

Slavic Languages in the Black Box

Workshop on Empirical Psycholinguistic Methods
Sep. 24th — Sep. 26th at the University of Tübingen

Program and abstracts

EBERHARD KARLS
UNIVERSITÄT
TÜBINGEN



Welcome to

Slavic Languages in the Black Box

Slavic languages have become an attractive object for psycholinguistic analysis, as recent studies on language processing and on language acquisition show. Psycholinguistic methods are multi-faceted and elaborate, but are often conceived of with Germanic languages in mind, and English in particular. How can Slavists still manage to make use of these methods for their own inquiries? Can exemplary studies, e.g. on English, be directly applied to Slavic languages, which have their own grammatical and morphological peculiarities?

We hope that our workshop will bring together linguists who study Slavic languages from the perspective of psycholinguistics. The focus will be on the methods, especially concerning activities in which speakers complete formally defined tasks (e.g. making judgments or decisions, reading activities, etc.) The workshop is intended to promote methodological exchange, to provide an overview over the various methods that are used, and to address the specific problems associated with them.

Keynotes

Denisa Bordag (Leipzig) · Tatiana V. Chernigovskaya (St. Petersburg)

Barbara Mertins (Heidelberg) · Roumyana Slabakova (Southampton)

Organizers

Anja Gattnar (SFB 833, Project C2, Universität Tübingen)

Tanja Anstatt and Christina Clasmeier (Institute for Slavic Studies, Ruhr-Universität Bochum)

General Information

Conference Venue: Wilhelmstr. 19. (Verfügungsgebäude) R. 0.01 & 0.02



Map of the Conference Venue

- | | |
|--------------------------------------|--|
| 1. Conference Venue (Wilhelmstr. 19) | 7. Supermarket (Rewe) |
| 2. Café Unckel (pizza & pasta) | 8. Snack Bars and Cafés (Indian food, Swabian food, Döner Kebab) |
| 3. Mensa | 10. Saints and Scholars (Irish Pub) |
| 4. and 5. Bakery | 11. Africa (Ethiopian Restaurant) |
| 6. and 9. Copy Shop | |

Internet Access

Network name (ESSID)	Guest
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Eating Out

The map already lists some restaurants near the conference venue:

- 2. Café Unckel (Italian) · Wilhelmstr. 17
- 10. Saints and Scholars (International) · Wilhelmstr. 44
- 11. Africa (Ethiopian) · Schlachthausstr. 9

Additionally, there are many more places to eat out in Tübingen city:

- Al dente (Italian) · Clinicumsgasse 22
- Asien Haus (Thai) · Schiedtorstr. 11
- Collegium (Bar) · Lange Gasse 8
- El Chico (Mexican) · Gartenstr. 2
- Kichererbse (Lebanese, vegetarian) · Metzgerstr. 2
- Manufaktur (Italian) · Vor dem Haagtor 1/2
- Mauganeschtle (Swabian) · Burgsteige 18
- Neckarmüller (Swabian) · Gartenstr. 4
- Wok In (Chinese) · Wilhelmstr. 20



Slavic languages in the Black Box Program

Tuesday, 23.09.2014

Starting at 7 p.m.: Warming up - *Saints and Scholars* (www.saints-and-scholars.de/)

Wednesday, 24.09.2014

Starting at 8.30 a.m.	Distribution of name tags, good morning coffee	
9.00 – 9.15 a.m.	Welcome	
9.15 – 9.45 a.m.	Christina Clasmeier Introduction	Psycholinguistic Research in the Scope of Slavic Languages – the Status Quo
9.45 – 10.45 p.m.	Barbara Mertins Keynote 1	The use of experimental methods in linguistic research: advantages, problems and possible pitfalls
10.45 – 11.05 p.m.	<i>Coffee break</i>	
11.05 a.m. – 1.05 p.m.	Presentation unit #1: Phonetics	
	Yulia Nigmatulina, Elena Riekhakaynen	A psycholinguistic study of pauses in spontaneous speech: evidence from Russian
	Olga Raeva, Elena Riekhakaynen, Yulia Nigmatulina	Processing reduced word forms in spontaneous Russian: looking for new methods
	Marion Krause	Statistical modelling in psycholinguistic research on accents and attitudes: problems and solutions
1.05 – 2.30 p.m.	<i>Lunch</i>	
2.30 – 4.30 p.m.	Presentation unit #2: Grammar – aspect	
	Jan Chromý, Eva Lehečková	Aspectual Interpretation of the Bi-aspectual Verbs in Czech
	Anastasia Makarova	Psycholinguistic studies of Russian aktionsarten
	Anja Gattnar	One experiment – different languages: a challenge for the transfer of experimental designs between Slavic languages

16.30 – 16.50 p.m.	<i>Coffee break</i>	
16.50 – 18.20 p.m.	Presentation unit #3: Grammar – Aspect and more	
	Elena Dieser	Some "cases of doubt" of the Russian grammar from different methodical perspectives
	Penka Stateva, Arthur Stepanov	Processing complexity in Slavic numeral phrases

Thursday, 25.09.2014

9.00 – 10.00 a.m.	Denisa Bordag Keynote 2	Exploring Czech inflection with the picture-word interference paradigm
10.00 – 10.15 a.m.	<i>Coffee break</i>	
10.15 – 11.15 a.m.	Presentation unit #4a: Grammar	
	Radka Julínková, Denisa Bordag	Evidence of Split Morphology Hypothesis in Czech
	Dagmar Divjak, Antti Arppe	TAM markers as strongest predictors for the choice between near-synonyms: a self-paced reading experiment
11.15 – 11.30 a.m.	<i>Coffee break</i>	
11.30 a.m. – 1.00 p.m.	Presentation unit #4b: Lexis	
	Bernhard Brehmer, Tatjana Kurbangulova, Marcin Wiński	How to measure lexical proficiency in heritage speakers of Russian and Polish in Germany? A comparison of different experimental approaches
	Tanja Anstatt, Eva Belke, Christina Clasmeier	<i>Schalter, šapka, šaška</i> – Coactivation in the bilingual lexicon of Russian heritage speakers and methodological problems of its investigation
1.00 – 2.30 p.m.	<i>Lunch</i>	
2.30 – 3.30 p.m.	Tatiana V. Chernigovskaya Keynote 3	Debates on Mental Lexicon and its Cerebral Basis: Evidence from Russian
3.30 – 3.50 p.m.	<i>Coffee break</i>	
3.50 – 5.50 p.m.	Presentation unit #5: Syntax	
	Arthur Stepanov, Franci Vaupotič, Rok Žaucer	Relative clause attachment preferences and the role of complementizer in Slovenian

	Filip Smolík	Sentence comprehension and structural priming in Czech toddlers and preschoolers; preferential looking and offline pointing compared
	Natalia Gagarina, Julia Lomako, Elena Valentik-Klein	Interpretation of ambiguous pronouns in Russian: canonical and non-canonical word order
afterwards	<i>Workshop-Dinner at El Chico (www.el-chico-restaurants.de/tue)</i>	

Friday, 26.09.2014

9.00 – 10.00 a.m.	Roumyana Slabakova Keynote 4	How to investigate interpretation in Slavic experimentally?
10.00 – 10.15 a.m.	<i>Coffee break</i>	
10.15 a.m. – 12.15 p.m.	Presentation unit #6	
	Jan Patrick Zeller, Esther Ruigendijk	Processing code-switches between closely and less closely related languages. An ERP study.
	Jakub Jehlička	How differences in encoding of space in Czech Sign Language and in spoken Czech affects the non-linguistic spatial thought of the users of the respective languages?
	Vlasta Erdeljac, Anita Peti-Stantić, Jana Willer-Gold and Martina Sekulić	Adaptation of Tests for English into a Slavic Language: Case of Croatia PALPA
12.15 – 12.30 p.m.	<i>Coffee break</i>	
12.30 – 1.30 p.m.	Closing discussion	
afterwards	<i>Lunch</i>	

Departure of workshop participants

List of Abstracts in the Order of Appearance

Barbara Mertins
University Heidelberg

The use of experimental methods in linguistic research:
advantages, problems and possible pitfalls

In this talk I will present and discuss several experimental methods used inside and outside of psycholinguistic research. The main focus will be on speech production. The methods presented include eye tracking, measurements of speech onset times as well as (grammatical) judgment tasks and different questionnaire types. On the basis of my own experimental data I will describe the main features of the selected methods, and will have a closer look at their suitability for various linguistic research questions. Finally, I will explore the advantages, shortcomings and limitations of the methods. Additionally, I will make some remarks about the use of inferential statistics and about the presentation of data in linguistic research.

A psycholinguistic study of pauses in spontaneous speech: evidence from Russian

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Pauses have been assumed as being meaningful for spoken word processing, forming a coherent speech and helping a listener to interpret casual speech.

The present research is based on The Corpus of Spontaneous Russian (<http://www.narusco.ru/>) that consists of radio interviews and TV talk-shows. Analysis of the fragments of speech between two pauses revealed that three types of pause realization are possible in spontaneous speech: (i) an interpausal fragment contains several semantic-syntactic units; (ii) a semantic-syntactic unit coincides with an interpausal fragment; (iii) a semantic-syntactic unit is broken by a pause.

Around 70% of all pauses analyzed break semantic-syntactic structure of the phrase. Sometimes, the left part of the phrase (before the pause) still includes some features that allow a listener to understand that the phrase is not completed. These are either unfinished syntactic structures (such as prepositions; for example: *об inh(0,199) опыте-е* ‘about (*inhalation*) the experience’) or the intonation (for example, the rising pitch on the word before the pause).

The most interesting from the psycholinguistic point of view are those broken semantic-syntactic units whose left part has neither syntactic, nor melodic features indicating that the phrase is not finished. We are focused on the description of the mechanism used by a listener while processing such units. The methods of psycholinguistic research and prosodic analysis that can be applied for such a study will be discussed in the presentation.

The research is supported by the research grant number 13-06-00374 of the Russian Foundation of Basic Research.

Processing reduced word forms in spontaneous Russian: looking for new methods

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Context is shown to be crucial for the recognition of strongly reduced word forms in spontaneous speech (Ernestus et al. 2002; Riekhakaynen 2010). However, new methods (including online tasks) are required in order to describe how exactly and when the context does influence the recognition of reduced word forms in casual speech. Such a research has been recently conducted on Dutch (Brouwer 2010). The combination of offline and online tasks (cloze tests and eye-tracking method) allows assuming that reduced word forms benefit more from wider discourse context that can be strongly or weakly supportive and that listeners are sensitive to fine phonetic cues in strongly reduced forms.

In the presentation, we are going to discuss whether the methods described in (Brouwer 2010) are applicable to spontaneous Russian speech. We are primarily going to introduce our results received in the offline tasks (dictation task and cloze tests) showing that many strongly reduced word forms can be recognized even in limited and weakly supportive semantic contexts (presumably, due to the greater grammatical superfluity of Russian compared to Dutch). The advantages and disadvantages of the visual word paradigm for the description of reduced word forms recognition will be discussed.

The work is supported by the research grant number MK-3646.2013.6 from the President of the Russian Federation and the research grant number 0.38.518.2013 from St. Petersburg State University.

References:

- Brouwer, Susanne. 2010.* Processing strongly reduced words in casual speech. Wageningen, the Netherlands: Max Planck Institute for Psycholinguistics dissertation.
- Ernestus, Mirjam, Harald R. Baayen & Rob Schreuder. 2002.* The recognition of reduced word forms. *Brain and Language* 81 (1–3): 162–173.
- Riekhakaynen, Elena. 2010.* Vzaimodestviye kontekstnoy predskazuyemosti i chastotnosti v protsesse vospriyatiya spontannoy rechi (na materiale russkogo yazyka) [Interaction of context and frequency in the process of spontaneous speech recognition (evidence from Russian)]. St. Petersburg, Russia: St. Petersburg State University dissertation.

Marion Krause
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Slavic languages: Russian, BKS; special studies: Polish, Czech

Specific research topics: Speech perception and speech processing. Language acquisition and learning. Accent. Attitudes.

Abstract

Statistical modelling in psycholinguistic research on accents and attitudes: problems and solutions

Recent psycholinguistic research scrutinizes basic assumptions of previous research paradigms about the features of factors and variables under issue. Widely-used statistical procedures like ANOVA base on the assumption of the orthogonal, independent distribution of factors and their gradations. But in fact the material of a large part of psycholinguistic research doesn't comply with these requests. On this background, new methods are currently under discussion. The paper aims to explicate the main problems of statistical modelling comparing traditional approaches with newly introduced ones on the basis of empirical research on accents and attitudes.

Slavic Languages in the Black Box

Workshop on Empirical Psycholinguistic Methods

Names: Jan Chromý, Eva Lehečková

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Slavic language studied: Czech

Topic: Aspectual Interpretation of the Bi-aspectual Verbs in Czech

Abstract:

In Czech there is a class of loaned verbs that could express either perfective or imperfective meaning. The paper focuses on how Czech speakers interpret these bi-aspectual verbs in ambiguous contexts.

The research was based on a questionnaire experiment. We hypothesized that the interpretation of a bi-aspectual verb is determined by the verb tense, i.e. that a bi-aspectual verb in past tense tends to be interpreted as perfective while the same verb in present tense tends to be understood imperfectively.

There were two versions of the questionnaire and each consisted of 14 sentences (each contained three loanwords including the bi-aspectual verb). Participants (N=60) had to reformulate these sentences and create a sentence with the same meaning but without any loanwords. The two versions contained same sentences but they differed in the tense of the verbs. Participants were randomly divided into two groups of 30, each group had to fill in only one questionnaire. The discourse meaning of the bi-aspectual verb was determined based on the aspect of the Czech translation.

11 of the 14 analyzed verbs showed statistically significant preference of the perfective interpretation in the past tense and 12 of the 14 verbs preferred imperfective meaning in the present tense. Comparison between the distribution of perfective and imperfective interpretation in the past tense and in the present tense yields statistically significant difference for all the verbs. This suggests that the tense of the verb has a strong impact on the aspectual interpretation of the bi-aspectual verbs in Czech during language processing.

Anastasia Makarova, University of Tromsø, CLEAR research group
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Research topic: Aspect and aktionsart

Method: Experiments with nonce-words, cloze-tests

Slavic language studied: Russian

Psycholinguistic studies of Russian aktionsarten

In this paper I report on two psycholinguistic experiments that were targeted at the Russian aspectual system. Revealing native-speakers' preferences in the use of various morphemes, the two studies shed light on the nature of the distribution and the motivation behind the choice of prefixes and suffixes associated with semelfactive and attenuative aktionsarten in Russian, as well as the phenomenon of aktionsarten in general. The semelfactive aktionsart describes doing something once and can be expressed by the *-nu-* suffix or the *s-* prefix (e.g. *kriknut* 'shout once' vs. *s-glupit* 'do something silly once'). The attenuative aktionsart describes doing something slightly, and can be expressed by a variety of prefixes, *pri-* and *pod-* being the two most productive (*priotkryt* 'open slightly' vs. *podpravit* 'correct slightly').

Methodologically, the two experiments have a lot in common. In both cases corpus data was used in order to 1) formulate hypotheses and 2) direct the composition of experimental tasks. For semelfactives, Dickey and Janda's (2009) corpus study suggests that the distribution of the semelfactive morphemes is not arbitrary and depends on the morphological class of the verb and on its semantics. My own corpus study of attenuatives based on data from the Russian National Corpus suggests that semantics plays a major role in their distribution (Makarova forthcoming). Both experiments were conducted in written form and included clozed-test tasks, thus participants were not restricted in their choice of morphemes. Moreover, they were not asked to produce semelfactives or attenuatives specifically, rather, they were asked to provide "the best suitable form of a given verb". Thus, the participants had a choice whether to use aktionsarten or other verb forms as well as which affix to select. The contexts for the experiments included lexical triggers for the relevant aktionsarten.

Due to the different nature of affix variation in the two aktionsarten (suffix-prefix variation vs. prefix-prefix variation), the experiments differed in the type and the presentation of target stimuli. While in the study of attenuatives existing verbs of Russian were used, in the study of semelfactives I used nonce-verbs (cf. "wug tests" used by Berko 1958, Bybee and Pardo 1981, Rodina 2008, Chernigovskaya & Gor 2000, 2001, 2003, Gor & Chernigovskaya 2004, Gor 2006, and Murphy 2004). Nonce-verbs were presented in finite and non-finite forms in a way that made their morphological class clear and in contexts that provided informants with some hints about the possible meaning of the verb. The number of the stimuli in the experiments varied: 32 targets out of 44 stimuli for the semelfactive experiment, and 59 targets out of 164 stimuli for the attenuative experiment.

The number of participants (63 and 122, respectively) and consequently the large total number of data points provided sufficient data for statistical analysis. Although in general the experiments provided additional support to the hypotheses, the data obtained in the experiments enabled us to see the complex distributions of morphemes in more detail. Furthermore, the experiments shed light on the status of aktionsarten in the mental grammars of the native speakers of Russian. Thus, the experiments contribute to our understanding of Russian aspectual system.

References:

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One experiment – different languages: a challenge for the transfer of experimental designs between Slavic languages

Anja Gattnar

In empirical linguistic research it is common to translate an experimental design from one language to another. Especially for languages where psycholinguistic methods are not as popular for linguistic research as for English or for German, it can be very useful to adapt field-tested experimental items for rapid data acquisition. It is also common to investigate a linguistic phenomenon cross-linguistically. But difficulties may occur in adopting experimental items not only between more distant languages like Russian or German but also between closely related languages like Russian, Czech or Polish. The aim of our project is to compare aspect use and the processing of verbal aspect in Slavic Languages. We investigate the use of perfective and imperfective aspect in so called competitive situations, where either aspect can be used. In my talk I want to present some problems that we had in translating test items and experimental designs in Russian, Czech or Polish by means of two different experiments. The first example concerns a self paced reading experiment that investigates the use of verbal aspect in iteration context. The second example represents a forced choice experiment concerning the acceptability of the perfective aspect in performatives.

Some "cases of doubt"¹ in the Russian grammar from different methodical perspectives

Elena Dieser, University of Würzburg (elena.dieser@uni-wuerzburg.de)

Modern linguists employ a large number of experimental designs; nevertheless, most linguistic investigation areas are associated with some so-called classical methods. In many cases, the investigation of first language acquisition, for example, is based on longitudinal studies, and analyses of the periphery of the linguistic norm build on grammaticality judgements. While these methods are most efficient for the investigation of the respective object (cf. Köpke / Schmid 2004), they also have their limits. The collection of numerical grammaticality judgements does not always lead to unambiguously interpretable results (Kaufmann 2008; Hundt 2008). The reasons for this are the often-discussed unnatural test situation, the performance of several successive tasks of the same kind, etc. The defects of an experimental method can be compensated at least partially by combining several methods (Featherston 2006; Anstatt 2008; Bermel 2008; Dieser 2009). However, the condition for this is that the researcher knows the advantages and disadvantages of each method.

In the present study, some "cases of doubt" in the Russian grammar are analysed on a broad empirical basis. Tests with different designs form the experimental basis. One of the test types concerns the pure collection of grammaticality and acceptability judgements, in which the participants express their appraisal of the naturalness of test sentences numerically. In this study, two versions of this experiment are used (in one version, the scale used by the informants does not have any endpoints (cf. method of the thermometer judgements); in the other version, the endpoints are given.) Tests with enlarged tasks form the other type: The participants were asked – in addition to judging the grammatical acceptability of sentences (cf. Dieser 2011) – to improve the forms or constructions which they considered wrong/ungrammatical. Moreover, the informants were asked to report on the situation or style of speech in which these deviating forms would be allowed (cf. Hundt 2008). All test types were carried out in several Russian regions as well as in Belarus and Germany. In view of the methodology, it should be clarified which diverging or correspondent results can be achieved with the different methods, whether additional tasks have an effect on the numerical judgement of forms and constructions (if, yes, whether the difference is statistically relevant) and whether the presence of endpoints on the scale influences the test persons in their decision etc. The data collected from the experiments will be contrasted with the use of such forms in the respective regions as well as with data/evidence from corpora. The advantages and problems of each method will be discussed.

¹ Terminus „Case of doubt“ (Zweifelsfall) s. Klein (2003 /2004).

Processing complexity in Slavic numeral phrases

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University of Nova Gorica

Agreement/attraction errors (Bock&Cutting 1992, a.o.) provide an important clue concerning the interface between the mental systems of grammatical knowledge and language production, about which little is known. Existing studies on number agreement errors typically discuss errors found in “symmetrical” agreement whereby the number feature values on two phrases (e.g. subject-verb) have to match (1). Those have argued that agreement errors are a function of computational complexity which, in turn, can be measured in terms of distance. We focus on a previously unnoted “asymmetrical” pattern of agreement errors within Slavic numeral phrases (NumP) to further explore the manner in which complexity affects the computation of agreement in both language production as well as language comprehension. We concentrated on Bulgarian and Russian.

In Bulgarian (which has no overt Cases), Num assigns a special [+count] feature to the noun, morphologically visible as “-a” in the masculine inanimate form, whereas the simple plural/SP (e.g. “-i”) on the adjective reflects the number feature on the entire NumP (2a). Building on the initial observations (Pashov 1989) that speakers are prone to make errors such as (2b), by producing SP forms instead of “-a”-forms in spontaneous speech, especially when more material intervenes between Num and the noun, we conducted a series of offline and online experiments, with the goal of investigating the strength and patterns of processing complexity involved in this phenomenon.

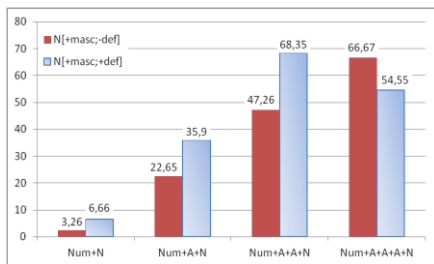


Fig. 1. Agreement errors in %, Bulgarian

In Experiment 1, a corpus study ([Bulgarian National Corpus](#), 240000 text samples, 1.2 billion tokens), we analyzed the patterns of NumP with one, two and three intervening adjectives, each in indefinite and definite form. About 4% and 15% of all such NumPs, respectively, were erroneously SP-marked. Furthermore, we found a robust correlation between the error ratio and the number of intervening adjectives (Pearson’s $r=0.999$ for indefinite, $r=0.85$ for definite NumPs), as well as across both adjectives and determiners (Pearson $r=0.92$ overall).

Addition of an adjective always has a greater effect than addition of a determiner (Fig.1).

We then asked whether the [+count] feature assignment rule is indeed part of the speakers’ mental grammar or, rather, speakers perceive both forms on the noun as doublets, regulated mostly by prescriptive grammar. In Experiment 2, an online comprehension study, subjects (N=27) read 24 target sentences as in (2), ending in a NumP with the masculine noun either in the correct “-a” form or SP form, and two adjectives always separating Num and the noun. Subjects read the sentences in the auto-paced mode (400 msec per word), whereby only one word appeared in the center of the screen at a time. Subjects then had to evaluate whether the morphological ending on the final noun is appropriate or not by choosing a “yes” or “no” answer. Additional 48 sentences of a similar kind ending on a feminine and neuter noun were constructed as fillers. The results showed that subjects are sensitive to the noun morphology, reliably indicating “-a” as the appropriate and SP as inappropriate (Pearson $\chi^2(2)=10.9$, $p=0.004$). This shows that the [+count] assignment rule is a productive part of the speakers’ knowledge of language and cannot be attributed to prescriptive factors.

In Experiment 3, an online sentence completion study, we explored the complexity issues further. Experiment 3 was designed as a 2x2 study crossing factors Distance (1 or 3 intervening adjectives) and Definiteness (+def, -def) of NumP. In each trial, an incomplete sentence as in (2) with NumP as a final constituent with a missing end noun appeared in the auto-paced (400ms per word) reading mode, followed by the unmarked (nom. sg.) form of the target noun. Subjects (N=47, excluded 9) were asked to read the auto-paced input and type in the appropriate form of the noun to complete the sentence. The ratio of erroneous SP forms was the dependent variable. Results: rANOVA with Distance and Definiteness as within-subject factors showed a main effect of Distance ($F(1,36)=8.55$, $p=0.006$); no main effect of Definiteness ($F(1,36)=1.912$, NS); and no interaction between Distance and Definiteness ($F(1,36)=0.192$,

NS). This corroborates the results of the corpus study in the online setting for the Distance factor, but diverges from those for Definiteness. We tentatively attribute the divergence to the different presentation modalities of Num in Experiments 1 and 3: production in the former, comprehension in the latter.

Building on the important findings in the previous literature on agreement errors (e.g. Franck et al. 2002), we inquired whether the main complexity factor of distance should be measured in linear (number of words), or rather, structural terms, that is, number of intervening syntactic nodes. To test this, we have conducted an additional corpus search for error patterns Num+[Adv+A]+N (see (3)) and compared them with both Num+A+N and Num+A+A+N. Since an adverb modifies only the adjective, the number of intervening syntactic nodes between Num and N is not increased, though linear distance is. Importantly, our results show that the error ratio in the adverbial pattern (26.98%) is not significantly different from the pattern involving just a single adjective (Pearson $\chi^2(1)=0.42$, NS), but reliably differs from the pattern involving two adjectives (Pearson $\chi^2(1)=9.05$, $p=0.003$), showing that structural distance indeed plays a role. A corresponding online sentence completion experiment is currently underway.

If the errors in Bulgarian NumPs are due to either processing complexity or interaction of the mental grammar and processor, then we should see similar processes -and find similar kinds of errors- in other languages, all else equal. Russian presents an excellent ground for testing this prediction because the structure of its NumPs is maximally similar to Bulgarian, modulo the productive Case system. While for numerals between 2-4 agreement is “paucal” (morphologically similar to gen.sing., see (4a)), for 5 and beyond agreement is gen.pl. (4b). We hypothesized that a) Russian speakers may make errors producing paucal morphology in place of gen.pl. (“false paucal”, FP) as well as gen.pl. morphology in place of paucal (“false genitive”, FG) in the course of processing NumPs under the similar kind of memory tax caused by the auto-paced mode of stimulus presentation, and b) distribution of both errors types should be about equal (50% each). In Experiment 4, we manipulated the length of the NumP (1, 2 or 3 intervening adjectives), and numeral type (≤ 4 and > 4 in equal proportions). 48 incomplete target sentences ending in NumP with missing Noun were presented to subjects in auto-paced mode followed by the unmarked (nom. sg.) form of the target noun (5). Subjects (N=64, excluded 18) were asked to read the input and type in the appropriate form of the noun. We found that Russian speakers indeed make errors under the design conditions, in quantities comparable to those observed in our Bulgarian experiments as well as in the previous studies on agreement errors (around 7%). The distribution of these errors, however, was quite unexpected: the ratio of FPs to FGs was 4:1. Complexity (number of intervening adjectives) affected the error ratio in FG, but not as much as in FP. We interpret these results as to suggest that there is a latent systematic factor favoring the paucal assignment rule in NumPs. In our view, this is the same factor that led to the spread of the [+count] assignment rule in Bulgarian over NumPs headed by numerals larger than 4 in the earlier stages of historical development, the details of which will be made precise.

Overall, our results show that 1) agreement errors in NumP is a Slavic phenomenon, independent of the presence of a productive Case system. 2) because of their dependence on complexity, a processing factor, the origin of feature assignment errors in Bulgarian and Russian must lie in the processing mechanism, or its interaction with the grammatical system of the respective language.

(1) *The son of the neighbours always *come* back late.

(2) a. V ezeroto pluvaha [dvanajset(te) krasiv-i (bel-i) lebed-a]
 in lake-the swam twelve-(def.) beautiful-pl. white-pl. swan-count.
 ‘Twelve beautiful swans swam in the lake.’

lebed swan-nom.

b. *V ezeroto pluvaha [dvanajset(te) krasiv-i (bel-i) lebed-i]
 in lake-the swam twelve-(def.) beautiful-pl. white-pl. swan-pl.

(3) a. _[NumP] pet _[AP mnogo prašasali] _[NP prozoreca] b. _[NumP] pet _[AP stari] _[AP prašasali] _[NP prozoreca]
 five very dusted windows five old dusted windows

(4) a. dva / tri/ chetyre kuska / b. pjatj/odinnadcatj/sorok kuskov /
 two three four pieces-masc.pauc. five eleven forty pieces-masc.pl.

(5) Na beregu reki paslisj pjatnadcatj krasivyx belyx ...
 On bank river grazed fifteen beautiful white
 ‘Fifteen beautiful white ... grazed on the river bank’

konj horse-nom.

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Exploring Czech inflection with the picture-word interference paradigm

Denisa Bordag

In the talk I will present the picture-word interference paradigm and its possible adjustments that enable exploration of various phenomena within the domain of inflection. I will summarize results from several experiments using this method and demonstrate a) how language specific properties of a highly inflected language like Czech can contribute to our understanding of more general psycholinguistic issues and b) how psycholinguistic research can enhance our knowledge of language properties that have been investigated within more “traditional” approaches so far. The focus will be on processing of grammatical gender, and of declensional and conjugational class.

Evidence of Split Morphology Hypothesis in Czech

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Derivation and inflection are basic morphological processes by which two different classes of words are formed, i.e. words with derivational affixes and words with inflectional affixes. Linguists suggest several principles of lexical storage for morphologically complex words. According to Split Morphology Hypothesis (SMH), derivation and inflection are mentally completely different processes, which was proved in many non-Slavonic languages, but also disproved in Hebrew.

The aim of this research was to find out whether SMH is relevant also to Slavonic languages with abundant inflectional system, in this case to Czech (because in Slavonic languages only one research on SMH was done and was affirmed in Serbian - Feldman, L.B.: Beyond orthography and phonology: Differences between inflections and derivations. *Journal of Memory and Language*, 33, 1994, s. 442-470.).

Our research is based on morphological repetition priming (identical, inflectional, derivational) and on the method known as lexical decision. The battery test suitable for Czech language, containing twenty seven triples of words (nouns, verbs), which were morphologically related (basic form of word, inflectionally related form, and derivationally related form) and also 27 triples of made-up pseudowords, was created. Real words and pseudowords were presented to respondents at random and reaction times (RTs) were measured according to the type of prime. The method known as lexical decision was used and RTs were compared.

The results indicate that RTs were significantly slower in derivational priming compared to inflectional priming or identity priming, which were statistically the same. As for pseudowords, the effect of type of prime was not significant for any of RTs (therefore different RTs in inflectional and derivational priming with real words should not be caused by orthographic effect). We also found out that RTs for nouns were faster than for verbs.

Significantly larger facilitation with inflection suggests that there are distinct representations of inflectional and derivational forms in lexicon also for Czech language.

TAM markers as strongest predictors for the choice between near-synonyms: a self-paced reading experiment

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Frequency has long been known to be among the most robust predictors of human behaviour (Hasher & Zacks 1984). Evidence has been accumulating that frequency of exposure is an experience that drives linguistic behaviour too. Yet, a number of studies in both the generative and usage-based traditions have recently reported that corpus-derived frequencies are poor predictors for off-line acceptability ratings in morphology and syntax, in particular at the lower end of the frequency spectrum (Kempen & Harbusch 2005/2008, Arppe & Järvikivi 2007, Divjak 2008, Bader & Häussler 2009, Bermel & Knittl 2012a/b).

This is potentially problematic for usage-based models, which predict a strong correlation between the two. Work on syntactic phenomena shows, however, that the wrong type of frequency data has been targeted, i.e. raw or contextual frequency rather than frequency-derived conditional probabilities. (Logged) conditional probabilities, or the likelihood to encounter Y given X, outperform any other frequency-related measures for a range of syntactic phenomena (Keller 2003, Divjak 2008/under review, Levy 2008, Fernandez Monsalve et al. 2012, Levshina under review).

We set out to test this hypothesis for semantics on the basis of a group of synonyms that express TRY in Russian. Regression models fit to corpus data (Divjak 2010, Divjak & Arppe 2013) show that TAM markers, often overlooked in lexical semantic studies, are the strongest predictors of lexical choice. To validate this finding, we ran a self-paced reading task in which 40 (20 male, 20 female) adult native speakers of Russian participated, aged between 18 and 30 and currently living in St Petersburg. We expect to find a negative correlation between probability of occurrence and reading times for TAM combinations, with more typical TAM markings leading to quicker reading times.

In our presentation we will focus on how we used advanced regression modelling techniques to deal with the fact that we deviated from the traditional approach to self-paced reading experiments in 2 important ways as we used an imbalanced design and ran the task with actually attested sentences rather than artificially created ones. These deviations were motivated by the fact that we had to accommodate the restrictions on TAM combinations and the lack of a strict word error, which are typical for Slavic languages.

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How to measure lexical proficiency in heritage speakers of Russian and Polish in Germany?

A comparison of different experimental approaches

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Lexical proficiency is generally considered to be a crucial point in rating the language competence of bilinguals. Therefore, language attrition studies (cf. Schmid 2011 and many others) as well as studies on heritage languages (cf., e.g. Polinsky & Kagan 2007) often make use of experimental tasks that are designed to tap lexical knowledge in the involved languages. In most cases, only one specific task is used to shed light on lexical proficiency in the supposed weaker language (e.g. a picture description task, a semantic fluency task etc.). For an ongoing research project on language competence of heritage speakers of Russian and Polish living in Germany we expose our informants to a whole battery of different tasks which all aim at establishing a measure of lexical proficiency in the Slavic heritage language (Russian or Polish), but also in the surrounding language German. We plan to test not only the heritage speakers themselves (i.e. representatives of the second generation of immigrants who were already born in Germany), but also their parents in order to get an impression about the richness of lexical input the heritage speakers (potentially) receive at home in their heritage language and in German. The purpose of our presentation for the workshop is to compare the results of the different experimental tasks with one another, but also to other indices of lexical diversity (e.g. type-token frequencies) that were calculated on the basis of the performance of heritage speakers in other tasks. These additional data are taken from an elicited oral narrative where a picture story is used as a stimulus and from a written task where the informants are asked to deliver a written construction manual of a boomerang in the heritage language and in German. As for the specific experimental tasks that were designed to get data on the lexical proficiency of the tested informants, they include:

- a word-list/vocabulary task where the informants are asked to translate a list of basic, but also more complex words from German to the heritage language and vice versa (cf. the Swadesh list used by Polinsky 2006 to estimate lexical proficiency in heritage speakers of Russian in the US)
- a picture naming task
- a semantic mapping task which serves as a standardized test to measure lexical proficiency in German (CFT-20R, cf. Weiß 2006)
- a semantic fluency task in controlled association (cf. Schmid 2011)

As these tasks approach the problem of lexical proficiency from different perspectives, our main aim of the presentation is to compare, whether these experimental tasks, when exposed to the same group of informants, yield the same or comparable results regarding the internal ranking of our informants. We thus hope to answer the question whether these tasks (or which of these) represent a reliable means of estimating lexical proficiency of heritage speakers in the heritage language and in the surrounding language (in our case German).

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***Schalter, šapka, šaška* – Coactivation in the bilingual lexicon of Russian heritage speakers and methodological problems of its investigation**

Tanja Anstatt, Eva Belke, Christina Clasmeier

We present a research project on the mental lexicon of Russian-German bilinguals that uses eye tracking and the visual world paradigm as a method for the investigation of interlingual lexical competition. Marian & Spivey (2003) suggest that bilingual speakers, when processing lexical items in one of their languages, activate phonetically overlapping words of their other language – be it L1 or late L2 – as well. Our study extends their method to the investigation of Russian as a heritage language: we plan to test the hypothesis that the strength of coactivation depends on the degree of completeness of language acquisition and first language attrition, respectively.

However, in our talk we will not present results of the main study, but will discuss the problems we had in preparing the test materials, and share our ways to deal with these problems. On the one hand, they arise due to specifics of the Russian language and the differences between the Russian and the German phonological and phonetic systems. On the other hand, they result from the not very advanced preparation of Russian for psycholinguistic purposes: At the moment, databases of standardized picture naming as well as of phonetic neighborhood are missing, and the frequency information at our disposal seriously differs from that available for German. To cope with these problems, we conducted pre-tests, the results of which we will discuss in some detail.

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Debates on Mental Lexicon and its Cerebral Basis: Evidence from Russian

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150 years ago P. Broca and K. Wernicke started the story of cerebral specialization for language and some other cognitive functions. We currently know a lot about versatile nature of language localization as seen from behavioral and brain functional imaging studies in cross-linguistic perspective. Neurolinguistic debates on modular vs. parallel processing now get experimental evidence of neuronal patterns based on both probabilities and universals shown in different language families. The generation of regular and irregular past tense verbs has long been a testing ground for different models of inflection in the mental lexicon. According to the dual-system view, regular forms are generated by a rule and irregular forms are retrieved from memory. The single-system view postulates a single integrated system for all forms. Behavioral studies examined a variety of languages, but neuroimaging studies still rely almost exclusively on English and German data. We used Russian, a language with a much more complex verb class system. We randomly mixed different tasks (inflecting nonce and real verbs and nouns of different types) and compiled large sets of stimuli matched for frequency and phonological complexity. Unlike most previously obtained results, our findings are more readily compatible with the single-system approach. Observed activation patterns are best explained by the difference in processing load between experimental tasks. The data on mental lexicon organization in speakers of Russian were also received by our group in normal and aphasic adult subjects, normal and SLI children and second language learners.

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Relative clause attachment preferences and the role of complementizer in Slovenian

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Keywords: relative clause, pseudorelative, attachment preference, complementizer

Cross-linguistic variation in attachment preferences in relative clauses (1), in particular, with respect to attaching a relative clause either to a local (low-attachment, LA) or a non-local (high-attachment, HA) head noun, present a well known and widely investigated challenge to the universality of parsing principles such as Late Closure (Frazier 1978). At the same time, reduced relative clauses, best known in the psycholinguistic literature on garden-path effects, have received relatively little attention in the context of investigations of attachment preferences. Comparison between full and reduced relatives across languages as well as within a single language is beneficial in a number of respects that can highlight the core properties of the human syntactic parser.

The present study investigates the attachment preferences in full as opposed to reduced relative clauses in Slovenian. Our main objectives were 1) to establish the pattern of attachment preferences for this language in both off-line and online experimental tasks; 2) to re-examine the role of the complementizer in determining the attachment site, in light of recent theories that treat it as a significant factor in attachment preferences; and 3) to evaluate the recent proposal that the choice of a non-local noun in HA languages may be due to a syntactic confound, a “pseudorelative” construction whose syntactic properties resemble that of a small clause (see below).

Experiment 1 is an offline study intended to establish the pattern of attachment preferences in Slovenian full relatives. We used the methodology of untimed questionnaire similar to the one used, e.g. in Sekerina (1997) for Russian. Subjects (N=99, all native speakers of Slovenian), were presented sentences like (2) where both attachment possibilities are grammatically available, followed by two unambiguous partial paraphrases corresponding to HA and LA of the relative clause. Subjects had to evaluate the availability of both interpretations for the sentence on a scale from 0-3, with 0 representing the unavailability of an interpretation, and 3 the most readily available interpretation. 8 target sentences were randomly mixed with 16 filler ambiguous sentences. **Results:** by comparing the mean scores, we found a robust preference for HA over LA (means: HA=2.39, LA=1.83; $t(196)=8.17$, $p < 0.0001$, $t(14) = 4.29$, $p < 0.0001$). This places Slovenian on a par with other HA languages such as Spanish, Russian, and Croatian.

Prediction 1: Hemforth et al (2000) attribute a key role in determining the attachment site to the complementizer. They report that in German, RCs as in (3a) are resolved toward HA, while in their counterparts involving a prepositional phrase as in (3b), LA is preferred. On the basis of this finding, Hemforth et al. propose the anaphoric resolution hypothesis, according to which the presence of a relative pronoun initiates a search for an appropriate discourse referent to which the pronoun points, which is usually the non-local noun due to its high prominence. This account predicts, among other things, that *reduced relative clauses, with the relative pronoun absent, should behave similarly to constructions with PPs, i.e. elicit LA*, in accord with Late Closure.

Prediction 2: Grillo and Costa (2013) argue that in the languages and structures with HA preference, a parser can be “garden-path” led into analyzing a relative clause as a string-identical construction called “pseudorelative” (4). In particular, both kinds of clauses involve the same complementizer roughly meaning “that”. These authors argue that once this confound is controlled for, the LA predicted by the likes of Late Closure, reemerges. This claim can be directly tested on Slovenian, which uses the invariant relative complementizer “ki” designated for full relative clauses only, hence relative clauses in this language can never be mistaken for any alternative construction. Grillo and Costa’s account predicts, all else equal, that *full relative clauses in Slovenian should tend to LA, in the absence of the confound*. Experiments 2 and 3 test these two predictions for Slovenian.

Experiment 2 is an online 2x2 study crossing factors Complementizerhood (yes, no) and Attachment (high, low). 20 target items (preceded by 4 practice sentences) were tested in the versions that included either a full (+comp) or reduced (-comp) relative clause, avoiding potential morphological disambiguation cues. Subjects (N=37, different from Exp.1) read the sentences in the self-paced mode. Each target sentence was followed by a question highlighting either the HA or LA reading of the respective clause, yielding the total of 4 conditions (see (5)). Subjects were told to respond to the question as fast as possible (cutoff at 5 sec). Positive responses and response times were recorded. The target items were interspersed with 50 filler items, each followed by a comprehension question. Only subjects showing at least 80% accuracy rate on filler

comprehension questions were retained. Results: 1) Subjects interpreted target sentences with either HA or LA option essentially at chance level (51% and 48% positive responses for full relatives, and 56% and 43% for reduced relatives, respectively); 2) The presence of complementizer did not affect the attachment preference (no interaction: Pearson $\chi^2(1) = 1.393$, NS); 3) rANOVA conducted on response times showed both the main effect of Complementizerhood ($F(1, 184)=5.53$, $p=0.02$) and the main effect of Attachment ($F(1, 184)=28.8$, $p<0.0001$), but no interaction between them ($F(1, 184)=0.23$, NS), consistent with 2).

This experiment registered sensitivity to global ambiguity, but not initial preference for one or the other attachment option. To address the preference issue, Experiment 3 was conducted under the same evaluation methodology used in Experiment 1, with a crucial difference: each target item was tested in two conditions: one involving a full, the other a reduced relative clause, counterbalanced in the usual way. 12 target items were supplemented with 24 filler items, constituting overall 36 test items. Results: Subjects' (N=48, different from Exp1. and Exp.2) evaluation judgments show a clear preference for HA over LA in both full relatives (means: HA=2.46, LA=1.27; $t(567)=13.32$, $p < 0.0001$) and reduced relatives (means: HA=2.43, LA=1.29; $t(572)=12.88$, $p < 0.0001$).

Overall, our results a) establish Slovenian as a HA language; b) argue against the "pseudorelative" hypothesis; c) argue against the hypotheses that associate the attachment preference with the formal/semantic properties of the complementizer. In contrast, they are compatible with the proposals that account for HA in terms unrelated to complementizerhood (e.g. Implicit Prosody, Fodor 2002). To the extent that a reduced relative clause is a shorter version of the corresponding full relative, our results also show that the length of attachment may not necessarily be among the decisive factors for attachment preferences.

- (1) Someone shot the servant of the actress who was standing on the balcony.
- (2) Znanec od sodelavca, ki stanuje v sosednji ulici, je izgubil službo. /Slovenian/
 acquaintance of colleague who lives in neighbouring street is lost job
 "An/The acquaintance of a/the colleague who lives in the next street lost his job."
 a. Sodelavčev znanec, ki stanuje v sosednji ulici, je izgubil službo. (0-3)
 colleague's acquaintance who lives in neighbouring street is lost job
 b. Znanec od tistega sodelavca, ki stanuje v sosednji ulici, je izgubil službo. (0-3)
 acquaintance of this colleague, who lives in neighbouring street, is lost job
- (3) a. The daughter of the teacher who came from Germany met John.
 b. The daughter of the teacher from Germany met John.
- (4) Ho visto Gianni che correva (lit. "I saw John that ran") /Italian/
- (5) Target: Prijatelja od sodelavca, {ki je bil pozvan / pozvanega} na sodišče, ne mara nihče. /Slov./
 friend of colleague who is been called / called to court, not likes nobody
 "Nobody likes the friend of the colleague who was summoned / summoned to the court."

Question: Ali je bil {prijatelj od sodelavca / sodelavec} pozvan na sodišče?

Q is been friend of colleague / colleague called to court

"Was the friend of the colleague / the colleague summoned to the court?"

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Sentence comprehension and structural priming in Czech toddlers and preschoolers; preferential looking and offline pointing compared

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Purpose: 1) Examine whether Czech 2.5- and 4.5-year-olds can interpret simple transitive sentences based on word order and case marking. 2) Is the placement of the sentence subject and object susceptible to structural priming?

Method: Two intermodal preferential looking experiments were performed (N=104). Children heard transitive sentences and saw pairs of pictures or clips one of which depicted the sentence. Sentences were presented in pairs with identical or different word orders (SVO, OVS). The second sentence in each pair was temporarily ambiguous until the last word. Additionally, children in Experiment 2 were given an offline picture-pointing task testing their comprehension of SVO and OVS sentences. Similar experiment was presented to another group of 107 children.

Results: In prime sentences in Experiment 1, only the older group of children showed clear signs of comprehending. In target sentences, the only observed effect was on OVS targets in the younger group. In Experiment 2, prime sentences in both age groups were comprehended, and comprehension was better for SVO sentences in younger children. Structural priming was observed in SVO targets in younger children, and in OVS targets in older children.

In the offline tasks, children generally showed clearer evidence of comprehending the target sentences than in the preferential looking tasks.

Conclusions: Results confirm that children can interpret SVO sentences as early as at 2.5 years of age, and that they have problems interpreting the OVS word order at this age. Structural priming effects demonstrate that children have an abstract representation of word order at the early age. Evidence from the offline tasks shows that children begin to comprehend OVS sentences around the age of four.

Keywords: preferential looking – case – word order – sentence comprehension – structural priming

Interpretation of ambiguous pronouns in Russian: canonical and non-canonical word order

Natalia Gagarina, Julia Lomako, Elena Valentik-Klein

The interpretation of ambiguous pronouns is controversially discussed. Three main strategies include i) First mention: pronouns co-refer with the NP which was mentioned first (Gernsbacher & Hargreaves 1988), ii) Subjecthood: pronouns co-refer with the subject NP (Crawley et al. 1990), iii) Parallelism: subject pronouns co-refer with the subject NP and object pronouns co-refer with the object NP (Smyth 1994, Chambers & Smyth 1998, cf. Gagarina 2010).

Previous eye-tracking studies showed – in English and Finnish – a preference for the syntactic role and parallelism in the pronoun resolution; data come from two and a half year old children and adults (reference). The results of the other study on English showed that participants interpret ambiguous pronouns as referring to the first mentioned (subject) character of the preceding sentence (Arnold et al. 2000, Song & Fisher 2005, Song & Fisher 2007, Hartshore et al. 2011).

Kaiser & Trueswell (2008) studies anaphora resolution in adults with native language Finnish. Participants were tested with short narratives containing SVO or OVS sentence structures and personal pronouns “HÄN” (H/SHE). The results showed that adults preferably interpret the subject pronoun “HÄN” as referring to the subject in sentences with canonical (SVO) and non-canonical (OVS) word order. This results supports the subjecthood account. Pyykkönen & Järvikivi (2010) conducted another study on adult Finnish. Participants saw pictures while listening to two-sentence stories with canonical word order (SVO). The results showed that after the pronouns “HÄN” and “HÄNET” participants preferred to look at the subject. This provides evidence for the subject preference in the pronoun resolution.

Aim: The study aims to find out the impact of word order (non/canonical) and pronoun type (subject/object pronoun) on anaphor resolution in children acquiring a language with a flexible word order (Russian).

Method: A *visual world paradigm* (eye-tracking) with 5-year old monolingual TD and SLI Russian speaking children (in St. Petersburg) and adults were used. 2x2 design: third person masculine pronoun in a subject/object ON/EGO) in the canonical SVO word order and non-canonical word order OVS (table (1)).

Word order	Sentences
SVO	Тигр видит льва. ОН зовет жирафа. <i>The tiger sees the lion. HE calls the giraffe.</i>
SVO	Тигр видит льва. ЕГО зовет жираф. <i>The tiger sees the lion. HIM calls the giraffe.</i>
OVS	Льва видит тигр. ОН зовет жирафа. <i>The lion{OBJ} sees the tiger {SUBJ}. HE calls the giraffe.</i>
OVS	Льва видит тигр. ЕГО зовет жираф. <i>The lion{OBJ} sees the tiger {SUBJ}. HIM calls the</i>

<i>giraffe.</i>

Table (1)

Results: The experimental data showed an influence of word order on the interpretation of ambiguous pronouns in adults and TD children. A clear discrepancy between the preferential looking in TD and SLI children was found. TD children showed a clearer preference to look at the subject or the object referent, whereas in SLI children exhibited no preference for either of the referents.

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How to investigate interpretation in Slavic experimentally?

Roumyana Slabakova

In the investigation of meaning that speakers attribute to linguistic strings, Slavic languages present a curious empirical and methodological challenge. They often allow grammatical meanings (such as definiteness, specificity or quantization of the object) to be expressed without morphological marking on the noun phrase. Instead, the meanings under discussion are signaled by the perfective marking on the verb, by information structure (Topic, Focus) or by the word order of the whole sentence. Linguistic Theory often makes categorical predictions about the availability of certain interpretations of strings, while native speaker judgments reveal a lot more intra- and inter-personal variability than predicted. This talk will discuss two experimental studies, looking at Russian object interpretation in perfective and imperfective sentences (Slabakova, 2002, 2004) and definite NP interpretation depending on word order (Cho and Slabakova, in press). The first study employs a multiple-choice interpretation task while the other employs an acceptability-in-context rating task. Both studies reveal that object interpretations in Russian are much more flexible than those in English, and depend not only on word order but on discourse context as well. I will discuss which linguistic approaches can accommodate such variation, and what this flexibility of interpretation entails for experimental methodology.

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Specific research topic:

Code-Switching/Code-Mixing

Method:

Event-related potentials

Slavic languages studied:

Russian, Belarusian

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Processing code-switches between closely and less closely related languages. An ERP study.

In spite of a huge interest in the phenomenon of bilinguals switching between languages, its psycholinguistic nature is so far poorly understood. In this talk, we will show how the event-related potential (ERP) technique can be used to shed some light on the mechanisms of processing code-switches (CS).

We will begin with a short review of the basic concepts of the ERP-technique and a discussion of some of the main language-related components of ERP. Then, we will discuss two of our studies which focus on code-switching constellations, differing (among other things) in the degree of similarity between the involved languages.

Replicating Moreno et al. (2002) the first study investigated the processing of CS from German into Russian by Russian-L1-speakers. Three groups participated: 16 Germans (L1) without knowledge of Russian, 14 Russian-L1-speakers with moderate and 18 Russian-L1-speakers with excellent knowledge of German (L2, AoA>12). Stimuli were auditorily presented German sentences that ended with a semantically adequate German word, a semantically odd German word or a Russian equivalent of the semantically adequate ending. The results indicate that CS can to a certain degree be compared to lexical-semantic integration difficulties (as indicated by an N400). Late positivity effects indicate that CS are also treated as unexpected events. The finding that these effects are smaller when speakers are more proficient in their L2 suggests that L2 proficiency makes switching between L2 and L1 easier, or less costly.

In the second study, we investigate the effects of CS between two closely related languages. 32 young Belarusians participated, all of them with high competence in Russian, but with varying degree of competence in Belarusian. The make-up of the study was comparable to the previous study, but involving both Belarusian-Russian and Russian-Belarusian CS. The first results indicate that the processes are similar to those observed in the previous study, but differ in magnitude.

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My contribution is focused on the issue how differences in encoding of space in Czech Sign Language and in spoken Czech affects the non-linguistic spatial thought of the users of the respective languages. As previous research on American Sign Language (ASL) and spoken English suggests (Emmorey et al., 1998), the way deaf signers of ASL use the perspective-switching when describing spatial scenes may influence their ability in non-linguistics tasks demanding mental rotation (Shepard – Metzler, 1971). Influence on spatial reasoning of the users of ASL is significant in comparison to hearing English speakers.

In my paper I will present results of my replication of Emmorey et al.'s experimental design applied to Czech and Czech Sign Language. Experiment consists of two tasks. In first task, only the Deaf subject participated, for it was aimed at testing the capacity of mental rotation within linguistic processing in Czech Sign Language. In second task participated both deaf and hearing subjects. This part of experiment was fully non-linguistic and only the mental rotation ability was tested (using visual stimuli).

Results will be discussed in the context of neo-Whorfian research of language-cognition relationships.

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EMMOREY, Karen – KLIMA, Edward – HICKOK, Gregory (1998): Mental rotation within linguistic and non-linguistic domains in user of American Sign Language. *Cognition*, 68, pp. 221-246.

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Specific research topic and method:

Adaptation of Tests for English into a Slavic Language: Case of Croatian PALPA

Slavic language studied:

Croatian

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PALPA - Psycholinguistic Assessments in Language Processing in Aphasia (Kay et al., 1992.) is a battery of tests assessing competence of language processing in individuals with Aphasia. PALPA comprises of 60 tests organised in 4 subsections: Auditory Processing, Reading and Spelling, Picture and Word Semantics, Sentence Comprehension. Each provides information on processing of a lexical unit in varying modality - auditive, visual and written, and at a specific linguistic level - phonological, semantic and syntactic. PALPA is designed for English, however, the theoretical model on which the battery of tests was constructed and against which results should be interpreted, represents a *general* psycholinguistic modular model of (non-)verbal stimulus processing, and hence, should not be sensitive to translations of PALPA into any other language.

Here, we comment on the case of adapting PALPA into Croatian by noting a couple of recurring issues. Although extensive adaptation of the Picture and Word Semantic subsection that was preliminarily tested on 25 patients with varying types of Aphasia, showed that PALPA is a sensitive tool, consequent adaptations of another three subsections demanded awareness of language specific phenomena when finding the right equivalents or asked for constructing new tests that would test linguistic competence specific to Croatian. Aware of the typological variations, the adaptation replicated the phenomena under examination rather than the linguistic equivalents of its examples. However, the issue here presented the terminology used in description of mentioned phenomena, as it was self-explanatory, but vaguely defined.

As the goal of our research is to construct a language test for Croatian that would encompass all linguistic levels, alongside the noted issues and specifically concerning the language-specific needs, noteworthy is the forthcoming challenge to construct a new battery of morphological tests that would test for all three stimulus modalities, while keeping in line with the PALPA model.