

The Importance of Working Memory, Executive and Attention Functions in Attention Deficit Hyperactivity Disorder and Learning Disabilities Diagnostics

Authors : Dorottya Horváth, Tímea Harmath-Tánczos

Abstract : Attention deficit hyperactivity disorder (ADHD) and learning disabilities are common neurocognitive disorders that can have a significant impact on a child's academic performance. ADHD is characterized by inattention, hyperactivity, and impulsivity, while learning disabilities are characterized by difficulty with specific academic skills, such as reading, writing, or math. The aim of this study was to investigate the working memory, executive, and attention functions of neurotypical children and children with ADHD and learning disabilities in order to fill the gaps in the Hungarian mean test scores of these cognitive functions in children with neurocognitive disorders. Another aim was to specify the neuropsychological differential diagnostic toolkit in terms of the relationships and peculiarities between these cognitive functions. The research question addressed in this study was: How do the working memory, executive, and attention functions of neurotypical children compare to those of children with ADHD and learning disabilities? A self-administered test battery was used as a research tool. Working memory was measured with the Non-Word Repetition Test, the Listening Span Test, the Digit Span Test, and the Reverse Digit Span Test; executive function with the Letter Fluency, Semantic Fluency, and Verb Fluency Tests; and attentional concentration with the d2-R Test. The data for this study was collected from 115 children aged 9-14 years. The children were divided into three groups: neurotypical children (n = 44), children with ADHD without learning disabilities (n = 23), and children with ADHD with learning disabilities (n = 48). The data was analyzed using a variety of statistical methods, including t-tests, ANOVAs, and correlational analyses. The results showed that the performance of children with neurocognitive involvement in working memory, executive functions, and attention was significantly lower than the performance of neurotypical children. However, the results of children with ADHD and ADHD with learning disabilities did not show a significant difference. The findings of this study are important because they provide new insights into the cognitive profiles of children with ADHD and learning disabilities and suggest that working memory, executive functions, and attention are all impaired in children with neurocognitive involvement, regardless of whether they have ADHD or learning disabilities. This information can be used to develop more effective diagnostic and treatment strategies for these disorders.

Keywords : ADHD, attention functions, executive functions, learning disabilities, working memory

Conference Title : ICAIDD 2023 : International Conference on Autism, Intellectual and Developmental Disabilities

Conference Location : Budapest, Hungary

Conference Dates : August 17-18, 2023