Adaptation of Preschool Children with Special Educational Needs to an Inclusive Environment through Play: A Systematic Review

Rysty Kerimbayeva, Aigul Syzdykbayeva,
Makhabbat Ospanbayeva, Yulduz Iminova

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Rysty Kerimbayeva — Candidate of Sciences in Pedagogy, Associate Professor at the Department of Social Psychology, M.Kh. Dulaty Taraz University. E-mail: risti1971@mail.ru. ORCID: https://orcid.org/0000-0003-0430-1831

Aigul Syzdykbayeva — PhD, Associate Professor at the Department of Pedagogy and Methods of Primary Education, Kazakh National Women's Pedagogical University. Address: 99 Aiteke bi St., 050010 Almaty, Republic of Kazakhstan. E-mail: syzdykbaeva.a@qyzpu.edu.kz. ORCID: https://orcid.org/0000-0003-1356-2988 (corresponding author)

Makhabbat Ospanbayeva — Candidate of Sciences in Psychology, Associate Professor at the Department of Educational Psychology, M.Kh. Dulaty Taraz University. E-mail: Omachabbat@mail.ru. ORCID: https://orcid.org/0000-0002-8941-3172

Yulduz Iminova — PhD Doctoral Student, Educational Program 8D01201 — Preschool Education and Upbringing, Abai Kazakh National Pedagogical University. E-mail: iminova.yulduza@mail.ru. ORCID: https://orcid.org/0009-0006-9588-7522

Abstract

The adaptation of preschool children with special educational needs to an inclusive educational environment represents a complex process of gradual adjustment of children with developmental disabilities to conditions of joint learning and upbringing with neurotypical peers. Adaptive mechanisms in children with special educational needs are characterised by increased complexity and require specialised pedagogical strategies that account for individual characteristics of cognitive, sensory, and socio-emotional development. The purpose of the research is to investigate the effectiveness of using play as a means of adapting preschool children with special educational needs to an inclusive educational environment. The research methodology is based on PRISMA principles with a search of publications in Web of Science, Scopus, and Google Scholar databases using key descriptors "kindergarten adaptation", "preschoolers with special educational needs", "inclusive environment", "play-based interventions" for the period 1975–2025. Strict inclusion and exclusion criteria were applied to ensure high quality of selected studies. From 2,880 initially identified records, 7 studies meeting the established relevance criteria were included in the final analysis. The results demonstrate consistent support for the effectiveness of play interventions for children with attention deficit hyperactivity disorder, severe speech impairments, and visual impairments. The greatest adaptive effect is achieved through socially-mediated play activities involving neurotypical peers and significant adults, promoting natural formation of inclusive relationships and mutual understanding within the children's group.

Keywords kindergarten adaptation, preschoolers with special educational needs, inclusive environment, play-based interventions

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Inclusive education in the 21st century has transformed from an alternative approach into a dominant educational paradigm based on the principle of universal design for learning and ensuring equality of educational opportunities [Graham, 2020; Jardinez, Natividad, 2024]. UNESCO emphasises that every learner has equal value, yet millions of people worldwide continue to be excluded from education for various reasons, disability being one of them [UNESCO, 2024]. According to the UNESCO Global Education Monitoring Report, 258 million children and young people are completely excluded from education, and in low- and middle-income countries, children with disabilities are 19% less likely to achieve minimum reading proficiency levels than those without disabilities [UNESCO, 2020].

Statistical data [Sun et al., 2024; Peng, Long, Su, 2024] demonstrate a consistent trend towards increasing numbers of children with special educational needs in preschool educational institutions across various regions of the world. According to data from psycho-pedagogical councelling, in Kazakhstan as of January 1, 2024, there are 203,717 children with special educational needs from birth to 18 years of age, distributed across developmental stages as follows: early childhood (birth to 3 years old) — 9,556 children; preschool age (3 to 5 years old) — 56,727 children; and school age (6 to 18 years old) — 137,434 children. The number of children with disabilities under 18 constitutes 109,500, representing 15.1% of the total population with disabilities and 1.6% of the country's child population (as of January 1, 2024, Kazakhstan has 6,841,527 children). Analytical data demonstrates a concerning upward trend in childhood disability, with an 11.4% increase over the three-year period: from 98,254 children in 2021 to 104,260 in 2022, and 109,496 in 2023. The age distribution within this population shows predominance of school-age children (7 to 18 years old), who account for 74,928 children or 68.4% of all children with disabilities[1]. Out of more than 47,000 preschool-age children with special educational needs, 9,709 children attend special kindergartens and special classes in preschool institutions, while 16,305 children attend regular groups in preschool institutions[2]. These figures show that

[1] Concept of Inclusive Policy in the Republic of Kazakhstan for 2025–2030.

[2] Government of the Republic of Kazakhstan (2023) Concept for the development of preschool, secondary, technical and vocational education of the Republic of

a significant proportion of children with SEN are currently being integrated into inclusive educational environments at the preschool level.

The process of adaptation of children with special educational needs to an inclusive preschool environment is characterised by a complex of interrelated difficulties. According to Kazakhstani legislation, children with special educational needs are divided into two groups: those with mental or physical developmental disorders and children without such disorders whose educational needs are determined by socio-psychological factors, including difficulties in adaptation to the sociocultural environment[3].

UNESCO notes that educational systems often fail to consider special needs of learners, and approximately 40% of countries still do not provide teacher training on inclusion [UNESCO, 2024]. Communication barriers manifest in limitations of verbal and non-verbal interaction, behavioural disorders include maladaptive reactions and underdeveloped socially acceptable forms of behaviour, whilst emotional barriers are characterised by heightened anxiety and difficulties in forming positive self-identification.

The research problem lies in the objective contradiction between the growing need for evidence-based approaches to the adaptation of preschool children with special educational needs to an inclusive environment and the insufficiency of systematic analysis of global experience in applying play-based practices in this field. Despite the fact that the Salamanca Statement of 1994 laid the foundations for inclusive education and called for the creation of schools that accept all children regardless of their characteristics [UNESCO, 2019], there is a lack of profound understanding of the mechanisms through which various types of play activities impact the processes of social, emotional, and cognitive adaptation of children with SEN in diverse sociocultural and institutional contexts on an international scale.

The above leads us to the following research question: What play-based practices demonstrate effectiveness in adapting preschool children with special educational needs to an inclusive environment?

1. Literature Review

1.1. Theoretical Foundations for Studying Children with Special Educational Needs

Within the contemporary scientific paradigm of special pedagogy and psychology, children with special educational needs (SEN) are regarded as a heterogeneous population of learners encompassing various nosological groups with developmental disorders [Dankowska-Kosman, 2025]. Each nosological group of children with SEN is characterised by specific dysontogenetic features that determine the

Kazakhstan for 2023–2029: https://adilet.zan.kz/rus/docs/P2300000249 (accessed 06.05.2926).

[3] Ministry of Education and Science of the Republic of Kazakhstan (2022) On approval of rules and programmes for assessing special educational needs: https://adilet.zan.kz/rus/docs/V2200026618 (accessed 06.05.2926).

necessity for individualised approaches along with specialised psychological and pedagogical support.

Children with speech and language disorders constitute a significant cohort amongst learners with SEN. Epidemiological studies estimate the prevalence of such disorders among five-year-old children to be around 7% [Law et al., 2000]. In the United States, according to data from the Centers for Disease Control and Prevention (CDC), 7.7% of children aged 3–17 years had a communication disorder in 2012, with speech and language impairments being the most commonly reported types [Black, Vahratian, Hoffman, 2015]. A more recent overview by the National Institutes of Health indicates that these disorders often co-occur, highlighting their complexity[4]. In the United Kingdom, the situation is similarly acute: a record 1.9 million school-aged children are behind in their speech and language development, the highest number ever recorded according to the leading charity in this field[5].

Research findings by [Harding et al., 2024] demonstrate that this category of children exhibits dysarthric disorders of sound production, impairments in lexical and grammatical language structures and coherent speech, which significantly impacts their communicative competence and social adaptation processes. Priority research directions [Wallace et al., 2015; Usha, Alex, 2023] are focused on developing objective diagnostic instruments for assessing speech dysfunctions in preschool children.

Learners with sensory hearing impairments experience deficits in perceiving acoustic information, which affects not only communicative development but also the formation of cognitive function [Nikolaeva, 2024]. Experimental studies [Lam et al., 2019] confirm the necessity of creating specialised educational environments to ensure comprehensive cognitive development of children in this nosological group during the preschool period.

Features of dysontogenesis in children with visual impairments were analysed by Isitan and Okyar [2024], who established specific patterns of phonological awareness formation and auditory speech comprehension skills in blind and visually impaired children during the preschool period. Farrenkopf, Howze, and Sowell [1995] and Futterer et al. [2023] emphasise the need to develop compensatory perception mechanisms and alternative information acquisition modalities for successful socio-educational integration.

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[4] National Institute on Deafness and Other Communication Disorders (2023) Quick statistics about voice, speech, language. U.S. Department of Health and Human Services: https://www.nidcd.nih.gov/health/statistics/quick-statistics-voice-speech-language (accessed 07.05.2026).

[5] Speech and Language UK (2023) The 1.9 million children behind with talking and understanding words: Voice of the nation's children 2023: https://speechandlanguage.org.uk/media/5395/sluk-state-of-the-nation-report-2023-final.pdf accessed 07.05.2026).

Considerable attention in contemporary research literature is paid to studying children with autism spectrum disorders (ASD). Research by Ko, Lin, Lin [2024] demonstrates a correlational between executive function development and the severity of autistic symptomatology in preschoolers with ASD. These children exhibit qualitative deficits in social interaction and limited, stereotypical behavioural patterns, which determines the necessity of applying specific methodological approaches to their education and upbringing.

Children with developmental delays, as noted by Indiaminova [2025], demonstrate a slowed pace of psychological ontogenesis and heterochrony in the development of psychological functions. Research findings confirm the need to of implement comprehensive approaches to correctional-developmental work with this category of children, integrating medical and pedagogical intervention components.

Learners with musculoskeletal disorders, according to research by Baigaliev, Ospankulov, Butabayeva [2024], demonstrate various forms of motor dysfunctions that limit their physical capabilities. Contemporary pedagogical technologies for physical rehabilitation ensure significant improvements in quality of life and social adaptation for children in this nosological group.

1.2. Inclusive Educational Environment as a Condition for Successful Adaptation

Despite the specificity of each nosological category of disorders, all children with SEN share common needs for unconditional acceptance, ensuring psychological safety, and implementing individualised approaches that account for the dysontogenetic developmental features of each child. Meeting these specific needs appears possible exclusively within specially developed inclusive educational environment.

Research by Ytterhus and Åmot [2025] demonstrates that an inclusive educational environment is a systemically organised space which provides not only by suitable facilities and resources, but also a specific socio-psychological atmosphere. The underlying principles of such an atmosphere are tolerance as active acceptance of individual characteristics, collaborative interaction between all subjects in the educational process, and multilevel support through a system of interdisciplinary interaction.

The effectiveness of inclusive environment is determined by the success of each child's adaptation processes to new living conditions. Adaptation is conceptualised as a complex process of active adjustment to new functioning conditions, incorporating the following three categories of interconnected components: physiological, psychological, and social. Each of these components is characterised by its own specificity and requires targeted pedagogical intervention [Taylor et al., 2025].

1.3. Difficulties in the Adaptation Process for Children with SEN

Literature analysis [Sukumaran, Loveridge, Green, 2015] shows that the adaptation process for children with special educational needs is complicated by a number of specific issues. The first and most significant is heightened anxiety and various fears. A study of anxiety in children and adolescents with autism spectrum disorders found that anxiety can manifest as generalised worry related to the uncertainty of new situations, as well as specific fears determined by the nature of the primary disorder [White et al., 2009].

A problem closely related to anxiety is the underdevelopment of communicative skills, which creates additional barriers to social integration. A meta-analysis of school social skills development programmes for children with autism spectrum disorders showed that common manifestations include difficulties in initiating communication and maintaining dialogue, whilst specific impairments are determined by the underlying deficit [Bellini et al., 2007].

A significant factor exacerbating adaptation issues is sensory overload. Research by [Ashburner, Ziviani, Rodger, 2008] demonstrates that heightened sensitivity to auditory, tactile, visual, and other stimuli can provoke maladaptive reactions and behavioural disorders, particularly pronounced in children with ASD and certain forms of developmental delay.

The next group comprises problems with accepting general rules and following routines, reflecting features of voluntary behavioural regulation. A study of behavioural interventions for repetitive behaviour in children with autism showed that impairments are conditioned by organic features of the nervous system, cognitive rigidity in children with ASD, or difficulties in understanding the logical connection between rules and specific situations [Boyd, McDonough, Bodfish, 2012].

The final link in the chain of adaptation difficulties are those in establishing contacts with peers. A study of social networks of children with autism in mainstream classrooms found that social isolation is a consequence of both the child's own unreadiness for interaction and rejection by other children [Chamberlain, Kasari, Rotheram-Fuller, 2007].

1.4. Play Activity as a Means of Overcoming Adaptation Difficulties

Research by Rahman, Sikder, and Zundans-Fraser [2024] demonstrates that overcoming adaptation difficulties based on Vygotsky's cultural-historical theory requires the use of natural pedagogical intervention means for preschool age through play, which serves as the leading activity where intensive development of psychological functions and mastery of social relationships occurs.

The first and most important advantage of play activity in the context of adaptation is the naturalness and voluntariness of play, which reduces stress. A study of improving preschoolers' adaptation through play technologies showed that play does not evoke resistance and fear of failure as it is based on intrinsic motivation and freedom

of choice, creating a favourable neurochemical background for learning processes and contributing to reduced anxiety levels [Kilybayeva et al., 2025].

Play creates a safe situation for modelling social relationships. In their review study of play interventions for autism spectrum disorders, López-Nieto, Compañ-Gabucio, and Garcia-de la Hera [2022] showed that the conditional nature of play situations allows children to experiment with different roles and interaction methods without the risk of real negative consequences.

The therapeutic potential of play is realised through the possibility of working with fears and difficult situations in a symbolic form. A systematic review and meta-analysis of parent-mediated play interventions for improving social communication and language skills in preschoolers with autism demonstrated that the principle of symbolic representation enables children to express traumatic experiences that they cannot verbalise directly [Deniz et al., 2024].

The developmental effect of play manifests in its contribution to simultaneous development of speech, communication, and voluntary behaviour. A study of theoretical foundations for forming communicative skills in preschoolers through role-playing games showed that speech development occurs through the necessity to negotiate rules and comment on actions, communicative skills are formed through interaction with play partners, and voluntary behaviour evolves due to the necessity to follow the rules and control impulses in accordance with the play role [Akbarov, Berdieva, 2025].

Of particular interest within the framework of the present study are two large-scale systematic reviews [Carrington et al., 2024; Sandbank et al., 2023] investigating the effectiveness of play interventions for children with developmental disabilities.

The systematic review and meta-analysis by Carrington et al. [2024], which included 22 studies of 1,784 children with various forms of disability, was aimed at evaluating the effectiveness of play as a therapeutic intervention using outcome measures classified according to the International Classification of Functioning (ICF). The review results revealed a trend towards a small positive effect of play interventions; however, the certainty of the effect was predominantly low or very low due to high data heterogeneity (I^2 = 95% for overall outcomes). Moderate certainty of effect was obtained only for narrow homogeneous subgroups: joint engagement in ASD (SMD = 1.53) and outcomes in cerebral palsy (I^2 = 0%) [Ibid.].

The discrepancy identified by Carrington et al. between the declared goals of play interventions and actual measurement priorities in empirical studies is significant as the application of ICF classification revealed substantial bias: 61% of primary outcome measures belonged to the “body functions and structures” domain, only 11% to activity, and 18% to participation. Despite the role of play in social

participation, only two primary measures directly assessed play, and both were classified as activity in a standardised environment rather than participation in the real context of a preschool institution. Analysis of play intervention characteristics revealed significant variability in their implementation: play was used as a primary intervention (68%), in combination with other methods (18%), or to engage in another activity (21%), whilst intervention duration ranged from 100 to 12,960 minutes (the median being 1,140 minutes). A significant problem was insufficient reproducibility of interventions due to incomplete descriptions of play materials, procedures, and implementation parameters [Carrington et al., 2024].

The systematic review by Sandbank et al. [2023], which included 252 studies of early interventions for children with autism spectrum disorders (13,304 participants), incorporated analysis of play components within comprehensive intervention programmes. With sequential application of strict methodological criteria and exclusion of studies with high risk of detection bias, the only statistically significant effect was the influence of naturalistic developmental behavioural interventions (NDBI) on diagnostic characteristics of autism ($g = 0.30$, $P = 0.03$). Critically, 65% of results were subject to risk of detection bias, and 45% were based on subjective reports from parents or educators, which substantially reduces the reliability of claimed effects. Intervention effects were found to be significantly larger on proximal, specific outcomes directly targeted in the intervention ($B = -0.15$, $P = 0.002$), and on outcomes measured in contexts similar to the intervention context ($B = -0.27$, $P < 0.001$), indicating limited transfer of skills acquired through play to real interaction situations in preschool institutions.

Thus, the literature analysis demonstrates methodological limitations of the current evidence base on the effectiveness of play interventions for children with developmental disabilities: low certainty of effects, high intervention heterogeneity, predominance of specific function measurements over real participation measurements, limited generalisation of effects, and critical deficit in safety monitoring.

2. Methods

2.1. Protocol

We utilized the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) protocol as the methodological foundation for our review. Our specific implementation of this protocol was formally registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on September 14, 2025, receiving registration number INPLASY202590057 and DOI number 10.37766/inplasy2025.9.0057/ (accessed on September 14, 2025) [Kerimbayeva et al., 2025]. The following sections dwell upon how we adapted each component of the PRISMA framework to meet the specific requirements of this systematic review.

2.2. Methodology for Determining Acceptability Criteria, Information Sources and Search Strategy

The systematic review is aimed at investigating the effectiveness of play practices in adapting preschool children with special educational needs to an inclusive environment.

Inclusion and exclusion criteria were developed based on the PICO research question, which stands for Population, Intervention, Comparator, and Outcome. In this research, the four elements are preschool children with special educational needs, games, "natural" adaptation, and successful adaptation, respectively.

Accordingly, for the systematic review, only studies were taken that examined the phenomenona of "kindergarten adaptation", "inclusive environment", and "play-based interventions". Participants in the selected studies were exclusively preschool children with special educational needs (Table 1).

Table 1. **Basic concepts of systematic review**

PICO	Keywords	Alternative
P	preschool children with special educational needs	Children with special educational needs (SEN), children with special needs, students with disabilities, children with developmental disabilities, children with learning differences
I	games	Play, games, play-based interventions, play therapy, game-based learning, play activities
C	"natural" adaptation	standard adaptation programmes of preschool organisations without play components
O	successful adaptation	easy adaptation

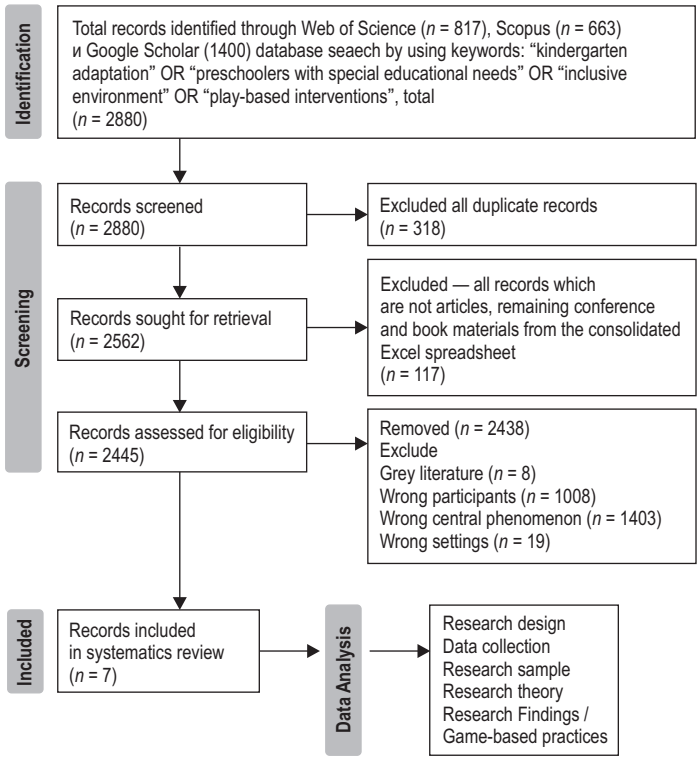
The methodological design used in this study is visually presented in Figure 1 and described in detail in the subsequent sections.

2.3. Selection Process and Data Extraction

The quality of included studies was assessed using the Joanna Briggs Institute (JBI) checklist, which is well-suited for evaluating qualitative studies [Porritt, Gomersall, Lockwood, 2014]. Given that the review encompasses qualitative, mixed methods, and quantitative studies, the JBI approach was chosen due to its versatility in assessing different methodologies. The JBI checklist consists of 10 criteria, each of which is assessed as either "Yes", or "No", or "Unclear", or "Not applicable". The assessment process was conducted independently by the third and fourth authors. Any discrepancies were resolved collaboratively. All studies included in the review met 7 to 10 criteria, reflecting their high quality.

The presented contingency table demonstrates a statistically significant level of inter-rater agreement ($\kappa = 0.7024$), indicating a high degree of reproducibility of results. Cohen's Kappa coefficient empirically confirms that the concordance of expert assessments significantly exceeds the random level, indicating the reliability of the methodology and the validity of the research tools. This value of inter-rater

Figure 1. **PRISMA flow diagram**



reliability meets the established standards for research and confirms the objectivity of the obtained data.

Table 2. **Inter-rater assessment correlation**

Rater B Response	Rater A: Yes	Rater A: No	Rater A: Maybe	Total (Rater B)
Rater B: Yes	25	8	12	45
Rater B: No	15	2750	35	2,800
Rater B: Maybe	8	20	7	35
Total (Rater A)	48	2,778	54	2.880
Total Observations (N)	2.880			
Observed Agreement (Po)	0.9639			
Expected Agreement (Pe)	0.9255			
Cohen's Kappa (Kappa)	0.7024			
Selected Sources	7			

In accordance with PRISMA methodology, the empirical basis of the study comprised materials indexed in scientometric databases Web of Science, Scopus, and Google Scholar, using the search query "kindergarten adaptation" OR "preschoolers with special education-

al needs" OR "inclusive environment" OR "play-based interventions". The chronological scope of the study is from 1975 to 2025. The following selection criteria were determined: the publication type "Review Article" and the thematic category "Educational Research". Language restrictions were not applied when selecting materials.

The choice of Web of Science, Scopus, and Google Scholar databases for conducting the systematic review is determined by their unique indexing characteristics and ability to ensure maximum coverage of relevant research literature. Web of Science is a selective bibliographic platform with the most stringent publication quality criteria, providing access to high-impact research through a citation system and journal impact factor index. Scopus is distinguished by the broadest geographical and linguistic coverage of indexed sources, including European, Asian, and Latin American publications, ensuring international representativeness of research. Google Scholar covers regional publications that are not included in international indices. The combined use of platforms ensured methodological rigour through inclusion of high-quality international research whilst simultaneously guaranteeing comprehensiveness of coverage through access to regional sources, minimising the risk of systematic selection bias and enhancing the representativeness of systematic analysis results.

Records were extracted from Web of Science (n = 817), Scopus (n = 663), and Google Scholar (n = 1400). At the screening stage, duplicates (n = 318) were removed from the total volume of initially identified 2,880 records. After applying the "article" filter, a further 117 materials (such as conference materials, or monographs) were removed from the 2,562 items. At the subsequent screening stage, 2,438 records were excluded based on four main criteria of non-compliance with research parameters. Grey literature (n = 8) included unpublished dissertations on play therapy without peer review, technical reports from educational institutions on implementing play programmes, and methodological recommendations from ministries of education on inclusive practices. The category "inappropriate study participants" (n = 1008) encompassed studies involving school-age children (7–12 years old), adults with disabilities in educational programmes, neurotypical preschoolers without special educational needs, as well as children with severe multiple disabilities requiring specialised medical support. Inappropriate central research phenomenon (n = 1403) included works focusing on academic readiness without emphasis on adaptation, pharmacological treatment of behavioural disorders, family counselling without play components, as well as traditional pedagogical methods without the use of play technologies. Inappropriate research setting (n = 19) represented studies conducted in specialised correctional institutions, home conditions without peer participation, clinical rehabilitation centres, and private therapy offices that did not meet the criteria of an inclusive educational environment.

The corpus of studies included in the systematic review comprised a total of seven publications that met the established four inclusion criteria: kindergarten adaptation; preschoolers with special educational needs; inclusive environment; play-based interventions.

3. Results and Discussion

In accordance with the established inclusion criteria, seven articles were selected for the systematic review that address the stated research objective. Following PRISMA methodology, the selection process included screening by titles and abstracts, followed by full-text assessment of publication relevance (Table 3).

Table 3. **Results of studies reviewed**

N	Research ID	Research design	Research sample	Research theory	Data collection	Research Findings / Game-based practices
1	Kondratyuk Z., Omelchenko I., Konopliasta S., Matiushchenko I., Synytsia A., Mykhailenko V., 2025	Descriptive cross-sectional study, mixed design	*n* = 3 children with SEN (5 years old): 1 with visual impairments, 2 with severe speech disorders	The concept of adaptive capabilities of children with special educational needs, which emphasises the necessity of creating special conditions and using compensatory mechanisms for maximum realisation of the adaptive potential of children with various types of developmental disorders	Comprehensive diagnostics: “Insert cubes” methodology, “Find and cross out”, A.R. Luria’s “10 words”, “Seguin board”, Y.V. Miklyaeva’s methodology for communicative skills, E.V. Kucherova’s methodology for emotional state, K.L. Pechora’s parent survey	Three levels of adaptive capabilities were identified: high (a child with visual impairments – 2.78 points), medium (a child with severe speech disorders and emotional disorders – 2.11 points), low (a child with pronounced speech disorders – 1.89 points). Necessity for an individual educational pathway based on assessment of adaptive potential / Play practices are not detailed
2	Fedortseva M.B., Litvinova Y.A., Krechetova N.M., Freze N.V., 2017	Review article (not an empirical study)	Preschool children with ADHD	U. Bronfenbrenner’s ecological systems theory of development and inclusive education theory. The study examines the inclusive educational environment through the lens of ecological systems affecting child development, where the environment acts as an active factor in adaptation and development	Theoretical analysis of existing research on play interventions for children with ADHD	Play interventions show potential for improving executive functions in preschoolers with ADHD. The importance of the social context of play and parental involvement is emphasized. Further randomised controlled studies are needed / Play practices are not detailed
3	Voynilenko N.V., 2023	Pilot experimental study “proof-of-concept”	*n* = 29 children aged 4–5 years with ADHD	Socialisation theory and inclusive education theory. The work is based on concepts	Group sessions (3–5 children), parent groups, home practice	High parental satisfaction with the programme. Significant improvements in inhi-

N	Research ID	Research design	Research sample	Research theory	Data collection	Research Findings / Game-based practices
				of social integration and adaptation of children with special needs in mainstream educational environments, drawing on principles of normalisation and social inclusion	30–45 min/day, assessment of satisfaction and attendance	bition, working memory, attention, visuospatial abilities, planning, and motor skills. Behavioural changes persisted for months after treatment completion / Games for developing executive functions
4	Azletskaya E.N., Kiseleva O.M., 2019	Randomised controlled trial with "waiting list" design	*n* = 29 children with ADHD (5–11 years), intervention-first (*n* = 15) vs control-first (*n* = 14)	A.G. Maklakov's theory of adaptive potential of personality. The study is based on the concept of adaptive capabilities as a set of psychological characteristics that determine the ability to regulate mental activity and the adaptation process in extreme conditions	Test of Playfulness (ToP) with blind assessment, 6 clinical play sessions, weekly home modules, monthly observation	Statistically significant improvements in social play skills with large effect size (Cohen's d). Improvements were maintained at follow-up stage. All social components of ToP significantly improved after intervention. Support for effectiveness of play interventions involving parents and peers / Play practices are not detailed
5	Oteer R., Barakat H., 2024	Mixed research: descriptive-analytical quantitative method + qualitative focus groups	*n* = 80 kindergarten teachers, Jerusalem suburbs	Social constructivism theory and H. Gardner's theory of multiple intelligences. The study examines educational games as a means of developing various types of intelligence and social interaction	Structured questionnaire (30 items, Cronbach α = 0.90) in three areas: adaptation, group communication, creativity. Focus group (*n* = 9)	All areas received high ratings: creativity (M = 4.34, 86.8%), group communication (M = 4.17, 83%), adaptation (M = 4.10, 82%). Age differences in favour of 30–39 years and work experience less than 5 years. A deficit in electronic games was identified and the need for planning play activities / Developmental games for creativity, group communication, and adaptation skills
6	O'Neill S., Rajendran K., Halperin J.M., 2012	Descriptive study	Preschool children with severe speech disorders	Vygotsky's sociocultural theory. A child's psychological development occurs through social interaction with more competent partners (adults or peers) in a cultural-historical context, with the zone of proximal develop-	Observation of the socialisation process in the educational complex	Features of socialisation of children with severe speech disorders in the inclusive environment of the educational complex were identified. Factors of successful adaptation were determined / Researchers used both specially developed

N	Research ID	Research design	Research sample	Research theory	Data collection	Research Findings / Game-based practices
				ment playing a key role – the area of tasks that a child can perform with assistance but not independently		games for developing inhibition skills, working memory and motor coordination, as well as the well-known children's games "Simon says" and hopscotch
7	Kazorina A.A., Rudenskaya O.N., Samartseva E.G., Nalivalkina T.N., 2019	Theoretical-empirical study	Preschool children with special educational needs	A. Bandura's social learning theory, revealing adaptation mechanisms through observation, imitation, and behavioural modelling in a social environment	Analysis of inclusive environment conditions, assessment of adaptation factors	The inclusive environment is considered as a means of adaptation. Components of the inclusive environment that contribute to the adaptation of children with SEN were identified / Play methodologies are not described

Systematic analysis of the seven included studies demonstrates a multifaceted approach to studying the adaptation of preschool children with special educational needs to an inclusive environment through play practices. Azletskaya and Kiseleva [2019] substantiate the necessity of comprehensive assessment of adaptive capabilities of children with special educational needs prior to entering an inclusive environment, demonstrating that children with various developmental disorders require individualised approaches to adaptation based on an analysis of their cognitive, speech, social-communicative, and emotional potential.

O'Neill, Rajendran, and Halperin [2012] provide theoretical justification for applying play interventions for preschool children with attention deficit hyperactivity disorder, emphasising that "engaging in play serves a critical role in young children's social, affective and cognitive development" and that directed play has potential for improving long-term developmental trajectories through facilitating neuronal and social development in natural conditions of interaction with parents and peers. The authors note the importance of Vygotsky's sociocultural theory, which stipulates that "children are better able to learn complex mental tasks by interacting with more knowledgeable peers and adults" in the zone of proximal development.

Fedortseva et al. [2017] present empirical evidence of the effectiveness of structured play programmes for preschoolers with ADHD, where group play sessions combined with home practice demonstrated significant improvements in executive functions, attention, and motor skills, which directly contributes to successful adaptation to the requirements of an inclusive educational environment. The stu-

dy confirms that play interventions can serve as an effective bridge between children's individual needs and the requirements of inclusive education.

Kazorina et al. [2019] provide the most convincing evidence of the effectiveness of play interventions for social adaptation of children with ADHD in an inclusive environment through a randomised controlled study, demonstrating statistically significant improvements in social play skills with the participation of neurotypical peers. The author notes that "children with ADHD may view their interactional difficulties as external and outside of their control", emphasising the importance of supporting children in performing social skills in naturally occurring social environments for successful inclusion.

Oteer and Barakat [2024] contribute to understanding of the role of educational games in developing social interaction among preschoolers through analysis of pedagogical workers' perceptions, revealing that educational games play a key role in developing children's adaptive skills for group activities in an inclusive environment. The study confirms that "educational games have a large and effective role in developing social interaction skills among kindergarten children", particularly in the context of developing creativity, group communication, and adaptive abilities.

Voynilenko [2023] focuses on specific aspects of socialisation of preschool children with severe speech disorders in the inclusive educational environment of a "kindergarten-boarding school", providing understanding of how play methods can be adapted for children with communicative disorders in conditions of prolonged inclusive education. The paper demonstrates the importance of considering the specific needs of children with speech disorders when planning play interventions for successful social adaptation.

Fedortseva et al. [2017] conceptualise an inclusive educational environment as an independent condition for development and social adaptation of children with special educational needs, where the inclusive environment itself acts as a means of adaptation, emphasising the synergistic effect between play methods and inclusive conditions for optimising adaptation processes of preschoolers with various developmental disorders.

Having analysed the results of the studies reviewed, one can reveal both convergent and divergent trends in understanding the role of play practices in adapting preschool children with special educational needs to an inclusive environment (Table 4).

Methodological analysis of the studies included reveals significant heterogeneity in design and quality of evidence. The research by O'Neill, Rajendran, Halperin [2012] is rather a review article than an empirical study, limiting its compliance with systematic review criteria. The papers by Voynilenko [2023] and Fedortseva et al. [2017] contain insufficient methodological information for complete quality

Table 4. **General patterns and differences in adaptation of children with SEN through games**

General patterns	Differences in obtained results
All included studies demonstrate consistent support for the effectiveness of play interventions in improving adaptive capabilities of children with special educational needs. Azletskaya and Kiseleva [2019], O'Neill, Rajendran, and Halperin [2012], Oteer and Barakat [2024] unanimously confirm that structured play activities contribute to developing key skills necessary for successful inclusion. The studies consistently reveal the importance of a social context of play, where interaction with typically developing peers, parents, and educators enhances the adaptive potential of children with special educational needs. A common finding is confirmation that play methods are effective for various categories of special educational needs, including ADHD [O'Neill, Rajendran, Halperin, 2012], severe speech disorders [Azletskaya, Kiseleva, 2019; Voynilenko, 2023], and visual impairments [Azletskaya, Kiseleva, 2019]. The studies emphasise the necessity of an individualised approach and systematic planning of play interventions to achieve optimal adaptation outcomes	Significant differences manifest in specific mechanisms and temporal frameworks of adaptation processes. Azletskaya and Kiseleva [2019] revealed critical differences in adaptive capabilities of children with various types of disorders, where children with visual impairments demonstrated high levels of adaptive potential (2.78 points), whilst children with severe speech disorders showed low levels (1.89 points), indicating the necessity for differentiated temporal frameworks for adaptation. O'Neill, Rajendran, and Halperin [2012] focused exclusively on children with ADHD, identifying specific improvements in executive functions and social play skills respectively, whilst Oteer and Barakat [2024] found that creativity development surpasses group communication and adaptive skills in the hierarchy of play method effectiveness. This difference reflects cultural and methodological features in the assessment of play interventions. Oteer and Barakat [2024] revealed age differences in educators' perceptions of play method effectiveness (favouring the 30–39 age group), which was not investigated in other works. Voynilenko [2023], Fedortseva et al. [2017] provided qualitative data on socialisation processes and conceptualisation of inclusive environments, which contrasts with the quantitative approaches of other studies. The differences reflect the multifaceted nature of the adaptation phenomenon and the necessity for a comprehensive approach to understanding the role of play methods in inclusive education of preschool children with special educational needs

assessment, including the absence of detailed descriptions of data collection methods, sample sizes, and analysis procedures. The study by Azletskaya and Kiseleva [2019] uses a critically small sample (n = 3), substantially limiting the generalisability of obtained results and conclusions.

Differences in operational definitions of special educational needs and inclusive environment between studies create additional obstacles for comparative analysis and synthesis of results. Research by O'Neill, Rajendran, Halperin [2012] is built on high-quality evidence, using experimental designs with control groups and standardised assessment procedures. Azletskaya and Kiseleva [2019] as well as Oteer and Barakat [2024] present moderate quality evidence through application of descriptive methods with quantitative data analysis.

Despite methodological limitations, the studies analysed demonstrate consistent support for the effectiveness of play practices for various categories of children with special educational needs, including

attention deficit hyperactivity disorder [O'Neill, Rajendran, Halperin, 2012], severe speech disorders [Azletskaya, Kiseleva, 2019; Voynilenko, 2023], and visual impairments [Azletskaya, Kiseleva, 2019]. Results emphasise the critical importance of individualising approaches based on comprehensive assessment of each child's adaptive potential [Ibid.], as well as the necessity for systematic parental involvement [O'Neill, Rajendran, Halperin, 2012] and careful planning of play interventions [Oteer, Barakat, 2024] to achieve optimal adaptation outcomes to an inclusive educational environment.

4. Conclusion

The conducted systematic analysis, based on PRISMA methodology and covering a wide temporal range of studies (1975–2025), revealed a preliminary trend indicating potential benefits of play interventions for adapting preschoolers with special educational needs to an inclusive environment. Strict selection criteria resulted in the inclusion of only seven studies from the 2,880 initially identified sources; the analysis provided important preliminary data while simultaneously revealing limitations in the current evidence base. The small number of included studies combined with heterogeneity in intervention design, implementation, and outcome measurement substantially limited the ability to draw definitive conclusions about the effectiveness of play interventions for adaptation to inclusive environments. Nevertheless, the observed preliminary trend towards positive effects across various nosological groups, including children with ADHD, severe speech disorders, and visual impairments, demonstrates the transdiagnostic applicability of play as an adaptation mechanism.

The identified role of the socially-mediated nature of play activity appears a theoretically important observation. The results suggest that adaptive effects may be maximised not through isolated play activities, but through triadic interaction involving the child with special needs, neurotypical peers, and significant adults.

The analysis revealed methodological gaps that fundamentally limit the interpretability and generalisability of findings. Small sample sizes in the studies included, absence of standardised assessment protocols specifically measuring adaptation to inclusive environments, heterogeneity of operational definitions of both "play interventions" and "successful adaptation", and limited description of intervention components create obstacles for synthesising evidence and producing evidence-based recommendations.

A limitation of the current study was the absence of adverse event monitoring in the evidence base. The inability to assess potential harms alongside potential benefits is a substantial ethical and methodological problem, which has to be addressed in future research involving children with special educational needs. Despite limitations, the preliminary positive trend observed in the study suggests that

play interventions warrant continued investigation as a potentially valuable component of supporting the adaptation of preschoolers with special educational needs to inclusive environments. Future research should be directed towards addressing the identified methodological shortcomings: conducting multicentre randomised controlled trials with adequate sample sizes; application of masking procedures in outcome measurement, and use of objective assessment instruments; development and validation of standardised, ecologically valid measurement instruments specifically aimed at assessing adaptation to inclusive preschool environments in the domains of activity and participation; creation of standardised play intervention protocols with detailed specification of components, dosage, and implementation procedures; regular adverse event monitoring with long-term prospective follow-up for comprehensive benefit-risk assessment; systematic evaluation of transfer and maintenance of effects from experimental conditions to naturalistic inclusive preschool environments; investigation of the mediating and moderating factors that determine the observed effects for theoretically informed optimisation of intervention strategies.

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