

Eye guidance in Russian: difference in processing nouns vs. verbs

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Most of our knowledge about eye movements during reading is based on studies investigating Latin-alphabet languages like English. However, Russian differs from English in a number of features which might impact on the gaze patterns when reading Russian.

The present study reports the basic eye-movement measures of natural reading in Russian based on the data recorded from 24 persons, each reading 42 sentences. The Cyrillic script, the highly inflexional morphology, and the transparent orthography in Russian results in similar patterns of fixation durations as reported for English. However, the skipping of function words and re-fixation rate seem to be increased for Russian readers.

We conducted supplementary analysis using linear-mixed modeling on the subset of 3557 words being either nouns or verbs. Both nouns and verbs are content words, but verbs are the nucleus of the sentence that bind all other elements in the syntactic structure. This fact might lead to reading cost for verbs during sentence reading. Our results confirm this hypothesis: readers spent less time viewing nouns than verbs even when other word-specific variables are controlled. We discuss the cognitive cost of verbs in terms of ongoing syntactic integration processes.

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Children's Cognitive Processes and Learning Strategies for Reading Illustrated Biology Texts: Eye Movement Measurements

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Previous research suggests that multiple representations can improve science reading comprehension. This facilitation effect is premised on the observation that readers can efficiently integrate information in text and diagram formats; however, this effect in young readers is still contested. Using eye-tracking technology and sequential analysis, this study investigated children's reading strategies and comprehension of illustrated biology texts by comparing their performance to that of adults. Fourth-graders with high reading abilities and university students read a biology article from an elementary school science textbook containing two illustrations, one representational and one decorative. After the reading task, participants answered questions on recognition, textual, and illustration items. Unsurprisingly, the university students outperformed the children on all tests; however, more interestingly, eye-movement patterns differed across the two groups. The adult readers demonstrated bidirectional reading pathways for both text and illustrations, whereas children's eye fixations only went back and forth within paragraphs in the text and between the illustrations. The children also made fewer references to both text and illustration and spent less time viewing illustrations. This suggests that regardless of their high-reading ability, fourth-grade children's visual literacy is not mature enough to perceive connections between corresponding features of different representations crucial to reading comprehension.