



NATIONAL RESEARCH
UNIVERSITY

EYE-MOVEMENTS DURING READING IN CHILDREN WITH HEARING LOSS

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CENTER FOR
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BACKGROUND:

Deaf individuals:

- 1) The language they learn from birth is not the language they are learning to read in (Goldin-Meadow & Mayberry, 2001).
- 2) For children with hearing loss it is hard to learn the mapping between the spoken language and the printed word.
- 3) Difference in peripheral vision between the groups of deaf and hearing (Bélanger, 2015).
- 4) They experience serious problems with reading, because there is a difference between spoken and sign languages.

Typically developing children:

- 1) Reading patterns are not the same for adults and children.
- 2) Adults are better in oculomotor control. Ability to control eye movements improves with age (Blythe & Joseph, 2011).
- 3) Children did not appear to differ from adults in the location of their first and second fixations (Vitu et al., 2001).
- 4) They have more fixations and longer fixation durations due to the lack of experience than adults.

CURRENT STUDY:

Goals:

- 1) Investigate reading mechanisms in children with hearing loss.
- 2) Compare reading patterns in children with hearing loss and typically developing children without hearing loss.

Hypothesis:

- 1) Children with hearing loss could not rely on phonology, but they may be more proficient in using spelling.
- 2) Children with hearing loss may have the advantage in reading due to more developed peripheral vision.
- 3) Children with hearing loss will have low comprehension response accuracy, because they read in a foreign language.

METHOD:

Participants:

Children with hearing loss: N = 4, Mage = 8.75, range 8 – 10 years old.

Controls: N = 38, Mage = 8, range 7 – 9 years old.

Reading experiment:

- 1) 33 sentences from the child version of the Russian Sentence Corpus (Korneev et al., 2017).
- 2) 15 two-choice comprehension questions.

Vocabulary test:

- 1) Online test, 5 minutes to complete.
- 2) Goal: collect the data about their reading experience.

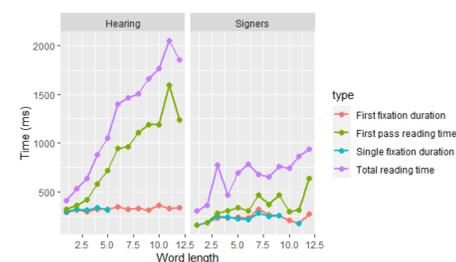
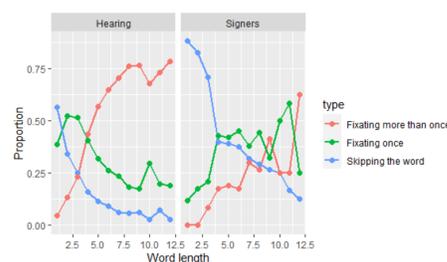
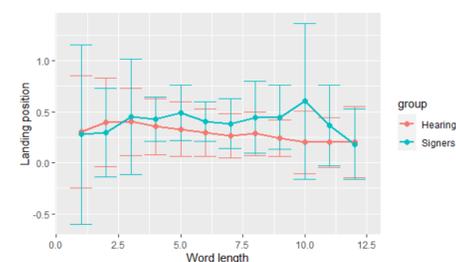
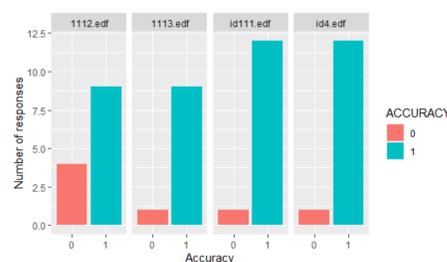
Raven's Colored Progressive Matrices:

- 1) A nonverbal intelligence test with 36 colored patterns.
- 2) Task: identify the missing part that makes a given pattern complete.

OUTCOMES:

Reading experiment:

- 1) For children with hearing loss, saccade landing position was closer to the center of the word;
- 2) They had higher probability of skipping a word than controls;
- 3) Children with hearing loss displayed lower probability of fixating a word more than once;
- 4) They slowed down on longer words less than the hearing ones;
- 5) Accuracy level for children with hearing loss was 87%, while typically developing children had 94% of right answers.



Vocabulary test:

- 1) Children with hearing loss had low proficiency level in spoken Russian language.
- 2) All participants with hearing loss demonstrated significantly lower results than their typically developing peers.

Raven's Colored Progressive Matrices:

- 1) Both participants who completed the test had normal nonverbal intelligence.
- 2) Their results were even higher than the average value for their age.