

Poster presentation

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The relation of dyslexia to cerebellar function and articulation speed

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Background

Over the last few years it has been claimed that the cerebellum is involved in higher cognitive functions, such as language and reading (Marien, Engelborghs, Fabbro, and Deyn, 2001). Apart from that, many researchers have been investigating the presence of oral speech deficits in impaired readers (Davenport, Yingling, Fein, Galin, and Johnstone 1986; Plaza, Cohen, and Chevrie-Muller, 2002). The objectives of the present study are a) to examine the propriety of the cerebellar deficit hypothesis and b) to explore if there is a differentiation of articulation speed in children with dyslexia.

Materials and methods

A battery consisted of five cerebellar tests, five cognitive tests, and an articulation speed test was administered to dyslexics, children with ADHD and normal readers aged 8–12 years. Each group comprised 10 children, all of which were Greek elementary school pupils. The three groups were matched for age and sex.

Results

Analysis indicated that the dyslexics showed statistically significant impairment in their performance in one cerebellar test compared with the control group and in two cognitive tests compared with both the control and the ADHD group. Finally, dyslexic children performed significantly worse than the control group during the articulation speed test; such difference was not observed between the control and the ADHD group.

Discussion

This study provides partial support to the cerebellar deficit hypothesis (Nicolson, Fawcett and Dean, 2001) and examines the possible relationship between reading and

articulation speed. The fact that the dyslexic children showed significant impairment in only one cerebellar test is not consistent with previous research; however, this particular finding may be due to our small sampling fraction. The fact that there was no significant difference concerning articulation speed between control and ADHD children indicates that ADHD is not a factor that could induce slower articulation. Thus, the only cause for lower articulation speed in our case is the presence of dyslexia. Nevertheless, it must be taken into consideration that any differences in articulation speed are not easily perceivable and were detected by using specialized software for speech recording and speed measurement. Further research is considered essential to clarify the relation of cerebellar function and oral speech to dyslexia.

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