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APPLY OF ELECTROPHYSIOLOGICAL MEASUREMENTS IN EVALUATION OF COGNITIVE FUNCTIONS AND LANGUAGE PROGRESSION

Results of many investigations emphasize that children's ability to preserve data in working memory has direct impact on different aspects of children's language development. Aforementioned difficulties are correlated with existence of deficit in working memory, i.e. difficulties in processing and preserving some sentence or part of it in child's memory what later can cause difficulties in a language development and lead even to a specific language impairment. Repeating of long sentences can also be a tool for evaluating language progress in children with special language impairment because this task demands that children produce not just repeat the sentence. The second hypothesis is that children have disorders of processing short and quickly presented auditory stimulations and remembering temporal sequence of information.

The aim of this investigation was to determine which of the following subsystems of working memory and language functions have the biggest correlation with electrophysiological measurements (perception and discrimination of auditory stimuli in children with speech and language difficulties by ERP). The experiment was performed twice in the interval of one year. The examinees were 12 children aged 7-9 years. Evaluation of progression was tested by repeating nonwords, sentences and assessing the phonological awareness. The measurements (ERP) were performed with 32-channel Neuroscan electroencephalographic system, using an electrode cap with a set of electrodes arranged according to the International 10-20 electrode positioning system. The stimuli were presented in an oddball paradigm, requiring a conscious reaction for the subjects. Latencies and amplitudes of P1, N1, P2, N2, and P3, waves were analyzed, as well as the reaction time and number of responses.

The results are facilitating further research and clinical work, both in diagnostic and in therapeutic purposes.

Key words: working memory, ERP, CAEP, children with specific language impairment