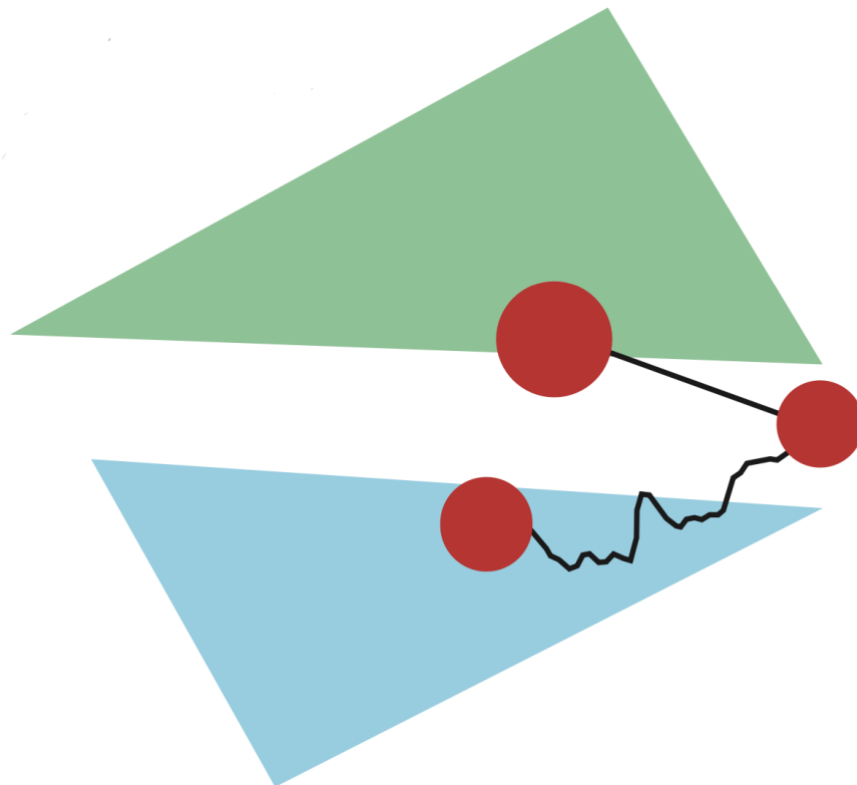


CONFERENCE PROGRAMME

NEUROBIOLOGY OF SPEECH AND LANGUAGE

5th International Conference



October 8 – 9th, 2021

Saint Petersburg

Russia

Dear colleagues,

I am delighted to welcome you to the 5th International Conference on Neurobiology of Speech and Language organised by the Laboratory of Behavioural Neurodynamics at the Faculty of Psychology of Saint Petersburg State University. Over the last five years, our annual meeting has grown from a small and cosy seminar to a much anticipated event shaping the current landscape of psycho- and neurolinguistics, at least in this part of the world. While celebrating our fifth anniversary, we are glad to see the flourishing community of both young and well-established researchers, which NBSL contributed to by providing them with a quality platform for fruitful discussions and new collaborations. This is a great honour for us to be a part of this vibrant academic life.

This year, we are keeping the online format which we are now used to. Traditionally, the scope of our scientific programme remains varied and covers a wide range of cutting-edge issues in neurobiology and psychology of speech and language, such as language acquisition and word learning, speech pathologies and their amelioration, and many others. The absolute highlight of our two-day interactive conference is the brilliant line-up of three most distinguished keynote speakers: Prof. Teija Kujala (University of Helsinki), Prof. Antoni Rodrigues-Fornells (University of Barcelona), and Prof. Yury Shtyrov (University of St. Petersburg and University of Aarhus), whose talks will make our event even more special.

We are wishing you an enjoyable and insightful NBSL2021 experience!

Olga Shcherbakova

On behalf of all Organizing Committee

Organizing Committee:

Chair of the Committee:

Olga Shcherbakova (SPbSU)

Members of the Organizing Committee:

Yury Shtyrov (SPbSU; Aarhus University; HSE)

Ekaterina Perikova (SPbSU)

Varvara Averianova (SPbSU)

Ekaterina Andriushchenko (SPbSU)

Ekaterina Blinova (SPbSU)

Tatiana Isaeva (SPbSU)

Aleksander Kirsanov (SPbSU)

web page:

<http://cogneuro.spbu.ru>

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October, 8th

9.30 – 11.00

ONLINE REGISTRATION (via ZOOM)

11.00 – 11.10

WELCOME AND INTRODUCTION

11.10 – 12.30

KEYNOTE LECTURE:

Neural responses uncovering the nature of language development deficits

Prof. Teija Kujala (University of Helsinki, Finland)

University of Helsinki, Finland

12.30 – 13.45

SLIDE SESSION 1

13.45 – 14.30

BREAK

14.30 – 16.00

SLIDE SESSION 2

16.00 – 17.20

FLASH TALKS SESSION 1

(bring your own snacks and wine)

18.00 – 19.30

KEYNOTE LECTURE:

Motivated language learning: The role of intrinsic reward and information sampling

Prof. Antoni Rodriguez-Fornells

Catalan Institution for Research and Advanced Studies; University of Barcelona; Bellvitge Biomedical Research Institute, Spain

October, 9th

9.30 – 11.00

ONLINE REGISTRATION (via ZOOM)

11.00 – 12.30

SLIDE SESSION 3

12.30 – 12.40

BREAK

12.40 – 14.00

SLIDE SESSION 4

14.00 – 14.40

BREAK

14.40–16.00

FLASH TALKS SESSION 2

(bring your own snacks and wine)

16.00 – 17.20

KEYNOTE LECTURE:

Word learning in the brain: Functional, structural and neuromodulatory evidence

Prof. Yury Shtyrov

Saint Petersburg State University, Russia; Aarhus University, Denmark

17.20 – ...

CLOSING REMARKS

Keynote Lectures

Word learning in the brain: Functional, structural and neuromodulatory evidence

Prof. Yury Shtyrov

Saint Petersburg State University, Russia; Aarhus University, Denmark

The ability to use language to communicate with our conspecifics is perhaps the most important human cognitive ability, constituting the backbone of our personal, social and economic lives. Its efficient use relies on a unique human skill to quickly and efficiently learn new words, building up huge lexicons of many thousands of words throughout our lifespans. Despite its clear importance, this vital word acquisition ability is poorly understood. Conventional knowledge maintains that language learning – especially in adulthood – is slow and laborious. Furthermore, its neural bases in the brain remain unclear. Even though behavioural manifestations of learning are evident near instantly (e.g., we can start using new words immediately after hearing or reading them), the bulk of previous neuroimaging work has largely studied slow neural changes associated with months or years of practice. To overcome this gap, we used a variety of state-of-the-art neuroimaging tools, including EEG, MEG, MRI, TMS and tDCS, as well as bespoke learning paradigms to tackle rapid brain mechanisms underpinning different types of word acquisition. Our results show a network of cortical areas that take part in online word and morpheme acquisition, which exhibit immediate functional and structural plasticity. This plasticity depends on multiple factors, including phonology, semantic references, individual language experience, age, etc. Distinct cortical mechanisms become involved depending on the type of learning and semantic and morphological content of novel words. Furthermore, we show that these cortical learning systems can be modulated using neurostimulation tools to boost word acquisition outcomes, which may in the future lead to development of new applications, therapies and interventions.

Motivated language learning: The role of intrinsic reward and information sampling

Prof. Antoni Rodriguez-Fornells

Catalan Institution for Research and Advanced Studies; University of Barcelona; Bellvitge Biomedical Research Institute, Spain

During the last decade we have accrued important knowledge regarding the cognitive and neural mechanisms involved in the hard process of learning a new language. However, it is unknown which are the neural processes underlying the human drive to learn a language and what maintains this effortful activity. In recent studies we observed robust activations in core reward-pleasure centers when participants successfully learned the meaning of new words. These results support the view that during evolution, emerging cortical language learning mechanisms might have been glued to phylogenetically older subcortical reward centers, reinforcing motivated-language learning activities. These internal reward-related dopaminergic pathways could trigger specific value-signals, increasing the changes of the organism to actively engage in intrinsic motivated behaviors (curiosity) for improving language learning and accrue new information.

However, to a certain extent, the proper engagement of intrinsic reward-motivational circuits might depend on the proper evaluation of learning success (metacognitive processes). One crucial aspect in learning is information sampling, selecting which piece of information is more relevant to attend. This is especially important when learning occurs under uncertainty, impoverished conditions or without full access to all relevant information. Correct self-directed information sampling might prevent accruing indiscriminate information from the environment that might result in diminishing problem-solving capacities. We were the first to explore this issue using time-sensitive neuroimaging techniques and show that successful language learners were extremely sensitive to the amount of information in a learning experience. Overall, successful language learners boosted learning through optimal information sampling, probably requiring the optimal interplay between reward-motivation and self-monitoring systems, memory and attention.

Neural responses uncovering the nature of language development deficits

Prof. Teija Kujala

University of Helsinki, Finland

Language development deficits such as developmental dyslexia and developmental language disorder are prevalent and negatively influence learning and career outcomes, also causing a burden to the society. Understanding their origins is vital for developing interventions targeted to alleviate these disorders. Identifying deficits that may lead to an unfortunate path in language development in infancy is particularly important for prevention.

Recent neurophysiological studies have brought new knowledge on the perceptual deficits that may crucially contribute to these disorders. Using neurophysiological responses (event-related brain potentials, ERP) has remarkable advantages in studies on developmental language deficits. They enable us to accurately pinpoint how a specific stimulus is processed in various contexts. Moreover, they can be used even to study newborns, illuminating the development of speech from birth onwards.

According to the most prevalent theories, developmental dyslexia is primarily caused by a phonological deficit, but it is debated whether it lies in the representations of phonemes or in their accessibility. According to another hypothesis, developmental dyslexia and developmental language disorder could be based on an implicit learning deficit. ERP studies testing these hypotheses suggest poor phonological representations in infants with an inherited dyslexia risk, which appears to be less predominant in adults with dyslexia diagnosis. This result together with findings showing weak associations between phonemes and graphemes in dyslexic adults speak for poor phonological accessibility in adulthood. These findings are also compatible with the suggestion that poor phonological representations are prevalent in infants with dyslexia risk, this deficit subsiding during development. In addition, it was recently shown that whereas typical readers can implicitly extract violations of rules embedded in sound sequences, those with dyslexia display poorer ability. Moreover, the response implicating rule-extraction ability, elicited in infants without a dyslexia risk, was found to be totally absent in newborns with dyslexia risk. Overall, these results are also supported by recent neuroanatomical findings showing diminished grey matter volumes in dyslexic individuals in areas subserving phonological and implicit processing.

These neurophysiological results offer direct support to dyslexia theories suggesting phonological representation deficit in infancy, which subsides by adulthood, poor phonological accessibility becoming then more prominent. They also support the suggestion of implicit learning problems in dyslexia. A challenge for future studies is to determine the prevalence of the different types of deficits and the possibilities to ameliorate them early.

October 8th

12.30 – 13.45

SLIDE SESSION 1

1. Vocabulary and phonological decoding skills affect reading in English as L2 by Russian native speakers

Daria Chernova¹, Natalia Slioussar^{1,2}, Elizaveta Kuzmina¹

¹ Saint Petersburg State University

² National Research University Higher School of Economics

2. By trial and error: Reading aloud in first and second languages

Valeriya Prokaeva¹, Elena Riekhakaynen¹, Vladislav Zubov¹

¹ Saint Petersburg State University

3. Written, not spoken or too much to read: How to present information more effectively?

Elena Riekhakaynen¹, Lada Skorobagatko¹

¹ Saint Petersburg State University

4. Letter similarity effects when reading braille

Ana Baciero^{1,2}, Pablo Gomez³, Jon Andoni Duñabeitia^{1,4}, Manuel Perea^{1,5}

¹ Nebrija University

² DePaul University

³ California State University, San Bernardino

⁴ The Arctic University of Norway

⁵ University of Valencia

5. Predictors of understanding implicit meanings in verbal texts

Varvara Averianova¹, Olga Shcherbakova¹

¹ Saint Petersburg State University

14.30–15.45

SLIDE SESSION 2

1. White matter correlates of spontaneous speech and communicative abilities in chronic aphasia

Svetlana Averina¹, Olga Dragoy^{1,2}, Roelien Bastiaanse¹

¹ National Research University Higher School of Economics

² Institute of Linguistics RAS

2. Subjective and objective evaluation of naming ability in older adults with suspected mild cognitive impairment

Svetlana Malyutina¹, Alina Zabolotskaia¹, Victor Savilov², Timur Syunyakov², Elena Kurmysheva², Natalia Osipova², Olga Karpenko², Alisa Andryuschenko²

¹ National Research University Higher School of Economics

² Alekseev Psychiatric Clinical Hospital No. 1

3. Speech recovery in chronic non-fluent aphasia after intensive language therapy: Clinical, behavioral and functional outcomes

Maxim Ulanov¹, Yury Shtyrov^{1,2,3}, Olga Dragoy^{1,4}, Ekaterina Iskra^{1,5}, Andrey Prokofyev⁶, Tatiana Stroganova⁶

¹ National Research University Higher School of Economics

² Saint Petersburg State University

³ Aarhus University

⁴ Institute of Linguistics RAS

⁵ Speech pathology and Neurorehabilitation Center

⁶ Moscow State University of Psychology and Education

4. Passive voice comprehension level influence the ERP during sentence-picture matching task in 4-5 years old Russian-speaking children

Olga Kruchinina¹, Ekaterina Stankova¹, Diana Guillemard¹, Elizaveta Galperina¹

¹ Sechenov Institute of Evolutionary Physiology and Biochemistry RAS

5. Benchmark measures of eye movements during silent reading in Russian school students

Anastasiya Lopukhina¹, Nina Zdorova¹, Vladislava Staroverova¹, Nina Ladinskaya¹, Anastasia Karpielova¹, Olga Dragoy^{1,2}

¹ National Research University Higher School of Economics

² Institute of Linguistics RAS

October 9th

11.00 – 12.30

SLIDE SESSION 3

1. Neurocognitive processing of zero morpheme: EEG and MEG evidence

Maria Alekseeva¹, Yury Shtyrov^{1,2,3}, Andriy Myachykov^{1,4}

¹ National Research University Higher School of Economics

² Aarhus University

³ Saint Petersburg State University

⁴ Northumbria University at Newcastle

2. Frequency effects on spelling error recognition: An ERP study of Russian

Ekaterina Larionova¹, Olga Martynova¹

¹ Institute of Higher Nervous Activity and Neurophysiology of RAS

3. Effects of cathodal and anodal tDCS of Broca's area on the acquisition of novel semantics

Daria Gnedykh¹, Diana Tsvetova¹, Nadezhda Mkrtychian¹, Evgenii Blagovechtchenski¹,
Svetlana Kostromina¹, Yury Shtyrov^{1,2,3}

¹ Saint Petersburg State University

² Aarhus University

³ National Research University Higher School of Economics

4. Take your chance: ERP evidence of single-shot word learning in the developing brain

Marina Vasilyeva¹, Veronica Knyazeva¹, Eino Partanen², Aleksander Aleksandrov¹, Yury
Shtyrov^{1,3,4}

¹ Saint Petersburg State University

² University of Helsinki

³ Aarhus University

⁴ National Research University Higher School of Economics

5. Dramatic increase of beta oscillations at the advanced stage of learning of pseudoword-movement association

Anna Pavlova¹, Nikita Tyulenev², Vera Tretyakova², Valeria Skavronskaya², Boris
Chernyshev^{1,2,3}

¹ National Research University Higher School of Economics

² Moscow State University of Psychology and Education

³ Lomonosov Moscow State University

6. Using the fMRI-equivalent linguistic MMN to determine how the frequency of Russian words influences on changes in BOLD-signal

Kristina Memetova^{1,2}, Lyudmila Stankevich¹, Irina Malanchuk², Aleksander Aleksandrov¹

¹ Saint Petersburg State University

² National research center Kurchatov Institute

12.40 – 14.15

SLIDE SESSION 4

1. What picture to choose? On actual aid of alternative communication for those experiencing difficulties with written language

Nina Shcheglova^{1,2}

¹ Saint Petersburg State University

² University of York

2. Do diacritics play a role in the access to lexico-semantic information? Evidence from Spanish and German

Melanie Labusch¹, Manuel Perea^{1,2}, Ana Marcet¹

¹ University of Valencia

² Nebrija University

3. A story of a paradox and an eggbeater: A deep learning approach to classify concrete and abstract words based on event-related potentials

Laura Bechtold¹, Abhijeet Gupta¹, Christian Bellebaum¹, Marta Ghio¹, Laura Kallmeyer¹

¹ Heinrich Heine University

4. The facilitating effect of narrator variability in incidental word learning: Where did I hear it?

Jose Luis Tapia¹, Francisco Rocabado¹, Eva Maria Rosa Martinez², Marta Vergara Martinez², Manuel Perea²

¹ Nebrija University

² University of Valencia

5. Visual recognition of English iconic words by native speakers

Liubov Tkacheva¹, Maria Flaksman², Elizaveta Korotaevskaya¹, Yulia Sedelkina¹, Yulia Lavitskaya¹, Andrey Nasledov¹

¹ Saint Petersburg State University

² Saint Petersburg State Electrotechnical University 'LETI'

6. Different types of text presentation: Which is the best one?

Tatiana Petrova¹, Daria Skvortsova¹

¹ Saint Petersburg State University

October 8th

16.00 – 17.20

FLASH TALKS SESSION 1

1. Does grammar affect the psycholinguistic assessments of Russian words? The ratio of emotionality and size and location in space

Valeriia Palii¹, Zoya Rezanova¹, Irina Korshunova¹

¹ Tomsk State University

2. The influence of differences in grammatical categorization on the conceptualization of objects: Russian-French language interaction

Olesia Platonova¹, Zoya Rezanova¹

¹ Tomsk State University

3. The bilingualism influence on the perception of emotional words (Khakass-Russian bilingualism)

Alina Vasilyeva¹

¹ Tomsk State University

4. The relationship of reading disorders with the asymmetry of optokinetic nystagmus in children

Artemy Novozhilov¹, Victoria Efimova¹

¹ Neurological clinic «Prognoz»

5. The role of emotions in cross-modal correspondence effect

Ekaterina Andriushchenko¹, Ekaterina Blinova¹, Kirill Miroshnik¹, Viktor Timokhov², Armina Janyan³, Yury Shtyrov^{1,2,4}, Olga Shcherbakova¹

¹ Saint Petersburg State University

² National Research University Higher School of Economics

³ New Bulgarian University

⁴ Aarhus University

6. Let's imagine: The abstractness of an iconic text and processing of semantic mismatch

Ekaterina Blinova¹, Olga Shcherbakova¹

¹ Saint Petersburg State University

7. *Understanding of a text: Digital vs. printed format*

Tatiana Isaeva¹, Olga Shcherbakova¹

¹ Saint Petersburg State University

8. *Writing in tongues: Naïve viewers with mild intellectual disability interpret pictorial sentences*

Nina Shcheglova^{1,2}

¹ Saint Petersburg State University

² University of York

9. *Talking of the mundane. What is different about pictorial public spaces' signs?*

Nina Shcheglova^{1,2}

¹ Saint Petersburg State University

² University of York

10. *Local and global mechanisms of perception in children with reading disorders*

Evgeny Shelepin¹, Kseniya Skuratova¹

¹ Pavlov Institute of Physiology RAS

11. *Neurophysiological features of visual verbal information processing in the form of a single word and a combination of words*

Nataly Nuzhina¹, Peter Prodius¹, Irina Mukhina¹

¹ Privolzhsky Research Medical University

12. *Eye movements during hybrid visual search for verbal information in various conditions*

Kseniya Skuratova¹, Evgeny Shelepin¹, Veronika Zueva²

¹ Pavlov Institute of Physiology RAS

² Neuroiconica Assistive

13. *Predictive processing in children with developmental language disorder*

Anastasiia Sukmanova¹, Daria Kalinicheva²

¹ Saint Petersburg State University

² Saint Petersburg State University of Veterinary Medicine

14. Behavioral maladaptiveness as a predictor of language dysfunctions in Russian-speaking teenagers

Elizaveta Ivanova¹, Valentina Burlan²

¹ National Research University Higher School of Economics

² Saint Petersburg State University

15. Use of stress and statistical cues for speech segmentation by Russian infants and adults

Daria Mitciuk¹, Anastasiya Lopukhina¹, Mireia Marimon², Barbara Höhle²

¹ National Research University Higher School of Economics

² University of Potsdam

16. Typing skills depending on the executive functions in children with different levels of language development

Darya Momotenko¹, Alisa Kosikova¹

¹ Saint Petersburg State University

October 9th

14.40 – 16.00

FLASH TALKS SESSION 2

1. How fast is fast mapping? Behavioural evidence from preschool children

Elena Artemenko^{1,2}, Marina Vasilyeva¹, Veronika Knyazeva¹, Marina Azarova¹,
Rumia Abdullaeva¹, Aleksander Aleksandrov¹, Yury Shtyrov^{1,2,3}

¹ Saint Petersburg State University

² National Research University Higher School of Economics

³ Aarhus University

2. Learning through movement: Fast mapping and explicit encoding of novel vocabulary in VR and conventional environment

Ekaterina Perikova¹, Ekaterina Blinova¹, Ekaterina Andriushchenko¹, Margarita Filippova¹,
Alexander Kirsanov¹, Yury Shtyrov^{1, 2, 3}, Olga Shcherbakova¹

¹ Saint Petersburg State University

² Aarhus University

³ National Research University Higher School of Economics

3. M400 study of product–price associations

Elizaveta Kuznetsova^{1,2}, Aleksei Gorin¹, Anna Yurchenko¹, Vasily Klucharev¹,
Victoria Moiseeva¹, Anna Shestakova¹

¹ National Research University Higher School of Economics

² University of Helsinki

4. The hearing thresholds of listeners and the recognition of speech features

Elena Lyakso¹, Olga Frolova¹

¹ Saint Petersburg State University

5. Corpus study of the early vocabulary acquisition by Russian children

Valeriya Lelik¹, Anastasiya Lopukhina¹

¹ National Research University Higher School of Economics

6. Adaptation and standardization of PPVT-4 in Russia: first results from Moscow and Yakutsk

Ekaterina Oshchepkova^{1, 2}, Daria Bukhalenkova¹, Natalia Kartushina³

¹Lomonosov Moscow State University

²Institute of Linguistics RAS

³University of Oslo

7. Mechanism of metathesis: side vs site hypothesis

Olga Sizova¹

¹Psychological and Pedagogical Center for Social Adaptation of Children with Severe Speech Disorders

8. Multichannel perception of irony in actors' speech

Uliana Kochetkova¹, Pavel Skrelin¹, Vera Evdokimova¹

¹Saint Petersburg State University

9. The lost possible selves' descriptions and the perception of the past

Marina Avanesyan¹, Ksenia Denisenko¹,

¹Saint Petersburg State University

10. Is a sandwich of words the new gold-standard?

María Fernández-López¹, Colin J. Davis², Manuel Perea^{1,3}, Ana Marcet¹, Pablo Gomez⁴

¹University of Valencia

²University of Bristol

³Nebrija University

⁴California State University, San Bernardino

11. Negative feedback coherence with narrator's expert position in case of poly-position comic stimuli

Julia Zaitseva¹ Julia Dzhaoshvili¹,

¹Saint Petersburg State University

12. Linguistic expression of causality in Russian toddlers

Elena Galkina¹, Sofia Krasnosheikova¹

¹Pavlov Institute of Physiology RAS

13. Ambiguous pronoun processing strategies: The role of reader's task and text properties

Ekaterina Saenko¹, Tatiana Gribkova¹, Veronika Prokopenya¹

¹ Saint Petersburg State University

14. Atypical arrangement of speech zones in stuttering preschoolers

Elena Nikolaeva¹, Tatiana Brisberg¹

¹ Herzen State Pedagogical University

15. The relationship of reading disorders with the asymmetry of optokinetic nystagmus in children

Victoria Efimova¹, Natalia Konshina¹

¹ Neurological clinic «Prognoz»