Morphosyntax and ADHD vs. autism in Greek student populations

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Abstract

Deficits in morphosyntax and pragmatics in relation to language development are among the biggest language problems in children with high-functioning autism and ADHD. The aim of the present research was to measure morphological skills of children with ADHD and high-functioning autism, matched for age and non-verbal intelligence. The assessment tool used is the which was administered to 15 students with ADHD and 15 students with high-functioning autism in the 2nd - 4th grade, who had assessment from KEDASI. Parameters were tested such as: speed and accuracy of picture and word recognition, historical and grammatical spelling, oral and written comprehension, syntax such as sentence completion and analogies, attention span, non-verbal intelligence and musical skills. According to the results, difficulties are found in both spelling and syntax without particular differences between students with ADHD and students with high-functioning autism. The analysis of errors per item, however, provided useful information for the development of morphosyntax between the two groups.

Key words: ADHD, high-functioning autism, morphosyntax, difficulties in language

Introduction

ADHD is a neurodevelopmental disorder that affects the child in many areas of life with the main characteristics being increased motor activity, distraction and impulsive behavior (Dupaul et al., 2013). The defining feature in children with autism is a significant delay in the development of early speech and language skills before the age of three (Larson et al., 2022). The area of syntax and morphology in children with ADHD has not yet been sufficiently studied. According to research data, children show deficits in understanding complex sentences. Also, the syntax of the spoken word is particularly simple, as even the verbs are omitted in many cases. Syntactic difficulties appear at the level of comprehension and sentence production, reflecting a significant limitation in grammatical knowledge (Leonard, 2014). As observed in research results, children with autism spectrum disorder use specific words and phrases in certain contexts and situations (Whyte and Nelson, 2015). In addition, the understanding of morphosyntactic phenomena has several deficits such as the detection of grammatical errors. Sentence errors include omissions, substitutions, word movements, and morpheme additions (Ambridge et al. 2015; Pseftogianni and Katsarou, 2022). Finally, according to Terzi et al. (2014)

in their research that studied relative pronouns and verbs without morphology in children with high-functioning autism and in children with typical development, it was found that the ending points create difficulties for children with autism as they are removed during their production.

Methodology

The sample consists of 30 students studying in the B and C grade of the primary school. Two groups were formed, the first group consisted of 15 children with a diagnosis of ADHD and the second of 15 children with high-functioning autism with a diagnosis of autism as tested and characterized from Public Centers of Differential Diagnosis, matched in terms of age (Mean. 8.3 years) and nonverbal age (Mean 7 years). Their participation was voluntary.

The LAMDA TEST was administered, which is a standardized test for detecting learning difficulties in both written and spoken language. The purpose of the test is the automated detection of learning difficulties in written and spoken language, since the results of the administration are controlled automatically by a computer (Skaloubakas and Protopapas, 2007). The areas examined by the LAMDA TEST are: speed and accuracy of picture and word recognition, historical and grammatical spelling, oral and written comprehension, syntax: sentence completion, verbal analogies, phonological awareness, vocabulary: image selection, definitions, attention span, memory, non-verbal intelligence and musical skills: rhythm reproduction.

For the morphosyntax, two tests were used in which Cronbach's Alpha was checked, which showed high reliability, a=.868. In the first task, the child is asked to complete a sentence with the appropriate word that differs in terms of morphology and thus in how far the type of word fits the particular sentence.

In the second test, the method of analogy is used to check the student's ability in productive and inflectional morphology, without the existence of a supporting sentence frame.

Results

For statistical analysis the SPSS 20.0 was used. Initially, the correlation of the first test (sentence completion) with the second test (verbal analogies) was studied showing a significant correlation, r= .438 (at the 0.05 level). Then an independent sample t-test was performed for two independent populations, ADHD and autism where, regarding the first test, no differences were observed between children with ADHD and autism, t (28) =0.963, p= 0.344 (Correct answers- $M_{eanadhd}$:0.75 SD:0.88, $M_{eanautism}$:0.7 SD: 0.59). In contrast, in the second test differences were observed between children with ADHD and autism, t (27) =3.319, p=0.003, (Correct answers- $M_{eanadhd}$:0.87 SD:0.83, $M_{eanautism}$:0.50 SD:0.52). The remaining variables (speed and accuracy of picture and word recognition, historical and grammatical spelling, attention span, non-

verbal intelligence and musical skills) did not show statistically significant differences.

Discussion

Our results showed that deficits in morphosyntax are evident in children with high-functioning autism, such that these children produce shorter and grammatically simpler sentences and perform worse in sentence repetition than children with ADHD, in agreement with previous research (Riches et al. 2023). In this particular research, many errors were observed in completing sentences and in verbal analogies, where differences were presented with a worse performance than that of children with ADHD. Also, children with ADHD showed higher response speed. Essentially, children with ADHD and children with high-functioning autism scored poorly on morphosynthesis with children with autism performing slower and scoring lower, the results agreeing with previous research (Chuthapisith et al., 2014). The important thing observed in these item tests is that children with autism showed difficulties in forming paste tense verbs, both in the subject and in the endings.

The figures provided above are noteworthy because they highlight several factors that could affect how well we understand the deficiencies displayed by children with autism and ADHD and improve the effectiveness of the necessary interventions for them. However, it is impossible to draw broad conclusions from the research because of the small sample size and the fact that the data originated from schools in a specific region of Greece. To corroborate the above results with a wider sample of students from different regions, more research is needed. Researchers will be able to look into possible confounding factors including students' lack of access to tools that could help them with language and reading comprehension.

Parents are an additional component that can be utilized in subsequent studies. In this study, the students' performance was solely assessed by the exercises they completed; other variables, such as parental support and other services and interventions, as well as how these might be tailored based on the social and economic characteristics of each family, were not taken into consideration.

Research in these areas needs to be conducted in order to improve our understanding of language impairments in kids with autism and ADHD. Teachers in both general and special education settings, as well as other professionals who offer pertinent interventions like speech therapists or clinical psychologists, can utilize the research's findings to help both groups of children address their deficits in a way that best suits their needs and abilities.

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