HIGHER SCHOOL OF ECONOMICS
NATIONAL RESEARCH UNIVERSITY

TALDS 2019

TYPICAL AND ATYPICAL LANGUAGE DEVELOPMENT SYMPOSIUM

September 4, 2019
Moscow, Russia

Welcome to the Typical and Atypical Language Development Symposium 2019!

TALDS aims to bring together researchers of infant, child, and adolescent language development using behavioral, eye tracking, neuroimaging, and computational methods. We welcome those who are interested in language acquisition in monolingual and bilingual environment as well as in children with neurodevelopmental disorders (Specific Language Impairment, Autism Spectrum Disorders, developmental dyslexia). This year TALDS is a satellite event of the 25th conference on Architectures and Mechanisms for Language Processing.

TALDS 2019 is organized by the members of the Center for Language and Brain at the National Research University Higher School of Economics (HSE):
Anastasiya Lopukhina, Olga Dragoy, Vardan Arutiunian, Victoria Reshetnikova, Natalia Borisova, Svetlana Dorofeeva, Svetlana Malyutina

TALDS 2019 will be hosted by the National Research University Higher School of Economics and will take place at Armyanskiy per. 4, c2, room 205.

Free Internet is available at the venue.
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Program

9:00 – 10:00	Registration	
10:00 – 10:10	Welcome by Center for Language and Brain team	
10:10 – 11:10	From sound to structure: phonetic information in early language development	Barbara Höhle University of Potsdam
11:10 – 12:10	Bilinguals in the crib: Is bilingual early language development so different from monolinguals'?	Núria Sebastián Gallés Pompeu Fabra University, Barcelona
12:10 – 12:40	Coffee break	
12:40 – 13:40	Diagnosing and treating Acquired Childhood Aphasia (ACA)	Mieke W. M. E. van de Sandt-Koenderman Rijndam Rehabilitation, Department of Neurorehabilitation, Rotterdam; Erasmus University Medical Center Rotterdam, Department of Rehabilitation Medicine
13:40 – 15:00	Lunch break	
15:00 – 16:00	Russian first language acquisition	Irina A. Sekerina City University of New York / National Research University Higher School of Economics
16:00 – 18:00	Poster session & Coffee break	

Contents

- Natalia Maltseva, Anastasia Stoops, Kiel Christianson
  Saliency and frequency in the L1 acquisition of Russian nominal morphology: 30-59-months-old children

- Anna Matyushkina, Anastasia Alekseeva, Elizaveta Shashihina
  Auditory Scene Analysis vs. Speech Scene Analysis: atypical speech development in childhood

- Natalia Meir, Rama Novogrodsky
  The interface of Autism and Bilingualism: a study of Language, Theory of Mind and Executive Functioning

- Alexandra Perovic, Ken Wexler
  The effect of age on the comprehension of passives in Down syndrome and Williams syndrome

- Katya Pertsova, Anastasiya Lopukhina, Olga Vedenina, Irina Nitsevich
  Acquisition of verbal morphology in Russian with attention to defective verbs

- Leona Polyanskaya, Mikhail Ordin, David Gomez, Arthur G. Samuel
  Universality and linguistic experience in the perception of speech rhythm

- Vladimir Preobrazhensky, Iuliia An, Irina Golovanova, Marina Zhukova
  Semantic processing in adults with a history of institutionalization: evidence from the N400 ERP-component

- Ana Lúcia Santos, Alice Jesus, Silvana Abalada
  Subject vs. object control: children do not avoid subject control as much as adults do

- Filip Smolík, Klára Matiasovitsová
  Sentence imitation with masked morphemes in Czech: the role of memory and morphological structure

- Olga Titova, O. I. Talantceva, I. V. Ovchinnikova, M. A. Zhukova
  Assessment of receptive and expressive domains of language development in children with autism spectrum disorders

- Sigal Uziel-Karl
  The development of agent-oriented modality: evidence from child Hebrew

- Ekaterina Yurtaeva, Kirsten Abbot-Smith, Natalia Gagarina
  Parental screening measures for language development in Russian

Keynote speakers

Barbara Höhle
University of Potsdam

From sound to structure: phonetic information in early language development

Bootstrapping accounts of language acquisition assume that the child makes use of specific information in her speech input that guide the first steps into structural properties of the ambient language. This talk will review recent research on how segmental and prosodic information from the speech input shape infants' knowledge about the relevant phonological categories in their language and how the growing phonological knowledge affects the perception and the processing of speech.
Data from research across different languages, different populations and different modalities will be presented.

Núria Sebastián Gallés
Pompeu Fabra University, Barcelona

Bilinguals in the crib: Is bilingual early language development so different from monolinguals'?

How different is the process of language learning in infants exposed to two languages from birth? It was not so long ago when the available evidence pointed to a delay in language learning in bilinguals. At present, there is some controversy regarding fact bilingual exposure may boost some learning mechanisms. In the present talk I will review the empirical evidence on language development in infants exposed to more than one language from birth and how such development differs from monolinguals'.

Mieke W. M. E. van de Sandt-Koenderman
Rijndam Rehabilitation, Department of Neurorehabilitation, Rotterdam Erasmus University Medical Center Rotterdam, Department of Rehabilitation Medicine

Diagnosing and treating Acquired Childhood Aphasia (ACA)

Acquired aphasia in childhood is a rare condition and the - small - population of children with acquired aphasia is very heterogeneous, which complicates its diagnosis and treatment. ACA differs from adult aphasia in several ways. Adult aphasia is almost always caused by stroke, whereas traumatic brain injury and tumors are the most frequent etiologies in children. Age and language development at onset are important variables. In this presentation, the state of the art in diagnosis and treatment of ACA will be reviewed, as well as our current knowledge on prognosis and recovery patterns. As there is virtually no literature on language treatment for these children, it will be discussed how to use our knowledge on treating adult aphasia to improve rehabilitation of ACA.

Irina A. Sekerina
City University of New York National Research University Higher School of Economics

Russian First Language Acquisition

This presentation is an overview of acquisition of Russian as a first language (L1) conducted outside of Russia (in the U.S. and Europe) in recent years. It will survey selected domains and topics (e.g., phonology, vocabulary, morphosyntax, and narratives) that have driven L1 acquisition research and their application to Russian L1, with special attention to experimental methods. The final part of the talk will speculate on the trends and challenges for the future development of the field of L1 acquisition, including Russian.

Cross-linguistic comprehension of subject-verb agreement markers by bilingual (Hebrew-L1/Spanish-L1/Russian-L1-English-speaking) preschoolers

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Keywords: bilingualism, sentence comprehension, subject-verb agreement

The mechanisms that underpin the acquisition of subject-verb agreement (SVA) are not well understood including in bilingual language development. Production studies report that bilingual children's production of 3rd Person Singular in English is influenced by their L1 (Blom et al., 2012): children whose L1 overtly marks SVA (e.g. Spanish) produce 3rd person SVA earlier than those whose L1 does not (e.g. Mandarin). This finding indicates that bilinguals transfer properties of their L1 when they acquire the verbal morphology of their L2, however the exact nature of this transfer is unclear. The present study approaches this issue in an innovative way by 1. focusing on comprehension and 2. determining the linguistic properties that foster positive transfer by comparing the effects of three first languages that exhibit overt SVA but differ in other respects: Spanish is fully pro-drop and exhibits systematic overt person and number SVA; Hebrew is partially pro-drop, exhibits non-linear morphology and

exhibits more systematic gender than number SVA contrasts; Russian is not pro-drop, exhibits case-marking and tends to be more systematically overtly marked for person and number SVA than for gender.
The comprehension of the SVA structure in both languages of bilinguals tested the robustness of comprehension of the 3rd Person Singular and Plural SVA markers in different contexts- that included the use of transitive and intransitive verbs; whether the agreement marker appeared in the medial or final position in the sentence; in medial position whether final constituents were an adverbial or prepositional phrase (intransitive verbs); and a real or nonce object (transitive verbs).
Eighty-five typically developing preschoolers (aged between 2;3 and 5;5) whose L1 was either Hebrew, Russian or Spanish and L2 English were administered sentence-video matching tasks in both their L1 and English. The sentences involved the 3d person singular and plural SVA markers. In all versions of the video, two boys appeared. In the singular version, only one boy was involved in the event or state described by the verbal stimulus. In the plural version, both boys were involved.
Sensitivity scores (the ratio of true positive/true positive + false positive) were analyzed. Russian-speaking bilinguals showed evidence of L1 comprehension of the SVA when the object NP involved a real noun or a nonce word. In Spanish, evidence of comprehension was found in the transitive condition with real object and the SVA marker in final position. Hebrew-speaking bilingual preschoolers performed above chance in the condition with real noun phrase and nonce noun phrase with a pronoun as Subject. The results on English suggested a trend in the SVA comprehension across-languages with better comprehension of medial condition with intransitive verbs followed by the adverbial phrase and different results across languages for the other conditions. Better performance on L2/English from children equally exposed to their L1 and L2 (than those with more exposure to L2) suggests that transfer from L1 facilitates comprehension in L2.
The discussion will focus on the nature of this transfer and the linguistic and contextual factors that impact this process.

Nonword repetition is impaired in children with Autism Spectrum Disorder: a pilot study in Russian

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Keywords: Autism Spectrum Disorder, nonword repetition, phonological deficit

Introduction.
Autism Spectrum Disorder (ASD) is a continuum of neurodevelopmental disorders characterized by impairments in social interaction and behavior (Coleman, Gillberg, 2012). Usually, children with ASD have comorbid language / speech delay or disorders (Luyster et al., 2008). However, most of the studies were addressed to higher language abilities, such as semantics or pragmatics, and only few papers were touched upon phonology and articulation (e.g., Wolk et al., 2016). Moreover, we know almost nothing about language profile, including phonology, in Russian children with ASD. Thus, the goal of this pilot study is to assess the low-level language processing (namely phonological discrimination) in Russian children with ASD using classical nonword repetition task.
Method.
15 children with ASD (14 boys, Mage = 8.9, SD = 1.1) and 14 typically developing children, TD (9 boys, Mage = 6.2, SD = 0.4) participated in our study. Nonword repetition test consisted of 24 stimuli balanced in length and articulation properties. We analyzed data with generalized mixed linear model that included three fixed effects (group, age, and length of stimulus) and random intercepts for participants and items.
Results.
The results of the pilot study showed that there is a statistically significant difference in the repetition accuracy between ASD and TD groups (Est = 2.49, SE = 0.81, z = 3.06, p = 0.002), see Figure 1. No significant influence of age (for ASD: Est = –0.23, SE = 0.26, z = –0.90, p = 0.36; for TD: Est = 1.83, SE = 1.49, z = 1.22, p = 0.21) or length on accuracy (for ASD: 2-syllables in comparison to 1-syllables, Est = –0.28, SE = 0.54, z = –0.52, p = 0.59; 3-syllables in comparison to 1-syllables, Est = –0.43, SE = 0.54, z = –0.79, p = 0.42; for TD: 2-syllables in comparison to 1-syllables, Est = –0.56, SE = 0.82, z = –0.68, p = 0.49; 3-syllables in comparison to 1-syllables, Est = –0.48, SE = 0.82, z = –0.59, p = 0.55) were detected.
Conclusion.
This pilot study demonstrated that Russian children with ASD have severe difficulties with phoneme discrimination. Importantly, it means that nonword repetition task which is successfully used for diagnosing Specific Language Impairment (e.g., Bishop et al.,

1996; Casalini et al., 2007) is sensitive enough for detecting phonological processing deficit in children with ASD as well. The goal of the further studies is to clarify at what level of speech sounds processing (perception, analysis or articulation) the problem is.

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Supplementary materials.

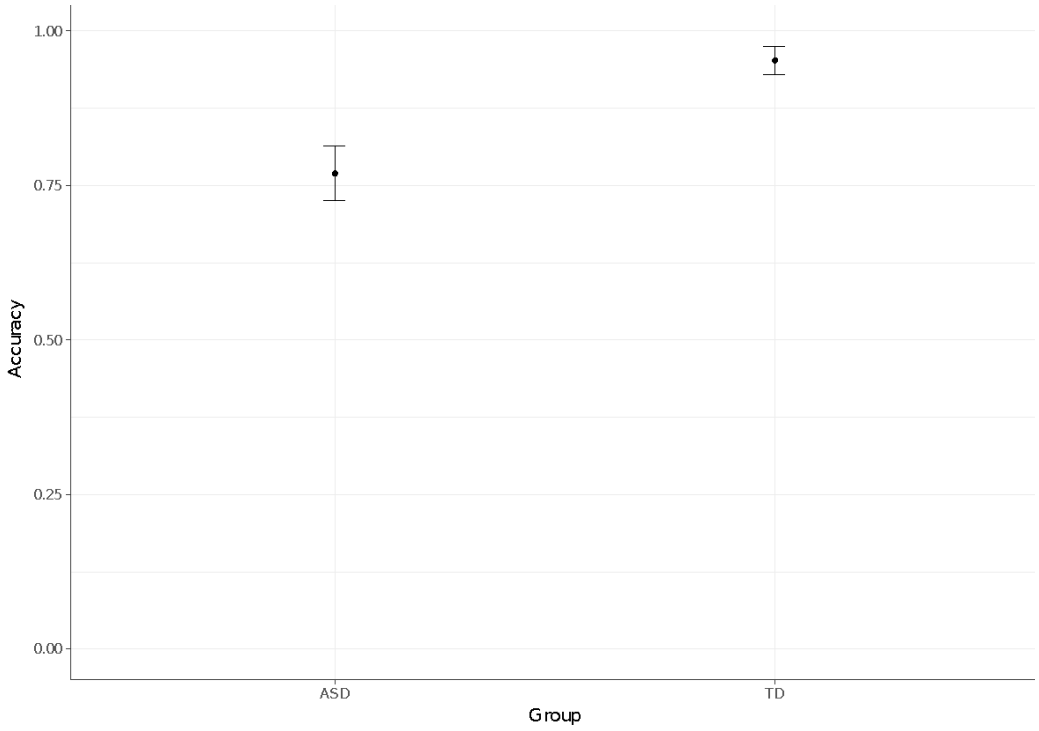

Figure 1. Nonword repetition: ASD – children with Autism Spectrum Disorder, TD – typically developing children.

Narrative structure and language in specifically language-impaired children

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Keywords: preschool age, SLI, narrative

Narrative analysis has been employed as a language assessment tool in many different languages and various clinical populations across the world. In Lithuanian, however, we still lack knowledge about narrative acquisition not only in clinical populations but also in typically-developing children (but see Balčiūnienė, 2012, 2013). In the current study*, we aimed to analyze and to compare story-telling skills between Lithuanian monolingual typically-developing preschoolers (n=12, mean age 70 months) and their specifically language-impaired (SLI) peers (n=12). During the individual assessment, each of the subjects was asked to tell a story according to a picture sequence (six black-and-white pictures, 10 x 10 cm in size, see Hickmann, 2003). The sessions were audio-recorded and transcribed using the CHILDES (MacWhinney, 2000) tools for further linguistic analysis. During the analysis, individual measures of narrative macrostructure (the scores for story structure (max. 10 points) and the score for episode completeness (max. 12 points)) and microstructure (various indices of story productivity, lexical diversity, syntactic complexity, and cohesion) were estimated and submitted for statistical analysis (more on the scoring procedure, see Kornev & Balčiūnienė, 2015; Balčiūnienė & Kornev, 2016).Results of the study evidenced that a macrostructure in the TD children was slightly better developed than in the SLI peers: the mean score for the story structure was scored 6.2/10 points in the TD children and 6.0/10 points in the SLI peers; episode completeness was scored 6.6/12 points in the TD children and 6.4/12 points in the SLI peers. As for the microstructure, both the groups demonstrated similar productivity (the length of narrative in utterances and words) but lexical diversity and syntactic complexity was different. First, the noun and verb lemma/token ratio, as the main index of lexical diversity, was slightly lower in the SLI than in the TD children (consequently, 0.53 and 0.58 for nouns and 0.81 and 0.89 for verbs). Second, the MLU (mean length of utterance) rate was lower in the SLI children (4.68) than in the TD peers (4.74). Also, the CL/U (clause/utterance) ratio (so-called index of syntactic complexity) was lower in the SLI group (1.04) than in the TD one (1.05). Finally, the so-called 'narrativity index' (Balčiūnienė & Kornev, 2019) was lower in the SLI children (1.10) than in the TD peers (1.17). To sum up, the SLI group demonstrated slightly lower results than the TD one, although the between-group differences were not statistically significant. In this follow-up study, we analyzed only the main macro- and microstructural measures, thus, in future research more parameters should be included; also, the sample should be expanded. However, the study shed light on the main limitations in narrative

structure and language in Lithuanian language-impaired children, and the results might be valuable for further researches as well as for practical work with clinical populations.

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Processing strategies in language acquisition

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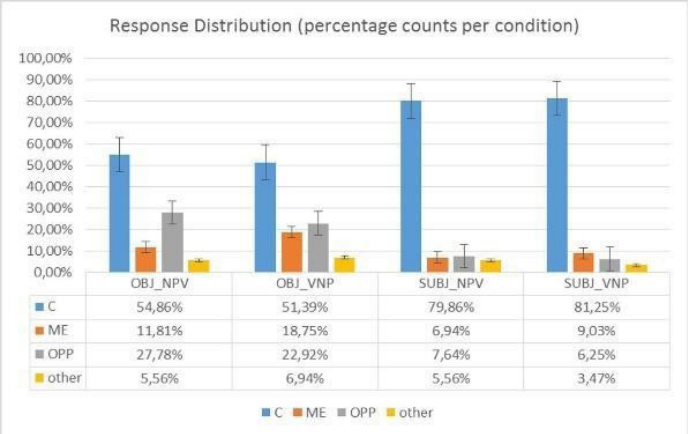
Keywords: subject-object asymmetry, processing strategies, Russian, German

It has been consistently shown that object relative clauses (ORCs, Where is the cat that the hedgehog is feeding?) are delayed in the process of language acquisition and cause greater comprehension difficulty with pre-school children, as compared to their subject-extracted counterparts (SRCs, Where is the cat that is feeding the hedgehog?) across a number of languages. However, numerous studies demonstrate that structural factors that facilitate ORC processing (grammatical gender/number of the verb) are underexploited by children up to a particular age. The present contribution assumes that SRCs and ORCs are operated by two different processing strategies. Russian and German children were exposed to instances of a SRC and an ORC in a character selection paradigm. Eye movements of German children were tracked on the visual display (fig. 3) while they were listening to the target stimulus. For Russian, word order variations (VNP; NPV) additionally were contrasted (fig.1). Example stimuli for German and Russian are provided in the table below.

GER, S	Wo ist der Kater.NOM.SG, der.NOM.SG gleich bestimmt den Igel.ACC.SG füttert?
	Where is the cat that will be feeding the hedgehog in the next moment?
GER, O	Wo ist der Kater.NOM.SG, den.ACC.SG gleich bestimmt der Igel.NOM.SG füttert?
	Where is the cat that the hedgehog will be feeding in the next moment?
RUS, S_NPV	Gde kot.NOM.SG, kotor-yi.NOM.SG vozmozhno ezha.ACC.SG pokormit?
	Where is the cat that will probably feed the hedgehog?
RUS, S_VNP	Gde kot.NOM.SG, kotor-yi.NOM.SG vozmozhno pokormit ezha.ACC.SG?
	Where is the cat that will probably feed the hedgehog?
RUS, O_NPV	Gde kot.NOM.SG, kotor-ogo.ACC.SG vozmozhno ezh.NOM.SG pokormit?
	Where is the cat that the hedgehog will probably feed?
RUS, O_VNP	Gde kot.NOM.SG, kotor-ogo.ACC.SG vozmozhno pokormit ezh.NOM.SG?
	Where is the cat that the hedgehog will probably feed?

Both Russian and German children performed significantly worse on ORCs than SRCs. The second most common error type was the so-called middle error (ME; "hedgehog") that showed up on deterministic response measures for Russian and eye-tracking patterns for German. Apparently, children are more skillful at applying a pre-stored empty structure for more frequent and well-entrenched SRCs than assembling a structure for ORCs, which requires additional low-level computation. Critically, middle error was more common for ORCs than for SRCs. It can be seen as a developmental stage for the ORC processing strategy to emerge, which is grounded in the maturation of inflectional morphology.

Supplementary materials



	OBJ_NPV	OBJ_VNP	SUBJ_NPV	SUBJ_VNP
C	54,86%	51,39%	79,86%	81,25%
ME	11,81%	18,75%	6,94%	9,03%
OPP	27,78%	22,92%	7,64%	6,25%
other	5,56%	6,94%	5,56%	3,47%

Figure 1. The bars illustrate Russian children's deterministic responses for two extraction types (S vs O) and two word orders (NPV vs VNP), resulting in four experimental conditions. The responses were classified into four categories: C – "correct"; ME – "middle error"; OPP – "syntactic competitor"; other – "other error". Error bars indicate standard error.

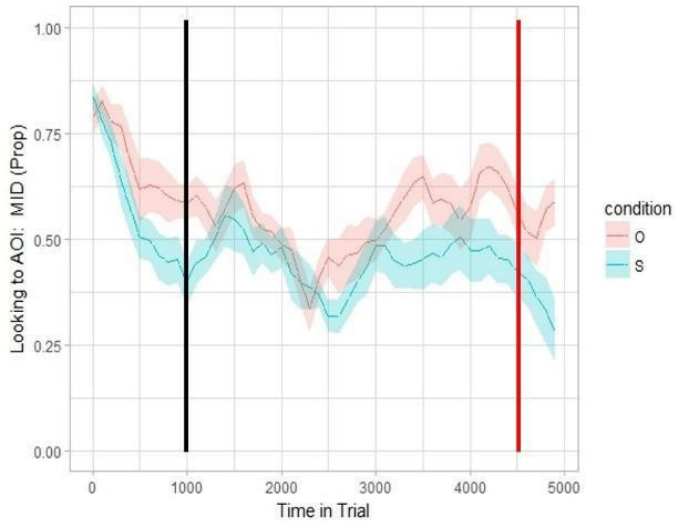


Figure 2. The curves illustrate mean proportions of looks towards the middle referent for German children in the Subject and in the Object condition. The black line indicates the time point of RC onset, the red line – RC offset.

Figure 3. Sample Visual Display

The role of semantic subjects in verb acquisition

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Keywords: language acquisition, semantics, subjects

Acquisition of syntax-semantics interface and of the net of its interconnections has been a vague question for many years. Russian syntax allows various ways of semantic subject representation – it may be explicit (for example, as the syntactic subject in Nominative case or as an indirect object in Dative case) or implicit (it may be elliptic). An intriguing problem follows the fact that there is a specific distribution of syntactic types and verb semantics. Children acquiring Russian as their native language have to learn all these possibilities, verb syntax and verb semantics, and as some previous studies have shown they do it in a stepwise manner (Eismont, 2016).

The present paper discusses the stages of this process and focuses on the acquisition of semantic subjects and their use with different verbs of 14 semantic classes. The study relies on the results of a series of experiments with Russian native children at the age of 2;7 to 7;6, who had to retell a story, presented to them either as a series of toy actions (for 2;7-3;6 year old children), or as a picture book (for 3;7-4;6 year old children), or as a cartoon in a silent mode (for 5;6-7;6 year old children). The total number of 213 children has been studied, the total number of tokens is 25689, 6521 of them verbs. The actions performed by the experimenters with the toys, by the cartoon characters and the characters of the picture book were similar, so the verbs of all age groups represented the same semantic classes. Each verb has been attributed with its specific list of semantic roles and its syntactic structures.

The analysis shows that despite any verb semantics allows to omit subjects, the absolute majority of verbs of physiological actions (храпеть (to snore), мерзнуть (to freeze)) and verbs of emotions (плакать (to weep), радоваться (to rejoice)) restrict such subject omission. On the other hand, there are verb semantic classes that accept both explicit and implicit semantic subjects – such verb classes as verbs of behavior (действовать (to act), вести себя (to behave)) or the verbs of movement causation (кидать (to throw), пнуть (to kick)).

At the early age children tend to omit all arguments, including subjects, but there are only few verb semantic classes where the difference between the youngest children and other age groups is statistically insignificant (p-value > 0,05). These are verbs of object manipulation (строить (to build), ловить (to catch)), verbs of movement causation and verbs of social relations (дружить (to be friends), помогать (to help)), and may be explained with the fact that these verbs are acquired earlier than other semantic classes (Eliseeva, 2014). The other semantic classes show statistically significant difference between age groups (p-value < 0,05). These data prove that at the early age children omit semantic subjects due to such reasons as verb semantic class and the level of its acquisition, while at the age of 5 to 7 they do it following syntactic and communicative rules.

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Acquiring gender and case in Russian: Russian-Dutch, Russian-Swedish and Russian-Azerbaijani bilingual children compared with their monolingual peers with and without SLI and adult learners of Russian as a foreign language

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Keywords: Bilingual children, Acquiring Gender and Case in Russian

The study presents a cross-linguistic comparison of simultaneous and early successive bilingual children and their monolingual Russian peers with and without language impairment (SLI). The results are compared with the results obtained from adult students acquiring Russian as a second language. The emphasis will be made on the acquisition of gender and case in the oral speech of adults and children.
Data: audio recordings of speech typically developing 30 Russian–Dutch, 18 Russian–Swedish and 15 Russian-Azerbaijan bilingual children (age 4-8), typically developing Russian monolingual children (age 2-6, n=50), Russian monolingual children diagnosed with SLI (age 4-6, n=50) and adults studying Russian as a second language (adult students, n=60). The recordings were transcribed according to the CHILDES conventions (McWhinney, 2000) and the acquisition of gender and case was analyzed. Our main task was to test bilingual children's speech. Other groups of informants were chosen for comparison: monolingual normally developing children represent the control group; SLI children, like bilinguals, are known to develop their language skills slower than their peers, and adult RSL acquirers also go through a process of second language acquisition, but show a different pattern. Our study is based on the analysis of specific utterances and doesn't suppose any statistical research.
Hypothesis: simplification is the main cause of bilingual innovations; transfer from another language and generalization are secondary causes.

The results indicate partial similarity between typically developing bilingual children, monolingual children with SLI and adults acquiring Russian as a second language.

The ungrammatical forms found in the speech of bilinguals were of three kinds:

- those that were also present in monolingual Russian children of younger age (overgeneralizations of case endings: malen'kih *ptichkov [instead of ptichek] 'small birds.GEN');
- those found in speakers acquiring Russian as foreign language (use of wrong cases, (a) "frozen" Nominatives: Ptichka sidela v gnezdo [instead of v gnezde] 'The bird was sitting in the nest.*NOM [PREP]', and, less often, (b) "frozen" oblique forms: Lisu [instead of lisa] hotel vz'at' eto I napugal vorona... I lisu [instead of lisa] ubezhal 'The fox.*ACC [NOM] wanted to take this and scared the raven... And the fox.*ACC [NOM] ran away'; and transfer: I etot wolf [instead of volk] kushal rybu 'And this wolf.SWED [RUS] ate the fish');
- those found in the material of Russian SLI children (violation of agreement: koshka hochet melen'kij ptichka [istead of malen'kuju ptichku] 'The cat wants the small.*m*NOM [f.ACC] bird.f.*NOM [ACC]').

The errors in case formation by bilingual children in most situations cannot be compared to mistakes made by their Russian-speaking monolingual peers but are similar to mistakes made by children of earlier age and children acquiring Russian as a second language.
Several structural modifications and replacements were found in the children's narratives in Russian that can be classified as bilingual innovations (Ceytlin, 2009) since they arise as a natural outcome of children's contact with the two languages. But they cannot be explained by transfer alone since the children made mistakes even when the two languages were structured in the same way (Rakhilina et al., 2014). The results are considered from the position of different strategies of language acquisition: transfer and generalization strategies are present in bilinguals' narratives, but the most common strategy is simplification of morphology.

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Effects of culture and bilingualism in linguistic assessment: word naming and comprehension by Nenets-Russian bilinguals and Russian monolinguals in Yamal

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Introduction.
Language assessment instruments should be made in consideration with or adapted to the linguistic and culture specificity. While there are more than 100 indigenous languages and cultures in Russia (Eberhard, Simons, & Fennig, 2019), the standardized language tests are not usually standardized with consideration of bilingualism and cultural specificities of the populations.
We present results of a pilot study on a standardized test adaptation in a group of ethnic Nenets children, both monolingual Russian speakers and Nenets-dominant Nenets-Russian bilinguals. Nenets is a Samoyed language from the Uralic language family with about 22 600 speakers and 44 600 ethnic population (Eberhard, Simons, & Fennig, 2019).
Methods.
We present data results of the verb and noun production and comprehension subtests of the KORABLIK test (Clinical assessment of basic linguistic competencies development) – a test for assessment of various linguistic functions in pre-school children.
25 first-graders from the Yamal boarding school took part in the research. 16 of them were Nenets-Russian bilinguals with dominant Nenets (Mage = 6.63, rangeage – 6- 8) and 9 were monolinguals from the Yar-Sale town (Mage = 6.67, rangeage – 6-7). The control group consisted of 16 Moscow typically developing children (Mage = 6.19, rangeage – 6-7).
The data analysis was performed in R (R Core Team, 2017). Binary logistic regression models were fitted using the glmer function (Bates, Mächler, Bolker, & Walker, 2015) with the best model evaluated by the backward stepwise approach (Bursac, Gauss, Williams, & Hosmer, 2008). All scripts can be accessed at the following OSF project: ***osf.io/psf8g***
Results.
The analysis of the Noun and Verb Comprehension and Production subtests indicated significantly lower accuracy for the bilingual group of naming and word to picture matching ($p < 0.001$); and for the group of Yamal children ($p < 0.05$).Nouns were more accurately processed and named, than verbs ($p < 0.01$), and in verb

comprehension accuracy in the bilingual and monolingual groups differed less than in noun comprehension ($p < 0.05$). There was no effect of age in any of the subtests. The analysis also revealed the items to be excluded and replaced by more culturally appropriate ones.

Discussion.

The results are consistent with previous findings on bilingual word processing and on word processing in general (Berkes, Friesen, & Bialystok, 2018): bilinguals were less accurate, than monolinguals, verbs were produced and processed less accurately than nouns.

This experience could be applied to adaptation of standardized language tests with regard to linguistic and cultural features of the populations.

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Child mimetical behavior in acquiring the models of aggressive communication (As based on Russian mother-child communication)

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Keywords: languaging, mother-child interaction, cognitive event analysis

Mother-child interaction is embodied interaction which aids caregiver and child in attuning to collective networks. These normative domains of culture, Donald notes, evolved before language (Donald, 1991). They enable children to use anticipatory activity to develop intrinsic motives (Trevarthen, 2001) and modes of action that meet – or, later, defy – caregiver expectations. Parties attune to the cultural embedding of language and cognition in bundles of practices that draw on co-action mediated by artifacts/institutions – they are languaging. Languaging is a contextually determined behavior (vocal, gestural, and other) immersed in the flux of joint activity with others and having a semiotic significance (Cowley, 2012).

The research aim is to describe the dynamic of different multimodal parameters of mother and child coping behavior that enable the rise of aggressive communicative displays in child's communicative and cognitive experience.

Our corpus is built up with 20 hours video recording 40 Russian mothers interacting with their 0 – 4-years-old children. To ensure the ecological character of the observation, we asked mothers themselves to record their interaction with children using the camera support. Before the recording, the mothers were given the following instructions: "We are especially interested in how children acquire their first language. We invite you to record (with our camera) a half an hour video of how you communicate with your children in the very familiar situation: while playing together, drawing, reading some book or just talking for being in touch". It wasn't a longitudinal study with the same group of children – we have recorded 40 different dyads.

While working with the collected data, we have noted a repetitive pattern in mother communicative behavior: from the very early age she put her baby in the situation of "pseudo" aggressive communication. We retrieved from the total corpus video data 40 recordings demonstrating such pattern.

As a **research method,** we use the cognitive event analysis "aware" of what happens while we are interacting? The method tends to define events, which yield cognitive results (Steffensen, 2011). It consists in identifying across the detailed timing and verbal / non-verbal structures analysis, a transition point (or event pivot) of an interaction where emerges a mutual understanding between the caregiver and the baby. The pivot divides mother-child interaction into before and after stages. In baby's

cognitive experience, the after-period is marked by the emergence of new cognitive link bridging first order activities (feel, interact, cooperate etc.) with second order constructs (linguistic forms / functions).

Two researchers annotated videos using Elan program. We were focusing on five parameters: 1) prosodic modulations 2) eye contact and its duration; 3) changes in the distance between dyad members; 4) intensity and quality of mimic facial movements; 5) and frequency of lexical repetitions in mother speech.

The analysis shows the preponderant role of mimetically based verbal and non-verbal behavior in teaching /learning patterns of aggressive communication. This intersubjective process can be traced to phases of (1) anticipated mimesis – 21 dyads; (2) mimetic interpretation – 17 dyads; and (3) full mimetic performance – 2 dyads.

On the first phase (0-3 months old babies), the mother makes as if her child was speaking to someone from her family complaining about mother's failures and swearing her inadvertence and left-handedness towards the baby: Look, my mother doesn't feed me, look, I'm lying here for a long time, but she gives me nothing to eat, a shameless woman!). (Fig.1)

In the mimetic interpretation phase (4 months to 18-20 months), mother acts as if she was very angry to her child. She swears but does it affectingly in the very attenuated, soft intonation giving to the communication a joke color understood by the child smiling in response. Thus, the child is invited to observe what mother would do and how she could behavior if she was angry. Another variation of the same pattern is often observed when mother interprets child's vocalizations as imitations of mother's voice when she is scolding someone. The child is praised each time when his / her vocalizations fill the prosodic contour of "scolding speech" (Fig.2).

In the full mimetic performance, someone from the family asks 3 or 4-years-old child to swear her mother: Scold your mother! (Fig.3).

The comparison of 5 parameters values for 3 phases under consideration showed us the following tendency: in two first stages the infant values change noticeably in the post-event pivot cycle, while the mother values – in the cycle preceding event pivot moment. It demonstrates that the infant while two first phases is mirroring mother behavior. As for the last phase, the tendency is different: the mother parameters values change noticeably in the post-event pivot cycle, while the infant parameters values – in the cycle preceding event pivot moment preceding the event pivot moment prosodic modulations.

Conclusions: The example of aggressive behavior growing demonstrates that languaging is embedded in the cognitive event structure. The event pivot represents a transition point when the caregiver shares with the baby his own cognitive niche and due to the sympathetic mirroring baby, seeking a place in the community, gains a new socially relevant and culturally based patterns of verbal and non-verbal behavior for which not only words, but the whole interaction, including vocalizations, gazering, gestures and, finally, words is significant.

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Supplementary materials

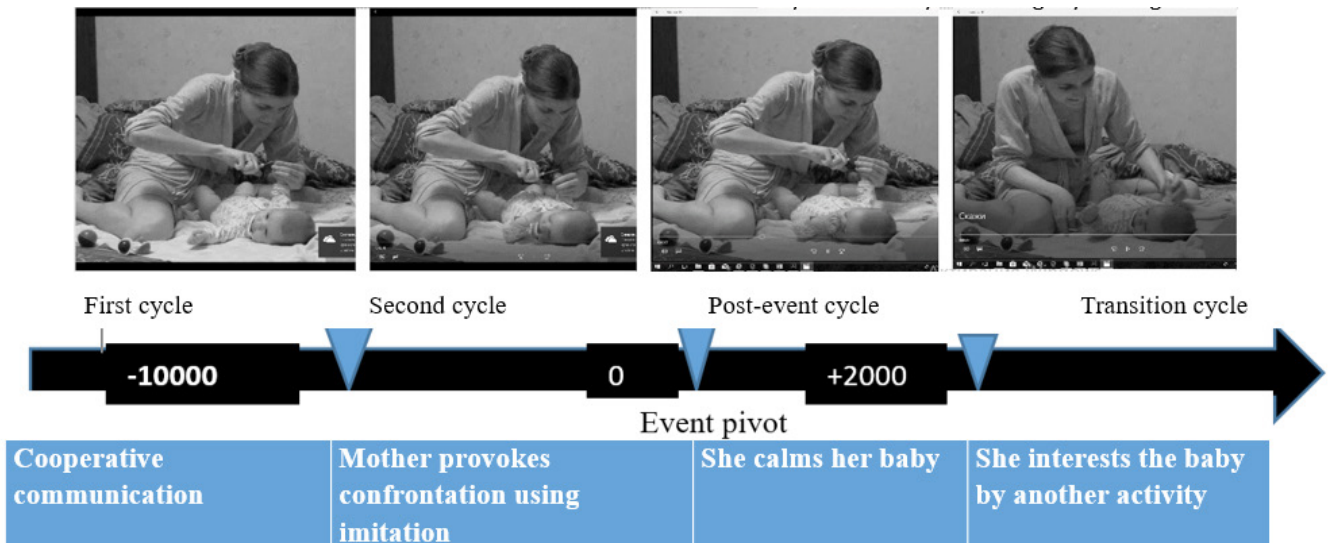

Figure 1. Anticipated mimesis in mother-child interaction (0-2 months old babies)

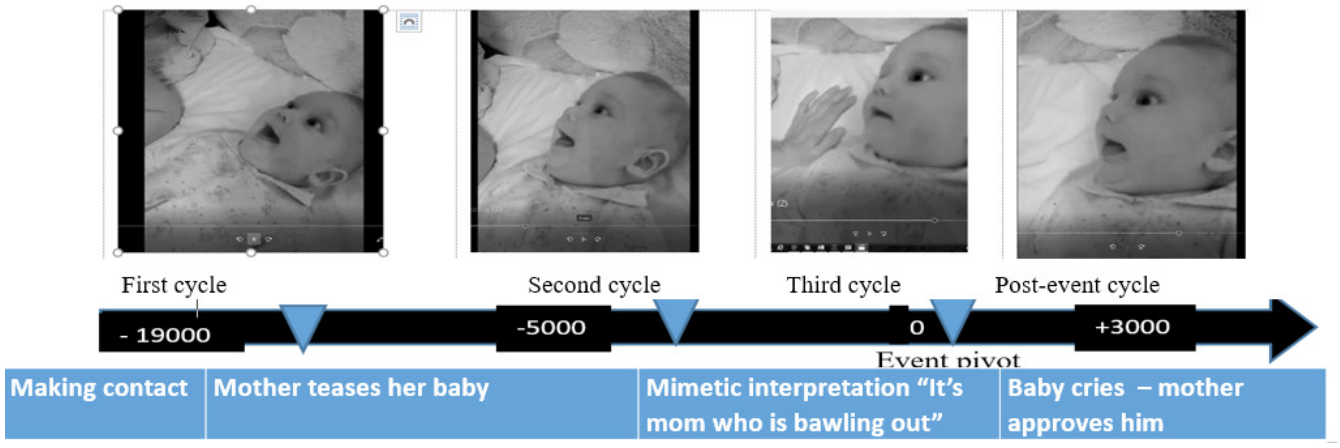

Figure 2. Mimetic interpretation in mother-child interaction (babies of 4 months -20 months)

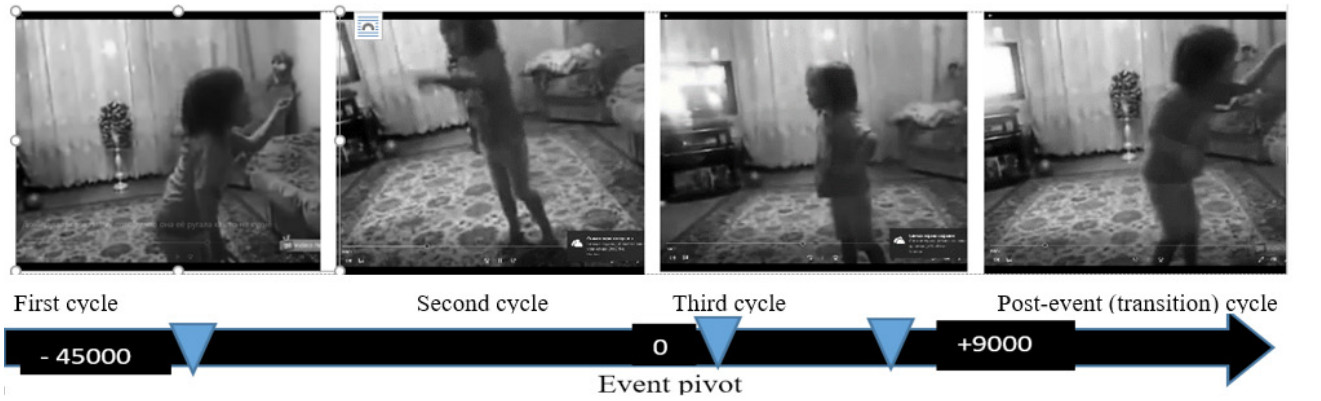

Figure 3. Full mimetic performance (3-4 years old children)

Expressive vocabulary growth in Russian children. The transition from preschool to primary school age

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Keywords: vocabulary; typical language acquisition; preschool age; school age

Introduction.
The early stages of vocabulary development have been widely investigated across the world. Later vocabulary development, however, still lacks comprehensive studies. In Russia, vocabulary acquisition has been mainly investigated from the perspective of longitudinal case studies (e.g., Gvozdev, 1981; Ceytlin, 2000), while experimental studies are still scarce. Therefore, age norms of Russian vocabulary acquisition, especially for the later stages of language development, are still not available.
The aim of the working group from St.Petersburg State Pediatric Medical University coordinated by Prof. Dr. A.N. Kornev is to develop and to standardize a test of expressive vocabulary for Russian-speaking preschool- and school-age children. At the current stage, the first version of the test was piloted in typically-developing and language-impaired children of different age groups. In this paper, we focus on the typically-developing preschool (4-6 years) and primary school (7-10 years) age.
Methodology.
The subjects of the study were 70 Russian-speaking typically-developing children representing seven age groups. The visual stimuli, 200 black-and-white pictures (Akinina et al., 2014, 2015, 2016), were employed for noun and verb elicitation. The pictures were counterbalanced according to the length and frequency of the target words.
Results.
Among all the groups, the 4-year-old children demonstrated the lowest results (only 64% of noun pictures and 43% of verb pictures were named correctly). By the age of five years, the scores increased up to 84% correct naming of noun pictures and up to 80% correct naming of verb pictures. Also, at the age of four years, significant dissociation between the percentage of correct naming of noun and verb pictures was obtained; by the age of five years, this dissociation became significantly weaker. In the preschool children, the age of the subjects strongly correlated with the percentage of correct naming of noun (r=0.8) and verb (r=0.8) pictures. In all the groups, a strong correlation (r=0.8 in the preschoolers; r=0.6 in the school-age children) was obtained between the percentage of correct naming of noun and verb pictures.
Along with age, the rate of incorrect picture naming constantly decreased and the distribution of different types of errors changed. During the preschool age, the children

tended to avoid naming the unknown pictures; school-age children, in contrary, tried to guess while naming the unknown pictures and, thus, produced various errors.

Conclusions.

The results of the study highlighted significant growth in expressive vocabulary during the preschool and early school age. This increase seems to be uneven: up to four years, children, presumable, have acquired mostly nouns (as this was evidenced by Gvozdev, 1981; Bates et al., 1994; Gentner, 1981, 1982; Bassano, 2000); while later on, the number of verbs increases rapidly (however, the prevalence of the noun vocabulary remains). The results of a correlational analysis evidenced that typically-developing children acquire the basis of vocabulary by the school age. Strong correlations between the volume of expressive noun and verb vocabulary imply the existence of some general mechanisms regulating both noun and verb acquisition at the later stages of language development.

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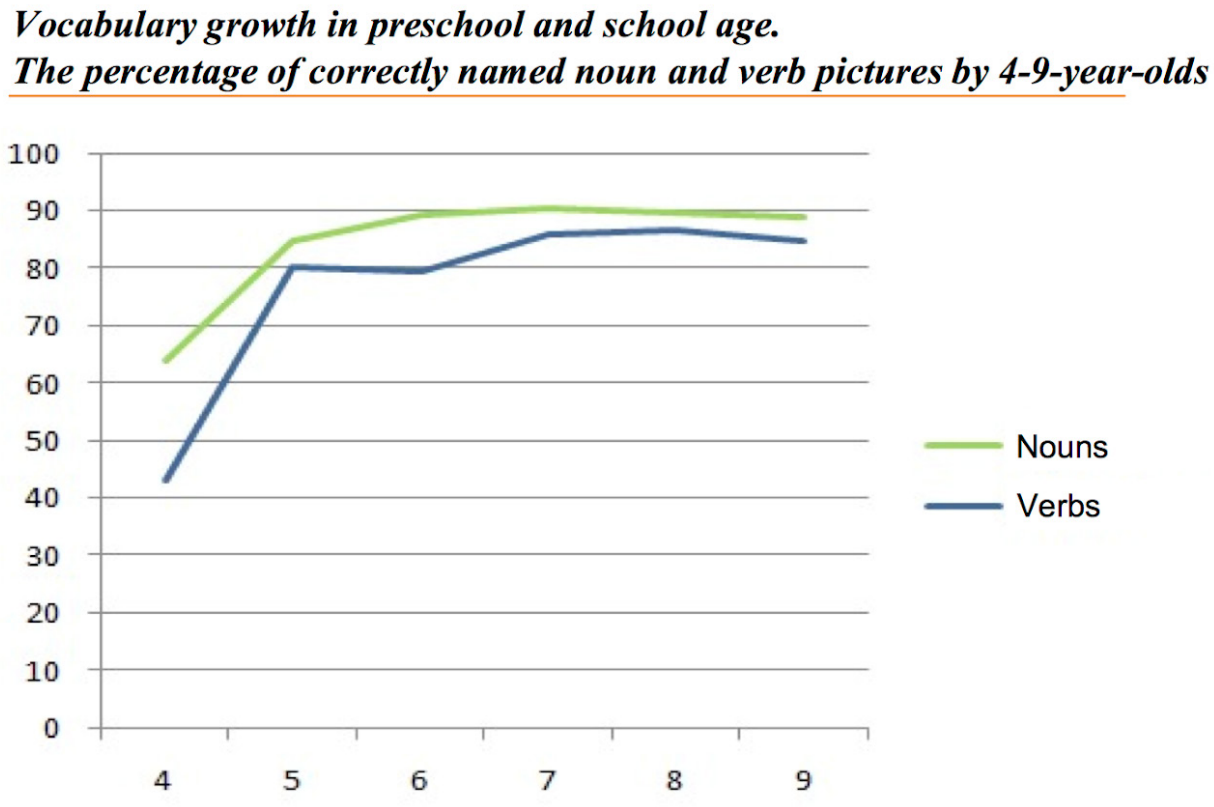

Figure 1. Vocabulary growth in preschool and school age. The percentage of correctly named noun and verb pictures by 4-9-year-olds

Acquisition of Russian nominal case inflections by monolingual and bilingual children: a psycholinguistic approach

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Keywords: child speech, acquisition, cases

The study compares acquisition of Russian nominal case inflections by Russian monolingual and Russian-English bilingual children (2-6 years old). Previous longitudinal studies have shown that the acquisition of the Russian case system presents challenge for both monolingual and bilingual children (Ceitlin, 2000; Gvozdev, 1981, 2007; Gagarina & Voeikova, 2009). Additional challenge for acquisition of the Russian case system in the bilingual context is due to linguistic interference which may lead to the reduction of case system (Polinsky, 2007). While there exists a number of longitudinal studies examining acquisition of the Russian case system in monolingual and bilingual settings, the data are sparse and disparate, coming from children of different ages, socio-economic statuses, and language acquisition backgrounds. We adopt a psycholinguistic approach to examine whether age-matched Russian speaking monolingual and Russian-English speaking bilingual children follow the same timeline in the acquisition of the Russian nominal case markings and to identify quantitative and qualitative differences in their case form productions. Children perform a picture-based sentence completion task in which they have to finish the sentence by naming an object in the picture. Five sentence frames were constructed to bias the children's responses towards the use of a noun in one of the five oblique Russian cases across three declensions plus plural forms, e.g.: [experimenter] "The girl is sitting next to the" ... [child] "table-GEN.SG.DECL2" (Девочка сидит возле ... столаGEN.SG.DECL2). The pictures depicted either existing objects (24 unique case forms) or non-existing objects (24 unique case forms) and the corresponding 24 words and 24 nonwords were constructed. We intend to collect 40 Russian monolingual children (2-5 years old) and 40 Russian-English bilingual children (2-6 years old). Data collection is now in progress. Children's response accuracy and types of errors will be analyzed.
If bilingual children experience linguistic interference during case acquisition, we expect them to make more errors in the production of case inflections compared to monolingual children across different age groups. We will also identify which factors in the bilingual acquisition setting (e.g., type of bilingualism, age of L2 onset) have an effect on the acquisition of Russian case markings. Additionally, the results will inform which case inflections present most challenge for bilingual and monolingual case acquisition. The main contribution of this study consists in complementing the insights gained from longitudinal studies with the experimental data. It will also allow refining the previously reported timeline for the acquisition of Russian cases by monolingual and bilingual children while extending the findings not only to known, but also novel, word productions.

Test for assessment of language development in Russian «KORABLIK»

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Keywords: language development, assessment, children, Russian

While a variety of standardized tests for assessment of language development exist for English children (e.g., Clinical Evaluation of Language Fundamentals Preschool-2 (Wiig, Secord, & Semel, 2004)), there is a lack of such tests for Russian-speaking children. It makes impossible to define quantitative norms for language development in Russian and to specify the type and severity of linguistic deficit in children in clinical practice and research studies. In response to the medical and experimental needs, a novel standardized language development test – the «KORABLIK» – has been developed. This test covers all the level of linguistic processing in auditory comprehension and oral production language domains and takes into account all relevant psycholinguistic variables. Importantly, to standardize the presentation and scoring, «KORABLIK» is implemented on a tablet, i.e. for each subtest, the stimuli are presented automatically and the responses are recorded and scored (for comprehension tasks only) also automatically.

Overall, the test includes 11 subtests that assess children's phonological, lexical, morphosyntactic, and discourse skills in comprehension and production. The comprehension subtests include:

- discrimination of minimal pairs of pseudowords (N = 24; stimuli are matched on the place of contrasting sound, syllable structure, type of a vowel, and type of a consonant);
- word to picture matching for objects and for actions (N = 24 in each subtest; each visual set includes four pictures — target, phonological distractor, semantic distractor and unrelated object; stimuli are matched on subjective visual complexity, familiarity, age of acquisition, imageability, frequency, and length — all parameters from http://en.stimdb.ru/);
- sentence to picture matching for syntactic constructions of varying complexity (N = 24; stimuli are matched on word order, argument structure of a verb; active, relative, or prepositional construction type);
- comprehension of an orally presented story indexed by response accuracy to a set of 16 yes-no questions on explicit and implicit content of the stories.

The production subtests include:

- repetition of pseudowords (N = 24; stimuli are matched on length and number of articulatory switches);

- repetition of sentences (N = 24; stimuli are matched on frequency and number of words);
- naming of objects and actions (N = 24 in each subtest; stimuli are matched on subjective visual complexity, familiarity, age of acquisition, imageability, frequency, and length — all parameters from http://en.stimdb.ru/);
- sentence construction using syntactic priming paradigm (N = 24; verbs in prime and target are different; stimuli are matched on word order, argument structure of a verb; active, relative, or prepositional construction type);
- picture description.

The standardization of «KORABLIK» will be based on normative evidence from at least 150 typically developing children aged 3-7 years. Data collection is in progress. After collecting the normative data, we plan to use this test in various atypical populations, including children with autism spectrum disorder and epilepsy.

Saliency and frequency in the L1 acquisition of Russian nominal morphology: 30-59-months-old children

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Keywords: morphology, acquisition, models

Goal:
In the study we investigate the L1 acquisition of Russian nominal morphology by children.
Background:
Three competing models are tested: (1) Dual-Route model (e.g., Pinker et al., 2002), where default forms are acquired first; (2) usage-based model (e.g. Ellis et al., 2016), which emphasizes the frequency of salient endings, and (3) generative-probabilistic model (Hayes et al., 2008), which stresses salient cues and the default form. The Russian gender-based nominal declensional paradigm consists of six cases and a three-way grammatical declension class system. Second declension class is considered **a default class** because it represents the most **frequent** part of the nominal lexicon that comprises both masculine (46%) and neuter (13%) nouns; feminine nouns represent 41% with first class declension taking approximately 32% and third declension type nouns being a minority (9%) (Akhutina et al., 2001). However, as Table 1 illustrates first class nouns of the feminine gender have the most **salient endings** that are unique and different from the rest of the classes and genders and have explicit markings for all 6 cases. Neuter endings are considered the second most salient type as they mark all the cases but do have overlap on the 4 cases with the masculine type, and the masculine type is least salient due to null case markings and overlap with the neuter gender (Voejkova, 2011). Third class declension nouns were not examined in this project, being least frequent and having a lot of overlap within its own class: NOM/ACC-ночь vs. GEN/DAT/PREP-ночи vs INST- ночью.
Predictions:
Dual-route model predicts that second class declension nouns would be most accurate. However, usage-based and generative-probabilistic models would predict that the accuracy for the feminine nouns of the first class will emerge first due to a combination of relatively higher frequency of the noun class and unique and explicit case markings, followed by neuter and finally masculine nouns.
Method:
An elicitation task with 37 Russian-speaking children aged 30-59 months, 21 female. 24 constructed nonce nouns were distributed equally across three tested types of nouns: 8 for the feminine first class nouns (e.g. бучиха/boochiha/, лахмута/lahmuta/) 8 for the second class masculine (e.g. кныр/knyr/, нунчун/nunchun/) and 8 for the

second class neuter (e.g. гро/gro/, лопочо/lopocho/). Phonotactically (words) and visually (pictures) normed stimuli were distributed across 3 lists in a Latin Square design. Nonce nouns were introduced in two of three cases, NOMINATIVE, ACCUSATIVE and INSTRUMENTAL and elicited in the third case to determine how the frequency and saliency of a declension class affects its generalizability.

Results and Conclusions:

Accuracy was highest in feminine (59%) and neuter (54%) nouns versus masculine (41%; p<.01; p<.05) (F1). NOMINATIVE cases were more accurately (p<.001; p<.01) elicited for neuter (88%) and feminine (86%) genders then for masculine (53%) suggesting the acquisition difficulty of the null case marking (F2). No differences across genders were observed in the ACCUSATIVE and INSTRUMENTAL case elicitations (F3-4). The results support models that rely on the saliency of unique, unambiguously marked endings as a key factor in morphology acquisition.

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Supplementary materials

Gender	Masculine	Neuter	Feminine	
Class	Second		First	Third
Cases	person	cloud	mother	night
Nominative	человек	облак**о**	мам**а**	ночь
Genetive	человек**а**	облак**а**	мам**ы**	ноч**и**
Dative	человек**у**	облак**у**	мам**е**	ноч**и**
Accusative	человек	облак**о**	мам**у**	ночь
Instrumental	человек**ом**	облак**ом**	мам**ой**	ночь**ю**
Prepositional	**о** человек**е**	**об** облак**е**	**о** мам**е**	**о** ноч**и**

Table 1. Russian Nominal Declension system.

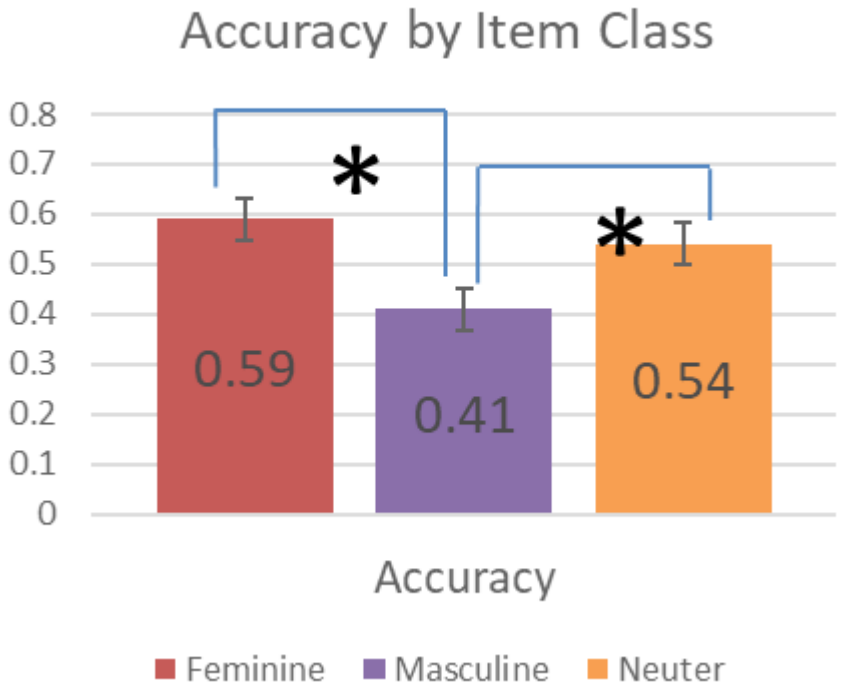

Figure 1. *p<.05; **p<.01

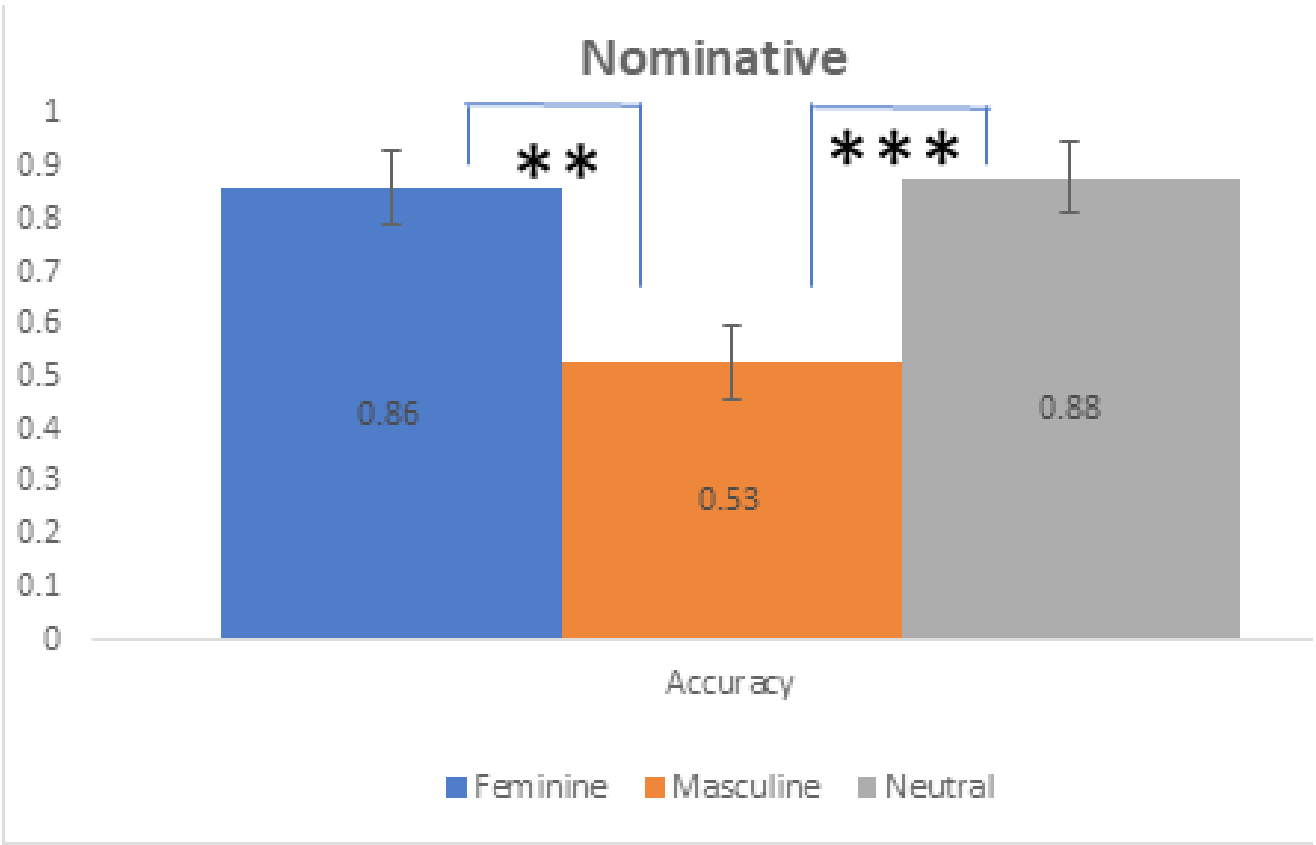

Figure 2. **p<.01; ***p<.001

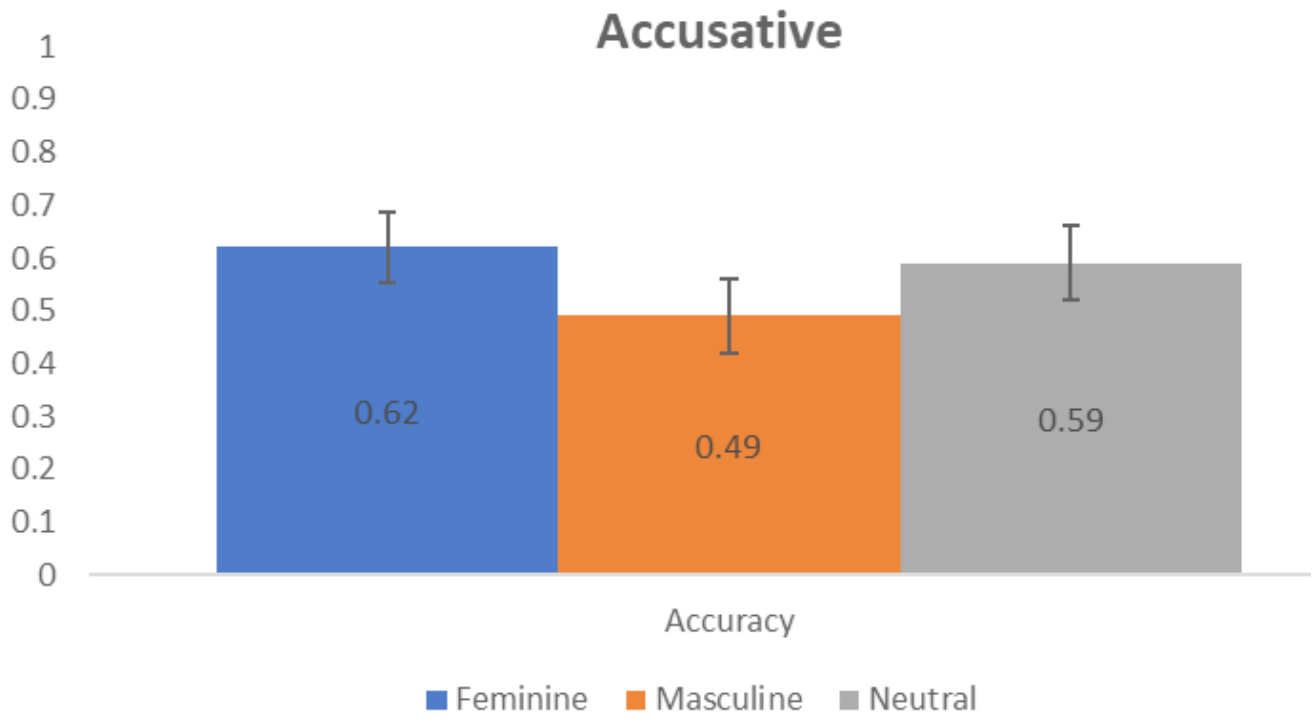

Figure 3. No significant differences here

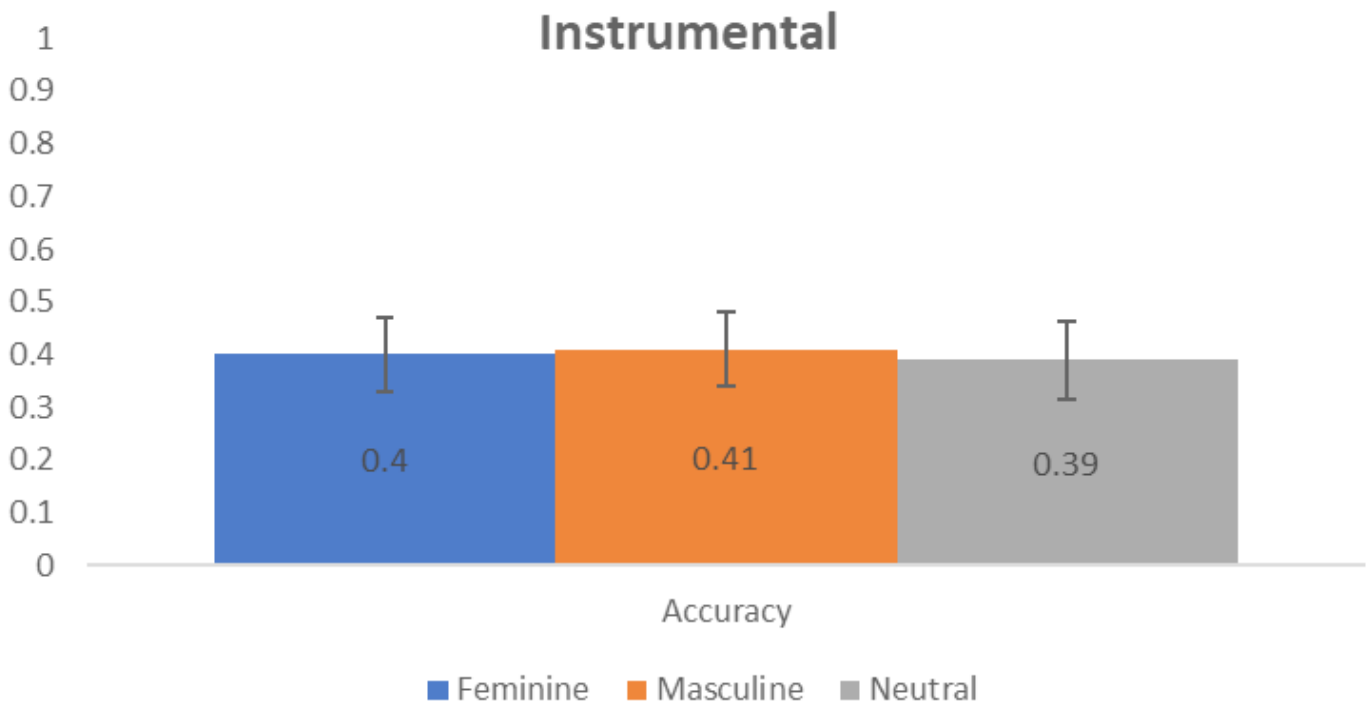

Figure 4. No significant differences here

Auditory Scene Analysis vs. Speech Scene Analysis: atypical speech development in childhood

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Keywords: Atypical speech development in Childhood, neuroabilitation, child's neuropsychology, dichotic listening, event-related potentials, EEG

The possibility to divide the Auditory Scene into separate acoustic units as a base for decoding acoustic sensory system (Bregman, 1990) leads to isolating of the sensory stimulus as a basis for Pavlov's Investigatory Reflex. Executive attention processes allow to choose the part of incoming sensory information which will be further processed.
Could the mechanism for Speech Scene Analysis be the same in early childhood development? Primary speech perception systems for conversion of acoustic and phonetic information of sounds into meaning are localized bilaterally both in the left and right hemispheres of the brain, and more complex processes are later mediated by zones of the left hemisphere only (Hickok, Poeppel, 2004, 2007).
In the last 3 years over 90 children from 3 to 7 years old with varying severity difficulties of the speech development have been observed and clinically investigated.
Methods. Complex neuropsychological investigation (quantitative scales), basic acoustic adaptation test (developed and validated by authors), dichotic listening studies (Hugdahl et al., Wasserman et al.), event-related potentials (ERPs) such as Acoustic evoked potentials (Auditory evoked potentials measure the bioelectric function of the auditory pathway in response to sound stimuli), P300, CNV, MMN — all these things have been recorded as well as EEGs and medical psychiatric examination.

Results.
Preliminary data (N=29) indicates that children with acoustic left-side ignoring, according to dichotic listening studies, show harsher speech disturbance correlated with oliva complex and diencephalic dysfunctions violations of conductivity.
What may be of a greater importance is that, in all groups, the severity of basic acoustic deficit was pronounced and correlated with the lag in speech development.
The research will be continued and we expect obtaining new results this summer.
Based on the data obtained, an approach to children's neuroabilitation was developed including both extension and amplification of Auditory Scene Analysis (ASA) and elaboration and evolution of Speech Scene Analysis (SSA). Further research will have to indicate whether this approach enables faster to intensification of Speech Development and to successful overcoming of the current development deficit.

The effect of age on the comprehension of passives in Down syndrome and Williams syndrome

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Keywords: Down syndrome, Williams syndrome, passives

Individuals with intellectual disabilities often show limitations in language functioning, commonly linked to their overall poor cognitive skills. However, language seems more vulnerable in some populations, e.g. Down syndrome (DS), and relatively preserved in others, e.g. Williams syndrome (WS). Individuals with DS are also known to be at increased risk of cognitive decline due to earlier onset of Alzheimer's dementia, although little is known about how aging affects language skills in this population. Individuals with WS, though with relatively developed language, are reported to never acquire some grammatical structures that appear late in typical development, such as passives of psychological verbs.

In an attempt to better understand how linguistic deficits in individuals with intellectual disabilities can be teased apart from effects of general language delays, chronological age, and overall intellectual impairment, we compare comprehension of passives in English-speaking adults with DS (mean age: 38) and WS (mean age: 30). Passives are known to develop late in typical development, especially passives of psychological verbs, compared to actional verbs.

Our results reveal divergent patterns of performance: adults with WS performed no different from younger TD controls, while adults with DS showed an exceptionally poor performance on all sentence types, even on actives of actional verbs. While the good performance of adults with WS might be due to individual variation, rather than continuous language development, we argue that the poor performance of participants with DS is due to an age-related decline of cognitive and language abilities, possibly linked to Alzheimer's type dementia.

The interface of Autism and Bilingualism: a study of Language, Theory of Mind and Executive Functioning

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Keywords: Autism Spectrum Disorder, Bilingualism, Language, Theory of Mind, Executive Functioning

Monolingual children with autism show high heterogeneity in their linguistic profiles (Kjelgaard & Tager-Flusberg, 2001). A core deficit in Theory of Mind (ToM) is well-established in monolingual children with autism (Baron-Cohen, Leslie, & Frith, 1985). Some researchers suggest a broader deficit in Executive Functioning associated with autistic symptoms (Joseph, 1999).
Little is known about the influence of bilingualism on Language skills, ToM capacity and Executive Functioning of children with autism (Welterlin & LaRue, 2007; Yu, 2013). The current study was devised to meet this gap by assessing separate and combined effects of autism and bilingualism on Language, ToM and Executive Functioning, and exploring links between these three capacities.
Eighty-six monolingual Hebrew-speaking and bilingual Russian-Hebrew-speaking children aged 4;6-9;2 participated in the study: 28 children with HFA (14 monolingual and 14 bilingual) and 58 children with Typically Developing Children (28 monolingual and 30 bilingual). HFA status was verified using the Autism Diagnostic Observation Schedule (ADOS; Lord et al., 1999). All children had non-verbal IQ scores within the norm (Raven, 1998).
Linguistic abilities were tested using (i) a control task not involving ToM, a Sentence Repetition task (Meir, Walters, & Armon-Lotem, 2016) and (ii) a Pronoun Elicitation Task, which is agreed to involve ToM capacity. ToM skills were measured using a composite score of three 1st order and 2nd order false-belief tasks (Buac & Kaushanskaya, 2019; Perner et al., 1987). Finally, Executive Functioning abilities were measured, i.e., (i) verbal short-term memory - Forward Digit Span (Wechsler, 1982); (ii) verbal working memory - Backward Digit Span (Wechsler, 1982); and (iii) visual inhibition - The Embedded Mouse Task (Iluz-Cohen & Armon-Lotem, 2013).
Using a 2 (Clinical Status: HFA vs. TLD) x 2 (Language Status: Monolinguals vs. Bilinguals) design, we assessed separate and combined effects of autism and bilingualism. The results showed that as a group children with HFA performed lower than the control TLD group on all the measures: Language, ToM and Executive Functioning (excluding verbal working memory). However, children with HFA showed highly heterogeneous profiles on all the measures. Some children with HFA showed intact language skills (both morpho-syntactic skills and pronoun use), while others showed impaired morpho-syntactic abilities and weak performance on pronoun use.

Similarly, children with HFA showed heterogeneous performance on verbal short-term memory. All children with HFA showed low performance on ToM tasks and visual inhibition. Furthermore, in children with HFA, positive associations were found between language skills and ToM, on the one hand, and ToM and visual inhibition, on the other hand.Importantly, within the group of HFA, there were no differences between monolingual and bilingual children, confirming that bilingualism is NOT an aggravating factor for linguistic and cognitive skills of children with HFA. We will discuss domain-specific (e.g., ToM) and domain-general (e.g., Executive Functioning) mechanisms underlying the phenotypic characteristics of the autism disorder. Moreover, we will elaborate on clinical implication for assessment and treatment of monolingual and bilingual children with HFA.

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Acquisition of verbal morphology in Russian with attention to defective verbs

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Keywords: morphology, language acquisition, paradigm gaps, defectivity, variation, verbal alternations, paradigm uniformity

Little work has been done on L1 acquisition of verbal morphology in Russian, and especially on acquisition of paradigms with gaps. We experimentally investigate how normally developing Russian children (age 3-5) acquire verbs with expected paradigm gaps and compare them to verbs with variation, with regular alternations, and with no alternations.

Defectivity or "paradigm gaps" are a known puzzle in morphology because, among other things, it poses serious questions for language acquisition: if children learn from positive evidence only, how would they learn that a particular inflectional form, especially of an infrequent lexeme, is absent or ill-formed (given that it is not produced)? If they learn from weak negative evidence (by noticing that some forms are not produced), when and how is such knowledge acquired? Do they generalize to the expected alternation or not before learning that a verb is defective? Or is defectivity a result of grammatical failure that manifests early on?

This investigation will also shed light on the theoretical accounts of gaps. There are different views on the origin of the notorious gaps in Russian 1sg. forms of second conjugation verbs with stems ending in dental consonants (pobedit' —?pobezhu, ?pobed'u, ?pobezhd-u) (see Gorman & Yang, 2017; Pertsova, 2016; Baerman, 2008; Sims, 2006). We test a theory proposed by Pertsova 2016 according to which 1sg. gaps in Russian result from the competition between two conflicting forces: a relatively weak alternation rule and the Paradigm Uniformity Principle (Benua, 1997). The alternation rule wins out in cases in which the expected alternation is supported by other existing allomorphs of the stem with that alternation. Otherwise, when all competitors have low well-formedness, the result of the competition is a gap. Gaps are similar to variation, but different from it in that variation presupposes relatively high well-formedness of the variants (Sims, 2006). Pertsova and Kuzntesova (2017) show experimental evidence that otherwise similar verbs differing only based on whether or not they have 1sg. alternations elsewhere (gundos-it' vs. kvas-it' - kavash-enn-yj) are treated differently by adults: there's lower interspeaker agreement and lower confidence in judgements for 1sg. forms of verbs like gundosit' compared to verbs like kvasit', as well as higher instance of circumlocutions.

The current study (in progress) is an extension of Pertsova and Kuznetsova's work to children. In this study children produce 1p.sg. and 3p.sg. forms of existing and nonsense verbs of four categories: a control group of verbs with no alternations

(darit'), verbs with free variation throughout their paradigm (maxaet-mashet), verbs with a labial alternation in 1sg (l'ub-it'), verbs with dental alternations of two types: those with existing relatives exhibiting 1sg. alternation (gruzit'), and those without such relatives (derzit'). We have currently collected data from 24 children (10 of which have completed both sessions). Our preliminary results show that as expected children perform best with verbs that have no alternations in their paradigm. Also as expected, children do worse with pseudo-words compared to real words. Among verbs with alternations, children do better on verbs with labial alternations and verbs in -at' with variation (although they mainly produce non-alternating forms) compared to verbs with dental alternations. Among verbs with dental alternations, children do equally badly on verbs with known and suspected gaps and pseudo-verbs. This is true even for high-frequency defective verbs such as ubedit', pobedit', and shelestet'. More data and analysis is required, however, these preliminary results show that dental alternations in general are harder to acquire than labial alternations (perhaps because they are consonant-specific), that paradigm gaps likely emerge early on, and that there is a general preference for non-alternating forms.

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Universality and linguistic experience in the perception of speech rhythm

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Keywords: rhythm, speech processing, auditory system design, general mechanisms of speech processing, native language filter

We investigated whether rhythm discrimination is mainly driven by the native language of the listener or by the fundamental design of the human auditory system and universal cognitive mechanisms shared by all people irrespective of rhythmic patterns in their native language. In multiple experiments, we asked participants to listen to 2 continuous acoustic sequences and to determine whether their rhythms were the same or different (AX discrimination). Rhythm was manipulated by changing the durational ratios of sub-syllabic components and the percentage of vocalic material. Participants were native speakers of 4 languages with different rhythmic properties (Spanish (N=29), French (N=25), English (N=29), and German (N=25), all participants are between 18 and 35 y.o., without history of neurological, speech or hearing problems) to understand whether the predominant rhythmic patterns of a native language affect accuracy and speed of detecting rhythmic changes in linguistic (Experiment 2) and in nonlinguistic (Experiments 1 and 2) acoustic sequences. Linguistic stimuli were re-synthesized Welsh utterance with natural-language prosody and phonotactics, and encouraged the listeners to engage the processing mechanisms that are brought to bear while listening a real language. Non-linguistic stimuli – a sequence of syllables devoid of prosody, recognizable linguistic hierarchy, segmentable discrete constituents – could have been processed at a lower-, psychoacoustic level, without engaging the phonological filter of a native language. To examine accuracy, we employed the signal detection theory framework and estimated sensitivity and bias measures using A-prime. To examine the speed of detecting rhythm changes, we measured reaction time locked to the onset of the second acoustic sequence in AX discrimination pairs. The data was analyzed using frequentist methods for statistical inferences and Bayesian approach, in order to compute the degree of support for competing hypothesis related to the presence or absence of the native language effect on the performance in rhythm discrimination task. For the latter, Bayes factors were computed in order to assess the effect of native language. Our results show that all listeners performed better (i.e., responded faster and manifested higher sensitivity and accuracy) when detecting the presence or absence of a rhythm change when the 1st stimulus in an AX test pair exhibited regular rhythm (i.e., a syllable-timed rhythmic pattern) than when the 1st stimulus exhibited irregular rhythm (i.e., stress-timed rhythmic pattern). This result pattern was observed both on linguistic and

nonlinguistic stimuli and was not modulated by the native language of the participant. We conclude that rhythm change detection is a fundamental function of a processing system that relies on general auditory mechanisms and is not modulated by linguistic experience. The ability to discriminate rhythms is a pre-requisite for successful language acquisition, and out study showed that this faculty, which is controlled by general properties of the human auditory system, can index a healthy phonological development. This suggestion is consistent with recent neurophysiological evidence that the disruption of synchronization between acoustic and neural oscillations can lead to delays in phonological development.

Semantic processing in adults with a history of institutionalization: evidence from the N400 ERP-component

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Keywords: Institutionalization, semantic processing, N400, ERPs, language development

Introduction.
Placement in institutional care settings is associated with atypical brain functioning (Marshall et al., 2008), deficits in cognitive (van Ijzendoorn, 2005) and language development, including semantic incongruence processing (Zhukova, 2018). Previous study showed that some deficits in language processes are partly compensated with age (Kornilov et al., 2019). However, the age of placement in institution varied in experimental group. We suggest that deprivation in early age may have more detrimental effects on language development.
This study assesses semantic processing in postinstitutionalized adults with a history of early psychosocial deprivation. Specifically, our research focuses on the N400 ERP component related to semantic processing (Kutas & Federmeier, 2011).

Sample.
A group of 20 young adults placed in institutional care settings in early age (0-4 y.o.) (IC Group, 9 males, mean age = 20,7 years, SD = 6.5, min = 16, max = 38) and a group of 20 matched in age and level of education control peers raised by biological parents (BF Group, 9 males, mean age = 21.25 years, SD = 6.3, min = 16, max = 35) participated in the study.

Procedure.
EEG was recorded at scalp using actiChamp EEG amplifier system with 64 active Ag/AgCl electrodes. The cross-modal paradigm (visual depiction of an imageable noun and an auditory word) with 6 ERP-conditions (350 trials in total) was used in order to elicit the N400 effect (Desroches et al., 2009). Participants were asked to determine whether the word matched the picture. In order to assess the dynamics of lexical processing across multiple states of the mental lexicon organization, the low- and high-frequency nouns were used.

The conditions were the following:

- High- and low-frequency words matched with picture (HF Match; LF Match);
- High- and low-frequency words semantically related to the picture (HF Related; LF Related);
- High- and low-frequency words that mismatched the picture (HF Mismatch; LF Mismatch).

Results.
The following four conditions were analyzed: HF Match, HF Mismatch, LF Match and LF Mismatch. For analysis we chose midline, left and right parietal electrode clusters, time window: 300-500 ms after the stimulus onset. The N400-effect to semantic incongruence was observed in both groups ($F(3) = 16.4$, $p < .001$). No group difference was found.

Although, N400 amplitude is related to lexical frequency (Memetova et al., 2011), we haven't observed an increase in amplitude in response to low-frequency words (LF Match) compared to high-frequency words (HF Match) ($p > .05$). We have found that in the IC group the neural response to the words matched with the picture (HF-, LF Match) was significantly more positive ($p = .0004$) compared to the BF, suggesting higher cognitive load in this group.

Although the previous study showed that children placed in institutional care settings demonstrate reduced N400 (Zhukova, 2018) it seems like adults with and without history of early deprivation process semantic information similarly. The direction for future research is to examine semantic processing in postinstitutionalized adults in more cognitively demanding task, taking into account the IQ level of participants.

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Supplementary materials

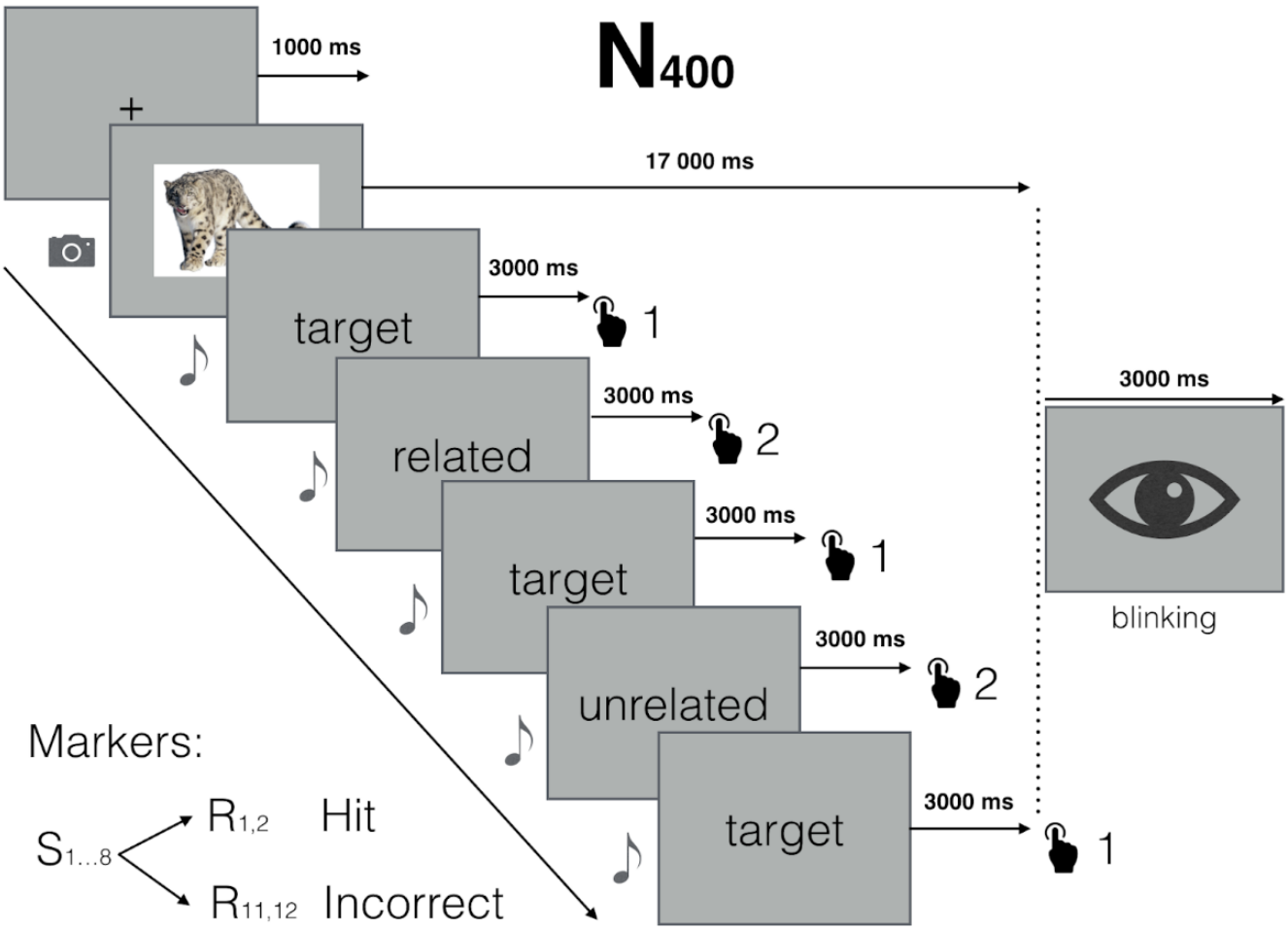

Figure 1. Scheme of the experiment.

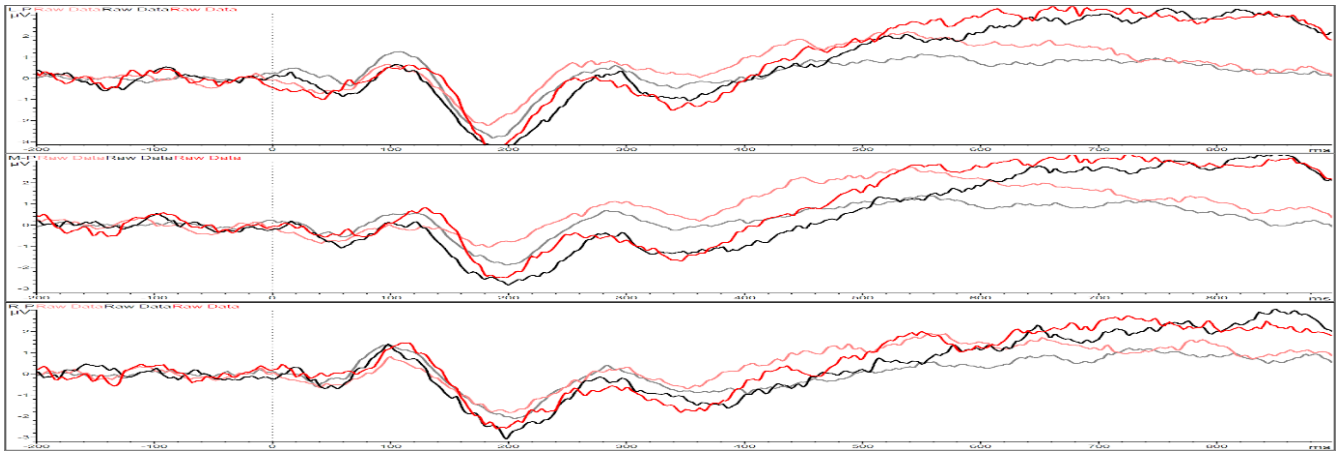

Figure 2. Grand-averaged event-related potential (ERP) waveforms in midline parietal cluster in two groups of participants – adults raised by biological families (gray color for match (target) condition, black for mismatch (semantically unrelated) condition) and adults raised in institutional settings (light-red for match (target) condition, red for mismatch (semantically unrelated) condition).

Subject vs. object control: children do not avoid subject control as much as adults do

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Keywords: Control, inflected infinitives, Portuguese

It is usually assumed that subject control with promise-type verbs is difficult for pre-school children, as the result of a preference for a 'closer' controller which favours object control readings with ditransitive verbs. This preference for a closer controller can be derived from either the analysis of control as movement (Hornstein, 1999) or from alternative accounts (Belletti & Rizzi, 2013). The present paper challenges this view, by testing how children interpret the subject of an infinitive under a novel ditransitive verb (a pseudoword).

We test children's and adults' interpretation of European Portuguese sentences with pseudowords presenting the distribution of a ditransitive control verb. European Portuguese displays inflected infinitives; even though in other contexts inflected infinitives induce no control interpretations, under object control verbs they maintain an obligatory (object) control interpretation, which adds to the general difficulty of the acquisition of control. We therefore consider the possible effect of an inflected infinitive in the interpretation of (object) control contexts. The experiment was a picture-choice task (4 pictures) run in E-prime; we analyse choice of object control and Reaction Time (RT) in different groups (30 adults, 30 4-year-olds, mean 4;6.6, and 30 5-year-olds, mean 5;8.3) and in two conditions (inflected and uninflected infinitives).

The results obtained show that even though children prefer object control readings in these contexts, they give significantly less object control readings than adults, contrary to expectations. Subject control answers also occur at high rates in children's answers (around 30%), a fact showing that subject control is not completely avoided by children. A GLMM (participant as random factor) was performed for object control vs. other answers: no effect of the inflected vs. uninflected infinitive contrast was found and only age showed a significant effect ($p<.05$), with significantly more object control answers given by adults than children (see supplementary material). No effect of the inflected infinitive was found in the choice of the interpretation. However, the analysis of RT shows a significant Age by Type of infinitive interaction, but only 4-year-olds show significantly longer RT with inflected infinitives ($p<.001$).

We discuss these results considering Boland, Tanenhaus & Garnsey (1990), who suggested that subject control could have a processing advantage, since in subject control the same entity is the 'doer' in the event denoted by the matrix verb and in the embedded event. We also explore an alternative explanation, namely suggesting a parallel interpretation of controlled and null (non-controlled) subjects in a Null Subject Language, especially when that language presents controlled and non-controlled inflected infinitives (such as European Portuguese): children would extend to control structures the tendency to interpret a null embedded subject as correferent with the matrix subject.

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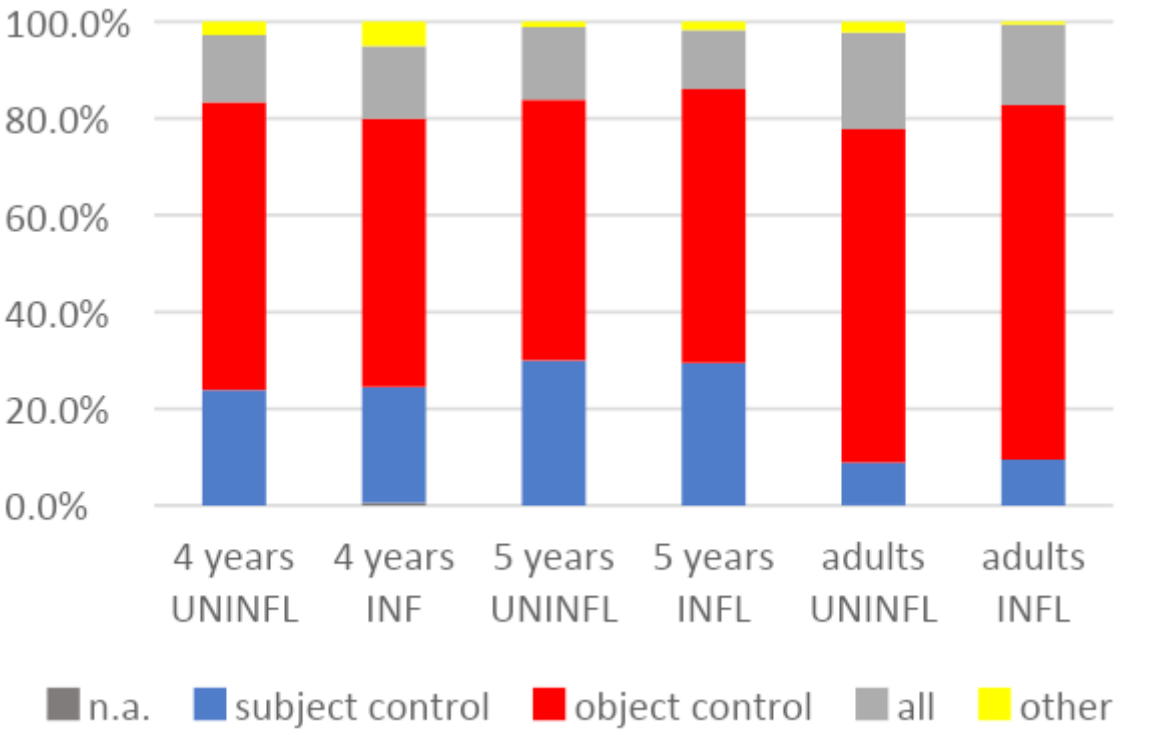
Supplementary materials

1. Sentence with a novel verb (pseudoword) (test item):

[As vacas]	**paritaram**	[as zebras]	[a cozinhar(em)].
the cows	**pseudoword**	the zebras	PREP cook.INF(.3PL)
'The cows	pseudoword	the zebras	to cook'

2. Sentence with an existing object control verb (with uninflected or inflected infinitive)

[As vacas]k	**obrigaram**	[as zebras]i	[a _i/*K/*w cozinhar(em)].
the cows	forced	the zebras	PREP cook.INF(.3PL)
'The cows	forced	the zebras	to cook'

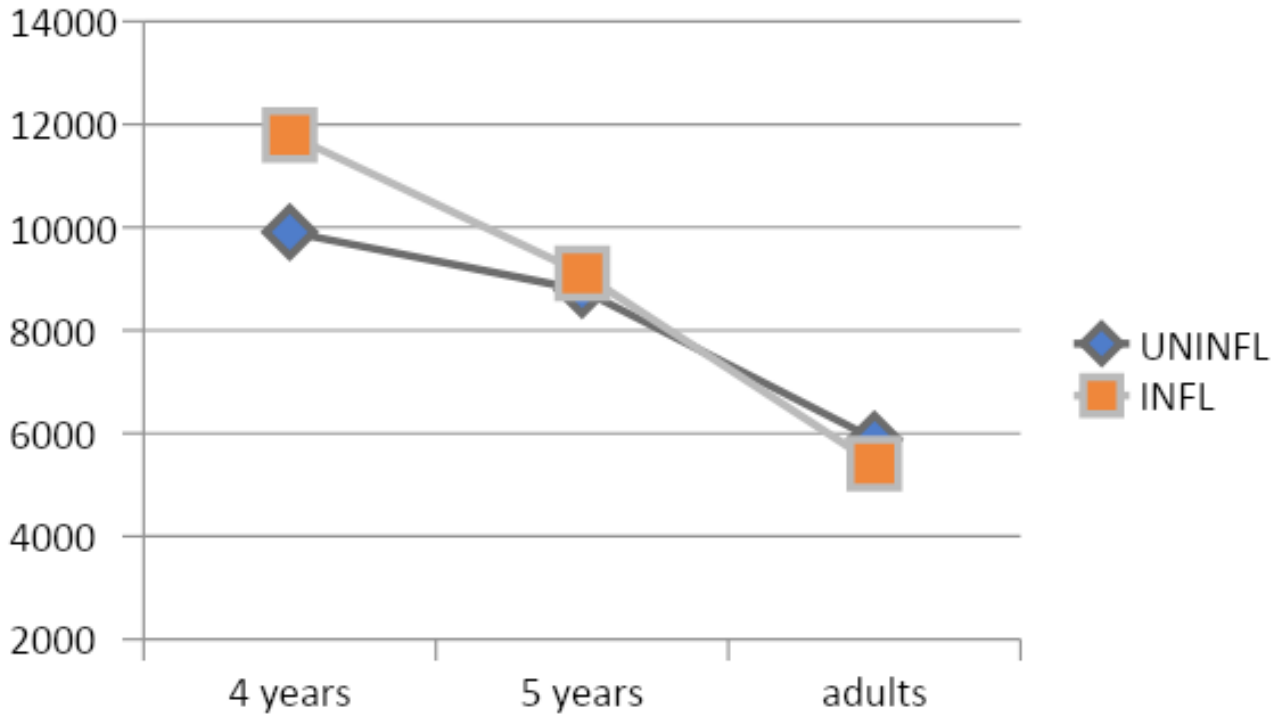


GLMM for choice of Object Control: participant (random), Group (age) (p=.015)

No effect of Condition (INFL/UNINFL) or Group*Condition

4 years vs. 5 years n.s.; adults vs. 4 years
t(1074)=2.373, p=.035, adults vs. 5 years
t(1074)=2.764, p=.017

Figure 1. Choice of interpretation (experiment with novel verbs)



GLMM with a logarithm link function: participant (random), Group (p<.001), Condition by Group interaction (p=.025).

Only for the 4-year-old group we find a significant difference between conditions, with inflected infinitives justifying higher RTs (p<.001).

Figure 2. Reaction Time by Group and Condition (experiment with novel verbs)

Sentence imitation with masked morphemes in Czech: the role of memory and morphological structure

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Keywords: sentence imitation; specific language impairment; morphological acquisition

Sentence imitation task is a recognized marker of language impairment in children, even though it may appear to be primarily a memory task. One important advantage of the task is the possibility to select specific target elements (morphemes, structures) in the stimulus sentences. This is useful especially in languages with underexplored morphological development (e. g. Smolik, Vávrů, 2014). Lukács et al. (2009) used sentence imitation to examine the ability to produce verb morphemes in Hungarian typically developing and SLI children, modifying the task so that the target morphemes were replaced by masking sounds in the stimulus sentences. Lukács et al. found that if children completed the sentences with incorrect morphemes, these replacements usually deviated from the target morphemes in one category (tense, person, number, definiteness) only ("near-misses"). The present study aimed to examine the performance on a similar task in Czech, for verbs as well as nouns, testing the effects of various predictors on overall performance and studying the patterns of morpheme completions.

We created a sentence imitation task with masked noun inflections (case-number endings) or verb inflections (endings encoding person, number, tense, and to some extent gender). There were total 72 sentences for nouns and 33 for verbs. They were presented to 17 children with language impairment (aged 5;1 to 7;6) and 17 typically developing children matched on receptive vocabulary (aged 3;8 to 4;11). Children were also given a vocabulary comprehension task and the forward and backward digit span task from WISC (2002). Overall sentence imitation ability was evaluated by scoring each sentence with 2 points for exact imitation, 1 for a grammatical imitation with 1 or 2 deviations (other than the masked morpheme), and 0 for the rest. Further analysis focused on the morphemes produced in place of the masking sounds.

The overall analysis confirmed that sentence imitation is a sensitive marker of language impairment, with clear differences of the total scores between typically developing vs. language-impaired children (mean 75.47, SD 28.05, in typical, and 35.24, SD 23.67, in LI; difference $p<0.001$). Regression analyses showed significant unique effects of language impairment, vocabulary, and forward digit span. Backward digit span was only significant for sentences with masked verb morphemes. This suggests that sentence imitation taps into language skills as well as the working memory in preschool children, but the exact role of memory skills depends on the material presented.

The analysis of morpheme completions showed significantly lower proportion of correct target completions in children with SLI. There were no systematic differences between children with and without SLI in the pattern of completions. Analyses found only limited support for the prevalence of single-category deviations in either group of children, which contrasts with Leonard's (2014) theoretical approach to early morphological errors.

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Assessment of receptive and expressive domains of language development in children with autism spectrum disorders

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Keywords: Autism, ASD, Autistic spectrum disorders, language development, expressive communication, receptive communication, nonverbal IQ, developmental disorders, speech production, speech comprehension

Autism spectrum disorder (ASD) is a group of neurodevelopmental disorders characterized by communication impairment (American Psychiatric Association, 2013). Language abilities of children with ASD vary widely (Charman et al. 2003, Smith et al. 2007), and the relationship between the receptive and expressive language domains remains not fully understood. There is evidence to suggest that children with ASD exhibit developmental delays in the receptive domain of language development compared to the expressive domain (Boucher, 2003, Hudry et al., 2010). The aim of this study was to assess the receptive and expressive domains of language development of children with autism spectrum disorders on the material of the Russian language.
The Preschool Language Scale, Fifth Edition (PLS-5) was used to assess the speech development in children.
Level of children's cognitive development was assessed using The Mullen Scales of Early Learning: MSEL (Mullen, 1995). Visual perception scale raw scores were used as a measure of nonverbal IQ.
The sample consisted of ASD group including 10 children with ASD aged from 36 to 101 months (M=57.70, SD=19.17), 8 boys and 2 girls, and a control group including 10 children with no diagnosed developmental disorders aged from 10 to 29 months (M=20,8, SD = 8,6), 8 boys and 2 girls.
A group of children with ASD was formed on the basis of clinical diagnosis made by a specialist, and the results of screening tests M-CHAT (Robins, Fein, & Barton, 1999) and CARS (Schopler et al. 1980, 1988). The control group was individually matched on gender and nonverbal IQ score.
In our comparison, we analyzed the age of cognitive development, not the chronological age of children. We used PLS and Mullen raw scores in our analysis.
It was found that children from ASD group demonstrate no differences in the indicators of the expressive component of language development in comparison with the neurotypical cohort of children ($p > .05$). We observed significant differences in the auditory comprehension domain with lower results obtained in the ASD group ($F(1,16)=11.224$, $p=.004$). Profile analysis investigating interaction between indicators of auditory comprehension, expressive communication, visual perception, and fine motor domains revealed that developmental profiles of both groups are parallel ($F(3,16) = 0.27$) $p>0.05$),

have equal levels (F(1,18)= 0.03) sig>0.05) and are flat (F(3,16)= 1.05 p>0.05). The graph of group profiles (Figure 1) shows that children from both groups are close to each other in expressive communication and visual perception abilities, and the greatest discrepancies are observed in the domains of auditory comprehension and fine motor skills. Visual proximity of indicators of visual perception abilities is explained by the initial matching of the groups on the basis of this score.
Our results are consistent with the data suggesting higher levels of the expressive component of language development in children with ASD compared to the receptive domain of language development (Charman et al., 2003; Luyster et al., 2007; Hudry et al., 2010; Volden et al., 2011). Found tendencies warrant further research on a larger sample of children.

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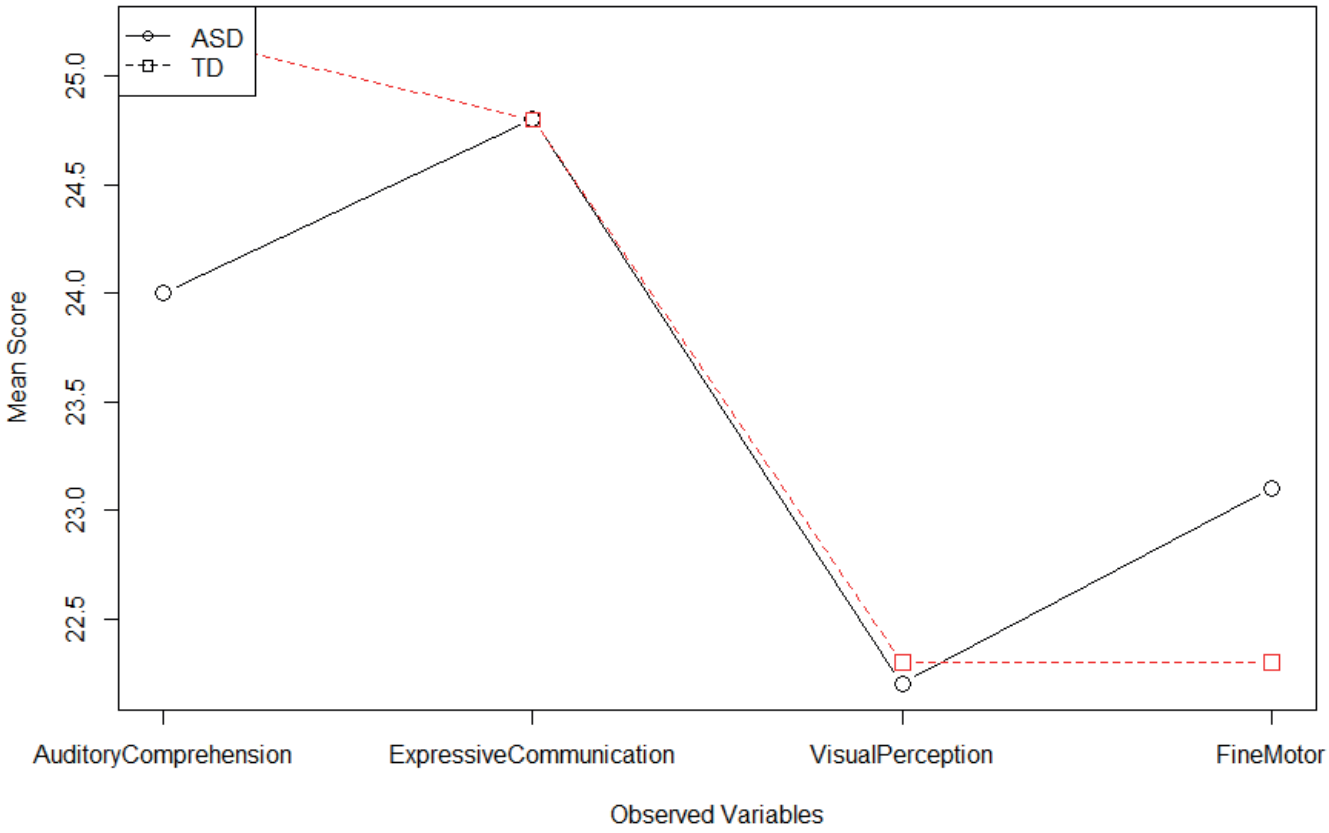
Supplementary materials



The development of agent-oriented modality: evidence from child Hebrew

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Keywords: agent-oriented modality, Hebrew, acquisition, child-directed speech

Modal functions like making requests, commanding actions and posing questions are essential communicative means offered by any language. Examining their development may lead to valuable insights on language acquisition in general, and on children's early semantic, social and cognitive development, in particular (Choi, 2006). The present paper describes the development of agent-oriented modality in Hebrew from a constructivist, usage-based perspective, comparing early modal forms and functions in CS and CDS. Agent-oriented modality refers to all modal meanings that predicate conditions on the agent concerning the completion of an action denoted by the main predicate. Modern Hebrew denotes agent-oriented modality using both verb morphology (mood) and modal predicates. The data for the study comes from analysis of naturalistic speech samples of two Hebrew-speaking girls, aged 1;5-3;0, and their mothers, audio-recorded every 10-14 days in a variety of settings. The recordings were transcribed, coded and analyzed using CHILDES as adapted to Hebrew. Modal predicates were singled out and coded for type of modality (deontic, dynamic, epistemic), function (volition, ability, necessity, possibility, permission, intention, plausibility, probability) and lexical category (verb, adjective, adverb). The findings reveal the following:

- The use of imperative alongside non-modal tenses starts very early and changes over time. The girls start out with modal inflection, relying heavily on the imperative. Over time, the relative frequency of modal inflection decreases, giving way to a wealth of other tenses and to modal predicates. The girls use the imperatives as directives, aimed at getting someone to act.
- The mothers use the imperative rather moderately, making more extensive use of the present tense throughout. Like the girls, they use the imperative and other forms of the modal-cluster to express directive functions, while using the present tense mainly to echo the girls' actions, to elaborate on them, or to express an opinion, an intention, or an emotion.
- The transition to modal predicates starts small - initially, the girls use only one or two modal predicates. Over time, they increase the frequency and diversity of modal predicates in their repertoire.
- The girls use modal predicates to assert what they want, to make requests, to get their mothers to act, and to express obligation and ability.
- The mothers use agent-oriented modals from early on, gradually increasing the diversity of modal predicate type and token frequency.
- The mothers use modal predicates to clarify children's desires, to talk about what needs to be done, (in)ability, possibility and permission.

Thus, the acquisition of modality proceeds gradually, with agent-oriented modality predominating early on. The girls' early use of modals closely reflects their needs, wishes, abilities, and their early perspective of the world around them (cf. Shtephany, 1993). The effect of input frequency appears to be more evident in the acquisition of modal predicates than in the acquisition of modal inflection, for which common discourse functions might play a more dominant role. These findings corroborate findings for other languages, but more research is required to fully explore the acquisition of modality in child Hebrew.

Parental screening measures for language development in Russian

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Keywords: Russian adaptation of the Children's Communication Checklist-2 (CCC-2), Questionnaire for Parents of Bilingual Children (PaBIQ), Multilingual Assessment Instrument for Narratives (MAIN), monolingual Russian-speaking children

While a variety of well-established standardised language assessment tools exist in English-speaking countries, only very few standardised tests with clear norms are available in Russian language. The aim of the present study was to contribute to a further development of tests of language ability for monolingual Russian-speaking children. One way to screen young children for a developmental language disorder is by the means of parental questionnaires. However, no such questionnaires are currently standardised for Russian language. We assessed which of the two parent-reported questionnaires, the Russian adaptation of the Children's Communication Checklist-2 (CCC-2) or the Russian version of the 8-item questionnaire assessing 'Current Language Skills' is a more reliable predictor of children's performance on direct measures of language. The revised version of the Children's Communication Checklist, the CCC-2 (Bishop, 2003), is a parent-reported measure and is one of the most widely used instruments that allow to (1) discriminate between children with and without communication impairments and (2) identify children whose pragmatic difficulties are disproportionate to their structural language skills. The Russian version of the 8-item questionnaire assessing 'Current Language Skills' was taken from the Parents of Bilingual children Questionnaire (PABIQ-(COST Action IS0804, 2011)) which includes Risk Factor measures such as the 'No Risk Index' and 'Current Language Skills'. The two composite scores available in the CCC-2 (General Communication Composite (GCC), a measure of formal/structural language, and the General Pragmatic Composite (GenPragC), a measure of pragmatic competence) as well as the 'Current Language Skills' measure were correlated with the results of a direct assessment of structural and pragmatic language. 19 monolingual typically-developing Russian-speaking children aged between 4;0 and 6;8 years and their parents participated in the study. A strong relationship was found between the parent-reported 'Current Language Skills' questionnaire and a direct measure of expressive vocabulary (a Russian version of the Cross Linguistic Lexical Tasks (CLTs), noun production subtest). These results suggest that further investigation is warranted into establishing the validity of a Russian adaptation of the parental questionnaire assessing 'Current Language Skills' as a screening tool for a language disorder.

Supplementary materials

Measure	Mean	SD	Range	N
Parental Report				
PaBIQ No Risk Index	23.95	1.35	21-25	19
PaBIQ Parental judgment of Current Language Skills	16	3.82	9-21	19
CCC-2 GCC	64.84	20.20	29-119	19
CCC-2 SIDC	-5.47	6.50	-18-6	19
CCC-2 GenPragC	41.58	12.28	21-76	19
Direct Assessment				
CLT Noun production	25.68**	2.81	19-29	19
Verb production	21.32	4.10	12-28	19
Overall	47	6.46	31-56	19
MAIN				19
SS	18.53	5.30	5-29	
SC	10.79	5.41	2-24	
IST	9.21	5.66	1-20	
Pragmatic language total	38.53	14.52	14-73	
Type/Token ratio	69.53%	8.36	53%-87%	

Note.
PaBIQ, Questionnaire for Parents of Bilingual Children; CCC-2, Children's Communication Checklist-2; GCC, General Communication Composite; SIDC, Social Interaction Deviance Composite; GenPragC, General Pragmatic Composite; CLTs, Cross Linguistic Lexical Tasks; MAIN, Multilingual Assessment Instrument for Narratives; SS, Story Structure; SC, Structural Complexity; IST, Internal State Terms

**the difference between the mean noun and verb production scores is significant at p<.001 level

Table 1. Descriptive Statistics for the language scores on the parental reports and direct language assessments

Scale	Mean	Minimum	Maximum
A. Speech	6.79(3.33)	2	14
B. Syntax	8.32(3.68)	0	14
C. Semantics	8.16(2.71)	3	16
D. Coherence	7.63(2.81)	3	15
E. Inappropriate initiation	10.21(2.62)	6	15
F. Stereotyped language	7.21(2.80)	3	15
G. Use of context	8.68(2.96)	4	17
H. Non-verbal communication	7.84(2.77)	3	14
I. Social relations	9.68(3.51)	4	14
J. Interests	8.63(1.98)	4	13

Note.
Standard deviations appear in parentheses
General Communication Composite (GCC) is calculated as a sum of subscales A – H
Social Interaction Deviance Composite (SIDC) is calculated as a sum of scales E + H + I + J minus the sum of scales A - D
General Pragmatic Composite (GenPragC) is calculated as a sum of scales D – H (this is comparable with the Pragmatic Composite of the original CCC, see Norbury et al., 2004)

Table 2. Descriptive statistics for the scaled scores on each of the CCC-2 subscales, based on the UK norms

Measure	Mean	Minimum	Maximum	Max score possible	Scoring
Age of first word onset	5.89	4	6	6	⩽15 months = 6 points; 16-24 months = 4 points; ⩾24 months = 0 points
Age of first sentence onset	5.89	4	6	6	⩽24 months = 6 points; 25-30 months = 4 points; ⩾31 months = 0 points
Parental concern	1.26	0	2	2	Yes: 0 points; No: 2 points
Hearing difficulties	2	2	2	2	4 questions: Yes: 0 points; No: 0.5 points
1) Early Development Index	15.05	12	16	16	A sum of the above scales
2) Family History Index	8.89	8	9	9	Any score less than 9 indicates possible family history
No Risk Index	23.95	21	25	25	A sum of 1) and 2)
Current Language Skills	16	9	21	24	8 questions rated on a Likert scale of 0-3

Table 3. Descriptive statistics for the Parents of Bilingual Children Questionnaire (PaBIQ)

Measure	1	2	3	4	5	6	7	8	9	10	11
1. PaBIQ 'Current Language Skills'											
2. PaBIQ 'No Risk Index'	.51*										
3. CCC-2 GCC	.53*	.46*									
4. CCC-2 GenPragC	.43	.35	.96**								
CLTs											
5. Nouns	.52*	.15	.04	.28							
6. Verbs	.25	-.09	.29	.21	.53*						
7. Overall	.41	-.01	.40	.27	.83**	.92**					
Main											
8. SS	.38	.18	.24	.19	.23	.29	-.09				
9. SC	.20	.27	.11	-.04	.34	-.10	.09	.67*			
10. IST	.27	.20	.25	.14	.25	-.09	.05	.72*	.66**		
11. Pragmatic language total	.31	.22	.18	.06	.42	-.01	.19	.89**	.87**	.90**	
12. Type/Token ratio	-.02	-.09	.01	.09	-.18	.07	-.04	-.44*	-.39	-.45*	-.48*

Note.
PaBIQ, Questionnaire for Parents of Bilingual Children; CCC-2, Children's Communication Checklist-2; GCC, General Communication Composite; GenPragC, General Pragmatic Composite; CLT, Cross Linguistic Lexical Tasks; MAIN, Multilingual Assessment Instrument for Narratives; SS, Story Structure; SC, Structural Complexity; IST, Internal State Terms

*significant at p<.05 level **significant at p<.001

Table 4. Correlation coefficients between the parent-reported scores and results of a direct language assessment

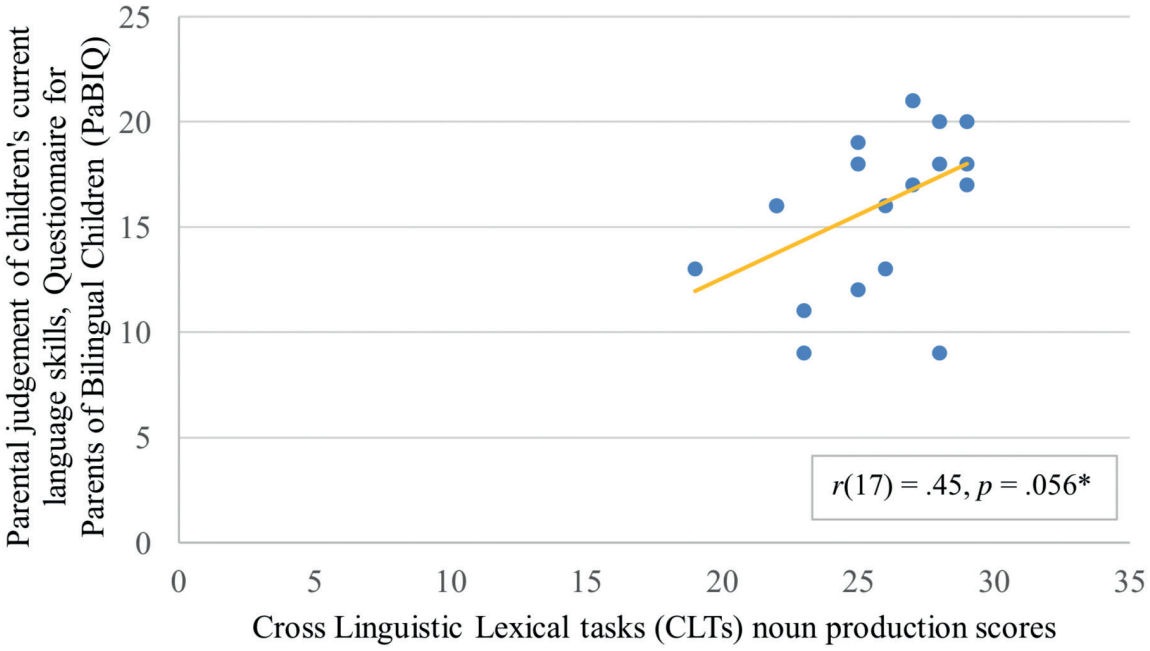

Figure 1. Relationship between parental report of children's Current Language Skills on the Questionnaire for Parents of Bilingual Children (PaBIQ) and direct assessment of noun production skills by the Russian Cross Linguistic Lexical Tasks (CLTs)

Step	Variable	b	SE	t	sr2
1	Constant			.00	
	Age	.17	.05	3.53**	.42
2	Age	.16	.04	3.80**	.38
	Current Language Skills	.29	.12	2.43*	.16

Note.
* = p <.05
** = p <.01

Table 5. Summary of multiple regression analysis for variables predicting CLTs noun production

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