
МАТЕРИАЛЫ КОНФЕРЕНЦИИ
И ШКОЛЫ

WRITTEN WORD ELICITED ERP OLD/NEW EFFECT
IN ADULTS AND CHILDREN

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N400 and P600 ERP components in adults are sensitive to the factor of novelty of the presented word (the so-called old/new effect). However, the dynamics of ERP components formation in ontogenesis as well as components involvement in new information are still remain poorly understood. The work aimed to compare ERP components in word repetition effect in children, adolescents, and adults.

We examined adults 19–26 years old ($N = 22$), children of 9–10 ($N = 25$) and adolescents of 12–14 years old ($N = 17$). In first step the pair of nouns was presented to the subject, in the second step – single word was presented, which could be new one or repeat the word from the pair. In total, there were 100 stimuli of each type in the categorical decision paradigm. At the same time, EEG was recorded from 19 sites, located according to the 10/20 system with a sampling rate of 500 Hz. The ERP was assessed on 1-second intervals separately for new and repeated words in each of the age groups. The amplitude and latency of the peaks in the ranges of 350–550 and 550–900 ms were compared using the Wilcoxon T-test.

It was shown that the amplitude of N400 and P600 ERP components significantly decreased with age elic-

ited by each type of stimulus. N400 between stimuli differences revealed only in adults: the latency of the N400 peak was significantly lower for a new word than for a repetitive one, $Z = -2.64$, corrected $p = 0.048$, no significant differences in the peak amplitude were found. Differences in the amplitude of the P600 elicited by to a new and repeated word are manifested in adolescents ($Z = -2.91$, corrected $p = 0.024$) and adults ($Z = -2.84$, corrected $p = 0.030$). In both groups, the amplitude was higher in old word trials.

Comparison of old and new visual information involve some different stages, which are formed at different age and reflected in different ERP components. These stages are formed at different periods of ontogenesis and are reflected in different components of the ERP. First, differences appear between the repeated and the new word in the P600 component: at 12–14 years old, the pattern of differences is similar to adults. N400 differences are not detected in childhood and adolescence and are present only in adults.

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