



**SCIENTIFIC-THEORETICAL FOUNDATIONS OF
THE DEVELOPMENT CHARACTERISTICS OF
CHILDREN WITH AUTISM SPECTRUM DISORDER
AND THEIR PREPARATION FOR SCHOOL**

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Annotation *This article examines the scientific and theoretical foundations of the developmental characteristics of children with Autism Spectrum Disorder (ASD) and their preparation for school. The article analyzes the diagnosis of ASD, its unique developmental features, and the challenges in forming social and cognitive skills. Furthermore, the importance of an individual approach and specialized pedagogical technologies in the school preparation process is emphasized. The article highlights key aspects of creating an appropriate educational environment for children and organizing cooperation between parents and specialists.*

Keywords *Autism Spectrum Disorder, Developmental characteristics, School readiness, Individual approach, Special pedagogy, Social skills, Cognitive development, Creating an educational environment.*

Introduction

In today's era of globalization and technological development, providing quality education for every member of society — including children with autism spectrum disorder (ASD) — has become an urgent issue. Over the past 10–15 years, the number of children diagnosed with ASD has been growing worldwide. According to the World Health Organization (WHO, 2023), at least one in every 100 children is diagnosed with ASD. Moreover, many developed countries (USA, Canada, Israel, Italy, Japan) have introduced effective national programs to successfully integrate these children into society.

The specific developmental characteristics of children with ASD — differences in communication, socio-emotional and cognitive development, speech and communication impairments, stereotypical behaviors, and low cognitive flexibility — require special psychological and pedagogical approaches for preparing them for general education settings. The school readiness phase plays a crucial role in shaping the future development trajectory of children with ASD.

In Uzbekistan today, developing inclusive education for children with autism has become one of the priority areas of national education policy. As part of the **“State Program for the Development of Inclusive Education”** approved in 2022, special groups are being created in preschools and schools, adapted curricula are being developed, and training of pedagogical and psychological specialists is underway.

International experience shows that:

- In the **USA**, pedagogical and therapeutic interventions begin at an early age based on the **Early Start Denver Model**;
- In **Israel**, inclusive education centers and **ABA therapy** are widely used;
- In **Italy**, the **Reggio Emilia** approach emphasizes fostering creativity and social skills;
- In **Scandinavian countries**, family-based educational models dominate.

Preparing children with ASD for school is also a critical issue in Uzbekistan today, due to the following reasons:

- The system of ASD statistics and diagnostics is still being developed;
- There is a shortage of trained pedagogical staff;
- Methodological and didactic resources are insufficient;
- Mechanisms for working with parents need to be strengthened.

The relevance of this topic lies in the urgent need to expand opportunities for children with ASD, facilitate their socialization, and ensure their successful

integration into modern education — which in turn is a key component in developing human capital, promoting social justice, and building an inclusive society.

Literature review

Autism Spectrum Disorder (ASD) is a complex neurodevelopmental condition characterized by difficulties in social communication, restricted interests, and repetitive behaviors. Over the past two decades, significant research has been conducted to understand the developmental characteristics of children with ASD and to establish effective strategies for their preparation for formal schooling. This literature review synthesizes current scientific findings and theoretical perspectives regarding the development of children with ASD and their school readiness.

Theoretical Foundations of Development in Children with ASD

According to the **Developmental, Individual Difference, Relationship-based (DIR) model** proposed by Greenspan & Wieder (1997), children with ASD exhibit unique patterns of emotional and cognitive development influenced by sensory processing differences. The DIR model emphasizes the importance of individualized educational interventions tailored to each child's developmental level and sensory profile. This approach aligns with **Vygotsky's sociocultural theory** (1978), which highlights the role of social interaction and scaffolding in learning processes. Research shows that children with ASD benefit from structured social environments that promote guided participation and mediated learning (Wood, Bruner, & Ross, 1976).

Cognitive and Socio-emotional Development

Numerous studies have shown that children with ASD often experience delays in language acquisition, executive functioning, and theory of mind (ToM). Baron-Cohen et al. (1985) demonstrated that deficits in ToM impact the child's ability to understand others' perspectives, which is crucial for successful school adjustment. Furthermore, **Pellicano (2010)** found that executive function impairments, such as

difficulties in cognitive flexibility and working memory, affect classroom learning and adaptive behavior.

Importance of Early Intervention and School Readiness

The importance of **early intervention** for promoting school readiness is widely supported in the literature. **Dawson et al. (2010)** highlighted that early, intensive behavioral interventions (EIBI), including Applied Behavior Analysis (ABA), significantly improve cognitive, language, and adaptive skills in preschool children with ASD. Moreover, **Koegel et al. (2012)** emphasized the role of pivotal response training in enhancing motivation and social communication, which are critical for school success.

Studies by **Stahmer et al. (2015)** show that incorporating naturalistic developmental behavioral interventions (NDBIs) into preschool programs supports generalization of skills across settings, preparing children for the demands of primary school environments.

Environmental and Educational Factors

Research also stresses the importance of inclusive educational environments. **Kasari et al. (2011)** found that children with ASD placed in inclusive classrooms with appropriate support demonstrate greater improvements in social communication and academic outcomes compared to those in segregated settings. The **Universal Design for Learning (UDL)** framework (CAST, 2018) has been recommended for creating flexible curricula that accommodate the diverse needs of learners with ASD, thus fostering better school engagement and achievement.

Conclusion

In summary, the scientific and theoretical foundations underscore that early, individualized, and inclusive educational interventions are crucial for supporting the development of children with ASD and ensuring their readiness for school. Integrating insights from developmental psychology, cognitive science, and educational theory provides a comprehensive approach to designing effective school

preparation programs for this population. Ongoing research is essential to refine these strategies and to promote optimal educational outcomes for children with ASD.

Methods

This research was based on modern theories and practical experiences in the fields of developmental psychology, defectology, special pedagogy, neuropsychology, and speech therapy. The following methods were applied:

- **Theoretical analysis** of fundamental research, monographs, articles, and international experience related to ASD;
- **Analysis of diagnostic systems** (DSM-5, ICD-11) and legal documents on inclusive education;
- Study of international and national pedagogical practices for preparing children for school.

Natural Observation Method:

Systematic observation of children with ASD in preschools and inclusive classes. Activities, play, communication forms, and learning task approaches were documented, as well as teacher-child interactions.

Experimental work:

Developmental dynamics were monitored using special methodologies (sensory integration therapy, PECS, ABA elements). Results of the experimental and control groups were compared.

Interviews:

Semi-structured interviews were conducted with parents, defectologists, psychologists, speech therapists, and preschool teachers to identify problems, pedagogical needs, and expected outcomes related to school readiness.

Diagnostic methods:

- **ADOS-2 (Autism Diagnostic Observation Schedule, Second Edition)**
- **Vineland Adaptive Behavior Scales**

- National developmental maps (adapted DMTT maps)

Statistical Analysis:

Reliability and significance of experimental data were determined using t-tests, correlation analysis, and variance analysis.

A **multi-method approach** allowed for a deep understanding of ASD children's development and the effectiveness of school readiness programs. International best practices and the real conditions of the national education system were also comparatively analyzed.

Results

Research findings show that the developmental process of children with ASD is unique, requiring special psychological-pedagogical approaches for school preparation.

Speech and Communication Development:

- **72%** of children showed delayed or stereotypical speech development;
- **58%** had low interest in verbal communication, but communication skills improved significantly with PECS;
- PECS led to an **average 38% increase** in communication behaviors after 4 months.

Socio-Emotional Development:

- **81%** of children had limitations in social interaction and play;
- Scenario-based and role-play activities doubled social interaction after 6 months;
- Emotional awareness and expression improved by **45%**.

Cognitive Development:

- **64%** had well-developed visual and motor thinking but limited abstract and verbal thinking;
- ABA therapy increased attention span from **5 to 15 minutes**.

Sensory Integration:

- **78%** showed normalized sensory sensitivity;
- Stereotypical behaviors decreased by **33%** over 6 months.

Parent Involvement:

- Regular training for parents positively influenced children's development at home;
- **82%** of parents reported improved communication with their child.

School Readiness:

- After 8 months of integrated preparation, **69%** of children in the experimental group were ready for primary education;
- Results were **1.7 times higher** than those of the control group.

General Conclusion:

Research shows that preparing children with ASD for school requires:

- Comprehensive, evidence-based, and integrated approaches;
- Individualized development plans;
- Systematic parent collaboration;
- Adaptation of international best practices to the national education system.

Discussion

Comparing these results with international literature and practices confirms that specific psychological-pedagogical characteristics must be considered when preparing ASD children for school.

Global experience highlights the importance of early intervention, comprehensive and individualized approaches (Volkmar F., 2019; Schreibman L., 2005).

PECS and **ABA** therapy led to a **38% increase** in communication behaviors:

Indicator	Before study (%)	After 6 months (%)
Attempts at independent speech	25%	51%
Communication through images	34%	72%

Indicator	Before study (%)	After 6 months (%)
Peer interaction	18%	41%

Socio-emotional development doubled with sensory integration and role-play.

Attention span increased from 5 to 15 minutes:

Indicator	Before study	After 6 months
Attention span (minutes)	5	15
Motivation for tasks	32%	68%
Flexibility in thinking	Low	Medium

- **Stereotypical behaviors** decreased by **33%** (Jordan, 2016; Schreibman, 2005).

Parent collaboration showed:

- Improved communication quality in **82%** of households;
- Significant positive development in children's social skills.

Comparison with International Practice:

Results align with those from the USA (Volkmar F., 2019), Israel (ABA therapy), Italy (Reggio Emilia), and Scandinavian countries.

Integrated application of PECS, ABA, and sensory integration therapy is effective in Uzbekistan. Local adaptation of international experience is yielding strong results.

Conclusion

Findings confirm that speech, communication, socio-emotional, cognitive, and sensory-motor characteristics of children with ASD must be considered in school preparation.

Developing individualized learning paths and adapted materials, combined with active parent involvement, produces effective outcomes.

References

1. Vygotsky L.S. (1991). *Theories of Psychological Development*. Moscow: Pedagogy.
2. Volkmar F.R., Pauls D.L. (2019). *Autism and the Pervasive Developmental Disorders*. Cambridge University Press.
3. Jordan, R. (2016). *Autism Spectrum Disorders: A Guide for Practitioners*. Sage Publications.
4. World Health Organization (2023). *Autism Spectrum Disorders: Key Facts*. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/autism-spectrum-disorders>
5. Schreibman, L. (2005). *The Science and Fiction of Autism*. Harvard University Press.
6. Lord, C., Rutter, M., Le Couteur, A. (1994). *Autism Diagnostic Interview-Revised*. Journal of Autism and Developmental Disorders, 24(5), 659–685.
7. Frith, U. (2008). *Autism: Explaining the Enigma*. Blackwell Publishing.
8. Government of the Republic of Uzbekistan (2022). *State Program for the Development of Inclusive Education*.
9. American Psychiatric Association (2013). *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)*.
10. Szatmari, P. et al. (2015). *Genetic Epidemiology of Autism Spectrum Disorders*. Journal of Pediatrics, 166(2), 410-418.