

TETA-RHYTHM REACTIVITY DURING PERCEPTION OF SPEECH SIGNALS BY CHILDREN OF EARLY AGE

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The reactivity of the theta rhythm of the EEG was studied in the perception of speech and reversed speech signal by children aged one and a half to three and a half years. The lower limit of the frequency range of the theta rhythm for children under two years was 3 Hz hertz, for children older than 2 years – 4 Hz. The upper limit of the theta rhythm (average value of 6.7 Hz) corresponded to the lower boundary of the alpha rhythm, the boundaries of which were determined individually for each subject by applying the EEG power spectrum overlay recorded during synchronization and desynchronization of alpha-activity. The EEG was recorded in three experimental situations: in a state of relative rest with open eyes, in the perception of speech (a poem that is understandable to the child of the content) and in the perception of a reversed signal (the original poem in the reverse mode). Note that the reversed signal, although it has all the acoustic characteristics presented in the speech, is devoid of both semantic and prosodic components. For statistical processing, the repeated ANOVA measures were used. The process of perception of speech was accompanied by a multidirectional change in the power of theta-rhythm of the EEG in young children. At the same time, the reversed signal caused a significant increase in the power of this EEG rhythm in wider cortical regions. The most pronounced differences in the reactivity of the theta

rhythm of the EEG in the perception of speech and the reversible signal were observed in the frontal, temporal and central regions, mainly the left hemisphere. The difference in the degree of activation of the structures of the right and left hemispheres, reflected in the modulation of the theta-rhythm, at the time of perception of the reversed signal was higher than that of perception of speech.

Keywords: electroencephalogram (EEG), speech perception, theta-rhythm, reversed speech, infants.

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