



Original Contribution

READING DIFFICULTIES IN CHILDREN WITH HIGH FUNCTIONING AUTISM

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ABSTRACT

PURPOSE: The paper presents the study on assessing reading comprehension difficulties to students with high functioning autism (HFA) with focus on academic text reading in two aspects: question answering and comprehension of figurative language. **METHOD:** The sample consisted of 10 patients suspected of having Asperger Syndrome or HFA who have been studied in inclusive environment (median age=9 years, range 8;5-9;5, gender –no gender taken account). In order to evaluate the academic reading comprehension difficulties in students with HFA, each student was asked to read silently a classic Bulgarian story and to answer 12 multiple choice questions (MCQs) on narrative and sentence relationship content, and on figurative language meaning. **RESULTS:** The HFA sample differentiated well between controls ($p=0.00$). The HFA students were demonstrated by significant group differences as measured by Student t-Test. They have statistically lower results on reading comprehension of text content related to its narrative and figurative language. **CONCLUSIONS:** The study found that Bulgarian small sample of HFA students has severe reading comprehension difficulties in two aspects. Those findings are important for the inclusive education instructions. Further comprehensive investigation needed for detailed analyses of Bulgarian autistic population's reading skills.

Key words: Asperger Syndrome (AS), reading comprehension, academic reading, figurative language, inclusive environment

INTRODUCTION

Autism is defined as neurol-developmental disorder with functional impairments in three main domains - social interaction, communication, and restricted and repetitive behavior (1). The diagnostic criteria require that main symptoms become apparent before the child is age of three. The exact cause for autism is still unknown. According to Abrahams and Geschwind (2), autism has a strong genetic basis, although its genetics are complex and it is unclear whether ASD could be explained more by rare mutations, or by rare combinations of

common genetic variants. Arndt, Stodgell and Rodier (3) argue that in some rare case autism is strongly associated with birth defects agents. The number of people diagnosed with autism has increased dramatically since the 1980s, partly due to changes in diagnostic potentials, partly due to changed diagnostic criteria and therapeutic practice. The prevalence of autism is about 1–2 per 1,000 people worldwide but the question whether the actual prevalence has increased is still unresolved (4). The disorder represents one of five recognized valid diagnoses comprising the autistic spectrum (ASDs). Asperger Syndrome (AS) is defined in terms of the individual meeting the same criteria for autism but with no history of cognitive or language delay and Pervasive developmental disorder, not otherwise specified (commonly

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abbreviated as PDD-NOS) is diagnosed when the full set of criteria for autism or AS are not met (5). Asperger Syndrome is now widely believed to lie on the autistic spectrum of conditions differing from 'classical autism' in terms of normal intellectual development which is often referred to high functioning autism (HFA). The HFA itself is characterized by normal Intelligent Quotient (IQ) but lack of normal early language development that makes the exact relationship between AS and HFA unclear (6). Clinicians have noted that as the clinical picture of Pervasive Developmental Disorders or Autistic Spectrum Disorders changes over time, a child may receive a diagnosis of severe autism or High Functioning Autism at one point in their developmental history and Asperger's syndrome at a later stage. (7). The exact relationship between AS and HFA is still unclear, and, in view of the similarities in clinical presentation between AS and HFA the terms will be used to both.

There has been an increase in the number of educators that are becoming familiar with the ASD population. The process started with the 1997 amendments to the Individuals with Disabilities Education Act (8), according to which schools were required to provide students with disabilities with access to general education curricula. Individuals with ASD are increasingly placed in general education classrooms and engaged in academic curricula that are especially true of students with Asperger syndrome or HFA. Numerous studies have found that for students with ASD, academic performance may be affected by difficulties regarding text comprehension (9). Hsu-Min Chiang and Yueh-Hsien Lin (9) report that the deficits in reading comprehension reported for children with ASD may be attributable to impairments in communication and a unique cognitive style. They also review several studies which show the large proportion of the ASD participants showed impairments in comprehension of text, vocabulary, and oral language. Different studies have indicated a strong connection between literacy and access to education, employment, culture, and communication. More specifically, children with AS show lower reading comprehension and listening comprehension skills compared with controls but the basic reading and oral expression skills were intact. The

authors underline that reading comprehension has been considered "the most important academic skill learned in school" (Mastropieri & Scruggs, 1997, p. 1, in (9)). People with ASD typically have difficulties understanding figurative and non-literal language, semantically ambiguous words and phrases, and highly specialized/technical words. They also experience difficulties with morphologically, orthographically, and phonetically long or complex words or sentences as well as inconsistent formatting of elements of document structure.

Thus, there is considerable evidence that autistic people with reading comprehension difficulties are at risk of exclusion from the opportunities available within the information society. The aim of present research is to evaluate the reading comprehension skills of group HFA 8-9 years of age, in the area of academic reading and answering MCQs on the contents and figurative language. Our hypotheses are connected with statistically lower results in reading comprehension in comparison with controls in academic reading and understanding figurative language.

MATERIALS AND METHODS

Instrument Design

The test was designed to be short, easy to use, and easy to score. It consists of short classical Bulgarian story that is available in reading books for the selected age. It comprises 6 MCQs on text contents and 6 MCQs on figurative phrases and sentences in the text. Each of the items listed above scores 1 point if the respondent records are correct and 0 point for incorrect record. The total score is 12. The instrument was piloted on 10 children with AS or high functioning autism (HFA), and age matched controls. Due to the concern over whether a condition like HFA or AS might impair one's ability to understand the items in the questionnaire, we checked comprehension with the children in this pilot study by asking them about their responses.

Subjects

Two groups of subjects were tested: Group 1 comprised $n = 10$ children with AS/HFA (7 males, 3 females). This sex ratio was not taken into account. All subjects in this group had been

diagnosed by psychiatrists using established criteria for autism or AS (1). They were recruited via several sources, including resource teacher information, speech-language therapist information and psychologists practice information- all of them are specialist with expert team clinical practice and carrying out diagnostic assessments. Their mean age was 9 years. They had all attended mainstream schooling and were reported to have an IQ in the normal range. Their mean number of years in education was 2 years that makes enough time for receiving adequate education in reading. Group 2 comprised 10 children without any pervasive developmental disorders selected at random (n = 7males and 3 females). This sex ratio was not taken into account. Their mean number of years in education was also 2 years.

Method

Subjects were instructed to read individually and silent the text and to answer the 12 MSQs on their own. They were given 40 minutes within is equivalent of one academic lesson.

RESULTS

Mean total on the first sub-category MSQs scores from each group on the academic reading comprehension are displayed in **Figure 1**. Comparing Groups 1 and 2 using an Student T-tests of total score by Group, we found, as predicted, that there was a statistically significant difference between the two of Groups [mean = 328.9, $p = 0.00$], the AS/HFA group scoring lower than the controls.

The results from the first part of the test-reading comprehension show statistically lower results on academic reading test for reading comprehension which confirm our first hypothesis.

Mean total on the second sub-category MSQs scores from each group on the academic reading comprehension are displayed in **Figure 1**. Comparing Groups 1 and 2 using an Student T-tests of total score by Group, we found, as predicted, that there was a statistically significant difference between the two of Groups [mean = 1.10, $p = 0.00$], the AS/HFA group scoring lower than the controls.

Our results from the second part of the test-reading comprehension of figurative language

that show statistically lower results on academic reading test for reading comprehension which confirm our first hypothesis.

DISCUSSION

In this paper we have described a pilot test of HFA group in reading comprehension test in two dimensions-academic reading comprehension and figurative language comprehension. As predicted, children with AS/HFA scored significantly lower on the MSQs than matched controls. Future work needs to test on a larger number of subjects in HFA group than was possible here. Additional research requires assessment of relation between the academic reading comprehension deficits and figurative language deficits as well as other aspect of reading comprehension. The results are consistent with similar research on reading comprehension in foreign ASD population. Our investigation confirms several study results. Previous research indicated that individuals with Asperger syndrome or HFA often have above-average intelligence but have difficulty with reading comprehension, especially when reading ambiguous texts (10, 11, 12). Our sample also shows significant difficulties in comprehension of figurative phrases and sentences. The academic reading was also difficult for Bulgarian ASD group which raises the question about reading instruction in ASD population. In order to defining the successful strategies for improving reading comprehension skills in students with high-functioning autism O'Connor and Klein (13) examined the effects of three strategies on that skill. The authors noticed that (i): answering pre-reading questions (a form of priming), (ii) the use of cloze task (i.e., students were required to supply words in blanks by referring to information in previous sentences), and (iii) cueing students to pay attention on anaphora (i.e., students were asked to choose the best referent word of a target pronoun) were among the most effective methods. They underline that choosing a referent of a target pronoun was the best among the three strategies.

CONCLUSION

Children with HFA show significant difficulties in two dimensions of reading comprehension-question answering and (ii) comprehension of figurative language. This finding is important for educators of students with ASD and suggests

teaching strategies that may be employed to facilitate development of their reading comprehension. The tendency requires students with high-functioning autism or Asperger syndrome to be placed in general education classrooms, where they will receive literacy instruction with their peers without disabilities. That place general class teacher in front of instructional challenge and the need of specific diagnostic and instructional tools.

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