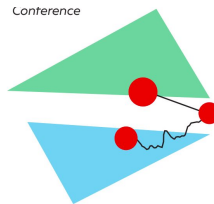


# Phonological and orthographic processing affect reading fluency in Russian children

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# Outline

1. Introduction
2. Method
3. Results
4. Discussion

- Reading is a complex cognitive skill that implies processing of visual and linguistic information.

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- **Research question** is  
*How do phonological and orthographic processing skills as well as age influence reading fluency in Russian speaking children?*

# Reading in Russian: Rakhlin et al. (2019)

- 1344 children, aged 7-14
- The main findings:
  - Phonological processing did not contribute directly to reading
  - Orthographic processing is of primary importance for reading
- Methodological difference:
  - phonological processing measured with pseudoword repetition
  - According to Dorofeeva et al. (2020), complex phonological tasks predict reading rather than simpler ones.

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# Participants and Materials

- Russian monolingual children (school students)
- N = 117 (55 girls), aged 6-12
- Mean age = 9, SD = 1.6
- No speech pathologies
- Nonverbal assessed matrices (Raven, 2004)
- Perform three behavioral tests



# Test 1 Standardized Assessment of Reading Skills

- Assessment of reading fluency (words per minute)
- Developed by Kornev, 1997
- Procedure: out-loud reading of a text printed on a paper for 1 minute at least



## Как я ловил раков

В нашей деревне текут два ручейка. В них живёт много раков. Мальчики ловят их руками под камнями, в дырах между корнями или под берегом.

Потом они варят их и лакомятся ими. Одного рака я получил от моего друга, и он мне очень понравился, был очень вкусный.

Мне тоже захотелось ловить раков. Но легко сказать, а трудно сделать. У раков есть своё оружие — клешни, которыми они щиплются как следует. Кроме того, я боялся сунуть руку в дыру между корнями. Ведь можно прикоснуться к лягушке или даже к змее! Мой друг посоветовал мне, как можно ловить раков совсем по-другому...

Нужно привязать на длинную палку тухлое мясо. Рак крепко схватит мясо, и затем его легко вытащить из воды, как рыбу на удочке. Этот способ мне очень понравился, и поэтому я подготовил все нужные вещи. В пруду я нашёл глубокое место и сунул палку в воду.

Сижу спокойно. Вода чистая, но раков я не видел нигде. Вдруг я заметил усы, потом глаза и клешни и, наконец, весь рак медленно вылез к мясу. Потом схватил мясо клешнями и разорвал его челюстями. Я очень осторожно потянул свою удочку из воды, и вот рак лежит на траве.

Но некоторые раки были более осторожными. Когда палка-удочка дрожала, рак сразу ее отпуская и задом шёл в нору.

Но всё-таки я наловил много раков. Мама их сварила. Какими они были красными! И очень вкусными!

# Test 2 Changing sound in a pseudoword

- Assessment of phonological processing
- Developed by Dorofeeva et al., 2019
- 24 stimuli in total, counting accuracy
- Procedure:

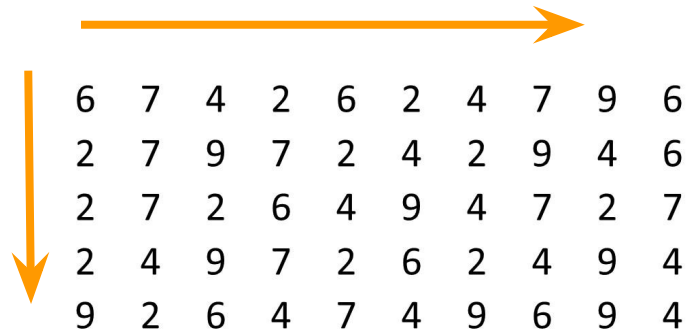


*Change the sound /v/ to the sound /v'/, MIMIVA*

<b>Stimulus</b>	mimiva
<b>Sound opposition</b>	non-palatalized /v/ and palatalized /v'/
<b>Expected response</b>	mimiv'ya

# Test 3 Rapid Automated Naming

- Assessment of orthographic processing
- Developed by Denckla and Rudel, 1974
- 50-digits matrix of figures 2,4,6,7,9
- Assessing time spent on naming
- Procedure: to name out loud all figures from left to right, and from up to bottom



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# Data analysis

Linear regression in R (Version 4.0.2)

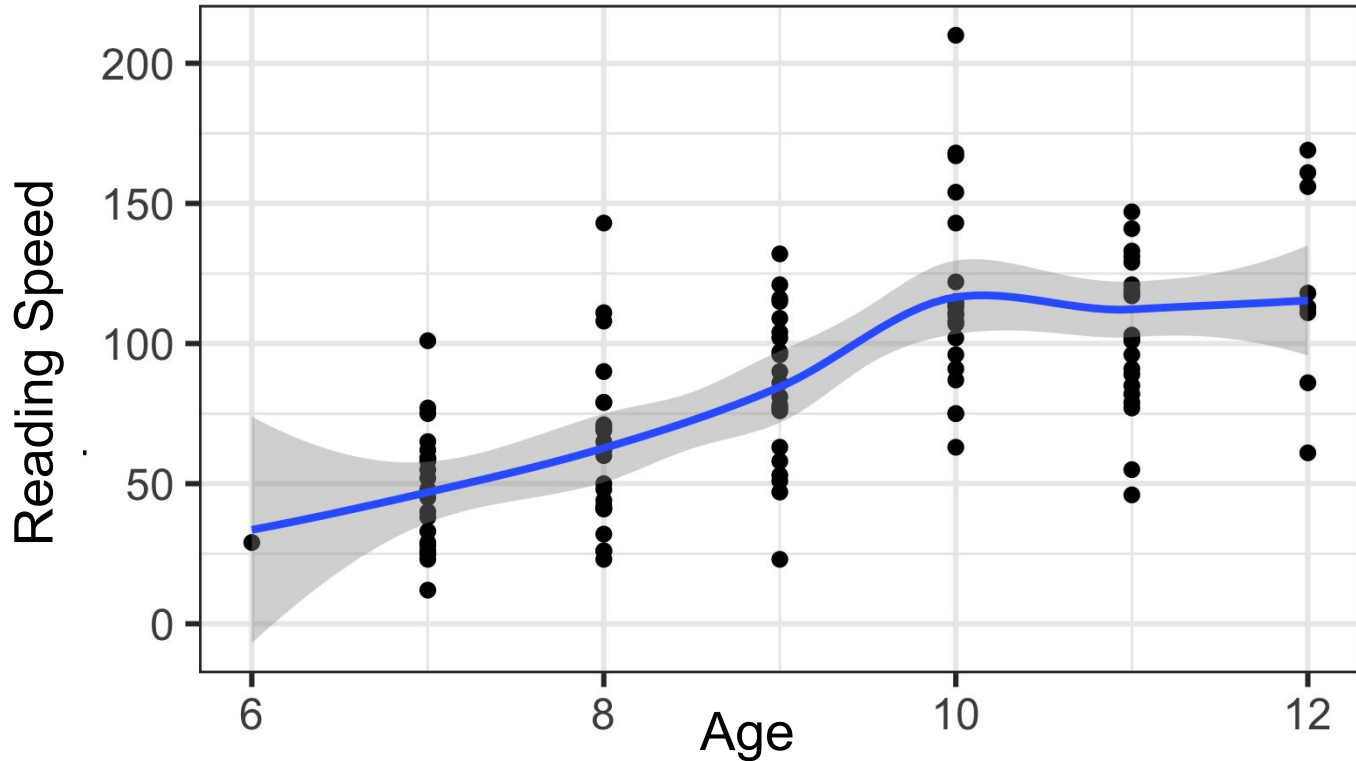
lme4m ggplot2 packages

DV = reading speed (number of words read per minute)

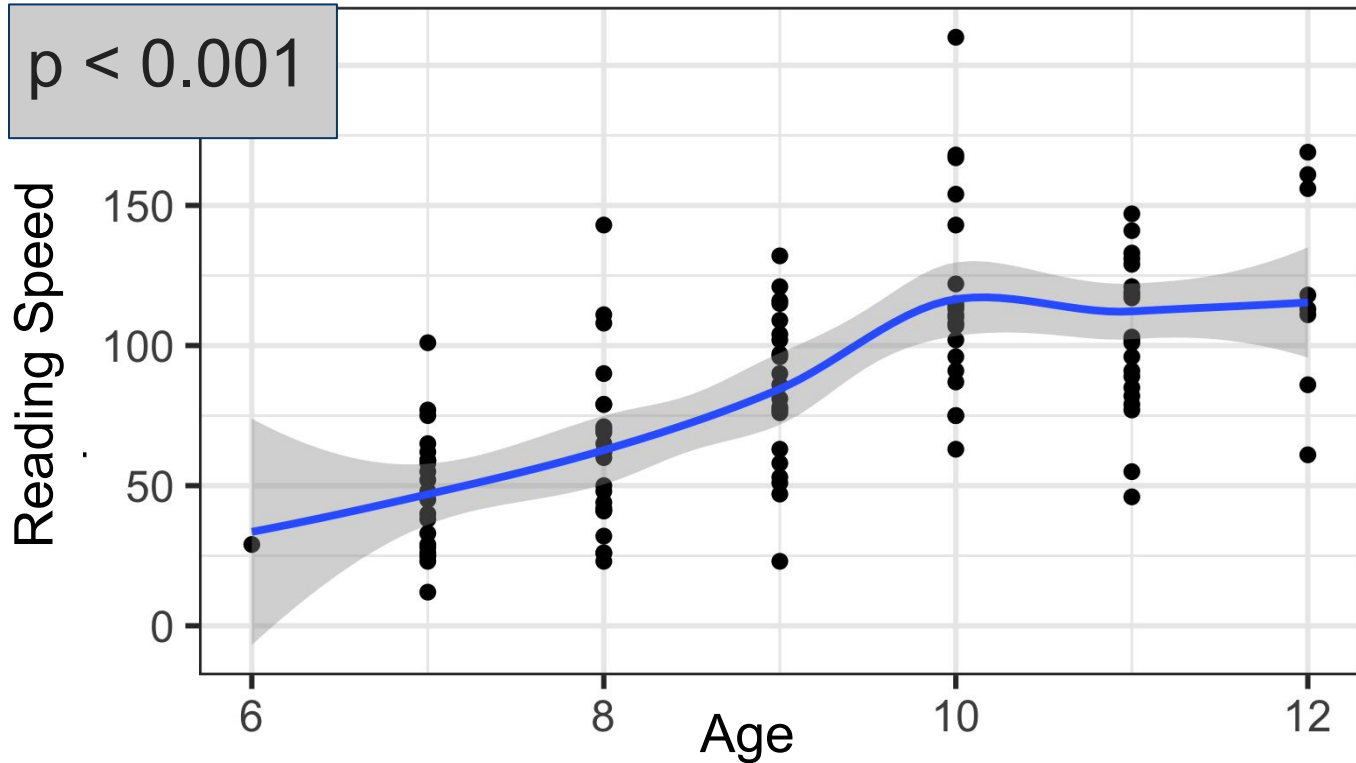
Analysis of factors:

- 1) age
- 2) phonological processing level
- 3) orthographic processing level

# Results: Dependency of reading speed and age

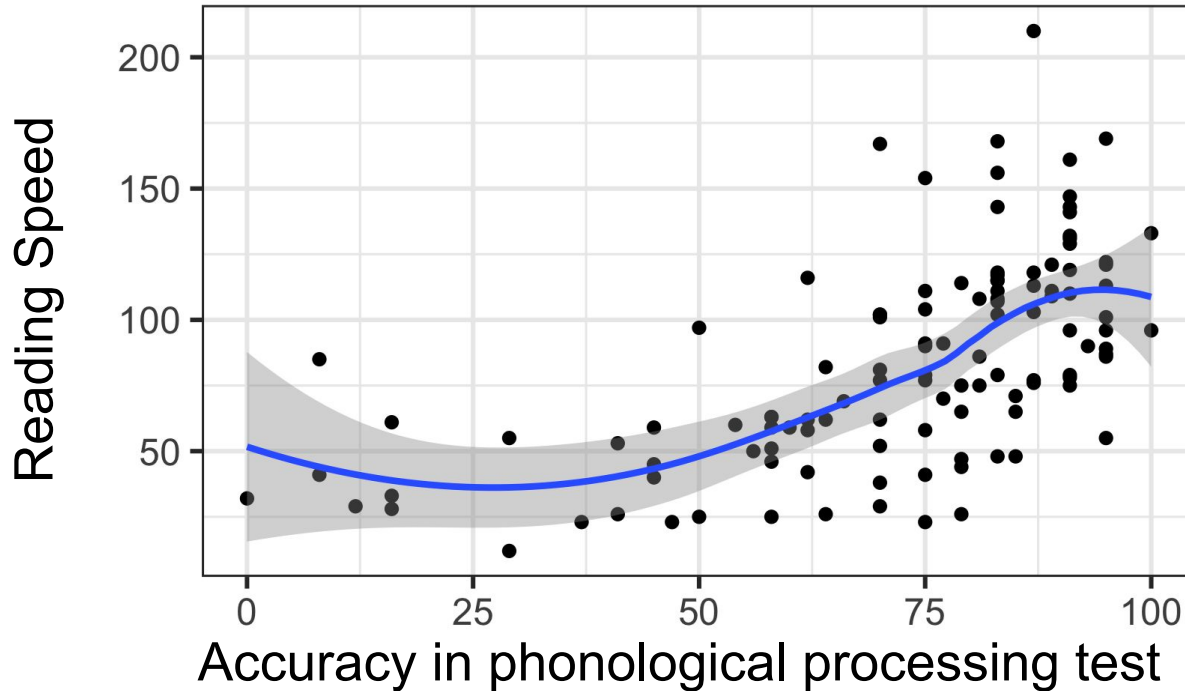


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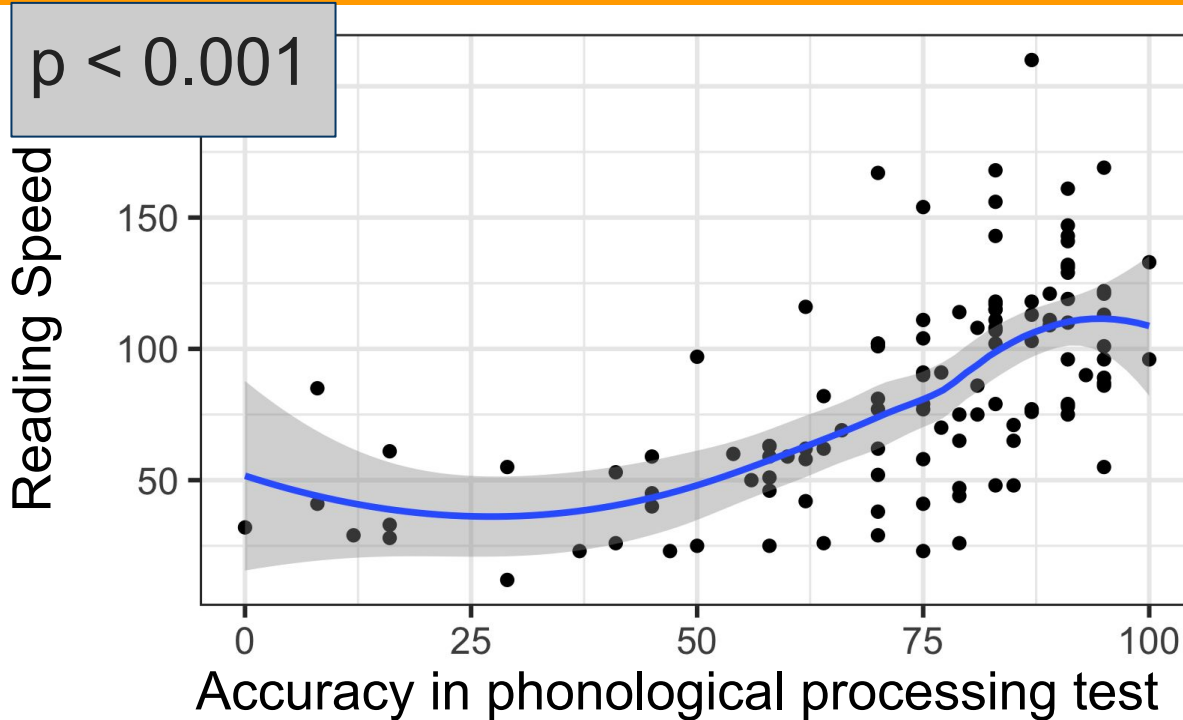




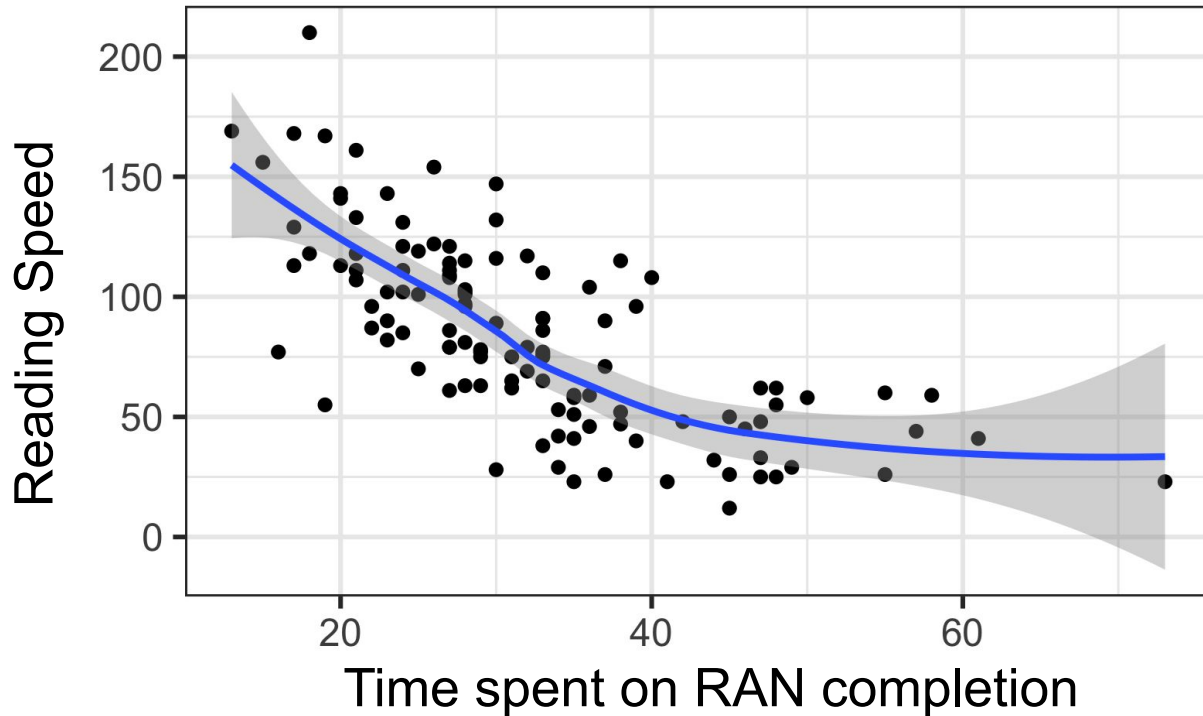
# Results: Dependency of reading speed and phonological processing level



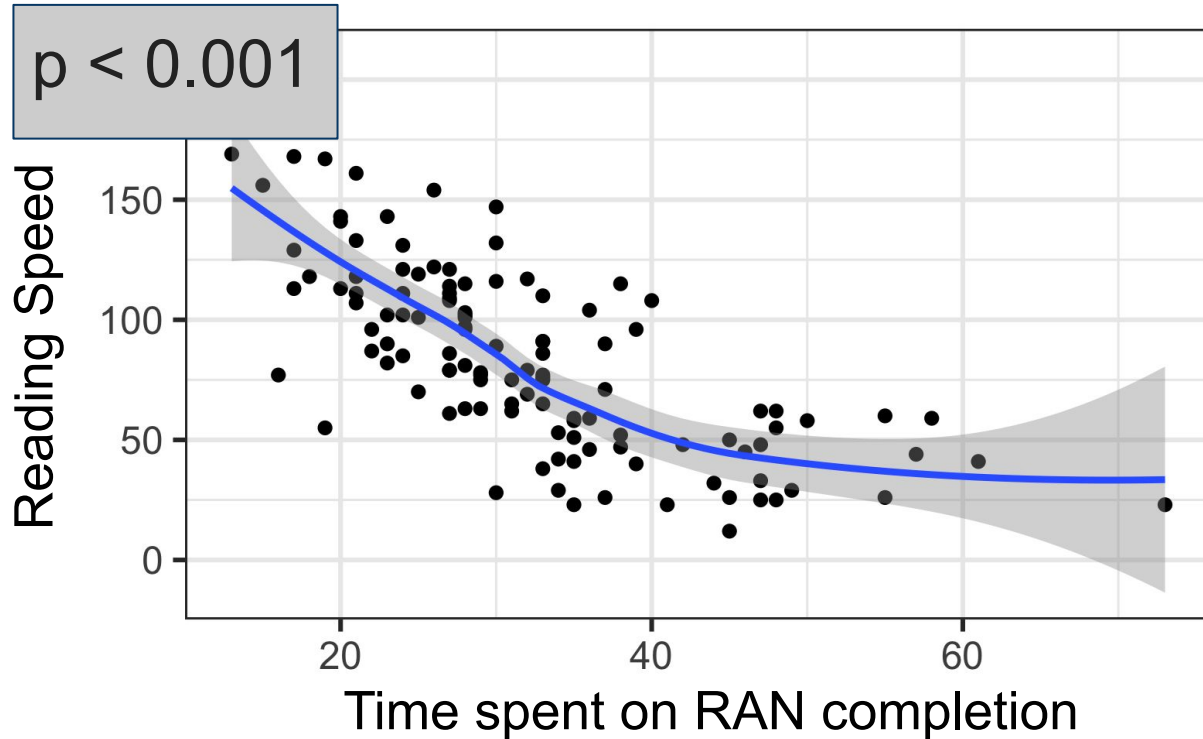
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# Results: Dependency of reading speed and orthographic processing level



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*How do phonological and orthographic processing skills as well as age influence reading fluency in Russian speaking children?*
- **The answer** is  
All three factors predict reading fluency in Russian speaking children, i.e.
  - higher level of phonological processing speeded up reading;
  - faster performance in RAN speeded up reading over and above phonological processing;
  - older children read faster than younger ones.



**Thank you for listening!**

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# Recruiting participants in Moscow

If you know families with Russian monolingual **children aged 6-12** years and living **in Moscow**, please share the info!

If you are THE family, contact us :)

