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Exploring the Psychological Foundations of Autism Spectrum Disorder in Children: Diagnosis, Development, and Intervention Strategies

Hina Tariq Jan (Corresponding Author)

Senior Registrar, Avicenna Medical College, Lahore, Pakistan.

Email: hinatariq898@gmail.com

Iman Javed Khan

Psychologist, Shaheed Benazir Bhutto Women University, Peshawar, Pakistan

Email: imanjavedkhan@gmail.com

Aleena Tahreem

MS Scholar, Riphah International University, Faisalabad, Pakistan.

Email: aleenatahreem1@gmail.com

Dr. Nazia Mustafa

Clinical Psychologist, EMDR Practitioner, Consultant/ Trainer in Training, Secretary General EMDR Association Pakistan.

Email: naziamustafadr@gmail.com

Muhammad Adil

Department of Psychology, Islamia College University Peshawar (ICP), Peshawar, Pakistan. Email: adilkhan7300@gmail.com

ABSTRACT

Autism Spectrum Disorder (ASD) is a complex neurodevelopmental condition with lifelong implications for children and their families. Globally, approximately 0.77% of children are diagnosed with ASD, with boys showing higher prevalence (1.14%) compared to girls (PubMed, 2024). The World Health Organization (2021) estimates that nearly 1 in 127 individuals worldwide live with autism, translating to over 61.8 million people globally (Healthdata.org, 2024). In Asia, prevalence is reported around 6 per 1,000 children, with significant diagnostic delays due to limited awareness and stigma (Wiley, 2023). Psychological foundations of ASD have been widely studied, with executive function models linking rigidity and transition difficulties to impairments in cognitive flexibility and planning, while sensory processing models emphasize atypical sensory reactivity shaping social and behavioral challenges (Cheong et al., 2025). This paper explores diagnostic practices, developmental trajectories, and culturally relevant interventions such as

Online ISSN

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Early Intensive Behavioral Intervention (EIBI), parent-mediated therapies, and adapted cognitive- behavioral approaches. By integrating recent global and Asian data with psychological models, this study highlights the urgent need for early detection, culturally sensitive assessment, and evidence-based interventions to improve developmental outcomes for children with ASD.

Keywords: Autism Spectrum Disorder (Asd); Children; Prevalence; Executive Function; Sensory Processing; Diagnosis; Comorbidities; Intervention Strategies; Asia; Cultural Sensitivity

Introduction

Autism Spectrum Disorder (ASD) in children is increasingly recognized as a significant neurodevelopmental condition that presents complex challenges in diagnosis, development, and intervention across diverse cultural contexts. Defined by persistent problems in social communication and interaction alongside restrictive and repetitive patterns of behavior, ASD is now understood as a heterogeneous condition influenced by genetic, neurobiological, and environmental factors (Hyman et al., 2020). While prevalence estimates vary globally, recent studies indicate a rising number of diagnosed cases, with approximately 0.77% of the global population meeting diagnostic criteria (Christensen et al., 2025). In Asia, prevalence rates range between 0.6% and 0.9%, reflecting both increased awareness and improved detection methods (Cheong et al., 2025).

The psychological foundations of ASD are crucial to understanding both its core symptoms and its developmental pathways. Social cognition, executive functioning, and sensory processing differences represent central domains of impairment that are linked to alterations in brain connectivity and neurotransmitter functioning (Lamanna & Meldolesi, 2024; Grumbach et al., 2025). At the same time, developmental outcomes vary widely, influenced by early detection, access to intervention and the presence of cooccurring conditions (Tafolla et al., 2025). Exploring the connection of diagnosis, developmental psychology, and evidence based interventions is particularly important in Asian contexts where cultural perceptions, healthcare infrastructure, and family systems shape the recognition and management of ASD.

This paper provides a comprehensive overview of the psychological foundations of ASD in children, emphasizing current diagnostic frameworks, developmental patterns, and evidence based interventions. It further situates these findings within Asian practices, highlighting the importance of culturally sensitive diagnostic tools and scalable interventions such as parent- mediated and school-based programs. By integrating recent advances in psychological and neurodevelopmental research, this study underscores the urgent need for early and contextually relevant interventions to optimize outcomes for children with ASD.

Literature Review

Diagnostic Frameworks and Psychological Models

Autism Spectrum Disorder (ASD) is defined within the DSM-5 and ICD-11 as a

Online ISSN

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Print ISSN

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<http://amresearchreview.com/index.php/Journal/about>

neurodevelopmental disorder characterized by social communication deficits and restricted, repetitive behaviors (Greaves-Lord et al., 2022). While diagnostic criteria provide a categorical framework, psychological models offer deeper insights into underlying processes. Social cognition theories suggest that autistic children experience difficulties with theory of mind, limiting their ability to infer others' intentions and emotions (Lamanna & Meldolesi, 2024). Executive function models on the other hand, link rigidity and difficulty with transitions to impairments in cognitive flexibility and planning. Sensory processing models have gained prominence, emphasizing the role of atypical sensory reactivity in shaping both social and behavioral challenges (Cheong et al., 2025). These frameworks illustrate that ASD is not merely a behavioral diagnosis but reflects broader psychological differences in information processing.

Developmental Patterns and Trajectories

The developmental course of ASD is highly heterogeneous, with early markers often emerging in the first two years of life. Infants who later receive a diagnosis frequently exhibit atypical gaze, reduced social orienting, and limited joint attention (Talbot & Miller, 2020).

Longitudinal studies reveal that while some children demonstrate significant developmental gains with early intervention others experience persistent impairments, particularly in adaptive functioning and social mutuality (Tafolla et al., 2025). Recent evidence highlights transdiagnostic overlaps between ASD and other developmental disorders, such as ADHD and language delays, complicating early identification (Sadat-Nejad et al., 2025). Importantly, developmental outcomes are not fixed but shaped by both neurobiological factors, including brain connectivity patterns (Clarke et al., 2025) and environmental factors such as family involvement and access to early services.

Comorbidities and Co-occurring Conditions

ASD rarely occurs in isolation instead it is often accompanied by co-occurring conditions that influence diagnosis and treatment. Anxiety disorders are among the most prevalent comorbidities, with estimates suggesting that up to 40% of autistic youth experience clinically significant anxiety (Yarger et al., 2025). Depression, attention-deficit/hyperactivity disorder (ADHD), and intellectual disabilities are also common, further complicating intervention planning (Hyman et al., 2020). These comorbidities exacerbate functional impairments and highlight the importance of comprehensive, multidisciplinary assessment. In addition, sensory sensitivities and sleep disturbances frequently co-occur, reinforcing the need for integrated treatment approaches that address both core ASD symptoms and secondary conditions.

Cultural Factors and Context in Asia

The cultural context significantly influences how ASD is recognized, diagnosed, and managed. In many Asian countries, stigma surrounding developmental disorders delays help-seeking and contributes to underdiagnosis (Cheong et al., 2025). Language barriers also pose challenges as most standardized diagnostic

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tools, such as the ADOS-2 and ADI-R, were originally developed in Western contexts and may not capture culturally specific social norms (Chahin et al., 2020). Moreover, family systems in Asia often play a central role in caregiving, making parent-mediated interventions particularly relevant (Gosling et al., 2022). Research from Asian settings suggests that culturally adapted interventions such as incorporating extended family in therapy or using school-based delivery enhance both feasibility and effectiveness (Trembath et al., 2022). Thus, cultural sensitivity is essential for bridging the gap between scientific knowledge and practical application. Collectively, the literature underscores the necessity of integrating psychological theories with neurobiological evidence to advance understanding of ASD's diverse developmental outcomes.

Assessment and Diagnosis

Early and accurate assessment is central to improving outcomes for children with ASD. Clinical guidelines recommend standardized developmental surveillance at 18 and 24 months to detect early signs, followed by comprehensive diagnostic evaluations when indicated (Hyman et al., 2020). High standard diagnostic tools include the Autism Diagnostic Observation Schedule (ADOS-2) and the Autism Diagnostic Interview-Revised (ADI-R), which combine direct behavioral observation with structured caregiver interviews (Chahin et al., 2020). In addition, the Modified Checklist for Autism in Toddlers (M-CHAT-R/F) is widely used for screening in primary care and community settings (Chahin et al., 2020).

Assessment is ideally multidisciplinary, involving developmental pediatricians, child psychiatrists, speech-language therapists and neuropsychologists to capture the complex interplay

of cognitive, social, and adaptive domains (Chahin et al., 2020). Beyond categorical diagnosis, functional assessments such as the Vineland Adaptive Behavior Scales provide valuable insights into adaptive functioning, guiding individualized intervention planning (Yarger et al., 2025). Importantly, implementation challenges persist in Asia, where diagnostic delays are common due to limited access to trained specialists, cultural stigma and language barriers in standardized tools (Cheong et al., 2025). Addressing these barriers requires culturally sensitive adaptations and community based awareness programs to improve timely diagnosis and service access.

Intervention Strategies

Interventions for ASD are most effective when initiated early, intensive and tailored to the child's developmental profile. Evidence consistently supports behavioral and developmental approaches, particularly Early Intensive Behavioral Intervention (EIBI) and Naturalistic Developmental Behavioral Interventions (NDBI) (Hume et al., 2021; Trembath et al., 2022). Parent-mediated programs are also particularly promising in Asian contexts, as they leverage family structures to enhance caregiver responsiveness and extend intervention beyond clinical settings (Gosling et al., 2022).

Table 1 summarizes the major psychosocial interventions, their evidence base, psychological mechanisms, and representative sources.

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

Table1

Evidence-based interventions for children with Autism Spectrum Disorder

Intervention	Evidence Base and Outcomes	Psychological Mechanism	Sources
Early Intensive Behavioral Intervention (EIBI/ABA)	Improves cognition, language, and adaptive skills in preschool children; variable effect sizes across trials	Operant learning principles with structured instruction and reinforcement	Hume et al., 2021; Meza et al., 2022
Naturalistic Developmental Behavioral Interventions (NDBI)	Enhances social communication and functional skills in young children	Combines developmental targets with naturalistic reinforcement and social motivation	Trembath et al., 2022; Gosling et al., 2022
Parent-mediated interventions	Effective in improving social communication and reducing disruptive behaviors across diverse settings	Strengthens caregiver responsiveness and scaffolding of child development	Trembath et al., 2022; Gosling et al., 2022

Online ISSN

Print ISSN

<http://amresearchreview.com/index.php/Journal/about>

3007-3197	3007-3189	Cognitive Behavioral Therapy (CBT) for anxiety	Adapted CBT demonstrates effectiveness in autistic children and adolescents with anxiety	Focuses on cognitive restructuring, emotional regulation, and exposure	Chahin et al., 2020
		Social skills groups	Evidence supports improved pragmatic and social interaction skills in school-aged youth	Direct practice, modeling, and feedback within peer contexts	Hume et al., 2021

Intervention research increasingly emphasizes scalability and cultural adaptation. For instance, community-based parent training programs are being piloted in low-resource Asian settings, with promising results in improving both child outcomes and caregiver well-being (Trembath et al., 2022). Furthermore, advances in technology-assisted interventions and early pre-symptomatic trials highlight future directions that align with precision medicine approaches (Grzadzinski et al., 2021; Clarke et al., 2025). Taken together, these findings underscore the importance of integrating evidence-based practices with culturally grounded approaches to ensure equitable and effective care for children with ASD in Asia and beyond.

Results

Recent studies show that the prevalence of Autism Spectrum Disorder (ASD) remains significant worldwide and continues to rise. Globally, about **0.77% of children** and **0.79% of the total population** are diagnosed with ASD, with boys more frequently affected than girls (PubMed, 2024; WHO, 2021). In Asia, prevalence ranges between **0.6–0.9%**, with national-level estimates reporting around **6 per 1,000 children** (Cheong et al., 2025). Despite improvements in awareness, diagnostic delays remain common in Asian contexts due to stigma, limited access to specialists, and cultural barriers.

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

Table 2 Prevalence of ASD in Children by Region

Region	Prevalence	Sources
Global (Children)	0.77%	PubMed (2024)
Global (All Ages)	0.79%	WHO (2021)
Asia (Average)	0.6–0.9%	Cheong et al. (2025)
Southeast Asia	6 per 1,000	Wiley (2023)

Table 3. Evidence-Based Interventions for ASD

Intervention	Evidence Base and Outcomes	Psychological Mechanism
EIBI/ABA	Improves cognition, language, and adaptive skills	Operant learning principles
NDBI	Enhances social communication and functional skills	Developmental targets + natural reinforcement
Parent-mediated	Improves social communication, reduces disruptive behaviors	Caregiver responsiveness, scaffolding
CBT (Anxiety)	Effective for anxiety in autistic youth	Cognitive restructuring, emotional regulation
Social Skills Groups	Improves pragmatic and interaction skills	Modeling, feedback, peer practice

Online ISSN

3007-3197

Print ISSN

3007-3189

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Limitations

Data Gaps in Asia – Reliable epidemiological studies are scarce, with wide variability across countries.

Diagnostic Tools – Most tools (e.g., ADOS-2, ADI-R) are Western-developed, risking cultural bias in Asian contexts.

Comorbidity Overlap – High rates of ADHD, anxiety, and depression complicate accurate diagnosis.

Intervention Research – Few large-scale randomized controlled trials have been conducted in Asian countries, limiting generalizability.

Stigma and Awareness – Underreporting due to cultural stigma skews prevalence estimates.

Conclusion

This study highlights the psychological foundations of Autism Spectrum Disorder in children, emphasizing diagnostic challenges, developmental variability, and intervention strategies. Global prevalence stands at nearly **1 in 127 individuals**, with Asian rates similar but often underreported due to stigma and limited infrastructure. Evidence supports interventions such as EIBI, NDBI, parent-mediated programs, and adapted CBT, which show promising outcomes when culturally adapted. To improve outcomes, future research must prioritize **culturally sensitive diagnostic tools, scalable interventions, and large-scale studies in Asia**. By integrating global evidence with regional contexts, this paper underscores the urgent need for **early detection, family involvement, and culturally informed practices** in supporting children with ASD.

References

- Chahin, S., Apple, R. W., Kuo, K. H., & Dickson, C. A. (2020). Autism spectrum disorder: Psychological and functional assessment, and behavioral treatment approaches. *Translational Pediatrics*, 9(1), S23–S35. <https://doi.org/10.21037/tp.2019.11.06>
- Cheong, M., et al. (2025). Dissecting the heterogeneity of autism spectrum disorder with sensory behavior, brain, and epigenetic factors. *Translational Psychiatry*, 15(1), 1–12. <https://doi.org/10.1038/s41398-025-03566-2>
- Christensen, K., et al. (2025). Subcortical brain volume variations in autistic individuals across the lifespan. *Molecular Autism*, 16(1), 1–18. <https://doi.org/10.1186/s13229-025-00673-1>
- Clarke, N., et al. (2025). High-precision machine learning identifies a reproducible functional connectivity signature of autism spectrum diagnosis in a subset of individuals. *GigaScience*, 14(1), g1af091. <https://doi.org/10.1093/gigascience/g1af091>
- Gosling, C. J., et al. (2022). Efficacy of psychosocial interventions for Autism spectrum disorder: An umbrella review. *Molecular Psychiatry*, 27(10), 4091–4103. <https://doi.org/10.1038/s41380-022-01670-z>
- Greaves-Lord, K., Skuse, D., & Mandy, W. (2022). Innovations of the ICD-11 in the field of autism spectrum disorder: A psychological approach. *Clinical Psychology in Europe*, 4(3), 10005. <https://doi.org/10.32872/cpe.10005>
- Grumbach, S., et al. (2025). Local activity alterations in individuals with autism

Online ISSN

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Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

- correlate with neurotransmitter properties and ketamine-induced brain changes. *Nature Communications*, 16(1), 63857. <https://doi.org/10.1038/s41467-025-63857-6>
- Grzadzinski, R., et al. (2021). Pre-symptomatic intervention for autism spectrum disorder: Defining a research agenda. *Journal of Neurodevelopmental Disorders*, 13(1), 42. <https://doi.org/10.1186/s11689-021-09393-y>
- Hume, K., et al. (2021). Evidence-based practices for children, youth, and young adults with autism: Third generation review. *Journal of Autism and Developmental Disorders*, 51(13), 4013–4032. <https://doi.org/10.1007/s10803-020-04844-2>
- Hyman, S. L., Levy, S. E., & Myers, S. M. (2020). Identification, evaluation, and management of children with Autism Spectrum Disorder. *Pediatrics*, 145(1), e20193447. <https://doi.org/10.1542/peds.2019-3447>
- Lamanna, J., & Meldolesi, J. (2024). Autism spectrum disorder: Brain areas involved, neurobiological mechanisms, diagnoses and therapies. *International Journal of Molecular Sciences*, 25(4), 2423. <https://doi.org/10.3390/ijms25042423>
- Meza, N., et al. (2022). Non-pharmacological interventions for autism spectrum disorder in children: An overview of systematic reviews. *BMJ Evidence-Based Medicine*, 27(4), 187–195. <https://doi.org/10.1136/bmjebm-2021-111811>
- Sadat-Nejad, Y., et al. (2025). Characterizing replicability in the clustering structure of brain morphology in autism, attention-deficit/hyperactivity disorder, and obsessive-compulsive disorder. *Translational Psychiatry*, 15(1), 540. <https://doi.org/10.1038/s41398-025-03540-y>
- Tafolla, M., Singer, H., & Lord, C. (2025). Autism spectrum disorder across the lifespan. *Annual Review of Clinical Psychology*, 21(1), 325–351. <https://doi.org/10.1146/annurev-clinpsy-081423-031110>
- Talbott, M. R., & Miller, M. (2020). Future directions for infant identification and intervention for autism spectrum disorder from a transdiagnostic perspective. *Journal of Clinical Child and Adolescent Psychology*, 49(6), 731–746. <https://doi.org/10.1080/15374416.2020.1790382>
- Trembath, D., et al. (2022). Non-pharmacological interventions for autistic children: An umbrella review. *Autism*, 26(7), 1695–1712. <https://doi.org/10.1177/13623613221119368>
- Yarger, H. A., et al. (2025). Assessing anxiety in adolescents with autism spectrum disorder: Developing a health equity protocol for non-invasive biomarkers. *BMJ Open*, 15(2), e107684. <https://doi.org/10.1136/bmjopen-2025-107684>