

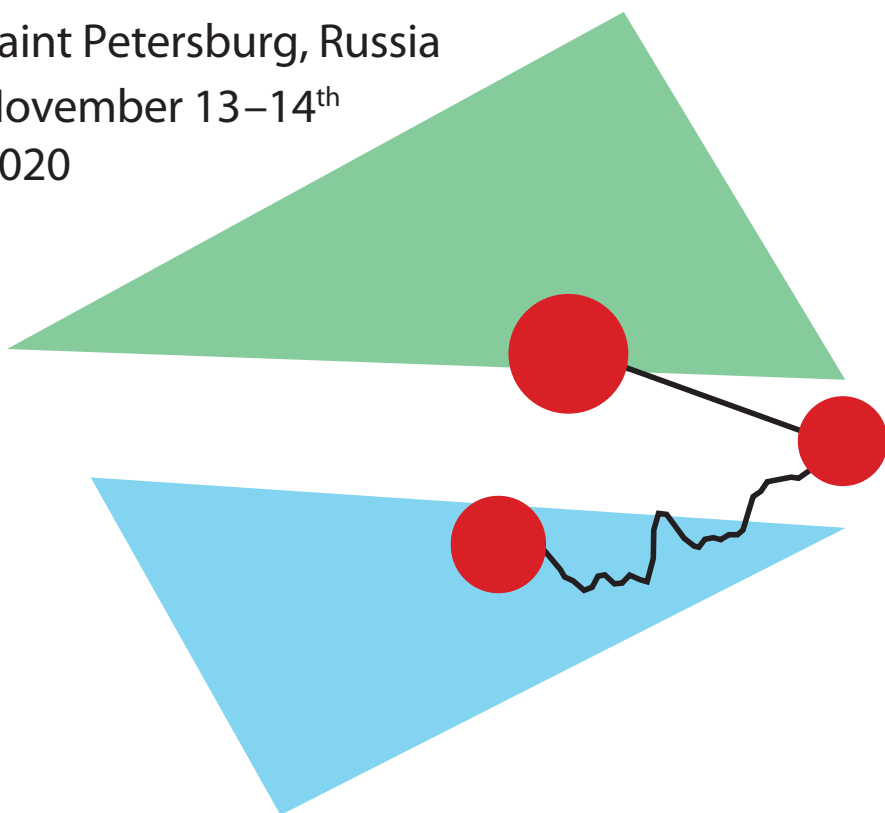
*Proceedings of the 4<sup>th</sup> International Conference on*

# **NEUROBIOLOGY OF SPEECH AND LANGUAGE**

Saint Petersburg, Russia

November 13–14<sup>th</sup>

2020



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

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**Edited by Olga Shcherbakova**



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**Neurobiology of Speech and Language.** Proceedings of the 4<sup>th</sup> 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

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## **Early stages of the acquisition of verbal grammar by Russian-speaking 1-to-3-year-old children (based on the CHILDES corpus)**

The purpose of the present study is to investigate the timeline of the acquisition of verbal grammatical categories in young children during their first three years of life. For that we analysed two corpora of longitudinal speech recordings: a corpus of a boy Y whose speech was recorded from 1 year 5 months till 3 years and a corpus of a girl T whose speech was recorded from 10 months till 3 years. We also analysed the parents' speech in both corpora and compared the usage of different grammatical categories in parents' and children's speech.

Child-parent everyday interactions were video-recorded and transcribed according to the guideline of the CHILDES database (Snow, 1977). The overall size of the Y corpus is 57184 tokens and the size of the T corpus is 37252 tokens. All the data were morphologically annotated using Pymystem3. Morphological homonymy was disambiguated by an annotator (only for Y corpus). We analysed the usage of verbal aspect, tense, person, and number. We also looked at the usage of infinitives and imperative forms, because previous studies showed that the number of these forms decreased with age and they were substituted by personal verb forms (Gvozdev, 2008).

First, we found that, overall, both children produced more imperfect than perfect verbs, which was in line with previous findings for Russian (Gagarina, 2008). Second, we showed that past tense was more frequent at the early stage of language development, but starting from the age of 2 children used present tense more often than past tense. Interestingly, future tense was the least frequent in our data during all periods of language development. This finding is in line with previous studies (Gagarina, 2008) and could indicate that future tense is acquired later. Third, we found that 2<sup>nd</sup> person verb forms were acquired last, which is in line with previous findings. However, 1<sup>st</sup> person was produced earlier and more often than 3<sup>rd</sup> person which contradicted previous observations (Gagarina, 2008). Fourth, our results showed that verb forms in singular are acquired earlier than in plural. Finally, in line with

our expectations, the number of imperatives in children's speech gradually decreased. However, the number of infinitives increased. Surprisingly, we found that statistical properties of verbal grammatical categories in parents' speech did not change as children grew older.

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## **When seeing is not believing: The role of illustrations in judging the reliability of information**

According to the theories, successful understanding of multimedia texts is determined by cognitive processing of both verbal components and pictures (Mayer, 2014). However, the specific role pictures play in this processing is still unclear. Particularly, pictures of different degrees of accuracy are often used for representing the core idea of a text in a schematic way (Spiegelhalter, Pearson, & Short, 2011), and readers need to assess by themselves how accurately each illustration represents the respective idea. In one of the previous studies it was shown that the degree of accuracy of verbal information (represented by words like “presumably” or “surely”) has more significant impact on cognitive processing of a text than particular type of visualization (schematic or realistic pictures; Glaser, Schwan, 2019). But the question whether judging the reliability of information differs for texts with pictures and without them remains open. Thus, the aim of this study was to investigate the role pictures play in mechanisms of judging the reliability of information.

We tested the following hypothesis: judgements of reliability of information vary between texts with pictures and those without them. Procedure: 20 slides with false facts were presented to 200 naïve participants (aged 15 — 56, M = 29; 88.5% female). A half of these slides presented the information in a purely verbal form, while another half included a picture illustrating a verbally described fact. The experimental task was to judge whether a fact was true or false and self-assess the confidence of each single judgement. The data was analyzed with comparative methods.

The results showed that participants more often judged false the facts that were presented along with pictures in comparison to those presented