

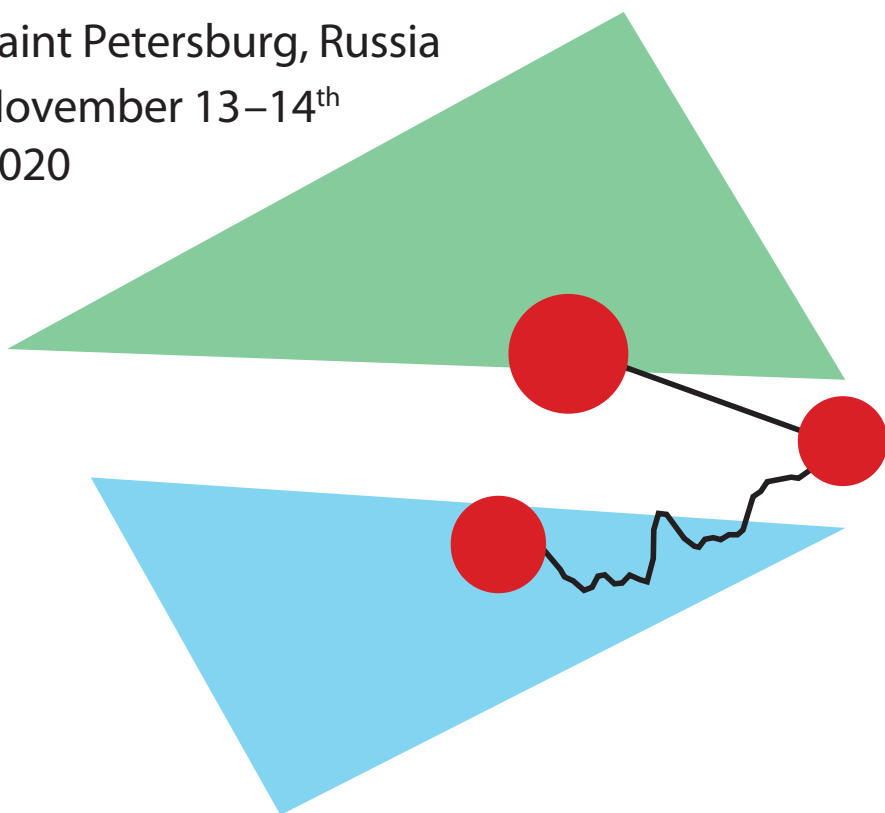
Proceedings of the 4th International Conference on

NEUROBIOLOGY OF SPEECH AND LANGUAGE

Saint Petersburg, Russia

November 13–14th

2020



Organised by the Laboratory of
Behavioural Neurodynamics,
Saint Petersburg State University

Government of the Russian Federation
Saint Petersburg State University

**Proceedings of the 4th International Conference
on Neurobiology of Speech and Language**

Organised by the Laboratory of Behavioural Neurodynamics,
Saint Petersburg State University

November, 2020

Edited by Olga Shcherbakova



Saint Petersburg, Russia

Neurobiology of Speech and Language. Proceedings of the 4th International Conference on Neurobiology of Speech and Language / Ed. by O. Shcherbakova.— St. Petersburg: Skifiya-print, 2020.— 76 p.

ISBN 978-5-98620-483-3

Front cover by Alexander Kirsanov

Abstracts' compilation and verification

by Varvara Averyanova, Ekaterina Blinova

Management and coordination by Ekaterina Perikova

Web page: <http://cogneuro.spbu.ru>

Supported by the grant of the Government of the Russian Federation
№ 14.W03.31.0010 (P.I. Yu. Yu. Shtyrov)

ISBN 978-5-98620-483-3

© Authors, 2020

CONTENTS



KEYNOTE LECTURES

Mari Tervaniemi

Music and speech: Two facets of auditory cognition and their interplay 7

Kira Gor

Fuzzy nonnative lexical representations 8

Olga Dragoy

Language pathways: The role of white-matter tracts in language processing. . 8

SLIDE SESSION 1

Maria Alekseeva, Andriy Myachykov, Yury Shtyrov

(Non)existence of zero morpheme: ERP evidence. 10

Ana Baciero, Manuel Perea, Francisco Rocabado, Ana Marcet

Do clothes make the man? Transposed-letter effects with logos 11

Beatriz Bermúdez Margareto, Gregory Kopytin, Andriy Myachykov, Yury Shtyrov

Handling two writing systems in the bilingual brain: ERP investigation . . . 13

María Fernández-López, Manuel Perea, Marta Vergara-Martínez

Does color modulate masked identity priming? Evidence from lexical decision. 14

Nadezhda Mkrtychian, Svetlana Kostromina, Evgeny Blagovechtchenski,

Daria Gnedych, Diana Kurmakaeva, Yury Shtyrov

Contextual acquisition of novel words: Interactions with verbal abilities, motivation, ambiguity tolerance and neural dynamics 15

SLIDE SESSION 2

Vladislava Staroverova, Nina Zdorova, Anastasiya Lopukhina

Development of phonological and orthographic parafoveal processing during reading in Russian 17

Ekaterina Perikova, Evgeny Blagovechtchenski, Margarita Filippova,

Olga Shcherbakova, Alexander Kirsanov, Ekaterina Andriushchenko,

Ekaterina Blinova, Yury Shtyrov

Anodal tDCS over Broca's area improves learning of novel vocabulary 18

Svetlana Alexeeva, Vladislav Zubov

First dyslexic font in Russian: Evidence of efficiency and new questions 20

Anna Chrabaszcz, Dengyu Wang, Witold J. Lipski, Alan Bush,

Julie A. Fiez, R. Mark Richardson

Processing of words and pseudowords in the thalamus and the
subthalamic nucleus 21

Hannah Marlatte, Jed Meltzer, Malcolm Binns, Asaf Gilboa

Individual differences in prior knowledge application during word
learning: A mechanistic Bayesian model 22

SLIDE SESSION 3

Marta Vergara-Martínez, María Fernández-López,

Montserrat Comesaña, Manuel Perea

Can we identify a word by its upper half? ERP correlates of letter
degradation during word recognition 25

Daria Gnedykh, Diana Kurmakaeva, Nadezhda Mkrtychian,

Evgeny Blagovechtchenski, Svetlana Kostromina, Yury Shtyrov

Differential effects of tDCS of Wernicke's area and its right hemisphere
homologue on contextual acquisition of novel words 26

Sofya Goldina, Anastasiya Lopukhina, Anna Laurinavichyute, Olga Dragoy

Eye movements during reading in Russian-speaking children with dyslexia 28

Nina Zdorova, Anastasiya Lopukhina, Olga Vedenina, Sofya Goldina,

Anastasiia Kaprielova, Vladislava Staroverova, Ksenia Bartseva, Olga Dragoy

Phonological and orthographic processing affect reading fluency in
Russian children 29

SLIDE SESSION 4

Sergei Oganov, Alexandr Kornev

Different types of regressions as a text processing skills indicator:

Eye-tracking study of reading in 9–11 years old dyslexics 31

Melanie Labusch, Manuel Perea, Sonja Kotz

The impact of capitalization of German nouns on semantic processing. . . . 32

Elizaveta Sokolenko, Svetlana Malyutina

The effect of different types of semantic cues on word retrieval success in
tip-of-the-tongue states 33

Hana Jee, Monica Tamariz, Richard Shillcock

Systematicity in language 35

FLASH TALKS SESSION 1

Elizaveta Galperina, Olga Kruchinina, Ekaterina Stankova,

Natalia Shemyakina, Zhanna Nagornova, Alexandr Kornev

Maturational changes of ERP N400 and P600 components elicited by
repeated written words in children, adolescents, and adults 37

effectively. We also found that only the effect of word length was strongly distinguished between children with dyslexia and controls, whereas the effect of the other word properties needs to be investigated further.

This work was supported by the Russian Foundation for Basic Research (research grant № 17-29-09122).

*Nina Zdorova¹, Anastasiya Lopukhina¹, Olga Vedenina¹, Sofya Goldina¹,
Anastasiia Kaprielova¹, Vladislava Staroverova¹,
Ksenia Bartseva², Olga Dragoy¹*

¹ National Research University Higher School of Economics

² Sirius University of Science and Technology

Phonological and orthographic processing affect reading fluency in Russian children

Reading, as a complex cognitive skill, implies processing of visual and linguistic information. At early stages of learning to read children rely more on the phonological information, whereas more advanced readers tend to rely more on the orthographic information (Grainger et al., 2012; Ziegler et al., 2014). The aim of the present study is to investigate how phonological and orthographic processing skills as well as age influence reading fluency in Russian-speaking children.

81 Russian monolingual children at the age of 7–12 years (grades 1–5) performed three behavioral tests. First, reading fluency (i.e. the number of words read in one minute) was assessed by the Standardized Assessment of Reading Skills (Kornev, 1997). Second, the level of phonological processing was evaluated by the Changing Sound in a pseudoword test (Dorofeeva et al., 2019), in which the participants were asked to replace a specific phoneme in an auditorily presented pseudoword with another given phoneme. Third, orthographic processing was assessed by the Rapid Automatized Naming of Digits task (RAN; Denckla, Rudel, 1974), in which we recorded the amount of time spent on naming 50 digits.

Linear regression analysis of the data was performed in R (version 4.0.2). We discovered a significant correlation between reading fluency and

all the three predictors: higher phonological awareness speeded up reading ($t = 4.399$, $p < .001$), faster performance in RAN speeded up reading over and above phonological processing ($t = -3.282$, $p = .0016$), older children read faster than younger ones ($t = 4.425$, $p < .001$).

We found that both phonological and orthographic processing skills had an important impact on reading fluency in Cyrillic script for young readers. Crucially, we showed that all the three predictors, i.e. phonological skills, orthographic processing skills, and age separately influenced reading fluency. Therefore, we can conclude that reading development in Russian-speaking children is based on the development of both phonological and orthographic processing.

This work was supported by the Russian Foundation for Basic Research (research grant No 19-313-51014).