017; Milton, 2012), the more significant contribution of this review is to show that deficit assumptions are not merely present in the field's language, but are built into its measurement design. As a result, evidence that solitary and parallel play may serve as enabling conditions for participation was largely unacknowledged.

5.1 The Measurement Gap

Pretend play has long been theorised as a context for developing self-regulation in previous literature. Drawing on Vygotsky (1933/2016), its educational value lies in sustaining an “as-if” frame, inhibiting reality-based responses, and internalising role-based rules. Thibodeau et al. (2016) found inhibitory control gains in a fantastical pretend play randomised controlled trial (RCT), and White and Carlson (2021) demonstrated gains following story-based pretending regardless of fantasy content, even in three-year-olds. This evidence base, however, is built almost entirely on neurotypical children. And crucially, the studies included in this review do not extend it to autistic children. They reproduce the gap rather than address it.

For autistic children, none of these studies examined whether play supported self-regulation. Their outcomes were predominantly defined by proximity to typically developing behaviour, such as peer interaction rates, joint engagement time, or imitation frequency. All three play forms were evaluated through the same lens, specifically observable social behaviour benchmarked against neurotypical standards. This consistent pattern across all six studies suggests that the regulatory dimension of play has been structurally displaced, not necessarily by intention, but as a consequence of assumptions about what matters that have gone unchallenged.

5.2 Pretend Play as Context

The pretend play findings on autistic children are consistent with Milton's (2012) double empathy problem. Crompton et al. (2020) support this empirically, showing autistic dyads transferred information as effectively as non-autistic dyads, while mixed dyads showed poorer transfer and lower rapport. The ecological conditions, including small peer groups, reduced adult involvement and high coaching quality, may work precisely because they reduce neurotype mismatch, not because they optimise pretend play as a developmental mechanism. This reframing clarifies why gains were narrow and did not generalise. If participation depends on carefully engineered ecological conditions rather than on pretend play itself, removing those conditions produces exactly the pattern observed, namely gains that do not spread across domains or hold over time. It follows that the peer ecology, not the play form, is the active ingredient in producing participation outcomes.

5.3 Solitary and Parallel Play as Enabling Ecology

The solitary and parallel play findings invite a different reading than the studies themselves adopt. Locke et al.'s (2016) heterogeneity finding is consistent with Heasman et al.'s (2024) qualitative account, in which autistic participants describe solitary play as a flow state. It is characterised by deep absorption in which autistic children match play to their attentional focus, sensory needs, and pacing. On this account, high rates of solitary play reflect a regulatory strategy rather than a social inability. Pritchard-Rowe et al. (2024), in a participatory study with autistic adults, develop this further. Autistic adults describe solitary play as deliberately recuperative which could restore the resources needed to tolerate the demands of social play. Reducing solitary play could remove a coping resource that autistic children rely on before engaging in social play.

Sara's sequential pattern from Fedewa et al. (2024) extends this argument to parallel play. Consistent with Bronfenbrenner and Morris's (1998) proximal process account, parallel play provides repeated and low-demand interactions between the child, peers and objects that gradually increase in complexity. In Bandura's (1977) terms, it supports modelling through processes of attention, retention, and reproduction, while keeping interaction optional. Sara's data lend empirical weight to this account: the progression from parallel to interactive social play arose organically, without being directly targeted or engineered.

Solitary play restores the regulatory resources that social interaction depletes, while parallel play builds the familiarity and low-demand exposure that makes interactive play feel possible. Neither is simply a less developed version of pretend play. They are better understood as an interdependent enabling ecology that make pretend play accessible rather than obstacles to be eliminated. Intervening to remove them, as the included studies consistently did, may therefore undermine the very participation outcomes the interventions were designed to produce.

5.4 Strengths, Limitations, and Implications

A major strength of this review lies in its critical attention to neurotypical assumptions underlying the studies on autistic children. Its theory-informed design enabled a more nuanced synthesis, allowing this review to assess not only what the included studies found, but how their measurement choices shaped what could be found at all. By treating deficit framing as an analytical object rather than a neutral feature of the literature, patterns that would otherwise remain invisible, particularly the structural

displacement of regulatory outcomes across all three play forms, became available for critical examination.

The most significant limitation is the small evidence base. Six studies is a narrow foundation for structural claims, and the findings should be read as hypothesis-generating rather than conclusive. The geographic concentration (five of six studies from the United States) further limits transferability, particularly to early childhood education systems with different inclusion policies, pedagogical traditions, or resource structures. The absence of qualitative studies in the final sample is also notable. Autistic children's own experiences of these play forms remain entirely unrepresented, yet this is precisely the kind of evidence that would most directly test the enabling ecology argument developed in the section above.

The implications follow directly from the limitations. For researchers, the most pressing need is not more intervention studies targeting solitary play for reduction, but studies that examine its regulatory dimensions, ideally using physiological or self-report measures alongside behavioural ones, and incorporating autistic children's own accounts (Pui & Tang, 2025). For practitioners and early childhood educators, the findings suggest caution: redirecting solitary and parallel play during the early years may remove regulatory resources that autistic children need before social participation becomes viable. Supporting participation may require protecting these play forms as a foundation, not replacing them.

6. Conclusion

This review set out to examine how solitary, parallel, and pretend play are interpreted in the empirical literature on autistic children in early childhood education, and what assumptions about autistic development underpin those interpretations. Across six studies, a consistent pattern emerged: all three play forms were evaluated through the lens of neurotypical participation standards, and the regulatory functions of play were structurally absent from the outcome measures before data collection began.

The findings do not suggest that the included studies were without value. Several produced meaningful evidence about the conditions under which autistic children engage in educational settings. What they collectively reveal, however, is that the questions being asked have been too narrow. By framing solitary and parallel play as deficits to be corrected and pretend play as a vehicle for social normalisation, the literature has produced evidence about participation performance while leaving the developmental foundations of that participation largely unexamined.

The enabling ecology argument developed in this review offers a different starting point. If solitary play restores regulatory resources and parallel play builds the low-demand familiarity that makes social engagement possible, then intervening to remove these play forms may work against the very outcomes practitioners are trying to support. This is not a call to abandon intervention, but to reconsider what intervention should be for. Future research needs outcome measures that can capture the regulatory dimensions of play alongside its social dimensions, and study designs that treat autistic children's play preferences as starting points for inquiry rather than problems requiring redirection. Including autistic children's own accounts of their play experiences would be a meaningful step toward that goal.

References

- [1] Armstrong, T. (2010). *Neurodiversity: Discovering the extraordinary gifts of autism, ADHD, dyslexia, and other brain differences*. Da Capo Lifelong.
- [2] Bandura, A. (1977). *Social learning theory*. Prentice Hall.

- [3] Blair, C., & Raver, C. C. (2015). School readiness and self-regulation: A developmental psychobiological approach. *Annual Review of Psychology*, 66(1), 711–731. <http://doi.org/10.1146/annurev-psych-010814-01522/>
- [4] Bredikyte, M., & Brandisauskiene, A. (2023). Pretend play as the space for development of self-regulation: Cultural-historical perspective. *Frontiers in Psychology*, 14, Article 1186512. <http://doi.org/10.3389/fpsyg.2023.1186512>
- [5] Briet, G., Le Maner-Idrissi, G., Seveno, T., Le Marec, O., & Le Sourn-Bissaoui, S. (2023). Peer mediation in play settings for minimally verbal students with autism spectrum disorder. *Autism & Developmental Language Impairments*, 8, Article 23969415231204837. <http://doi.org/10.1177/23969415231204837>
- [6] Bronfenbrenner, U., & Morris, P. A. (1998). The ecology of developmental processes. In W. Damon (Series Ed.) & R. M. Lerner (Vol. Ed.), *Handbook of child psychology: Vol. 1. Theoretical models of human development* (5th ed., pp. 993–1028). Wiley.
- [7] Crompton, C. J., Ropar, D., Evans-Williams, C. V. M., Flynn, E. G., & Fletcher-Watson, S. (2020). Autistic peer-to-peer information transfer is highly effective. *Autism*, 24(7), 1704–1712. <https://doi.org/10.1177/1362361320919286>
- [8] Colliver, Y., Harrison, L. J., Brown, J. E., & Humburg, P. (2022). Free play predicts self-regulation years later: Longitudinal evidence from a large Australian sample of toddlers and preschoolers. *Early Childhood Research Quarterly*, 59, 148–161. <https://doi.org/10.1016/j.ecresq.2021.11.011>
- [9] Fedewa, M. P., Watkins, L., Carden, K., et al. (2025). Effects of a teacher-facilitated peer-mediated intervention on social play of preschoolers with autism. *Journal of Autism and Developmental Disorders*, 55, 1595–1614. <https://doi.org/10.1007/s10803-024-06320-7>
- [10] Heasman, B., Williams, G., Charura, D., Hamilton, L. G., Milton, D., & Murray, F. (2024). Towards autistic flow theory: A non-pathologising conceptual approach. *Journal for the Theory of Social Behaviour*, 54(4), 469–497. <https://doi.org/10.1111/jtsb.12427>
- [11] Hong, Q. N., Fàbregues, S., Bartlett, G., Boardman, F., Cargo, M., Dagenais, P., & Pluye, P. (2018). The Mixed Methods Appraisal Tool (MMAT) version 2018 for information professionals and researchers. *Education for Information*, 34(4), 285–291. <https://doi.org/10.3233/EFI-180221>
- [12] Hume, K., Sam, A., Mokrova, I., Reszka, S., & Boyd, B. A. (2019). Facilitating social interactions with peers in specialised early childhood settings for young children with ASD. *School Psychology Review*, 48(2), 123–132. <https://doi.org/10.17105/SPR-2017-0134.V48-2>
- [13] Humphrey, N., & Symes, W. (2011). Peer interaction patterns among adolescents with autistic spectrum disorders in mainstream school settings. *Autism*, 15(4), 397–419. <https://doi.org/10.1177/1362361310387804>
- [14] Krier, J., & Lambros, K. M. (2021). Increasing joint attention and social play through peer-mediated intervention: A single case design. *Psychology in the Schools*, 58(3), 494–514. <https://doi.org/10.1002/pits.22460>
- [15] Locke, J., Shih, W., Kretzmann, M., & Kasari, C. (2016). Examining playground engagement between elementary school children with and without autism spectrum disorder. *Autism*, 20(6), 653–662. <https://doi.org/10.1177/1362361315599030>
- [16] Maenner, M. J., Warren, Z., Williams, A. R., Amoakohene, E., Bakian, A. V., Bilder, D. A., Durkin, M. S., Fitzgerald, R. T., Furnier, S. M., Hughes, M. M., Ladd-Acosta, C. M., McArthur, D., Pas, E. T., Salinas, A., Vehorn, A., Williams, S., Esler, A., . . . Shaw, K. A. (2023). Prevalence and characteristics of autism spectrum disorder among children aged 8 years — Autism and Developmental Disabilities Monitoring Network, 11 sites, United States, 2020. *MMWR Surveillance Summaries*, 72(2), 1–14. <https://doi.org/10.15585/mmwr.ss7202a1>
- [17] Messiou, K. (2006). Understanding marginalisation in education: The voice of children. *European Journal of Psychology of Education*, 21(3), 305–318. <https://doi.org/10.1007/BF03173418>

- [18] Milton, D. E. M. (2017). *A mismatch of salience: Explorations of the nature of autism from theory to practice*. Pavilion Publishing and Media.
- [19] Milton, D. E. M. (2012). On the ontological status of autism: The "double empathy problem." *Disability & Society*, 27(6), 883–887. <https://doi.org/10.1080/09687599.2012.710008>
- [20] Panganiban, J. L., Shire, S. Y., Williams, J., & Kasari, C. (2022). Supporting peer engagement for low-income preschool students with autism spectrum disorder during academic instruction: A pilot randomised trial. *Autism*, 26(8), 2175–2187. <https://doi.org/10.1177/13623613211072593>
- [21] Parten, M. B. (1932). Social participation among pre-school children. *The Journal of Abnormal and Social Psychology*, 27(3), 243–269. <https://doi.org/10.1037/h0074524>
- [22] Petticrew, M., & Roberts, H. (2006). *Systematic reviews in the social sciences: A practical guide*. Blackwell.
- [23] Pritchard-Rowe, E., de Lemos, C., Howard, K., & Gibson, J. (2024). Diversity in autistic play: Autistic adults' experiences. *Autism in Adulthood*, 6(2), 218–228. <https://doi.org/10.1089/aut.2023.0008>
- [24] Pui, W. S.W., Tang, Y. & Tang, P.I. (2025). Guided play as context for teacher practice: exploring young children's leadership development in Macau. *Polish Journal of Educational Studies*, 77(1), 163–185. <https://doi.org/10.2478/poljes-2025-0013>
- [25] Singer, J. (1999). "Why can't you be normal for once in your life?" From a "problem with no name" to the emergence of a new category of difference. In M. Corker & S. French (Eds.), *Disability discourse* (pp. 59–67). Open University Press.
- [26] Thibodeau, R. B., Gilpin, A. T., Brown, M. M., & Meyer, B. A. (2016). The effects of fantastical pretend-play on the development of executive functions: An intervention study. *Journal of Experimental Child Psychology*, 145, 120–138. <https://doi.org/10.1016/j.jecp.2016.01.001>
- [27] White, R. E., & Carlson, S. M. (2021). Pretending with realistic and fantastical stories facilitates executive function in 3-year-old children. *Journal of Experimental Child Psychology*, 207, Article 105090. <https://doi.org/10.1016/j.jecp.2021.105090>
- [28] Vygotsky, L. S. (2016). Play and its role in the mental development of the child. *International Research in Early Childhood Education*, 7(2), 3–25. (Original work presented 1933)
- [29] Zelazo, P. D., & Carlson, S. M. (2012). Hot and cool executive function in childhood and adolescence: Development and plasticity. *Child Development Perspectives*, 6(4), 354–360. <https://doi.org/10.1111/j.1750-8606.2012.00246.x>