

Oral and silent reading in adolescents: evidence from Russian

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Abstract

This study aimed to answer two questions: what type of reading contributes to more successful text processing and understanding, and what are the main characteristics of silent and oral reading for Russian-speaking secondary school children. Results show that while reading orally, participants with reading disorders comprehend the text poorly. They have a limited amount of attentional resources available for any given cognitive tasks, and thus, the greater the amount of attention they paid to text processing, the less is available for text understanding. However, in silent reading, the same participants demonstrate good comprehension if they read slowly, i.e. make more fixations and regressions. Their cognitive resources are spent on text comprehension, which is eventually what reading is aimed at.

Keywords: reading aloud, silent reading, Russian, adolescences, eye-tracking

Introduction

According to Adams (1990), the ability to read text fluently is one of the essential requirements for successful reading comprehension. Fuchs et al. (2001) gave theoretical and experimental arguments for supposing that oral reading fluency may reflect overall reading competence. Prior et al. (2011) examined comprehension after oral and silent reading in elementary- and middle-school students. They revealed that silent reading emerged as the better mode for text comprehension only in the seventh grade. Differences between reading modes were explained by additional processing demands imposed by concurrent articulation and eye voice coordination when reading aloud. Kim et al. (2012) suggested that silent reading fluency predicted reading comprehension better for skilled readers than for average readers. Price et al (2015) revealed that oral and silent reading fluency are separate constructs, though only oral reading fluency contributed to reading comprehension. Vocabulary was found to contribute a lot to comprehension even after controlling for reading fluency. It was also shown that silent reading was stronger for retelling narratives, but there was no significant difference for comprehension questions. The expository passages revealed no difference between the reading modes (Schimmel & Ness 2017).

Our study investigates how readers process and understand information when reading texts orally and silently. In particular, the relationship between reading fluency and reading comprehension was explored.

Experiment 1. Reading aloud

Participants

32 Russian-speaking adolescents with speech disorders (experimental group, N=32, Mage=15.3) and 28 Russian-speaking adolescents with normal reading skills (control group, N=28, Mage=15.6) participated in two experiments.

Methodology

Both groups of participants read aloud two texts of the same length and the same level of readability, and afterwards answered 8 comprehension questions.

The reading fluency was assessed using the reading rate — the number of correctly read words per minute (CW/min). A number of correct answers to the questions showed reading comprehension (reading understanding).

Using CW/min, in the experimental group we identified ‘poor readers’ (N=15) — participants who showed a result less than 3SD from the average value in the control group. Other participants of the experimental group were identified as ‘good readers’ (N=17).

For the good readers, poor readers and control group the Spearman correlation between reading fluency and reading comprehension was measured.

Results

In the group of ‘poor readers’, there was a negative correlation $r = -0.708$; $p = 0.003$ between CW/min and the number of points for text comprehension. In the group of ‘good readers’ and control group, we didn’t find any correlations between reading fluency and text understanding.

Experiment 2. Silent reading

Participants

The same participants as in Experiment 1 took part in the Experiment 2. Using the same procedure as Experiment 1 they were divided into three groups: the control group, poor readers and good readers.

Methodology

This time participants read silently. Two texts of the same length and the same level of readability but different from the ones of the Experiment 1 was used as reading material. After each text 10 questions were presented.

To assess reading fluency in the silent mode we recorded participants eye-movement using an eye-tracker EyeLink 1000 plus by SR Research. We

measured the reading time (RT), total fixations count (TFC), average saccade amplitude (ASA), and regressions count (RC). Text understanding was evaluated by the number of correct answers to the comprehension questions. To explore the relationship between reading fluency and reading comprehension we performed the Spearman correlation.

Results

In the group of 'poor readers' we found a correlation between text understanding and RT ($r = 0.67$; $p = 0.006$), TFC ($r = 0.747$; $p = 0.001$), RC ($r = 0.598$; $p = 0.019$), as well as a negative correlation between comprehension level and ASA ($r = -0.534$; $p = 0.04$). In the control group and the group of the good readers there was no significant correlation between any reading fluency measure and reading comprehension accuracy (all $ps > 0.05$).

Discussion

Overall results show that while reading orally, participants with reading disorders comprehend the text poorly. They have a limited amount of attentional resources available for any given cognitive tasks, and thus, the greater the amount of attention they paid to text processing, the less is available for text understanding. However, in silent reading, the same participants demonstrate good comprehension if they read slowly, i.e. make more fixations and regressions, and have smaller amplitude of saccades. Their cognitive resources are spent on text comprehension, which is eventually what reading is aimed at.

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