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and clinical linguistic research***

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Programme

9.15 Workshop opening

9.30 - 10.15 Keynote speech - Christina Manoulidiou (University of Ljubljana, Slovenia): **How we process morphology and what can go wrong with it**

10.15 - 10.30 Coffee break

10.30 - 11 Ivana Mitić & Boban Arsenijević (University of Niš, Serbia): **How many structures behind conjunct agreement?**

11 - 11.30 Srđan Popov & Roelien Bastiaanse (University of Groningen, Holland): **Gender and Number Disagreement Processing in Dutch: An Electrophysiological Study**

11.30-12 Seçkin Arslan, Eren Gür & Claudia Felser (University of Potsdam, Germany & Sisli Etfal Research and Training Hospital, Istanbul, Turkey): **Which factors predict agrammatic comprehension of *Wh*-questions in Turkish and German individuals with aphasia?**

12-12.30 Coffee break

12.30 - 13.15 Aleksandar Kostić (LEP, University of Belgrade, Serbia): **The effects of grammatical context on the processing of open class words (keynote speaker)**

13.15 - 14 Lunch break

14 - 14.30 Ana Bosnić (University of Groningen, Holland & University of Nantes, France): **What is *po* exhausting? Spatial and individual distribution in Serbian**

14.30 - 15 Maja Miličević, Tihana Kraš & Vladivoj Lisica (University of Belgrade, Serbia & University of Rijeka, Croatia): **L2>L1 translation and L1 attrition: Three studies of anaphora resolution**

15 - 15.30 Mirjana Mirić & Boban Arsenijević (Institute for Balkan Studies, Belgrade & University of Niš, Serbia): **Different loci of scalarity**

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16.30 - 17 Aleksandra Krstić (University of Novi Sad, Serbia): **Examining word order in aphasic speech**

- 17 - 17.30** Silvia Martínez Ferreiro, Byurakn Ishkhanyan, Kasper Boye (University of Copenhagen, Denmark): **Prepositions in Spanish-speaking individuals with aphasia: Evidence from connected discourse**
- 17.30 - 18** Jasmina Vuksanović, Tanja Milovanović, Ljubica Konstantinović & Saša R. Filipović (Institute for Medical Research, University of Belgrade, Rehabilitation centre “Dr Miroslav Zotović”, Belgrade & Faculty of Medicine, University of Belgrade, Serbia): **Effect of language therapy on receptive language recovery in patients with acute aphasia**
- 18 - 18.30** Ana Rendulić, Melita Kovačević, Marijan Palmović (SUVAG Polyclinic, Zagreb & University of Zagreb, Croatia): **Differential decay of cognitive abilities and language in healthy elderly population**
- 18.30** Workshop closing and much deserved dinner in a nearby restaurant

PLENARY LECTURES

The effects of grammatical context on the processing of open class words

Aleksandar Kostić

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Languages with highly developed inflected morphology are characterized with agreement between different open and closed-class words. Thus, for example, in Serbian adjectives and nouns agree in case, grammatical number and grammatical gender, personal pronouns and verbs agree in person and grammatical number, prepositions and nouns agree in case etc. Any violation of this agreement will produce an ungrammatical sentence.

In experimental psycholinguistics the effects of grammatical agreement are indicated with shorter processing latency when grammatical form of an open class word is preceded by grammatically congruent context than when preceded by neutral context (***). This effect is known as *grammatical priming*.

Grammatical priming of inflected forms of Serbian nouns and adjectives has been investigated in two experiments with visual lexical decision task. The research was done in the scope of the Information-theoretic approach to morphological processing with the assumption that grammatical agreement reduces the amount of information (bits) carried by the target word.

In the first experiment two inflected masculine noun forms were preceded by congruent and incongruent adjectival forms and neutral context (***). The results indicated no significant correlation between the amount of information and the averaged processing latencies due to conspicuous deviation the neutral context (***). However, when weighted for context type (lexical vs. non-lexical), almost all processing variability has been accounted for by the amount of information. With neutral situation being excluded significant correlation was obtained without additional weighted informational values. In the second experiment two inflected forms of adjectives were preceded by congruent and incongruent inflected noun forms and the neutral context. Again, conspicuous deviation of the neutral situation was observed with no significant correlation between processing latencies and the amount of information. The significant correlation was obtained when information values were weighted for context type. Unlike in the first experiment there was no significant correlation without additional weighted informational values.

This study should be taken as the starting point in the Information-theoretic approach to the effects of grammatical context on processing inflected forms of open class words.

How we process morphology and what can go wrong with it

Christina Manouliidiou
University of Ljubljana

In this talk, I will present recent findings about morphological processing in healthy adults and I will show how various types of neurodegenerative diseases affect the way we perceive and produce morphologically complex words. Psycholinguistic research on the processing of morphologically complex words supported by neuroimaging data has revealed that the human processor accesses morphological information immediately when confronted with a complex lexical item (Rastle & Davis, 2008 for a review of behavioural studies; Fruchter et al., 2013; Morris & Stockall, 2013; Neophytou et al, 2017 for neuroimaging data). This suggests that in healthy populations, morphological constituents are rapidly activated immediately after word viewing. Given that lexical access is a process consisting of various subprocesses, several operations take place after initial decomposition in order to validate the combination of stem and suffix. For instance, behavioural masked-priming experiments showed that the processor initially decomposes even words like *corner* into *corn* + *er*. In order to avoid the erroneous interpretation of initial decomposition, validation processes take place during the last stage of lexical access where speakers engage their semantic knowledge in order to resolve this morphological garden-path. This has been described either as *licensing* (Burani et al., 1999) or as *recombination* (e.g. Fruchter & Marantz, 2015), and it refers to the stage where speakers try to make sense of the decomposed parts of the word. Psycholinguistic research has also shed light on the ensuing questions of what kind of information is available after the initial decomposition, how much information is accessed by our processor once the initial decomposition and morpheme recognition has taken place and how much is needed when building word structure. I will elaborate on a recent study by Manouliidiou & Stockall (2014), where Greek-speaking and English-speaking participants had to make lexical decisions to pseudo-words which violated word-formation rules in both languages, in an attempt to tease apart the contribution of syntactic category information and argument structure information in building deverbal word formations. Recent neuroimaging studies (Stockall et al, 2016; Neophytou et al, 2017) confirm initial behavioural findings on the kind of information that is being processed. Within this framework, I will discuss patterns of loss in various types of dementia, with a special focus on Primary Progressive Aphasia (PPA), a type of dementia which primarily affects language and Mild Cognitive Impairment (MCI), a transition stage between healthy ageing and dementia. Specifically, I will focus on recent work about the processing of pseudo-words in Slovenian-speaking populations with MCI (Manouliidiou et al, 2016a) and by English-speaking populations with PPA (Manouliidiou et al, 2016b). Given the distinct profiles of these two types of pathological populations, I will attempt to disentangle the contribution of the underlying cognitive processes operating when confronted with morphological processing.

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WORKSHOP TALKS

How many structures behind conjunct agreement?

Ivana Mitić & Boban Arsenijević
University of Niš

Research of conjunct agreement, in particular that based on experimental methodology, has gained momentum in the recent years. Empirical data reported in theoretical literature are experimentally scrutinized and different factors playing a role in the choice of agreement pattern: agreement with the first conjunct (FCA), agreement with the last conjunct (LCA) or resolved agreement (RES) are identified.

- (1) Sveske i pisma su prodate / prodata / prodati. *Serbo-Croatian*
notebooks.FPI and letters.NPI Are.PI sold.FPI / NPI / MPI
'The notebooks and the letters were sold.' (FPI=FCA, NPI=LCA, MPI=RES)

One of the central questions to address is how many different structural configurations can derive the same surface manifestations of conjoined subjects governing agreement on the verb and whether the available agreement patterns can be derived from the structural differences. The two configurations traditionally considered are phrasal conjunction and clausal conjunction followed by conjunction reduction (see Willer-Gold et al. 2016b for an experimental investigation). Heycock & Zamparelli (2003) and Le Bruyn & de Swart (2014), a.o, argue for two additional non-clausal structures, with their own agreement tendencies: conjunction of two bare nouns (henceforth N&N), as in (2a), and the structure where a determiner or modifier surfaces before the first conjunct, but is interpreted on both (henceforth XN&N), as in (2b).

- (2) a. He had pad and pencil to picture the whole event. Le Bruyn & de Swart (2014)
b. We met a friend and colleague of Mary's yesterday.

Le Bruyn & de Swart (2014) show that only bare unmodified nouns enter the N&N structure. They argue that conjoined nouns cannot project a common DP, and that in the XN&N structure, the determiner and/or the potential prenominal adjectives form a constituent only with the first conjunct – with the second conjunct remaining a bare noun. This explains the restriction of the prenominal material to FCA in such expressions, but at the same time requires a relatively complex semantic analysis including a matchmaking function. These two additional structures are expected to disfavor or exclude certain agreement patterns. N&N is likely to take RES, since the conjunction itself is of the N category, and requires the computation of an own gender value. XN&N is expected to favor FCA, assuming Le Bruyn & de Swart's analysis of this construction in which only the first noun projects a DP and the other remains bare, and additionally that a DP is more likely to trigger agreement than an N.

Previous experimental research of Serbo-Croatian (SC) conjunct agreement (Willer-Gold 2016a, b, Puškar & Murphy 2016, among many others) has strictly included conjoined bare nouns. The question emerges whether in an articleless language like SC for this kind of expressions, next to regular phrasal and clausal conjunction, the structural ambiguity also involves the bare conjunction, as well as whether it has the expected effects on agreement. To test this, we conducted an elicited production experiment, where the subjects were given a model sentence and a conjoined expression, with the task to first read out loud the

model sentence, and then to repeat it with the conjoined expression substituting for the original subject. The subjects all consisted of one neuter plural and one feminine plural noun, and included the following conditions regarding the structure of the conjoined subject: bare nouns, prenominal modification on the first conjunct, adnominal modification on the second conjunct and adnominal modification on both conjuncts.

- (3) (Izvesne) sveske i (izvesna) pisma su prodate / prodata / prodati.
 certain notebooks.FPI and certain letters.NPI are.PI sold.FPI / NPI / MPI
 '(Certain) notebooks and (certain) letters were sold.'

Taking the conjunction of unmodified nouns as the base level, we expected that any modification will eliminate the N&N structure and thus decrease the production of RES. We also expected that the condition with the modified first conjunct will strengthen FCA at the expense of RES and LCA (at east under the Le Bruyn & de Swart's analysis of the XN&N structure, and the assumptions laid out in this regard).

<i>Expected effects</i>	no modifier	modified first	modified last	modified both
RES	base line	decrease	decrease	decrease
FCA	base line	increase	increase	increase
LCA	base line	decrease	increase	increase

The results of the experiment partly confirm the predictions, and partly show the exact opposite effect. They confirm the prediction about the lower production of RES with any type of modification, but at the same time they also show that modification of the first conjunct only has no effect on FCA and increases LCA, contrary to expectations.

<i>Attested effects</i>	no modifier	modified first	modified last	modified both
RES	base line	decrease	decrease	decrease
FCA	base line	!!!no effect	increase	increase
LCA	base line	!!!increase	increase	increase

One possible way to accommodate the results is to invert the assumption that DP is more likely to trigger agreement than N: perhaps DP intervenes for the features contributed by the noun, and a bare noun is a stronger agreement trigger. Another is that Le Bruyn & de Swart's analysis is incorrect.

We conclude that for conjoined unmodified nouns, the results of our experiment are consistent with the availability of the N&N structure and its triggering RES, but that additional research is required to understand the available parses for the XN&N conjunction.

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Which factors predict agrammatic comprehension of *Wh*-questions in Turkish and German individuals with aphasia?

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Previous research has indicated that individuals with aphasia (IWA) have selective difficulties interpreting *wh*-questions (e.g. Hanne, Burchert, & Vasishth, 2015; Hickok & Avrutin, 1996; Kljajevic & Murasugi, 2010; Neuhaus & Penke, 2008; Salis & Edwards, 2008; van der Meulen, Bastiaanse, & Rooryck, 2005). While some researchers attributed poor comprehension of *wh*-questions in aphasia to the presence of *wh*-movement, others have proposed that discourse-related specifications make certain types of *wh*-questions hard to process. Most studies however also revealed considerable individual differences.

In this study, we examined groups of monolingual IWA speaking Turkish, a non-*wh*-movement language, and German, a *wh*-movement language, using a picture-pointing task to assess comprehension of both *object* and *subject* questions. Eleven Turkish and six German IWA participated in our study. Mixed-effects regression and Random Forest models were used in tandem to predict which individual and aphasia-related factors and which morpho-syntactic constraints best predict our participants' comprehension patterns.

Our results (see Table 1 below) indicate that the Turkish IWA performed better in comprehending Object *Which* questions compared to Object *Who*, Subject *Which* and Subject *Who* questions. They attained better scores in Object *Who* questions than in Subject *Which* and Subject *Who* questions. The German IWA responded more accurately to Subject *Which* questions than to Object *Which*, Subject *Who* and Object *Who* questions. Interestingly, we found a cross-linguistic double dissociation in the Object *Which* condition, in which the Turkish IWA were spared while the German IWA were affected, and in the Subject *Which* condition, in which the German IWA performed relatively well but the Turkish IWA failed. Using the Random Forest algorithm, a tree-structured machine learning technique, predictors of the observed agrammatic patterns were determined. Severity of aphasia ranked first among the predictors, followed by other aphasia test scores (e.g. naming, auditory comprehension). The presence of case marking on the *wh*-pronouns and the existence of *wh*-movement were among the informative predictors. These findings will be discussed with regard to theories of agrammatic sentence comprehension.

Table 1. Mean % accuracy (and Standard Deviations) in Turkish and German IWA's comprehension of *wh*-questions.

Condition	Turkish agrammatic speakers		German agrammatic speakers	
	Mean (%)	SD	Mean (%)	SD
Object <i>Which</i>	73,4	44,2	38,4	44,2
Object <i>Who</i>	61,3	48,7	44,4	48,7
Subject <i>Which</i>	49,6	50,0	62,0	50,0
Subject <i>Who</i>	50,7	50,0	39,3	50,0

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What is *po* exhausting? Spatial and individual distribution in Serbian

Ana Bosnić

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Recent experiments suggest that Distributive Share markers have exhaustivity requirements (Bosnić et al, in prep). In picture verification tasks testing intransitive sentences with Serbian *po* and Korean *-ssik*, Bosnić showed that sets of relevant event participants (agents) were found to be crucial for defining spatial units that were the Sorting Key. This was regardless of the number of participants per unit; for every set of event-participants, relevant participants restricted by the Share marker need to be exhausted by the relevant event. These results are inconsistent with the analysis of Knežević (2015), who predicts that simple event plurality should be sufficient. These results were consistent with the analysis by Balusu (2006) that Distributive Share markers signal event distributivity, but Balusu's account is actually not precise enough to distinguish between an analysis where spatiotemporal units are interpreted as the Sorting Key and an analysis where individuals indicate the relevant spatial units. The current study tests generalizations made in Bosnić et al by extending them to transitive sentences with *po*-marked objects.

We tested 58 people with a picture verification task (Truth Value Judgement) and a 2x3 design with two factors of Group Size (*One* vs. *Four*) and Exhaustivity Type (*Exhaustive*, *Non-exhaustive* or *Different Exhaustive*), creating six conditions (with five observations for each condition). An example of each condition is given in Figure 1.

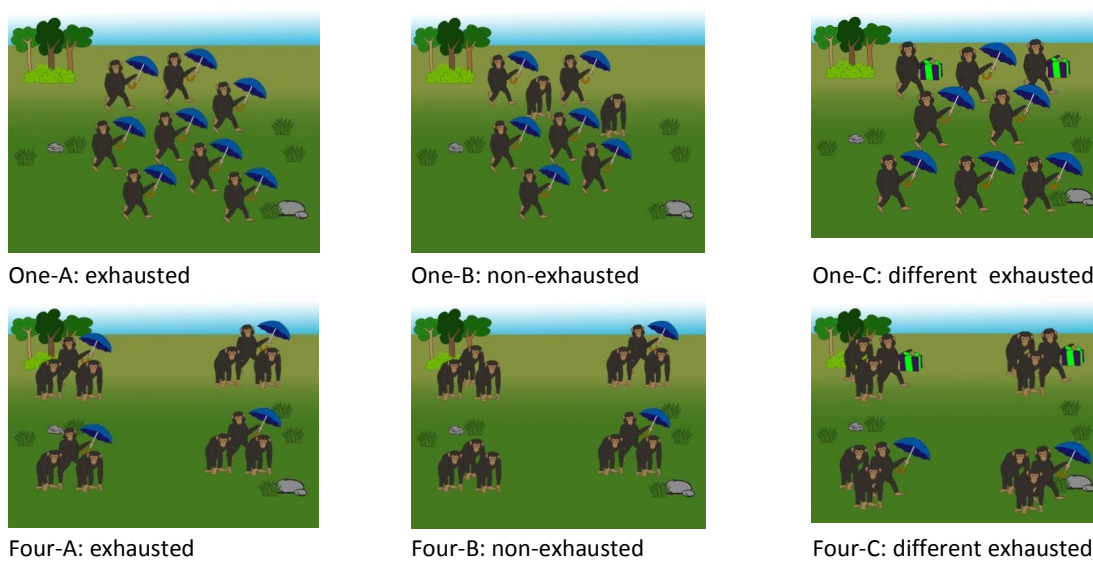


Figure 1

Each illustration was accompanied by a transitive sentence beginning with a plural noun referring to the relevant animal, an action, and *po* was marking the object (1):

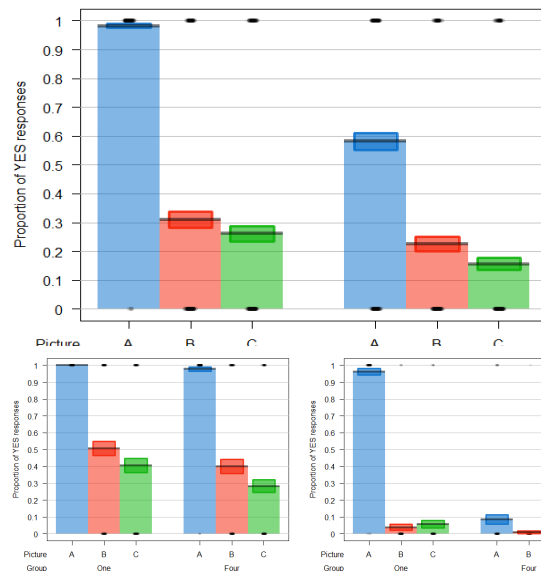
(1) Majmuni nose po jedan kišobran.

Monkeys are carrying DIST one umbrella

So far we have completed the experiment in Serbian only (German and Korean pending) and we wanted to answer and address the following questions (matched with the relevant condition):

- I. Is spatial distribution reducible to individual distribution? (*One-A*)
- II. Is the claim that the sets of event participants define spatial units transferrable to the situations where *po* is marking the object in the transitive sentence? (*Four-A*)
- III. Is spatial distribution more widely accepted than individual distribution in *po* sentences? (*One-A* and *Four-A*)

We predicted that *Four-A* would be widely accepted given the generalizations of sets of event participants that define the spatial units. The acceptance of *One-A* is also predicted to be high, revealing that individuals are defining their own space (making singleton sets).



The results clearly showed that spatial distribution indeed can be reduced to the individual distribution but the rest revealed a puzzling situation. The *Four-A* condition was not accepted as much as we predicted. Upon closer examination, we found that there seem to be two different populations of people that either systematically say YES or NO to *Four-A*.

There may be two possible explanations for this: Subject DP in Serbian is unmarked for articles and it could be that it is either interpreted as definite or indefinite. If the Subject is considered definite (meaning “THE/THESE monkeys”), it allows people to say NO because not ALL the monkeys are holding an umbrella. For

this reason, an experiment in German could give interesting results - it is only possible to use a definite article for “Monkeys” in the test sentence. Another possibility is that the Subject DP is read as indefinite, meaning “some, unspecified monkeys”, which would result in accepting all three exhaustive types in the *Four* condition. However, *Four-B* and *Four-C* conditions are still not as highly accepted as *Four-A*, meaning that it cannot be that that the subject DP means “some monkeys”. This may indicate that people simply have two distinct intuitions about what *po* actually means - *po* can allow group formations and that it means “in every group”, or it is only allowing individual distribution. Further research aims at addressing these questions.

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Concreteness of individual senses of polysemous words

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Psycholinguistic research has demonstrated the relevance of numerous semantic variables on word processing. One such variable is word concreteness which describes to what extent it is possible for the entity that is denoted by such word to be experienced by senses (to be seen, heard, touched, smelled etc; Paivio Yuille, Madigan, 1968). Concreteness has traditionally been measured using a bi-polar scale, one end of which is mapped to concrete words (e.g. *banana, cow, milk*) and the other end being mapped to abstract words (e.g. *love, truth, justice*). It has been widely established that concrete words show advantage over abstract words in both processing and memory-based tasks (Fliessbach, Weis, Klaver, Elger, & Weber, 2006; Paivio, 1971, 1986, 1991; Schwanenflugel & Shoben, 1983). However, the majority of words do not have clear, distinct meanings, but denote several related senses (polysemy) and sometimes even several unrelated meanings (homonymy). Very often, different senses denote entities for which it is not possible to be experienced by senses to equal extent.

One of the most frequent instances of polysemy is the case of metaphorical use of some word sense. Here, by definition, literal use of the word meaning would be concrete, whereas its metaphorical use would be abstract. However, to our best knowledge, this issue has never been addressed. Therefore, we conducted a norming study in which we collected concreteness judgements for each individual sense of 150 polysemous words of Serbian language, for which we previously estimated number of senses and sense frequency in a production task (Filipović Đurđević, 2007). Additionally, we collected traditional judgements of word concreteness and investigated how concreteness of individual senses maps onto judgements of traditionally defined general concreteness.

Our results revealed significant correlation between general concreteness and averaged concreteness of senses ($r=.68$). However, this correlation was driven by correlation between general concreteness and concreteness of the dominant (most frequent) sense ($r=.71$). The correlation between general concreteness and averaged concreteness of subordinate senses was not statistically significant. We also observed a mild positive correlation between sense concreteness and sense frequency. Taken together, our results suggest that when estimating concreteness of polysemous words, speakers mostly (but not fully) rely upon the concreteness of the dominant sense. At the same time, when listing all of the senses of the polysemous word that they can think of, they tend to list concrete senses more often than the abstract ones.

Keywords: word concreteness, polysemy, sense concreteness, norms

Examining word order in aphasic speech

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Aphasia is a speech-language disorder caused by damage to the brain (stroke, traumatic brain injury, brain tumors, infections, or other neurological diseases). The severity of aphasia varies from total loss of language abilities to mild problems in perception or production.

Word order perception and production is often impaired in aphasia. In Serbian, the word order is rather flexible. Thus, the research is aimed at addressing the possible effects of aphasia on the perception and production of different word order in Serbian. Seven aphasic subjects (3 female and 4 male individuals) participated in the research on word order in aphasia. All of the participants are native Serbian speakers who have been involved in speech therapy for at least 3 months following a stroke.

The main aim of the research is testing the perception and production of sentences in Serbian (and not just individual words), reflecting different word order. Perception was examined through tasks based on word order changes triggered by passive constructions, while production was controlled and tested through sentence-picture matching and paraphrasing tasks.

Word order was examined at the sentence level (always with a context provided), following the treatment programme Verb Production at the Word and Sentence Level (Bastiaanse, Jonkers, Quak, & Varela, 1997), and using three syntactic tests (i.e. sentence anagrams, sentence-picture matching, and paraphrasing). Spontaneous speech was analysed with respect to verbs, nouns, and utterance length.

All subjects showed certain level of difficulty with word order perception in different contexts, while the production was controlled with more ease. Subjects with Broca's aphasia showed problems with both verb perception and production, especially in the task based on paraphrasing (the participants were unable to paraphrase more complex sentences, which included embedded relative clauses, for example). Even though passives caused problems among the English-speaking individuals with aphasia (Grodzinsky, 1990), passive constructions in Serbian were not found problematic, even though this was expected.

Putting the linguistic knowledge about aphasic speech into practical use in treatment is the main goal of the initial research questions. Using language for the localization of the issues in the brain, for further classification of aphasia in Serbian, as well as for developing online and offline speech therapy computer-based online and offline programmes available for a wider audience might serve a stepping stone in neuroscientific research.

Keywords: aphasia, linguistics, word order, syntax, perception, production.

Prepositions in Spanish-speaking individuals with aphasia: Evidence from connected discourse

Silvia Martínez Ferreiro, Byurakn Ishkhanyan & Kasper Boye
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Prepositions form closed classes, but have nevertheless traditionally been analysed as lexical items on a par with nouns, verbs and adjectives. Some research suggests that in reality prepositions are a hybrid category comprising both grammatical and lexical items. In a recent functional theory (Boye & Harder, 2012), grammatical and lexical items, including prepositions, are distinguished based on prominence: grammatical prepositions are discursively secondary, as opposed to lexical words that can be discursively primary, i.e. express the main point of an utterance. It follows from this that only lexical prepositions can be focalized and addressed in subsequent discourse.

Despite the scarcity of works examining the heterogeneity of prepositions (see Mätzig, 2009 for a review), some studies have shown consistent differences across individuals with Broca's and Wernicke's aphasia (Friederici, 1981, 1982, Bennis et al. 1983). Friederici (1981) studied the performance of American English speakers. Prepositions were found to be more severely impaired in Broca's than in Wernicke's aphasia. However, the performance of Broca's informants improved in contexts of "semantically based processes" (Friederici, 1981: 197). On a later study in German, Friederici (1982) showed that informants with Broca's aphasia were better at producing lexical than grammatical prepositions (69.6% vs. 36.3% correct). The opposite pattern was found for informants with Wernicke's aphasia, who correctly used lexical prepositions less than grammatical prepositions (51.79% vs. 63.1% correct). This was also the case in Bennis et al.'s (1983) study of Dutch.

In this study, we aim at providing further evidence for the lexical-grammatical divide of prepositions in a set of Spanish-speaking individuals with rarely investigated aphasic syndromes: transcortical and mixed aphasias. We hypothesize that, as the speakers of Germanic languages with Broca's and Wernicke's aphasia, Spanish-speaking informants classified as non-fluent will show deficiencies in their use of grammatical prepositions, while individuals with fluent deficits will experience more difficulties with lexical forms. We focused on the performance of 9 Spanish-speaking individuals with aphasia (IWAs) from the Rosell (2005) corpus: 2 diagnosed with transcortical motor aphasia and 7 diagnosed with mixed aphasias (4 with motor predominance and 3 with sensory predominance). The non-fluent group included 3 males and 3 females (mean age = 65.6) and the fluent group included 3 males (mean age = 64). The performance of an additional set of 15 matched individuals (9 males, mean age = 58) was also analyzed. Data was obtained by means of semi-standardized interviews (last job and last holidays). Samples of 300 words per participant were transcribed and analyzed. All prepositions were counted and all tokens classified as lexical and grammatical departing from Stewart's (2015) classification of Spanish prepositions and applying Boye and Harder's (2012) criteria. A total of 825 forms were included in the analysis. These included 7 different lexical forms ($n = 203$ items: *desde* "since, from", *durante* "during", *en* "in", *entre* "between, among", *hasta* "until", *sin* "without", *sobre* "on, about") and 5 different grammatical forms ($n = 622$ items: *a* "to", *con* "with", *de* "of", *para* "for", *por* "for, by"). Quantitative results were analyzed using IBM SPSS Statistics 24.0.

The results show a clear divide between grammatical and lexical prepositions. First, grammatical prepositions are more frequent in the speech output of all the informants in the aphasia (fluent and non-fluent) and the non-brain-damaged (NBD) groups. Differences were significant for NBDs (Wilcoxon: $Z = -3.413$, $p = .001$) and non-fluent individuals (Wilcoxon: $Z = -2.201$, $p = .028$).

Across groups, opposite patterns were found in the performance of fluent and non-fluent IWAs. While fluent individuals were found to produce significantly fewer lexical forms than their control counterparts (Mann Whitney: $U = 4.5$; $Z = -2.151$, $p = .027$), no differences were found for grammatical forms (Mann Whitney: $U = 8.5$; $Z = -1.668$, $p = .100$). As for non-fluent informants, these were found to produce significantly fewer grammatical forms than controls (Mann Whitney: $U = 14.5$; $Z = -2.384$, $p = .014$), and showed no differences for lexical forms (Mann Whitney: $U = 23$; $Z = -1.737$, $p = .095$).

Despite etiological differences in our sample of IWAs, our results are consistent with previous findings from informants with Broca's and Wernicke's aphasia (Friederici, 1981, 1982, Bennis et al., 1983) and show that the grammatical-lexical asymmetry is not restricted to these syndromes, but general to fluent vs. non-fluent aphasias. These findings are relevant both from a theoretical and a clinical perspective. First, they confirm the heterogeneity of prepositions, which should no longer be analyzed as a monolithic category. Consequently, their status in the assessment, diagnose and treatment of aphasia should be reconsidered.

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L2>L1 translation and L1 attrition: Three studies of anaphora resolution

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In recent research, the internal linguistic system of translators has been proposed to undergo changes similar to those involved in the process of first language (L1) attrition. For instance, Cardinaletti (2005) interpreted the overuse of overt pronouns found in translations from non-null-subject L2 English to null-subject L1 Italian as an indication of L1 attrition in experienced translators, attributable to prolonged exposure to the L2.

In order to check this claim experimentally, we conducted a series of studies on the resolution of intra-sentential anaphora. Each study involved experienced and/or trainee translators, and a control group of non-translators; the L1s explored were Italian, Serbian and Croatian, while the L2 translated from was always English. The L1s are null-subject languages in which null pronouns prefer the subject antecedent, and overt pronouns a non-subject antecedent in intra-sentential anaphora (see Table 1 for a Serbian/Croatian example). The subjects did a picture selection task that required reading sentences containing null and overt pronouns, which either followed or preceded the candidate antecedents, and matching each sentence to one of three pictures, showing the antecedent as the subject, the object or an extra-linguistic referent (see Figure 1). The translators were expected to select the subject as the antecedent of overt pronouns more than the control group, pointing to (incipient) L1 attrition.

The results revealed that the translators patterned with the controls in the null subject conditions, and that, overall, they did not select the subject as the overt pronoun antecedent more often than the non-translators. Logistic regression analyses showed, in all three cases, that subject group on its own did not have a significant role in predicting the referent choice, but that a significant interaction existed between the subject group and pronoun type, showing that the translators were overall *less* likely than the controls to select a subject antecedent for overt pronouns. We conclude that evidence of (incipient) attrition in translators is absent, and discuss the role of metalinguistic awareness in the translators' interpretation of subject pronouns.

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Table 1. Experimental conditions

ANAPHORA WITH A NULL PRONOUN	<i>Portir_i pozdravlja poštar_j dok Ø_i otvara vrata.</i> the porter greets the postman while <i>pro</i> opens the door
ANAPHORA WITH AN OVERT PRONOUN	<i>Portir_i pozdravlja poštar_j dok on_{i/k} otvara vrata.</i> the porter greets the postman while he opens the door
CATAPHORA WITH A NULL PRONOUN	<i>Dok Ø_i otvara vrata, portir_i pozdravlja poštar_j.</i> while <i>pro</i> opens the door the porter greets the postman
CATAPHORA WITH AN OVERT PRONOUN	<i>Dok on_{i/k} otvara vrata, portir_i pozdravlja poštar_j.</i> while he opens the door the porter greets the postman

Figures

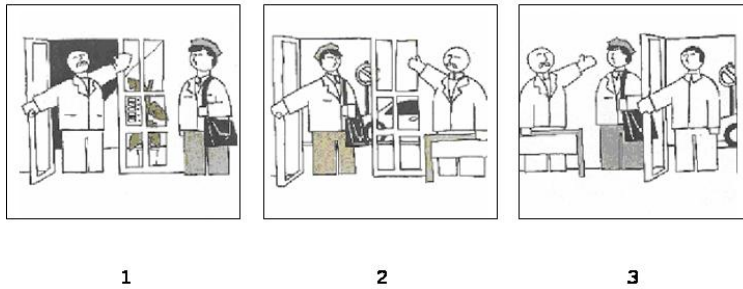


Figure 1. Example of a picture set from the picture selection task

Different loci of scalarity

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Scalar implicatures (1b) are one of the central types of linguistic inferences, which are drawn from sentences containing scalar items, such as ‘some’, ‘or’ or ‘not necessarily’.

(1) a. *Some students passed the exam.*

b. +>*Not all of the students passed the exam.*

Previous empirical research in the domain of experimental pragmatics has shown that adult speakers of Serbian are sensitive to the (extra)linguistic variation in the process of generating scalar implicatures. In particular, due to the lack of articles in Serbian, the scalar item *neki* ‘some’ is ambiguous between a spesomeptive (some=unidentifiable) and a quantificational interpretation, which possibly gives rise to SI (some=some, but not all). Our previous studies reported that if the right reference domain restriction is provided for the noun by using the partitive construction, SI quite regularly obtains (Mirić & Arsenijević 2014, Mirić 2016).

In addition to partitivity, we hypothesize that there are other syntactic and semantic factors that could contribute to the disambiguation of Serbian *neki*, making the SI available at different levels, namely:

a) non-partitive (*neke jabuke su na stolu* ‘some apples are on the table’),

b) partitive (*neke od jabuka su na stolu* ‘some of the apples are on the table’),

c) demonstrative (*neke od tih jabuka su na stolu* ‘some of these apples are on the table’),

d) pronoun (*neke od njih su na stolu* ‘some of them are on the table’),

e) ellipsis (*neke su na stolu* ‘some are on the table’).

In particular, we assume that the given factors will position on a scale based on the level of reference domain restriction they provide: the non-partitive version carries the least probability for generating SI, having in mind its ambiguity, whereas the use of other types of expressions presuppose the existence of a referent (e.g. *apples*) and its accessibility in the discourse, allowing the scalar interpretation (cf. Reed 1991 for partitives). We moreover hypothesize that the partitive expression will rank lower than the other expressions in the degree they trigger SI due to the fact that the noun (here *jabuke* ‘apples’) can be interpreted as non-co-referential with the antecedent, i.e. as referring to a different set of apples than the relevant one. Finally, the demonstrative version may be too marked for a non-focal discourse-old referent that restricts quantification. This predicts an additional scale, ranking these expressions with respect to their capacity to derive SI, where $a < b < c < (d, e)$.

In order to test our predictions, we performed a web-based experiment. Participants were 97 first and second year students of psychology (University of Niš). They were shown a set of visual stimuli (e.g. five apples on a table), followed by five written sentences containing the scalar item *neki* ‘some’ varied under 5 different conditions (non-partitive, partitive, demonstrative, pronoun, ellipsis). They were asked to evaluate on a 7-point Likert scale how appropriate the sentences are with regard to the visually presented situation. In the critical trials (8 sets of pictures each followed by 5 sentences), the use of the scalar item *svi* ‘all’ would be more informative. For each picture, sentences were presented in an invariable pseudo-randomized order (the order of sentences differed between the pictures,

but the same picture had the same order for all the participants), and there was another level of randomization among the critical and control items.

Taking the responses of all 97 participants, the mean values per condition are the following: 4.39 (non-partitive), 4.31 (partitive), 4.55 (demonstrative), 4.05 (pronoun), and 3.67 (ellipsis). The results indicate that the overall rate of SIs is rather low (given that the mean value for the SI should be 1). In addition, the results show significant difference among conditions, although slightly different than we expected ($c < (a, b) < e < d$). The poorest performance was on the demonstrative condition, whereas the ellipsis triggered the highest rate of SIs.

Our results potentially reinforce the findings that SIs are highly contextually dependent, which makes the distinction between generalized and particularized implicatures unjustifiable. Furthermore, they could have implications for the theoretical notion of 'scalarity', adding new loci of scalarity, apart from the previously well-known scale *<some, all>*. Looking from the developmental perspective, standards in children's performance should be reconsidered given the potential variation in the adult population. In addition to processing limitations, other factors, which are tested in our experiment, such as establishing the right reference domain, might be responsible for preschool children's typical difficulties in generating SIs. Finally, a methodological contribution of our research will be in informing future research on scalar implicatures about the consequences of the selected type of expression, as well as about the ideal type of expressions to be used to test SIs.

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Gender and Number Disagreement Processing in Dutch: An Electrophysiological Study

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The current study focused on the difference in processing gender (1) and number (dis)agreement (2) between the article/inflected adjective and the noun in Dutch. Brain responses were recorded by means of event-related potentials (ERPs), while participants read experimental sentences containing target DPs.

- (1) a. Er lag een mooi dorp vlakbij de grote stad.
there lay a beautiful_{N(euter)} village_N near the big city
'A beautiful village was close to the big city.'
- b. *Er lag een mooie dorp vlakbij de grote stad.
there lay a beautiful_{C(ommon)} village_N near the big city.
- (2) a. De gezellige dorpen trekken veel toeristen in de zomer.
the_{PL} nice_{PL} villages_{PL} attract many tourist in the summer
'The nice villages attract many tourists in the summer.'
- b. *Het gezellige dorpen trekken veel toeristen in de zomer.
the_{SG} nice_{SG} villages_{PL} attract many tourist in the summer

Most sentence-processing studies using ERPs rely on the so-called 'violation paradigm' (e.g., Osterhout, McLaughlin, Kim, Greenwald, & Inoue, 2004). This implies that participants are exposed to two different kinds of stimuli: grammatical or semantically plausible sentences (baseline; 1a and 2a), and ungrammatical or semantically implausible variants of the baseline sentences (1b and 2b). It has been demonstrated that sentences containing violations elicit different waveforms than baseline sentences, and that the characteristics of the elicited waveforms depend on the violation type (Friederici, 2002). For example, semantic violations elicit a negative-going deflection approximately 400 ms post-stimulus onset (N400; Kutas & Federmeier, 2011). Morphosyntactic violations, however, are commonly reflected in a positive waveform, some 500-600 ms post-stimulus onset (P600; Hagoort & Brown, 2000). Sometimes, the P600 is preceded by a left-lateralized anterior negativity (LAN), 300-500 ms post-stimulus onset (Osterhout et al., 2004).

The present study focused on morphosyntactic violations in the form of article/inflected adjective-noun disagreement. Such kind of disagreement has been shown to elicit the P600 effect, often preceded by the LAN (Barber & Carreiras, 2005). Our goal was to investigate whether electrophysiological responses would differ between gender and number disagreement, taking into account the following properties of number and gender in Dutch:

1. Gender (lexical feature) and number (determined by higher order semantics) are inherently different;
2. Gender is a lexical feature of the noun, whereas number is inflectional;
3. Number disagreement is more complex to repair than gender disagreement due to multiple repair options in number.

The prediction was that number disagreement is more costly to repair, which would elicit a larger P600 effect. Indeed, results showed a larger P600 effect for number disagreement than gender disagreement. Based on the characteristics of the P600, we speculate that the system is sensitive to the inflectional/lexical distinction between gender

and number, but also to the fact that number disagreement is more complex to repair. The inherent difference between number and gender seems to play no role in (dis)agreement processing.

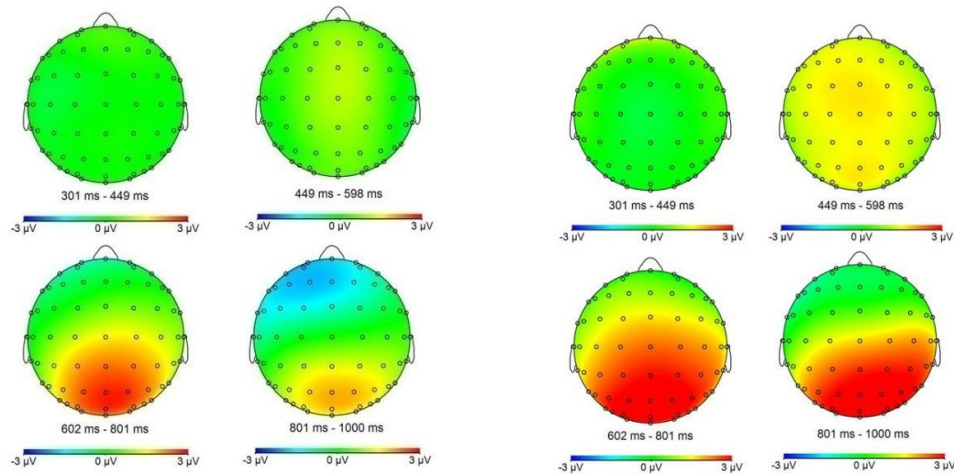


Fig.1 The topographic maps represent a difference between ungrammatical and grammatical sentences in 4 different time windows. Gender disagreement is represented on the left, and number disagreement on the right.

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Differential decay of cognitive abilities and language in healthy elderly population

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The aim of this study was to assess the differential decay of cognitive abilities and language in old age. Namely, while it is widely accepted that cognitive abilities decay with age, language is sometimes regarded as "crystalized". This is reflected in language use in the elderly population: while vocabulary is intact (vocabulary and general knowledge do not decay), the syntax can be characterized by short sentences or the use of short constructions. This is considered to be related to the decay of other cognitive functions, especially working memory, not language itself.

We used two tests to assess language and cognitive abilities and two simple reaction time (RT) tasks. *Peabody Picture Vocabulary Test (PPVT-III-HR)* was used to assess the vocabulary and *Wisconsin Card Sorting Test (WISC)* was applied in order to assess the mental fluidity (as opposed to the crystalized language). The RT experiments consisted of a simple motor task (pressing a button as fast as possible upon a picture of a bulb appearing on a computer screen) and a choice task with two bulbs appearing on a computer screen). Finally a *Lexical superiority task* with words, pseudowords and nonwords was given to the participants with all words being of high frequency and phonotactic probability, pseudowords being of high phonotactic probability and nonwords with strings of letters that violated the phonotactic rules of Croatian. The rationale behind this task was to check the prediction that the older the participants were, the larger the difference between their performance on words would be (due to the tacit influence of the intact lexical knowledge). The difference between conditions would be smaller for younger participants.

The participants were 32 elderly persons age 69 - 85, 22 women and 10 men with high school education or higher. The initial statistical analysis of the results (mixed model ANOVA) showed a statistically significant effect of age (older group having longer RT's on the lexical superiority task), but the results were somewhat surprising: the participants were consistently slower on words than pseudo- and nonwords. Parallel analysis with participants divided by the results on PPVT and WISC was similar, but did not reach statistical significance. The results will be interpreted in terms of the reliance of older persons on their lexical knowledge, not on the ability to manipulate the phonological information, but this pattern of results requires more participants to be included in the study and a comparison to a group of younger participants.

Keywords: elderly population, lexical knowledge, lexical superiority task, language and cognitive abilities

Effect of language therapy on receptive language recovery in patients with acute aphasia

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A growing body of studies indicates that recently developed Constraint-Induced Aphasia Therapy (CIAT) approach can be effective in language recovery in aphasic patients. However, there is still an open issue which factors are at play when considering CIAT success: is maximization of quantity and frequency of language therapy the most relevant factor affecting therapy outcome, or the focusing on language through constraints.

The present study aims to investigate the effect of two factors in SL therapy: the factor of *massed daily implementation* of SLT, and the *constraint usage* of language channel only on expressive and receptive language recovery in aphasic patients. Accordingly, we examined the comparative efficacy of the Constraint-Induced Aphasia Therapy (CIAT) and the standard aphasia therapy (ST) approach on receptive language recovery in nonfluent aphasic patients during the post-acute stage after stroke.

A total of 17 consecutive right-handed patients were randomly assigned to two groups that received either first conventional (ST) therapy (n=9) or CIAT (n=8). Two successive four-week blocks of intense (one-hour, five days a week) aphasia therapy were delivered of each therapy program in a randomized within-subject crossover design. One therapy block (a total of 20 hours each) consisted of standard aphasia therapy, another of CIAT. Thus, the total amount of therapy was the same for both groups.

The 60-item Boston Naming Test (BNT; Kaplan, Goodglass, & Weintraub, 1983) for naming skills and the Cookie Theft Picture description task from the BDAE (Goodglass & Kaplan, 1983) for syntactic accuracy and variety, and the BDAE clinical subtests of comprehension, the Word Discrimination, the Body-Part Identification, the Commands, and the Complex Ideational Material subtests were given at the beginning and the end of each therapy block and of each therapy program of each therapy program 1 month after the whole treatment stopped.

The present study points to some important findings. First, one of the most important finding is that early aphasia rehabilitation is beneficial. According to our results, factor intervention significantly affected naming ability: in all time points both groups demonstrated significant improvement, suggesting that both rehabilitation therapies when are done within massed practice principle has an effect on language production, the finding which is already reported in other studies. Second, our data has shown that factor group has a significant impact on naming ability, and that different group has different recovery over time. The group who started with CIAT and continued with standard aphasia therapy had higher naming ability improvement than the group who started with ST and continued with CIAT. Furthermore, the group who started with CIAT first had significant recovery after CIAT, significantly higher than the group who started with ST, and insignificant improvement after ST, while the group who started with ST, although significant overall naming skills recovery was noted, improvement was insignificant either after ST or after CIAT therapy. It seems that a systematic constraint of verbal communication modalities with practice of targeted language skills have greater impact on patients' early word production recovery than ST

approach even in a massed practice fashion. However, factor group does not have significant impact on receptive language improvement, suggesting no significant increases in receptive language skills after CIAT therapy, which is based on *constraint-induced* language approach, when compared to the ST therapy.

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