

THE ROLE OF NEUROPSYCHOLOGICAL ASSESSMENT IN ASD DIAGNOSIS AND INTERVENTION

Doniyorova F.A.

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Relevance. Autism Spectrum Disorders (ASD) are characterized by cognitive, social, and motor impairments, yet standardized neuropsychological assessments are often underutilized in ASD diagnosis and treatment planning. Many children with ASD exhibit deficits in attention, executive functioning, speech processing, motor coordination, and memory, which significantly impact their learning and adaptive abilities. Identifying higher cortical function impairments in ASD can help refine therapeutic strategies, improving patients' cognitive and behavioral outcomes.

Research Objective. The aim of this study is to analyze the role of neuropsychological assessment in diagnosing cognitive dysfunctions in ASD and to compare the severity of impairments between children diagnosed with Kanner's Syndrome and Asperger's Syndrome. The study focuses on how comprehensive cognitive evaluations can guide personalized interventions to support neurodevelopmental progress in ASD children.

Materials and Methods. This study included 240 children with ASD, divided into two diagnostic subgroups:

- Kanner's Syndrome (F84.0) – 129 children (53.8%)
- Asperger's Syndrome (F84.5) – 111 children (46.2%)

A control group of 60 neurotypical children, matched by age and gender, was used for comparison. The Childhood Autism Rating Scale (CARS) was applied to assess autism severity levels. Neuropsychological testing included praxis, auditory-motor coordination, stereognosis, visual gnosis, speech processing, and memory assessments. The evaluation followed an adapted version of A.R. Luria's methodology for pediatric neuropsychologists. Statistical analysis was conducted using Fisher's exact test and Pearson's Chi-square test, with a significance level of $p < 0.05$.

Results and Discussion. Neuropsychological assessment revealed significant cognitive dysfunctions in children with ASD, with more severe deficits observed in children diagnosed with Kanner's Syndrome. Kinesthetic praxis impairments were noted in 41.9% of Kanner's Syndrome patients and 18.0% of Asperger's Syndrome patients, suggesting parietal lobe dysfunction affecting motor planning.

Spatial praxis impairments were significantly higher in Kanner's Syndrome (54.3%) than in Asperger's Syndrome (3.6%), indicating difficulties in spatial awareness and motor coordination. Auditory-motor coordination impairments were observed in 82.9% of Kanner's Syndrome patients and 27.0% of Asperger's Syndrome patients, reflecting temporal lobe dysfunction affecting sensory integration. Stereognosis deficits, indicative of parietal lobe dysfunction, were found in 82.9% of Kanner's Syndrome patients and 28.8% of Asperger's Syndrome patients. Visual gnosis deficits, which affect object recognition and spatial processing, were found in 87.6% of Kanner's patients and 44.1% of Asperger's patients, suggesting occipital lobe dysfunction. Speech impairments were universal in 100% of both groups, though Kanner's Syndrome patients exhibited more severe expressive and receptive language deficits.

Auditory-verbal memory deficits were observed in 82.9% of Kanner's Syndrome patients and 69.4% of Asperger's Syndrome patients, highlighting frontal, temporal, and parietal lobe dysfunctions. Deficits in drawing tasks were identified in 67.4% of Kanner's Syndrome patients and 44.1% of Asperger's Syndrome patients, reflecting difficulties in motor coordination and executive function.

The praxis tests revealed impaired voluntary movement execution, spatial disorientation, and difficulty integrating sensory inputs into coordinated actions. Errors in auditory-motor coordination tests confirmed dysfunctions in the frontal and temporal lobes, affecting the ability to synchronize movements with rhythmic stimuli.

Speech processing deficits were more pronounced in Kanner's Syndrome patients, with echolalia, delayed speech onset, articulation issues, and comprehension difficulties being common. Memory deficits were also more severe in Kanner's Syndrome, particularly in word recall and retention tasks, indicating impairments in auditory-verbal processing and executive function.

Children with ASD exhibited difficulties in attention regulation, leading to rapid mental exhaustion, inability to maintain concentration, and failure to correct mistakes when prompted. These findings suggest that cognitive and executive function impairments are key contributors to ASD-related learning difficulties.

Conclusion

Neuropsychological assessment provides critical insights into the cognitive dysfunctions associated with ASD, particularly in Kanner's Syndrome, where impairments are most severe. The study confirms that higher cortical function impairments in ASD affect multiple brain regions, including the frontal, parietal, temporal, and occipital lobes, contributing to motor, language, and memory deficits.

Identifying these dysfunctions can help develop personalized interventions, including:
Speech therapy for expressive and receptive language deficits.

- Sensory integration therapy to improve auditory-motor coordination and praxis skills.
- Executive function training to enhance memory, attention, and problem-solving skills.

The findings highlight the necessity of integrating neuropsychological evaluations into standard ASD diagnostic protocols to improve therapeutic strategies and patient outcomes. Future research should focus on developing targeted neurocognitive rehabilitation programs tailored to the specific impairments observed in different ASD subtypes.