The written sentence processing in good and poor readers: an impact of two distinct task designs on the ERP study results


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The study aimed to explore ERP correlates of metaphoric/literal sentence processing during reading in Russian young adults (“good” and “poor” comprehenders according to their off-line reading text comprehension assessment). Two ERP-experiments with the different design were conducted. In both experiments the subjects made a categorical decision about 3-4 word sentences: is it’s meaning metaphoric or literal one. The parts of sentences were presented in two steps: 1 - the initial 2-3 words (1st stimulus – context); 2 - the key word (literal or metaphoric -2nd stimulus). In Experiment1 literal and metaphorical phrases were presented, the instruction was “to categorize the whole sentence”; in the Experiment 2 - stimuli were literal, metaphorical and distractors, instruction - “to categorize the last word”. ERP amplitude differences relevant to sentence meaning judgment were revealed for both the 1st and the 2nd stimulus (240-340 ms in Fp1, F7, Fz; and Pz) in “good” readers, and only for 2nd stimulus (220-380 ms-F3) in “poor” readers in Experiment1. For the 1st stimulus more negativity on 370-530 ms was revealed in “good” comprehenders vs “poor”. We presumed that “good” comprehenders made an inference about the sentence figurative meaning right after the 1st stimulus presentation contrary to “poor” made it only after the 2nd stimulus. The distractors and more focused instruction in Experiment2 blocked an early inference and prevent the relevant ERP between group distinctions; only the late ERP components after the 2nd stimulus distincted 2groups. It seems, that good and poor comprehenders differed by their inference making strategy in sentence reading. Supported by RFBR grant No15-06-08349.

Keywords: ERP, reading, comprehension.