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Book of abstracts

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PROGRAMME

9   **WELCOME NOTE**

9-11   **SESSION 1: LANGUAGE DISORDERS (chair: Seçkin Arslan)**

9-9.30   María Paz Oliva (Universidad de Buenos Aires, Facultad de Filosofía y Letras, Instituto de Lingüística, Agentina), María Elina Sanchez (Universidad de Buenos Aires, Facultad de Filosofía y Letras, Instituto de Lingüística; Consejo Nacional de Investigaciones Científicas y Tecnológicas (CONICET), Argentina), Camila Stecher (Universidad de Buenos Aires, Facultad de Filosofía y Letras, Instituto de Lingüística; Consejo Nacional de Investigaciones Científicas y Tecnológicas (CONICET), Argentina), Yamila Sevilla (Universidad de Buenos Aires, Facultad de Filosofía y Letras, Instituto de Lingüística; Consejo Nacional de Investigaciones Científicas y Tecnológicas (CONICET), Argentina) and Virjinia Jaichenco (Universidad de Buenos Aires, Facultad de Filosofía y Letras, Instituto de Lingüística, Argentina): *Assessment Battery for morphosyntactic processing of Rioplatense Spanish: a pilot study*

9.30-10   Silvia Curti and Emanuela Sanfelici (University of Padova, Italy): *The Morphosyntax Interface in Patients with Alzheimer's Disease*

10-10.30   Christina Manouilidou (University of Ljubljana), Michaela Nerantzini (University of Ioannina), Katarina Marjanovič (University of Ljubljana), Georgia Roumpea (University of Ljubljana), Zvezdan Pirtošek (University of Ljubljana) and Jure Bon (Psychiatric Clinic Ljubljana): *Transcranial magnetic stimulation coupled with behavioral intervention appears to improve sentence comprehension in early Alzheimer's disease*

10.30-11   Bianca Franzoia (Department of General Psychology, University of Padova, Italy), Stefania Laratta (Istituto S. Anna, Crotone, Italy), Francesca Franzon (Neuroscience Area, International School for Advanced Studies (SISSA)) and Carlo Semenza (Padova Neuroscience Center, University of Padova, Italy): *Prefixation in a Case of Neglect Dyslexia*

11-11.15   **COFFEE BREAK**

11.15-13.15 SESSION 2: APHASIA (chair: Silvia Martínez Ferreiro)

11.15-11.45 Vittoria Dentella (Department of English and German Studies, Rovira i Virgili University, Spain), Davide Bertocci (Department of Linguistic and Literary Studies, University of Padova, Italy) and Carlo Semenza (Padova Neuroscience Center, Italy): *Gender Agreement Processing in Transcortical Sensory Aphasia*

11.45-12.15 Francesco Ricciardi (University of Padova, Italy), Davide Bertocci (Department of Linguistic and Literary Studies, University of Padova, Italy) , Giulia Fullin (Speech Language Pathologist, and Department of Linguistic and Literary Studies, University of Padova, Italy) and Carlo Semenza (Padova Neuroscience Center, Italy): *Parasynthetic verbs in Agrammatism*

12.15-12.45 Han Zhang, Jinli Huang and Wolfram Hinzen (Department of Translation and Language Sciences, Universitat Pompeu Fabra, Barcelona, Spain): *Temporal overlap between gestures and speech in post-stroke aphasia: Is there a compensatory effect?*

12.45-13.15 Halima Sahraoui and Silvia Martìnez-Ferreiro (University of Toulouse, France): *Disfluency patterns in the connected discourse of individuals with agrammatic aphasia*

13.15-14 LUNCH BREAK

14-15 PLENARY LECTURE – Carlo Semenza (University of Padova): *Attention to written material: the modulating influence of morphosyntax*

15-15.30 POSTER PITCHES (chair: Sabina Halupka-Rešetar)

- Tuyuan Cheng (General Education Center, National Tainan Junior College of Nursing, Taiwan): *Is there a processing preference for object or subject relative clause in Chinese? Evidence from memory-load interference task*
- Alice Karbanova (Masaryk University, Brno, the Czech Republic): *A Poem set to Music: Perception of a Complex Semiotic Object*
- Living Yang (
- Liying Yang (University of Bergen, Norway and Bylingual Co., Ltd, Chengdu): *Form and meaning priming effects in native speakers of Mandarin Chinese with English as their second and Norwegian as the third language*
- Paula Janjić (School of Psychology, Faculty of Social Sciences, University of East Anglia, Norwich Research Park, UK): *The influence of word properties on the effectiveness of second language vocabulary learning methods*
- Yiran Hu (Lancaster University, UK): *Language faciliates category learning-From different perspective*
- Valentina Apresjan, Anastasiya Lopukhina, Maria Zarifyan, Alexander Orlov, Kirill Koncha (National Research University Higher School of Economics): *Different Types of Russian Adjectival and Verbal Polysemy in the Mental Lexicon*
- Michał B. Paradowski (Institute of Applied Linguistics, University of Warsaw, Poland): *The interaction of emotions and social norms in bilinguals' languages*
- Aicha Rahal (Aix-Marseille University, France): *What are the differences between having one language in the brain and having more than one?*
- Bojana Ristić (University of Ljubjana, Slovenia), Jana Willer-Gold (University College London, UK), Boban Arsenijević (University of Graz, Austria), Nermina Čordalija (University of Sarajevo, Bosnia and Herzegovina), Nedžad Leko (University of Sarajevo, Bosnia and Herzegovina), Frane Malenica (University of Zadar, Croatia), Franc Lanko Marušič (University of Nova Gorica, Slovenia), Irina Masnikosa (University of Zagreb, Croatia), Tanja Milićev (University of Novi Sad, Serbia), Nataša Milićević (University of Novi Sad, Serbia), Petra Mišmaš (University of Nova Gorica, Slovenia), Irina Masnikosa (University of Zagreb, Croatia), Ivana Mitić (University of Niš, Serbia), Anita Peti-Stantić (University of Zagreb, Croatia), Branimir Stanković (University of Niš, Serbia), Matea Tolić (University of Sarajevo, Bosnia and Herzegovina), Jelena Tušek (University of Zagreb, Croatia), and Andrew Nevins (University College London, UK): *Testing Word Order Asymmetries with Fragment Answers*
- Georgia Andreou and Vasiliki Lymperopoulou (Department of Special Education, University of Thessaly, Greece*): Predictive language processing of children with Autism Spectrum Disorder and children with Developmental Language Disorder*

15.30-16.30 DISCUSSION TIME (IN BREAKOUT ROOMS)

16.30-18.30   SESSION 3: PROCESSING (chair: Srdjan Popov)

16.30-17   Nermina Čordalija (Faculty of Philosophy, University of Sarajevo, Bosnia and Herzegovina), Srđan Popov (Centre for Language and Cognition Groningen, University of Groningen, The Netherlands) and Roelien Bastiaanse (Centre for Language and Brain, Higher School of Economics, Moscow, Russian Federation): *Processing tense and aspect violations: a self-paced reading study*

17-17.30   Ana Bosnić (University of Utrecht (UiL OTS); University of Nantes (LLING UMR 6310)) and Hamida Demirdache (University of Nantes (LLING UMR 6310)): *Is binominal* each *a distributive-share marker?*

17.30-18   Armine Garibyan (Friedrich-Alexander University Erlangen Nürnberg): *Neural correlates of collocation processing*

18-18.30   Katarina Bujandrić (European Masters in Clinical Linguistics (EMCL), Universities of Groningen (NL), Potsdam (DE), and University of Eastern Finland) and Srđan Popov (Centre for Language and Cognition Groningen, University of Groningen, The Netherlands): *Facilitating syntactic repair: The role of context in processing subject-verb agreement violations*

18.30   ROUND-UP
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PLENARY LECTURE

Attention to written material: the modulating influence of morphosyntax

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This talk will review several relatively recent neuropsychological investigations showing how linguistic content and structure modulate attention to written material. The neuropsychological condition allowing unearthing this information is neglect dyslexia. In neglect dyslexia, patients suffering from a brain lesion, most commonly in the posterior areas of the right hemisphere, tend to ignore, in reading, the leftmost side of a letter string. This lack of attention is not entirely determined by the position in space, however, but it is strongly influenced by linguistic content and structure. Some linguistic elements seem to attract attention more than others.

This review will show how semantic content is important, as well as the lexical structure of complex words. For instance reading the head of a compound is more likely to be preserved than the modifier. Semantic transparency and stem boundedness influence reading of prefixed words. Structures like topic and focus, as well as double negation, are also elements able to attract attention to the letter string. The anatomical location providing the advantage for some structures has also been explored and will be discussed in the talk.

WORKSHOP TALKS

SESSION 1: LANGUAGE DISORDERS

Assessment Battery for morphosyntactic processing in Rioplatense Spanish: a pilot study

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This presentation describes the development and implementation of an assessment battery specifically designed to evaluate the morphosyntactic processing during language comprehension and production of people with aphasia (PWA) in Rioplatense Spanish (RS).

The difficulties in morphosyntactic processing that PWA exhibit is known as agrammatism, which results in a particular linguistic profile. Concerning production, they utilize a limited set of syntactic structures, present a reduced speech rate, tend to use crystallized expressions, infinitive verbs or present tenses, and omit functional words, main verbs and morphemes. Regarding comprehension, complications appear when the sentence does not follow the canonical order (SVO in Spanish).

This deficit is widely discussed in neurolinguistic literature, but it is usually not precisely considered in assessment batteries. Furthermore, the evaluation methods available have other limitations: some are not supported by a strong framework of linguistic and psycholinguistic theories based on facts, others are translations not accurately adapted to RS. Due to this, the battery developed and used in this project makes a difference, as it is founded on updated discussions and theoretical knowledge in the research field and in the clinical practice.

For the design of the tests, we focus on the various grammatical problems reported in the literature about agrammatism in general and in Spanish, in particular: semantic reversibility, argument structure, word order, agreement and tense inflection, clitic pronouns, negation and sentence length. Assessments include: denomination of actions; production of sentences with different syntactic structures (actives, passives, cleft object, with subject and object relative clauses, interrogatives, negatives) and verbs with different argument structure (transitive, intransitive, ditransitive) by using drawings; elicited production of sentences (with agreement and tense features manipulated); comprehension of sentences with different types of verbs (transitive, psychological) and syntactic structures; sentence repetition; production and comprehension of clitic pronouns. The battery also involves a set of tests that evaluate the working memory. Once it is completed, the instrument offers a total score regarding the linguistic profile of the patient. The goal of the project is to obtain a standardized index that could be used in the future as a comparative normative measure.

We conducted a pilot study to check the validity of the battery. The systematization and analysis of the data will aid the final selection of items and tests that will form the instrument, to be validated and normalized afterwards. During the pilot, data will be collected from 45 healthy individuals divided into three age groups (20 to 40, 40 to 60, 60+) and three of educational levels (< 7 years, 8-12 years, 12+ years).

Finally, the evidence collected with this battery will allow us to make progress in ongoing research on psycholinguistic processing and language disorders. Most importantly, it will allow the interplay between theoretical linguistics and the clinical practice. We expect that this novel tool will make significant contributions to the evaluation, diagnosis, and future treatment of PWA with agrammatism in RS.
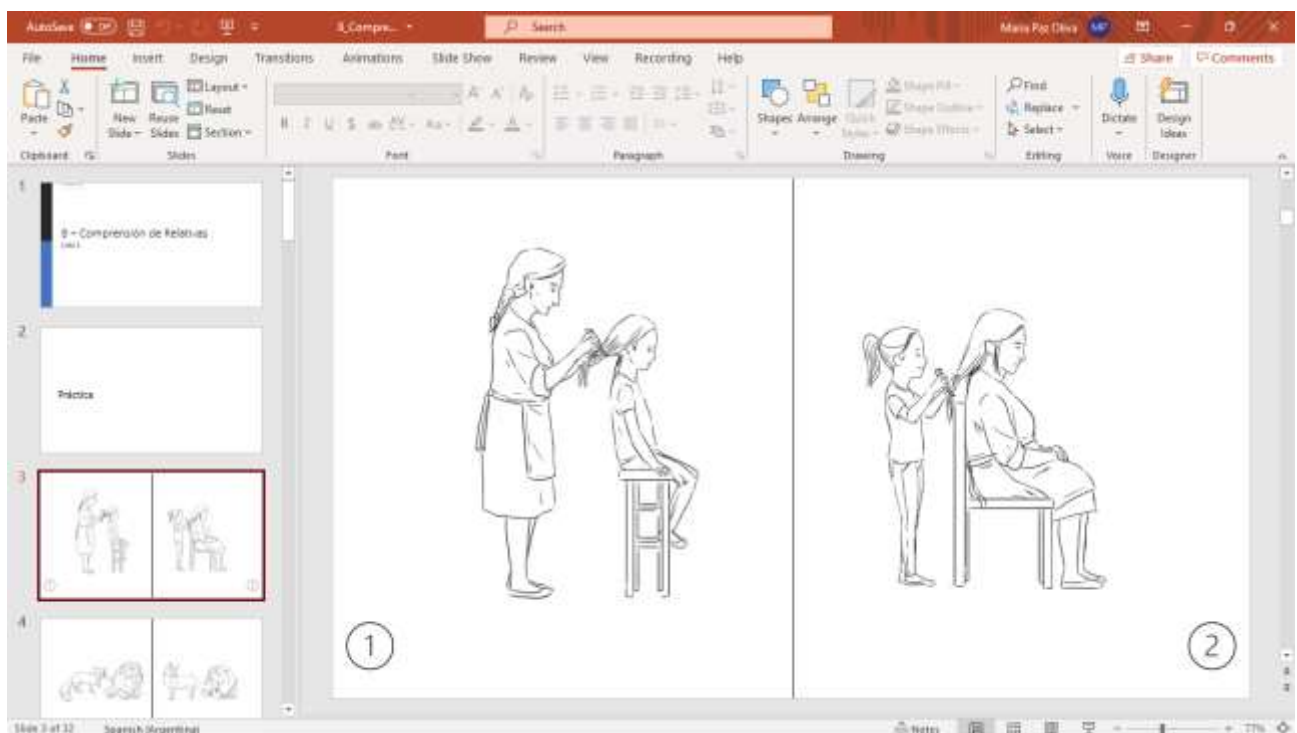

Figure 1. Example of the Test: "*Comprehension of Relative Clauses*".

Task: "I will enunciate a sentence and in the screen you will see two pictures. You have to point at the figure that matches with the given sentence".
Subject RC: "La abuela que peina a la nena es divertida"/ "The grandmother that brushes the girl is fun"
Object RC: "La abuela a la que peina la nena es divertida"/ "The grandmother that the girl brushes is fun"

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The Morphosyntax Interface in Patients with Alzheimer's Disease

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This paper investigates how morphologically complex words are formed in Italian speakers diagnosed with Alzheimer's disease (AD). To create new lexemes, languages exploit two morphological mechanisms (Dressler, 1985; Rainer, 2016). New lexemes are created via derivation, i.e., adding a suffix to a base, e.g., *dimenticare* 'to forget' *+ anza > dimenticanza* 'forgetfulness', or by conversion, where the base changes its category without the insertion of an overt morpheme, e.g., *corso* 'run' > *corso* 'flow' (Plag, 2003). The two mechanisms obey two different principles (Dressler, 1985). While derivational rules obey the transparency principle, since each morpheme maps one syntactic-semantic function, conversion obeys the economy principle, whereby no additional material is inserted. Acquisition research has shown that the two principles are exploited at different developmental stages: while conversion characterizes children's early productions, children apply derivation in the second stage (Clark, 2014). Given Jakobson's (1941) Regression Hypothesis, we ask (i) whether morphology is impaired in AD patients, and (ii) which morphological principles are exploited by this pathological population.

Previous studies have reported that AD patients are impaired in various linguistic domains: AD patients exhibit difficulties in naming, lexical-semantics, comprehending and producing syntactic and phonological structures (Croot et al., 2000; Rochon et al., 2000; Altmann, 2004; Aronoff et al., 2006; Almor et al., 2009; Hoffmann et al., 2010; Bencini et al., 2011; Caloi, 2017, a.o.). No studies we are aware of have investigated whether (and how) derivational morphology is impaired as well in AD patients.

A picture-supported sentence completion task was designed to test 20 AD patients (MMSE score 0-24) and 20 neurologically healthy subjects. The task contained 72 highly frequent and imaginative test items, manipulated for two variables, morphological process (36 conversion; 36 derivation) and syntactic category of the base (18 nouns and 18 verbs x each process). Participants were shown a page with a sentence containing a missing word, a picture illustrating the sentence, and three words, one of which was the target and two were non-existing but morpho-phonologically plausible Italian words acting as distractors (Fig. 1). The experimenter read the sentence and the three lexemes. Participants were asked to choose one of the three lexemes to fill the gap in the sentence, by either pointing to or orally producing the chosen response. We found that AD patients selected the target item less frequently than the control group (logistic mixed-effect regression *p*=.003). We also found that, unlike the control

group, AD patients produced complex word-forms (both targets and distractors) applying the two morphological mechanisms differently: complex verbs derived from nouns were formed via conversion, while complex nouns derived from verbs were formed via derivation.

Our study revealed that overall, morphological processes are still preserved in AD patients, in line with previous findings on aphasic patients' complex word-formation ability (Semenza et al., 2015). This suggests a separate storage for unitary lexemes and morphemes/rules composing complex items (Ullman et al., 1997). However, both the low rate of accuracy and the selective application of the morphological processes differentiate AD patients from the control group and can thus be taken as markers in AD diagnosis.

Per presentarmi do ogni volta una _____ di mano.

    a. stretta

    b. stringitura

    c. stringata

Figure 1. Example of a test item (complex noun from verb via conversion)

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Transcranial magnetic stimulation coupled with behavioral intervention appears to improve sentence comprehension in early Alzheimer's disease

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We present preliminary results on the application of behavioral language intervention coupled with repetitive transcranial magnetic stimulation (rTMS) in one individual with mild and two individuals with moderate Alzheimer's disease (AD), all of them native speakers of Slovenian.

Behavioral language intervention has traditionally been focused on improving communication abilities in patients with aphasia by alleviating symptoms both at lexical or sentence level. Treatment of Underlying Forms (TUF, Thompson & Shapiro, 2005), is a linguistic behavioral approach to treatment of sentence deficits primarily in PWA, but also in patients with the agrammatic variant of primary progressive aphasia (Barbieri, Mack et al., 2019), which focuses on complex, non-canonical sentence structures and operates on the premise that training underlying, abstract, properties of language will allow for effective generalization to untrained structures that share similar linguistic properties, particularly those of lesser complexity. Transcranial Magnetic Stimulation (TMS) is a promising tool for neurorehabilitation that has utilized to target pathologies for therapeutic gains, including therapy for acquired disorders. Combined with behavioral treatment, in particular TUF, TMS could substantially amplify the beneficial effect of behavioral therapy alone (Thiel et al., 2013).

The current study investigates the combined effect of these two methods in neurodegenerative conditions. We use TUF and placebo-controlled rTMS over the left and right dlPFC in Slovenian-speaking individuals with AD. Participants are randomized to groups A (high-frequency 10-Hz rTMS) and B (placebo), followed by 60min of behavioral treatment (5 session/week, 4 weeks), using the TUF method. They are trained in comprehension of centre-embedded relative clauses of the type *The girl who the mom kissed holds the mirror*. Up to now preliminary data (Fig. 1) from 3 participants (1 with mild dementia, and 2 with moderate dementia) all of them from group A, showed a therapy effect for the participant with mild dementia both immediately as well as 2 weeks after therapy ($z=2.58$, $p=.01$). Participants with moderate dementia did not show any effect in the tested structures (overall main effect of therapy: $\chi2 =1.62$, $p=.44$ for the first patient and overall main effect of therapy: $\chi2 =2.25$, $p=.32$

for the second participant). The results are promising for the beneficial effects of behavioral therapy and rTMS in complex sentence comprehension, at initial stages of dementia, something which is demonstrated in the literature for the first time.
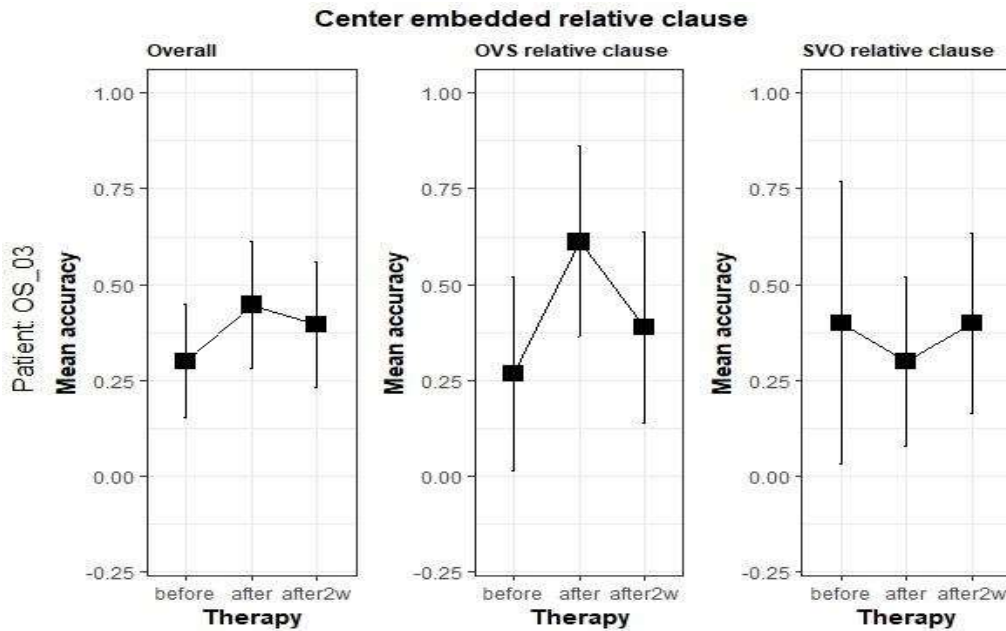
Center embedded relative clause
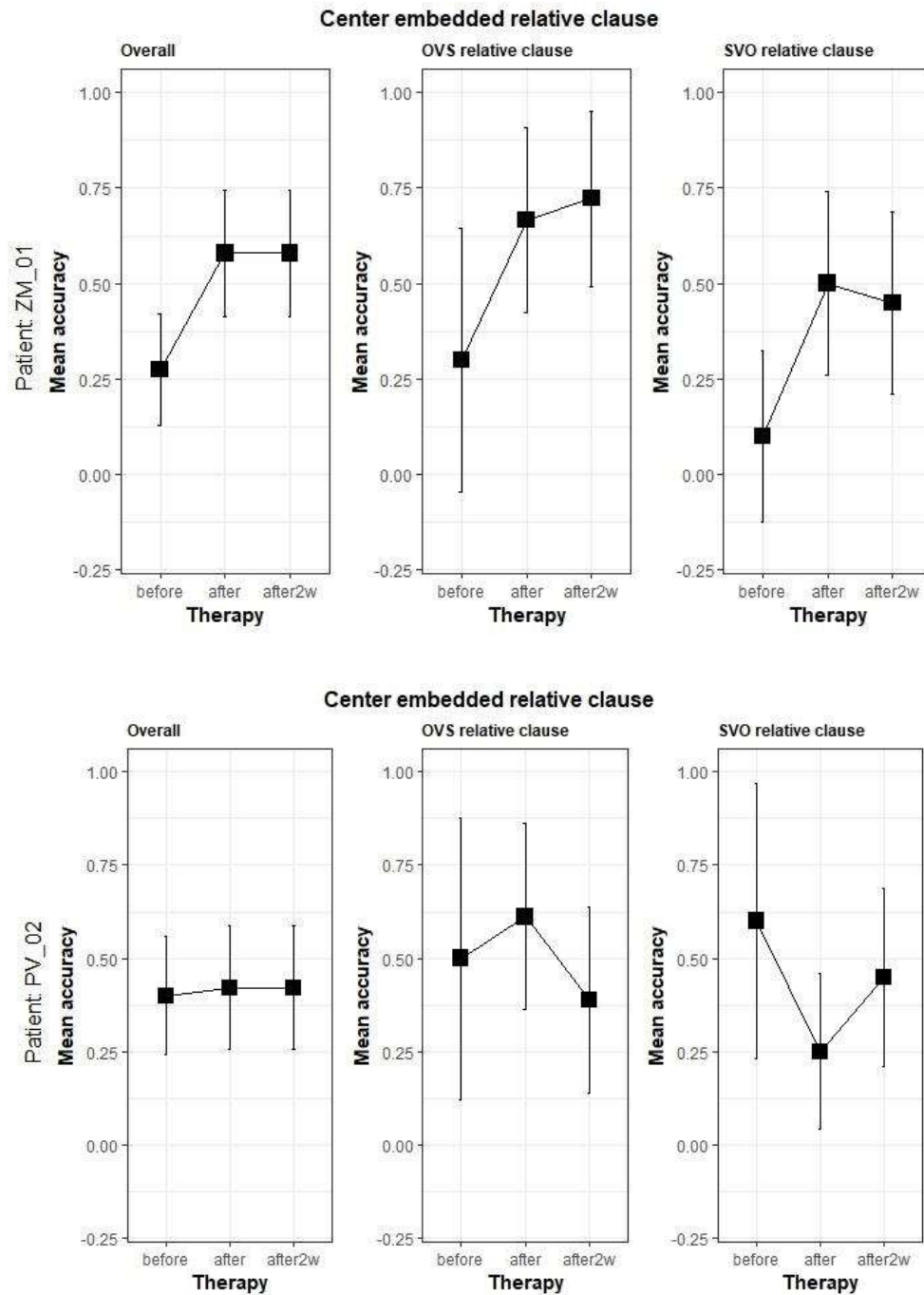
Figure 1. P1: mild dementia   P2: moderate dementia P3: moderate dementia

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Prefixation in a case of Neglect Dyslexia

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Information on lexical representation and processing can be obtained by observing how attention and lexical access interact in Neglect Dyslexia (ND). Spared morpho-lexical knowledge, in fact, has been shown to modulate the exploration of written material in ND (Semenza et al., 2011; Reznick & Friedmann, 2015). *Semantic transparency* and *stem boundedness* are lexical factors that may influence storage and processing of prefixed words in the mental lexicon (Marslen Wilson et al., 1994). Thus, the present study exploited the attentional deficit characterizing ND to investigate how prefixed words are processed and represented by the human cognitive system.

Patient ZE, 61 y.o., suffered a tumour lesion in the right posterior temporal lobe. He showed a left hemispatial neglect (BIT conventional: 40/146); additionally, clinical assessment and BIT behavioural (52/81) revealed ND. He was administered a set of prefixed and pseudo-prefixed Nouns (n=210) and Past Participles (n=115) to read aloud. *Stem boundedness* (bound vs. free) and *semantic transparency* (transparent vs. opaque) were considered in selecting prefixed words. Nouns were thus divided in four types: Bound Opaque (BO: *antipatia* - antipathy), Pseudo-prefixed (PP: *antichità* - antiquity), Free Transparent (FT: *antivirus* - antivirus) and Prefixed Non-Words (NW: *antimento* - antichin). Participles types were: Bound Transparent (BT: *condensato* - condensed), Pseudo-prefixed (PP: *continuato* - continued), Free Opaque (FO: *concentrato* - concentrated), and Prefixed Non-Words (NW: *conpiovuto* - conrained). Word length, word frequency, type of prefix and prefix frequency were matched across categories.

Confirming his ND diagnosis, ZE made, overall, a much higher number of errors on the left (96%) as compared to the right side (9%). Left sided errors were classified as either *morphological*, when respecting prefix-root boundary (*e.g.,* omission/substitution of prefix), or as *other* when they did not respect it (*e.g.,* partial/beyond prefix omission…). An overwhelming (χ^2 = 18.189, *p*< 0.001) prevalence of *morphological* over *other* errors was observed (Figure 1). Significant differences in distribution of errors across categories were however found (χ^2= 15.075, *p<0.05*): words likely represented as whole-units (i.e., PP, and, to a lesser extent, BO)

showed a lower proportion of morphological errors. In contrast, words likely stored as parsed (FT) or those lacking a lexical entry (NW), showed the higher rates of morphological errors.

These results provide evidence that attention to written material is modulated by lexical information and not just by orthographic information. Complex words are thought to engage two different stages in reading (Rastle & Davis, 2008). A pre-lexical *morpho-orthographic* segmentation, based solely on the analysis of orthography, would characterize the earliest stages of visual word perception. If attention is modulated just at this level, the effects of ND would have equally affected all categories of prefixed/pseudo-prefixed words and non-words. *Morpho-semantic* decomposition would characterize later linguistic processing. If attention to written material is, in addition, modulated at this later level, the effects of ND would influence the patient's performance in different word categories unequally: the leftward portion of words that are not decomposed, like PP, or less likely to be decomposed, like BO, would be less easily dropped. These results, by showing to what extent ND is sensitive to lexical factors engaged in higher-level processing of prefixed words, highlight the complex nature of this disturbance.
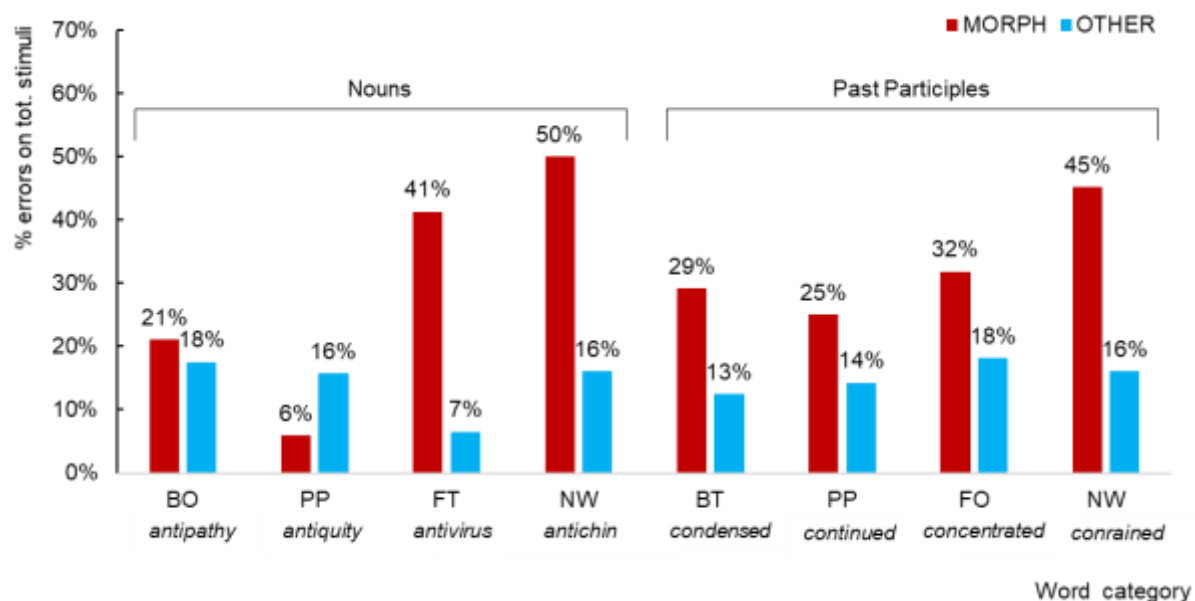

Figure 1. Results

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SESSION 2: APHASIA

Gender Agreement Processing in Transcortical Sensory Aphasia

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When mediated by both lexical and phonological decoding (Coslett et al., 1987), oral repetition in Transcortical Sensory Aphasia (TSA) has been shown to display linguistically informed altering of purposefully grammatically incorrect repetition stimuli (Whitaker, 1976; Davis et al., 1978; Berndt et al., 1987; Berthier et al., 1991; Berthier, 1995, 2001), with a tendency to correct grammatical errors during repetition in spite of the absence of semantic comprehension. The present TSA single-case study, conducted in Italian, investigated the processing of linguistic Gender agreement errors through a series of oral repetition tasks, with the purpose of: (i) investigating whether morphosyntactic and semantic abilities can be independently spared; and (ii) investigating whether Gender agreement errors are among the linguistic facts that sensitivity is retained towards, and if so, how.

The patient (TST) was a 78 y.o. female native speaker of Italian diagnosed as TSA, who sustained an ischemic lesion in the white matter in the left temporo-parietal and insular area. TST was administered 8 oral repetition tasks, each containing Gender agreement errors that occurred in either phrase condition (i.e. 'definite article + noun') or sentence condition (i.e. 'subject + nominal predicate'). These different conditions were formulated with the purpose of appreciating possible differences in the processing of the Gender feature in two different syntactic environments. A number of additional variables was introduced: animate/inanimate noun referents; Gender morphological (un)informativeness; common noun/proper name status; singular/plural and feminine/masculine nouns.

During repetition, the changes applied by the patient were almost exclusively corrective (82/96) and mostly followed a left-to-right strategy (75/82), meaning the Gender of words that preceded determined the Gender of words that followed in the phrase or sentence. Among the introduced variables, those that gave significant effects were: animate/inanimate noun referents and phrase/sentence agreement. Gender morphological (un)informativeness gave no significant effects, and neither did common noun/proper name status, singular/plural and feminine/masculine nouns (Table 1).

The findings indicate that: (i) in TSA, morphosyntactic and semantic abilities can be independently spared; (ii) in Italian, Gender could be accessed for the purposes of agreement only in the case of animate nouns. This suggests that, Gender-wise, inflection on animate nouns might be qualitatively different from that of inanimate nouns, whose inflectional suffixes and

related targets (i.e. definite articles referring to them) were never modified by the patient: while the morphology of animate nouns carries a Gender value, the morphology of inanimate nouns might be an expression of morphological Class only. In this study, the morphological realization of Gender sat on determiners, adjectives, and on animate nouns. Inanimate nouns did not seem to bear the morphological realization of Gender on themselves.

Table 1. Corrective changes across tasks 1-8

	Number of corrective changes
Task 1 *la ragazzo *theF boyM (60 items)	23
Task 2 *la biglietto *theF ticketM (40 items)	0
Task 3 *la bicchiere *theF glassM (40 items)	0
Task 4 *il ragazzo è alta *theM boyM is tallF (60 items)	16
Task 5 *il biglietto è vecchia *theM ticketM is oldF (60 items)	17
Task 6 *il bicchiere è piccola *theM glassM is smallF (60 items)	14

Task 7   9

Francesco è alta

FrancescoM is tallF

(40 items)

Task 8   3

Davide è bella

DavideM is beautifulF

(30 items)

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Parasynthetic verbs in Agrammatism

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The present Agrammatic Broca's aphasia single case study, conducted in Italian, investigated the processing of the linguistic phenomenon verbal parasynthesis. The study of word formation in agrammatism has in fact proved to be informative about the morphological composition of words in previous studies, with particular reference to prefixation, suffixation, derivation, inflection and compounding, (Semenza and Mondini, 2015; Ciaccio et al. 2020). The purpose of the present single case study was to shed light on three founding questions concerning the phenomenon of verbal parasynthesis in linguistics: (1) the order in which the prefix and the suffix are attached to their base (which is typical nominal or adjectival); (2) whether parasynthetic verbs all behave the same with respect to (1) or, whether they behave differently according to their semantics; (3) which is the affix that is responsible for making the nominal/adjectival base become verbal (transcategorization).

The patient AGK was a 49 y.o. female native Italian speaker who was diagnosed with Broca's Aphasia and consequent Agrammatism, incurred after a cerebral ischemia, in consequence of a superficial cranial contusion in the left occipital area. The patient was first administered 10 Reading Tasks, which were then re-administered for oral repetition. A total of 700 one-word stimuli were collected (350 one-word stimuli collected in reading and 350 one-word stimuli collected in oral repetition). The stimuli were divided between 5 different categories: parasynthetic verbs, double derivational stage verbs, prefixed verbs, prefixed with a derivational suffix verbs, suffixed verbs. Each of these categories was made of infinitive and inflected form.

AGK's performance in oral repetition was overall better than in reading (52/350 correct responses in reading vs 92/350 correct responses in oral repetition). Among different comparisons between Tasks, a significance was found in the ones comparing: parasynthetic verbs/double derivational stage verbs vs. prefixed verbs; parasynthetic verbs in the infinitive/double derivational stage verbs in the infinitive vs. prefixed verbs with a derivational+inflectional suffix in the infinitive/ verbs with a derivational+inflectional suffix in the infinitive.

With respect to (1), for instance, we established that prefixation in parasynthesis has to either precede suffixation or be simultaneous with it, whereas the hypothesis about prefixation following suffixation was excluded. As for (2), we noticed similar performances on parasynthetics and double derivational stage verbs, also with respect to the number of prefix omissions. While these results seem to point in a non-differentiation direction, the number of errors on the root differed among the two categories, which forces us to acknowledge that the different semantic content of the prefixes employed in both verb formations is a theoretical assumption that has empirical reality in the human brain. As for (3), an analysis of errors on suffixes of different verb types, seemed to point towards considering the infinitive suffix of parasynthetic/double derivational stage verbs as inflectional and not derivational. While these findings are by no means final, they might be worth being taken into account when attempting an analysis of verbal parasynthesis in Italian.

Table 1. Examples

Scalise (1986)

[Pref. [[X] N/Adj Suf.]V]V

Parasynthetic verbs are a single category formed in two steps: first derivational suffix, then prefixation.

Alcoba (1987)

[[[Pref.] [X] N/Adj] N/Adj Suf.]V

Parasynthetic verbs are a single category formed in two steps: first prefixation, then derivational suffix.

Corbin (1987)

[Pref. + X N/Adj]V

No parasynthesis: simple prefixation with prefix that changes the base.

Iacobini (2004)

[Pref. [X] N/Adj Suf.]V

Parasynthetic verbs formed with a simultaneous attachment of prefixes ad- in- s- and inflectional suffixes; Double derivational stage verbs formed in two steps by prefixes de- dis- s and inflectional suffixes.

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Temporal overlap between gestures and speech in post-stroke aphasia:
Is there a compensatory effect?

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Gestures have often been argued to compensate for linguistic deficits in people with aphasia. However, the picture is far from clear-cut as previous findings of the compensatory effect have suffered from experimental design limitations in gesture elicitation, failure to distinguish gesture types, and a lack of clarity in defining gesture compensation. The compensatory hypothesis naturally predicts that gesture is a representational system conveying thought content that would not necessarily be manifested in speech. Here we tested this prediction among 15 people with Broca's aphasia (PWBA) and 15 people with Wernicke's aphasia (PWWA) matched in aphasia severity and years of age. An annotation scheme was created distinguishing types of gestures and whether they co-occurred with fluent or dysfluent speech, and were aligned in content with co-produced speech. The results showed that across aphasia types, non-content (beat) gestures constituted the greatest proportion of all types of gestures produced, and that content gestures were largely co-produced with fluent speech, which moreover tended to be aligned with the content conveyed in language. Gestures did not differ in quantity depending on whether the dysfluencies were eventually resolved or not. Correlation analyses further showed that neither aphasia severity nor comprehension ability had an impact on the total amount of content gesture produced. The overall pattern of these results suggests that gestures are unlikely to have a role in compensating for linguistic deficits and to serve as a representational system conveying content independent of language: aphasia rather is a model of how gesture and language are inherently integrated.

Keywords: Broca's aphasia, Wernicke's aphasia, spontaneous speech, gesture, compensatory effect.

Disfluency patterns in the connected discourse of individuals with agrammatic aphasia

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Fluency disturbances such as pauses, false starts, self-corrections, abusive use of fillers, pragmatic operators and repetitions, are frequent in the speech output of individuals with agrammatic aphasia. Together with grammatical omissions and substitutions, this key feature crucially contributes to a better understanding of both impaired and strategic language use (Kolk & Heeschen, 1990; Kolk, 2006). Fluency is a highly sensitive indicator susceptible to both inter- and intrasubject variability. Whereas intersubject variability may be linked to aphasia type, across-task intrasubject variability may be determined by the use of differential adaptation strategies related to the amount of focus on form, which may enable a better grammatical accuracy under certain conditions (Sahraoui & Nespoulous, 2012). Crucially, corrective strategies are only possible for patients with a preserved ability to detect errors and monitor their speech production (Postma, 2000; Oomen, Postma & Kolk, 2001).

Under this view, we hypothesize that agrammatic patients, generally having minor comprehension deficits, may over-use monitoring skills in language production at a pre- or post-articulatory stage and that monitoring, and consequently the trade-off between (dis)fluency and morpho-syntactic well-formedness, can vary in function of the type of task (Sahraoui, 2014). To delve into this phenomenon both in connected discourse and isolated sentences, we looked at the temporal aspects and fluency disturbances in 5 French-speaking individuals with agrammatism and 9 controls across 4 tasks (spontaneous speech, narratives, picture description and sentence production).

The analysis of speech and articulatory rate, pause duration and distribution, overt errors (e.g. incomplete words), dysfluencies (e.g. false starts) and repair strategies (self-corrections, revisions) showed that isolated sentence production and connected discourse diverge at different levels. First, the sentence production task yielded higher morpho-syntactic accuracy and complexity outcomes, whereas connected discourse tasks included more frequent omissions of grammatical morphemes. Second, differences were found as for the pattern of pauses and fluency disturbances with a significant increase in the number of dysfluencies and more revisions in sentence production. Across discourse tasks, narrative and picture description tasks showed a similar pattern, contrary to spontaneous speech, which included less frequent and shorter pauses as well as fewer self-corrections.

Accuracy and fluency are constrained by the type of deficit, but also by flexibility and adaptation procedures when encoding discourse or isolated sentences. Adaptive behaviour is

an essential feature of agrammatic speech. This is confirmed by the omissions or "preventive adaptations" (pre-articulatory), commonly observed in more flexible tasks such as spontaneous speech, and by the "corrective adaptations" (post-articulatory) observed in sentence production, where the complexity and accuracy requirements imposed by the task lead to fluency issues such as longer pauses and self-interruptions. The intervention of pre- or post-articulatory speech monitoring and executive functions can then account for the trade-off between fluency and grammatical accuracy across tasks in relation to different (dys)fluency patterns.

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Acknowledgments

SESSION 3: PROCESSING

Processing of tense and aspect violations: a self-paced reading study

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Tense and aspect provide information about the temporal course of an event (Quirk et al., 1985; Binnick, 1991; Smith, 1991; 1997; 2013). Essentially, this information is semantic in its nature: tense locates the event in time, while aspect describes the internal temporal contours of the event (Comrie, 1976; 1985). We investigated the processing of tense and aspect violations in a self-paced reading (SPR) experiment. The experiment was followed by a binary offline grammaticality judgment task.

To investigate tense violations in Bosnian/Croatian/Serbian (BCS), we designed the sentences so that the perfect periphrastic verb form with past time reference violated the future time frame of the sentence as in (1). In sentences with aspect violations in BCS, the perfective verb form violated the real present time frame of the sentence as in (2).

The SPR experiment showed that tense violations are not detected at the non-finite participle of the perfect periphrastic verb form. However, they are rejected at the end-of-sentence grammaticality judgment task. Similarly, in an ERP study using the same type of tense violations, Tokmačić and Popov (2019) did not observe a P600 or any other ERP component suggesting that native speakers process tense violations. However, the SPR experiment showed that aspect violations are detected immediately at the verb. Offline grammaticality judgment data further confirmed that the use of perfective verb forms in real present contexts is deemed as an unambiguous violation.

We argue that differences in processing tense and aspect relate to inherent features of these two systems in BCS. The immediate effect of aspect violations occurred because of the saliency of aspect violations. That saliency is the result of the different distribution of imperfective and perfective aspect in the present time frame– the perfective cannot be used in the real present context. The absence of online effects for tense violations was suggested to be caused by the flexibility of the tense system of BCS: even though it is its canonical use, the past tense does not necessarily convey past time reference in all contexts. We argue that the parser may not have registered the perfect periphrastic form as a violation of the future time frame of the sentence because the perfect periphrastic form can also express future time reference in restricted contexts. Following Swinney's (1979) finding that all the meanings of a lexically ambiguous word are activated upon its encounter (even in biased contexts that strongly favor

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one interpretation over the other), we argue that initially, the parser activated all meanings of the past inflected verb form. However, after the sentence has been processed, only the relevant interpretation remained which is why tense violations were rejected in the grammaticality judgment task.

Examples:
(1) *Sutra   je   pedagog   pozivao   roditelje na razgovor.
     Tomorrow AUX$_{PRS}$ counselor   invite$_{PTCP.IPFV}$ parents   on talk
    '*Tomorrow the counselor was inviting parents on a meeting.'
(2) *Učiteljice trenutno   upišu   ocjene u dnevnik.
     Teachers   currently   write$_{PRS.PFV}$ grades in gradebook
     '*Teachers currently write grades in the gradebook.'

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Is binominal *each* a distributive-share marker?

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Binominal *each* is a type of a floating *each,* often classified as a distributive-share (DistShare) marker (or a distance-distributive marker).[6] Unlike determiner *each* (1a), on the surface, binominal *each* appears to attach to the argument that is being distributed (*goat*) (1b), similarly to other DistShare markers (e.g., *po* in Serbian (1c)), but it is still semantically associated with the DistKey argument/the restrictor (*the girls*). In fact, it is also claimed that binominal *each* is a relational 1-to-1 quantifier that relates both NPs it is associated with - hence the name (Safir & Stowell, 1988).

A crucial property of DistShare markers is that they allow event-distributive readings – meaning that distribution is done over events, or spatial and temporal locations, in addition to distribution over individuals/atomic entities (Champollion, 2016; Zimmermann, 2002). However, there is no clear evidence whether binominal *each* can also distribute over events, which is not a trivial question.

There is recent evidence that determiner *each*, a DistKey marker that should only allow distribution over atoms/individuals, can also allow collective readings. This was experimentally shown in English and in Dutch (Koster, 2021; Rouweler & Hollebrandse, 2015). Namely, in their judgement tasks, participants had high acceptance rates of collective readings (Figure 1a) with determiner *each* (ranging between 35% and 45%). These findings challenge the strong distributive and atomic requirement previously established for determiner *each* (Tunstall, 1998; Champollion, 2016; Zimmermann, 2002). It was found that these unusual results are related to the type of verbs used, which are referred to as *independent* and *dependent* verbs (Koster, 2021).

Independent verbs are verbs that describe situations in which each agent/subject can act in a separate subevent, regardless of the number of objects involved, while dependent verbs allow situations where the agents are dependent on each other to complete the action. Independent verbs were precisely the type that had the high acceptance rate for collective scenarios. It thus seems that determiner *each* can, in a way, distribute over events, rather than objects/individuals if there is a salient method of distribution (e.g., different spatial locations of the goat that is being brushed).

We tested sentences with binominal *each* with 33 English native speakers (19 f/13 m/1 unknown; MA: 43.9), paired with collective and distributive scenarios and, crucially,

distinguishing between independent (*brush*, *wash*) and dependent (*pull*, *carry*) verbs. If binominal *each* is a type of DistShare markers, it should allow (some type of) event distribution, so collective scenarios should be accepted, just like for determiner *each.* If, however, binominal *each* is a relational 1-to-1 quantifier that depends on both nominals in a sentence, it should only distribute over the individuals and not events. This would suggest binominal *each* is a quantifier that imposes stricter restrictions and should be considered a true atomic quantifier (more so than determiner *each*).

Our results suggest the latter (Figure 2) - binominal *each* is strongly atomic, and it may be simply a relational quantifier. The only similarity with DistShare markers would be the apparent syntactic attachment to the DistShare argument, but this is not a sufficient criterion for considering binominal *each* as a DistShare marker, given the range of interpretations other DistShare markers allow. Our study thus provides novel experimental arguments for those analyses that take binominal *each* to (underlyingly) form a constituent with the DistKey.

(1)   a. *Each* girl is brushing a goat.

         b. The girls are brushing a goat *each*.

         c. Devojčice   četkaju *po*   jednu kozu.

          girl.PL   brush   DIST   one   goat.ACC

      a.   Collective scenario   b.   Distributive scenario

Figure 1: Two most dominant interpretations to sentence (1)
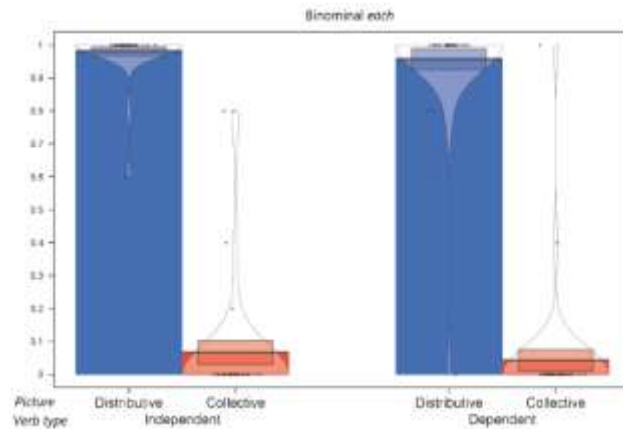
Figure 2: RDI plot for the experiment with binominal *each*, with standard errors. Bars show aggregate acceptance rate, lines show the distribution of answers, and each dot represents the mean of an individual participant's answers.

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Neural correlates of collocation processing

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Collocations have been studied extensively for decades now. These studies include offline tasks, e.g., multiple-choice, cloze test, as well as online behavioural tests such as eye-tracking, phrasal decision task, etc. Often, collocations are contrasted to artificially created non-collocations to study the possible differences in processing (Matsuno, 2017; Yi, 2018). However, until now there has been very little evidence of how collocations are processed in the brain. In particular, there are two studies that managed to scratch the tip of the iceberg. Molinaro & Carreiras (2010) found an increased negativity in the N400 time interval for the final word in figurative collocations as compared to literal ones, suggesting that processing figurative meanings in collocations presents higher processing load. In addition, Hughes (2018) established a larger N400 for non-collocational bigrams in comparison to collocational ones. Yet, the available studies often employ a rather broad definition of collocation and/or use unnatural paradigms.

The present study taps into how collocations are processed in the brain by using the EEG technique. From the multiple readings of collocation, here collocations are defined by corpus-derived measures (like strength of association). Unlike previous studies, this paper examines collocations within continuous speech signal, which presents an ecological task. Participants listened to a 40-minute German audio book where two types of items, i.e., collocations and non-collocations, appeared. Contrary to the original expectations and findings in previous literature, the results of permutation tests show that collocations (e.g. *niedriger Blutdruck*) display a larger negativity in the N400 time window compared to non-collocations (e.g. *stillvoller Verlierer*). Besides, collocations turn out to be associated with larger negativities in the right-anterior area.

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Facilitating syntactic repair:
The role of context in processing subject-verb agreement violations

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Findings from self-paced reading studies demonstrate that certain characteristics of the preceding context shape how readers process locally ambiguous sentences. Specifically, context that biases readers towards the non-preferred parse facilitates syntactic reanalysis (Hoeks et al., 2002; Spivey-Knowlton et al., 1993). The present study examines whether context has a similar facilitative effect on the syntactic repair of agreement violations in Serbian. In sentences with violations of subject-verb number agreement (Example 1), the parser reaches a coherent sentence representation through syntactic repair (Molinaro et al., 2011). We could consider the repair process to consist of different stages: after the parser detects the mismatch in number values, it first decides on a number value to apply to both subject and verb and then corrects one of the values and inflections in the sentence representation. The parser thus has two repair options: it can modify the inflection on the noun ($foxes_{pl} > fox_{sg}$) or the verb ($stalks_{sg} > stalk_{pl}$) (Popov & Bastiaanse, 2018). If the preceding context disambiguates the intended numerosity of the subject noun, it should help the parser to eliminate one of the repair options by signalling that the verb is the element with the incorrect inflection. The present Internet-based self-paced reading experiment had a 2x2 within-subject within-item design, manipulating context sentence type (disambiguating; neutral) and target sentence grammaticality (grammatical; ungrammatical). The context sentence was considered disambiguating if it contained the target sentence subject noun (Example 2) and neutral if it did not (Example 3). In the presence of neutral context sentences, we expected a pattern similar to repair in null contexts: longer reading times for ungrammatical than for grammatical target sentences at the critical disagreeing verb and/or the following word (De Vincenzi et al., 2003). In the presence of disambiguating context sentences, we expectedthe repair to be facilitated, as reflected in shorter reading times for ungrammatical sentences with disambiguating context compared to those with neutral context. Reading times for the verb and postverbal preposition were analysed using linear mixed models. Results showed that disambiguating context did not facilitate repair. All verbs were read more slowly in ungrammatical than in grammatical sentences ($p<.001$), regardless of whether the context cued the intended numerosity, as the interaction between context type and grammaticality was not significant ($p=.28$). At the

following word, neither the effect of grammaticality (*p*=.19) nor the interaction with context were significant (*p*=.10). There are two possible explanations for such findings. Firstly, syntactic repair may operate on an intra-sentential syntactic level, unable to utilize extra-sentential cues. Alternatively, it is possible that context did in fact facilitate repair by eliminating one of the repair options. However, the facilitation remained undetectable in the reading time data, either because this subprocess (i.e., selecting one out of two repair options) is less resource-demanding than the subprocess of modifying number values and inflections in the sentence representation or because of sensitivity limitations of the employed technique.

Examples:

1 *The cunning foxes <u>stalks</u> the unsuspecting rabbits.

2.   Disambiguating context sentence and grammatical target sentence

Devojčica   posle   kiše   gleda   gusenic-e   u   dvorištu.
girl   after   rain   look.at caterpillar-ACC.PL   in   garden
'The girl looks at the caterpillars in the garden after the rain.'

Gusenic-e   polako   puz-e   uz   vlažni oluk.
caterpillar-NOM.PL   slowly   crawl-PL   up   wet   gutter
'The caterpillars slowly crawl up the wet gutter.'

3.   Neutral context sentence and ungrammatical target sentence

Devojčica   posle   kiše   gleda   oluk   u   dvorištu.
girl   after   rain   look.at gutter-ACC.SG in   garden
 'The girl looks at the gutter in the garden after the rain.'

Gusenic-e   polako   puzi-Ø   uz   vlažni oluk.
caterpillar-NOM.PL   slowly   crawl-SG   up   wet   gutter
'The caterpillars slowly crawls up the wet gutter.'

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POSTER PRESENTATIONS

Is there a processing preference for *object* or *subject* relative clause in Chinese?
Evidence from memory-load interference task

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Head-initial languages, such as English, have consistently shown that subject relative clauses (SRCs) are easier to comprehend than object relative clauses (ORCs). However, several reports from Mandarin Chinese, a head-final language, have provided conflicting results. Thus, in the current study, we conducted two novel memory-load interference experiments to examine the auditory comprehension of Chinese relative clauses. In Experiment 1, an external memory load (digit-recall) interference study, participants remembered differing digit numbers while self-paced listening SRCs and ORCs. The memory-load ranged from 0, 3, and 5 digits were manipulated. In experiment 2, an internal memory load (Lexical Decision Task and word-recall) interference study, participants decided on the interfering word to be a word or a non-word while self-paced listening to SRCs and ORCs, and had to remember the word encountered till the end. Performance reveals that (a) online measure of listening times does not show SRC or ORC processing advantage, and that (b) there was greater SRC impairment than ORC in the end-of-sentence comprehension. These results have clear implication about the extent to which syntactic processing is modular, supported by memory resources specific to language, and also for our understanding the nature of working memory involved in language comprehension, particularly in Chinese RC listening comprehension. With respect to specialization of working memory in language processing, the results indicate that participants are equally impaired in their ability to assign syntactic structure and to use it to determine aspects of sentence meaning when listening to Chinese SRCs and ORCs, despite their reduced working memories due to concurrent memory load. This provides evidence for a specialization within working memory for syntactic processing.

With regard to the end-of-sentence comprehension, that participants took longer to respond to SRCs and had lower comprehension question accuracy on SRCs suggests that in sentence final position, retrieving the representations in the thematic/discourse units of Chinese SRCs is more demanding than of ORCs. In contrast, for the lexical/digital representation to be retrieved in the online processing, it required similar demands for both Chinese SRC & ORC, therefore no sentence type effect was observed along the sentence and showed no RC processing asymmetry. All this adds to that digit, lexis, thematic roles in discourse are represented in different levels of activation. At the post-sentence phase, listeners were required to reorganize and maintain the linguistic materials to answer the comprehension

questions and recall the digits/lexicon. Therefore, sentence final comprehension difficulty does not represent an online sentence processing difficulty. Using the interference task, the Chinese RC processing is measured and plotted into a paralleled but fluctuating configuration. Putting all RT data in the current study together, the nonsymmetrical and dynamic patterns of Chinese RC processing is schematized as a waveform in Figure 1, which shows there is no RC processing asymmetry but some processing advantage fluctuating at certain regions across the experiments. Our results pose a challenge to the universality of the SRC preference assumed by the structural distance hypothesis and highlight the values of cross-linguistic processing research which takes working memory involvement into consideration.
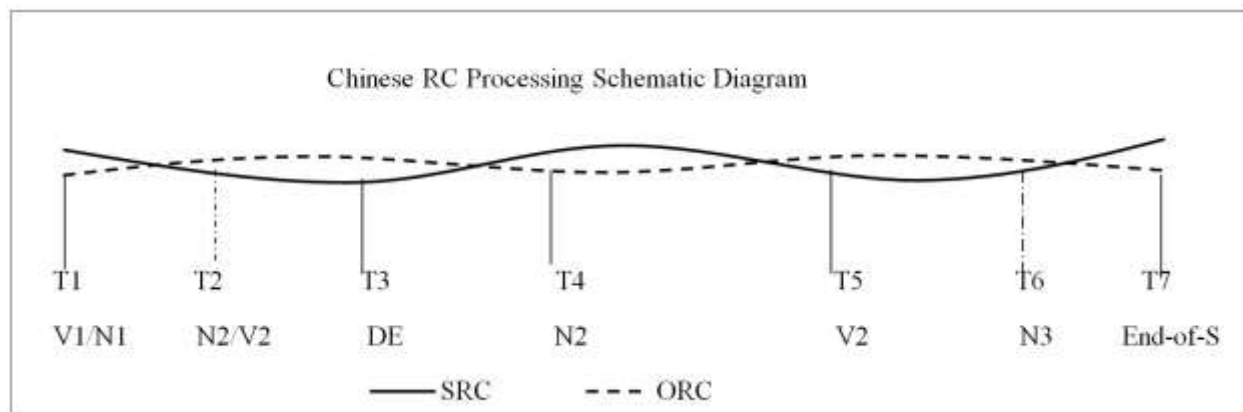
Fig. 1. Chinese RC processing schematic diagram

A Poem set to Music – Perception of a Complex Semiotic Object

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Language and music are human universals involving perceptually discrete elements organized in hierarchically structured sequences (Jentschke, 2005). Given their similarities, a joint research can strongly contribute to the knowledge of each separate domain and give an encompassing account of the human cognitive processing of any sign system. In the past decades, this topic has gained a significant scientific interest and my research therefore draws on the latest findings from cognitive sciences and neurosciences. There is copious evidence for the intricate relationship of syntax processing in language and music, yet a considerable lack of studies focusing on the semantic processing (Koelsch, 2006). Linguistic semantics seem to be more difficult to address experimentally and that is why the research of musical processing can be of help, since overlapping brain areas for the processing of both musical and language meaning have been suggested (Steinbeis & Koelsch, 2008). A song, compound semiotic construction, permits the use of interference paradigm that appears to be a promising approach to study whether music and language processing interact or not (Schön & Morillon, 2019). I conduct this research in order to test the initial hypothesis that in semantic appraisal of such a multidimensional object, the musical meaning prevails, despite the fact that there have been studies suggesting otherwise (Bonnel et al., 2001; Besson et al., 1998). Given that the perception of a song engages overlapping neural substrates and mechanisms for the processing of both music and language, it seems plausible to expect transfer effects between the two domains. The foreseen EEG and behavioral studies, comprising an appraisal and matching task, which due to the pandemic could not yet take place, use the poems put to music by Boris Vian as stimuli and explore the extent to which language and music compete for processing resources. Only few studies in this domain have been conducted using songs, and yet the use of such ecological stimuli seems necessary to uncover the true nature of brain's processing of meaning in both language and music (Fitch, 2015). Preliminary findings suggest at least partly overlapping processing mechanisms and hint at the influence the musical element exerts on the processing of linguistic meaning. Musical accompaniment provides additional contextual information and in spite of being at an early stage of the research, the findings seem to suggest its power to override linguistic semantics. The hypothesized result is therefore that musical semantic reference is perceived as predominant. I hope to shed light on the different perceptual and cognitive operations underlying this effect. In the presentation I will also outline

the methodological challenges that a researcher faces when examining a compound perceptual object.

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Form and meaning priming effects in native speakers of Mandarin Chinese with English as their second and Norwegian as the third language

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In four experiments, form and meaning priming effects in native speakers of Mandarin Chinese with English as their second and Norwegian as the third language were investigated with a series of lexical decision tasks under cross-linguistic priming paradigm. Form refers to two words that sound like each other, but do not share the same semantics, whereas meaning refers to two words that share the same semantics but do not sound like each other.

The form and meaning influences across languages were tested through four categories: cognates (+meaning, +form), false friends (-meaning, +form), translations (+meaning, -form) and unrelated (-meaning, -form). By using the same stimuli, experiments 1 and 2 examined the interaction between Chinese and Norwegian (i.e. L1 and L3). The priming effect was confirmed for meaning-related word pairs, but only when primed by Chinese words. Neither meaning nor form effect was demonstrated when primed by Norwegian words. Adopting the same paradigm, experiments 3 and 4 investigated the influences of meaning and form on lexical reaction times between Chinese and English (i.e. L1 and L2). Priming effects for meaning-related pairs (i.e. cognates and translations) were observed from both Chinese to English and the reverse direction, whereas form priming effect was found only when primed by English primes. Chinese nonwords were faster to decide than alphabetic language groups in all conditions. This is interesting since a word superiority effect predicts faster responses for words (Paap et al., 1982). It is possible that Chinese non-words may be decided without phonological encoding, which is necessary for lexical retrieval in alphabetic languages.

The results are in line with previous findings that lexical items in different languages are processed through semantic connections. Stronger facilitation in word recognition was found for meaning-related words than form-related words. Priming asymmetry was also observed that larger effects of priming from L1 to L3 (Chinese to Norwegian) than from L3 to L1, meaning advantage was found from both L1 to L2 (Chinese to English) and L2 to L1. Form priming effects were confirmed only from L2 to L1 (English to Chinese), suggesting that proficiency might play a role in lexical access. Besides, learning process may be another reason to be accounted for, as all participants had learnt English phonemes individually before learning to read, whereas they have learnt Norwegian by mapping the letters to sounds directly under English instructions. However, this needs further testing.

As for discrimination of nonwords, fast and accurate decisions on Chinese nonwords suggests that different routes or analytical skills might be involved in recognizing Chinese characters and the alphabetic string of letters. For Chinese, lemma can be activated through the combination of radicals or semantic radicals before phonological encoding.

The influence of word properties on the effectiveness
of second language vocabulary learning methods

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Second language (L2) vocabulary learning is influenced by factors such as the learning method, learner's characteristics and word properties (Tonzar et al., 2009). The details of the interaction between these factors have still not been adequately defined since research in this area has for a long time been focused predominantly on few types of words, mostly concrete nouns. However, recent work across a broader range of specific word categories suggests that different word properties, both within and across languages, lead to differences in processing, learning and representing of L2 words (Martin & Tokowicz, 2019; Butler, 2019; Comesana et al., 2012).

To investigate how different L2 vocabulary learning methods influence learning of different types of words, this study manipulates several factors. The learning methods observed include text-based and picture-based learning. In terms of linguistic word properties, this study focuses on the difference in the word classes between nouns, verbs and prepositions, since there is emerging evidence that they are grounded in different ways (Markostamou, 2017). Cross-linguistically, words from L2 will vary between presenting either concepts that exist in L1, or concepts that do not exist in participants' L1, in which case conceptual restructuring is required to take place during the process of learning (Jarvis & Pavlenko, 2010).

Native English-speaking participants aged between 18 and 25 will be exposed to multiple screen-based learning sessions. During the sessions they will hear target pseudo-words within sentences that provide the context needed for learning and creating of new concepts. The sentences will be presented along with either a corresponding picture or a written translation of the sentence. Production and recognition tasks will be introduced after each learning session and again after a one-week delay to obtain comprehensive data about the learning curve across conditions. In addition to that, participants will be controlled for their cognitive, visuospatial and verbal abilities to account for individual differences that might influence the word learning.

In accordance with the Dual Coding theory (Pavio & Csapo, 1969), embodiment theories and models (Craik & Lockhart, 1972; Klimesch, 1987) and previous research (Morett, 2019) it is expected that learning with images will lead to overall better learning outcomes compared to the text condition. However, we hypothesize that its efficiency will vary between the word

classes, which would indicate that there is a difference in grounding mechanisms of particular words which influences the learning process.

Studying the nature of word learning processes across different word types can be a step towards understanding how words are represented, processed and conceptualised and how they interact with different modalities during the initial learning phases. This understanding could potentially also have practical implications by leading towards increased optimisation of second language vocabulary learning methods and resources. This study can be further developed to include gestures as a learning modality and to be implemented across different age groups.

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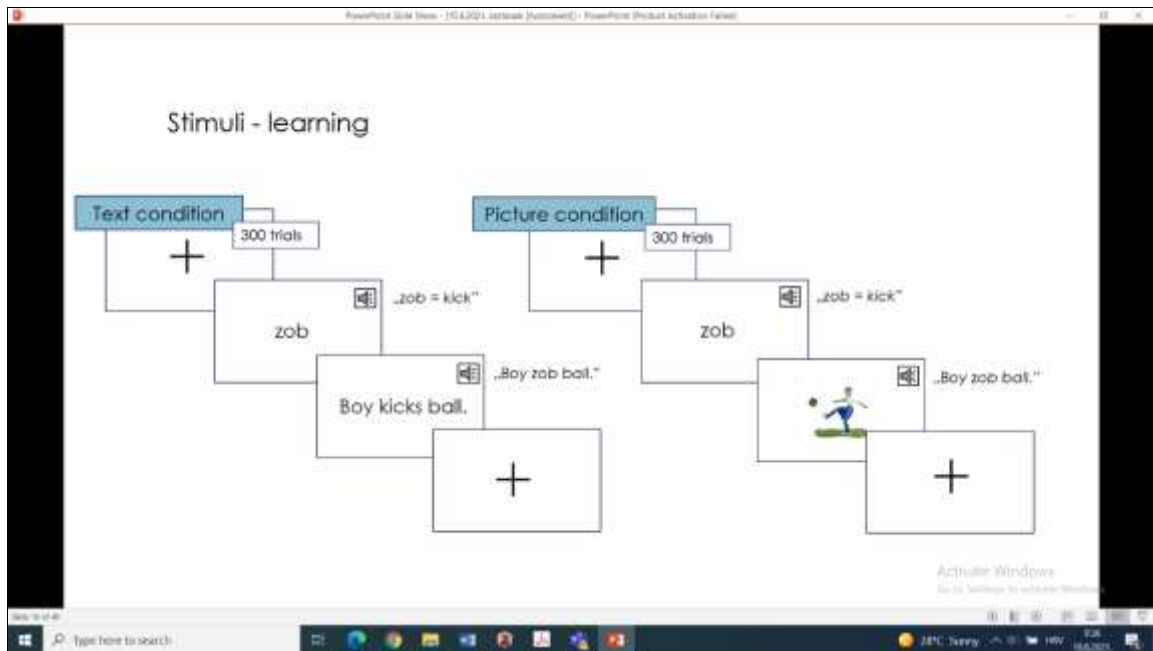Tonzar, C., Lotto, L., & Job, R. (2009). L2 Vocabulary Acquisition in Children: Effects of Learning Method and Cognate Status. *Language Learning*, 59(3), 623-646. https://doi.org/10.1111/j.1467-9922.2009.00519.x

Figure 1. Example of the vocabulary learning session in both conditions

Language faciliates category learning-From different perspective
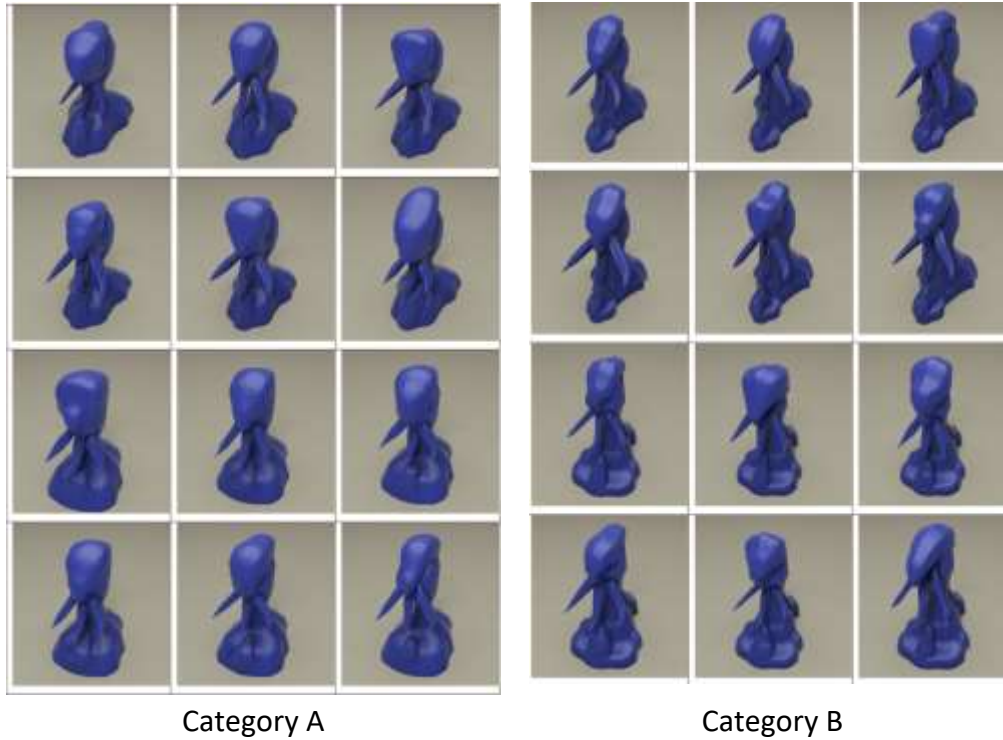
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Linguistic relativity has always been curious about the relationship between language and thought. One hypothesis has been established to clarify most of the principles of how language affects our thought. The Label-Feedback Hypothesis (Lupyan, 2012) proposed that language indeed affects the way we think. The current study is a combination of two experiments, category learning task and visual search task. In the category task, we aim to explore whether redundant label facilitates novel category learning. By separating participants into verbal and non-verbal group, we compared their accuracy rate and reaction time towards the novel category. The hypothesis is that if participants are facilitated by language, then the labeled the group will show an advantage in the learning and the teasing phase. However, there was no significant difference between the labeled group and the non-labeled group. The second experiment inherited the participants from the previous experiment and we performed a shape discrimination task. In this task, participants were required to name the category name first and then continue with the visual search task. According to the hypothesis, participants who acquired the category from the first experiment will show an advantage in their right visual field in discriminating between-category due to language facilitation. And for the non-labeled group, contrary to our expectations, the experimental data showed that both groups showed a lateralized Whorf effect in their right visual fields. The result is not consistent with the hypothesis proposed previously. However, this result indirectly revealed that all the participants applied linguistic labels to facilitate their learning process. Therefore, the results confirmed that linguistic relativity is a tenable principle, while it remains to be explored whether the redundant label facilitates the learning process.
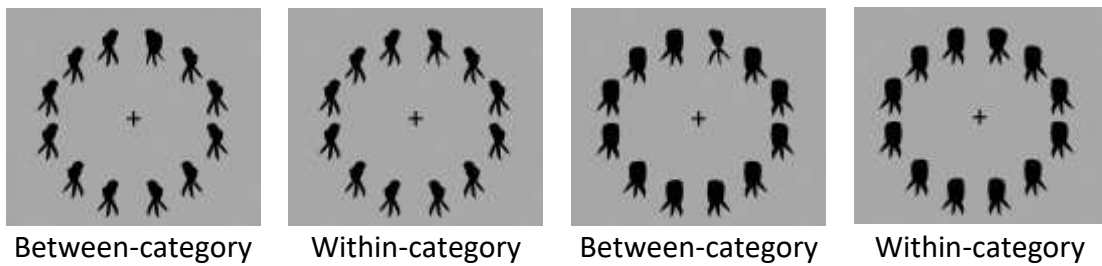
Keywords: linguistic relativity, categorization, lateralized Whorf effect

Stimuli

1.1 Category learning task

Category A   Category B

1.2 Visual Search Task

Between-category   Within-category   Between-category   Within-category

2. Data
2.1 Category Learning Task
2.1.1 Category learning Accuracy rate
2.1.2 Category learning Reaction time
2.1.3 Category learning generalization Accuracy rate
2.2 Visual Search Task
2.2.1 Naming Task Accuracy rate
2.2.2 Visual Search task Reaction Time

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Different Types of Russian Adjectival and Verbal Polysemy in the Mental Lexicon

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Many studies of polysemy suggest that senses, highly related to the literal (metonymies), are stored together with them in the mental lexicon. More distant senses (metaphors) are stored as separate entries (Klepousniotou et al., 2008). This approach does not account for different types of metaphors and metonymies with variable degrees of relatedness to the literal sense. Our hypothesis is that different degrees of relatedness will shape different patterns of storage in the mental lexicon, as well as different processing. To verify this hypothesis, we ran two experiments.

The first experiment investigated the storage of different metonymy types in Russian adjectives. The participants (1485) were asked to classify sentences representing literal senses, two types of metonymies (proximal and distal), and metaphor into different groups. Proximal (i.e., strongly related to the literal sense) metonymy was represented by the whole-for-part shift, such as *umnyj chelovek* 'intelligent person' => *umnye glaza* 'intelligent eyes'. Distal (i.e., less related to the literal sense) metonymy comprised temporal (*golodnyj chelovek* 'hungry person' => *golodnyj god* 'hungry years') and causal (*radostnyj chelovek* 'happy person' => *radostnyje novosti* 'happy news') shifts. We measured the pairwise similarity between data clusterings of senses using Adjusted Rand Index (Pedregosa et al., 2011). We found the following pattern of misgroupings: proximal metonymy is grouped with the literal sense most frequently, distal metonymy significantly less so, and metaphor very rarely. This suggests single-sense storage for proximal metonymy, hybrid storage for distal metonymy, separate storage for metaphor.

The second experiment investigated the processing of proximal and distal metaphors in Russian adjectives and verbs. Proximal metaphors are based on transparent similarities (*dikaja devochka* 'uncultured girl; lit. wild girl'; *vesti stranu k katastrofe* 'to lead the country to disaster') and are more related to the literal senses. Distal metaphors are highly abstract senses with weaker sense-relatedness (*dikaja ustalost* 'great tiredness; lit. wild tiredness'; *vesti urok* 'to give a class; lit. lead a class'). Participants (320 for adjectives, 116 for verbs) were given a timed reading task with a sensicality judgment to compare reaction times and sensicality evaluation for two pairs of adjectival phrases: with literal senses vs. proximal metaphors and with literal senses vs. distal metaphors. Verbs were represented within sentences, with all three sense types for each verb. The results were analysed with 'lme4' (Bates et al., 2015). Proximal metaphoric senses require significantly more time for comprehension than corresponding literal senses and are more likely to be rated as nonsensical. High frequency distal metaphors are processed with the same speed (in verbs) or faster (in adjectives) than high frequency literal senses and are also as rarely rated nonsensical. This

suggests different processing strategies: high frequency distal metaphors, due to their lexicalization, are processed as single units, while proximal metaphors have compositional processing which involves accessing the literal senses and requires more time.

Our findings speak in favour of representing polysemy as a continuum where different types of metaphor and metonymy have varying levels of relatedness to the literal sense and hence different patterns of storage and processing.

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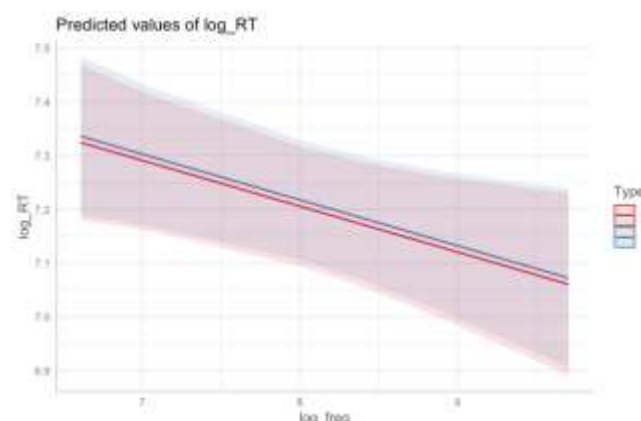
Acknowledgments

Visuals

Figure 1. Dependence of processing time (Y-axis) on the type of shift and frequency (X-axis) for adjectival high-frequency literal senses (0) and proximal metaphors (1)
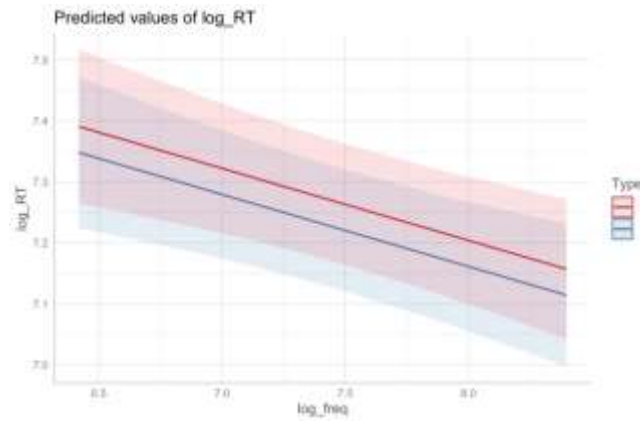
Figure 2. Dependence of processing time (Y-axis) on the type of shift and frequency (X-axis) for adjectival high-frequency literal senses (0) and distal metaphors (1)
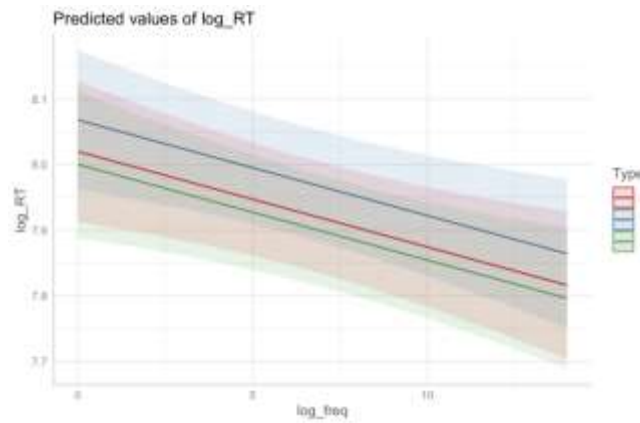

Figure 3. Dependence of processing time (Y-axis) on the type of shift and frequency (X-axis) for verbs literal senses (0), proximal metaphors (1) and distal metaphors (2)

The interaction of emotions and social norms in bilinguals' languages

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Recent research (Costa et al., 2014; Geipel, Hadjichristidis & Surian, 2015, 2016; Cipolletti, McFarlane & Weissglass, 2016; Corey *e*t al., 2017; Hayakawa et al., 2017; Ĉavar & Tytus, 2018; Brouwer, 2019; Karataş, 2019; Dylman & Champoux-Larsson, 2019; Driver, 2020) has shown that the same dilemma may elicit different moral judgements depending on the language in which it has been described.

Using a covert 2×2×2 experiment where 61 bilinguals were asked to translate ($L_1 \leftrightarrow L_2$) a passage peppered with swearwords, we show that the picture is much more complex. While the results ostensibly corroborate the so-called 'foreign language effect', it was only observed in the case of ethnophaulisms, that is expletives directed at social (out)groups. This indicates that the key factor modulating response strength is not so much the different emotional power associated with the respective languages, but *social and cultural norms*.

Long cultural learning and socialisation make expressions in L_1 highly prone to normative influences, whereas using a foreign language exempts the speaker from these (whether our own or socially imposed) norms and limitations. It transpires that switching to a foreign language during decision-making may not only reduce emotionally-driven responses and political correctness biases, but also promote candid deliberative processes (e.g. rational cost-benefit considerations). This clashes with the notion that the effort of using a FL cues our cognitive system to prepare for strenuous activity and thus a more deliberate mode of thinking.

The orthogonal influence of the language medium on decisions, judgments and reactions has far-bearing consequences in our multilingual and multicultural world (not limited to such high-stakes scenarios as legal contexts).

What are the differences between having one language in the brain and having more than one?

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The aim of this poster is to unravel the mystery concerning language and the brain. It attempts to show the differences related to having more than one language in the brain. It relies on Kim et al.'s (1997) research on the differences between early (left) versus late (right) bilinguals and brain activations during language processing in the two languages. This poster will start with a review of previous literature that demonstrates that a brain, that holds more than one language, hosts them together. Then, it will show the neurological differences. This poster will end up with showing how the brain computes and stores "language" as one single cognitive function, with all its aspects (phonology, syntax, etc.).

Keywords: language, brain, monolingualism, bilingualism.

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Testing Word Order Asymmetries with Fragment Answers

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Previous studies on Bosnian/Croatian/Serbian (BCS) and Slovenian (Marušič et al., 2015; Willer-Gold et al., 2016; Willer-Gold et al., 2018) established Closest Conjunct Agreement (CCA) with conjoined subjects (ConjP) as the preferred gender agreement strategy, with verbs reflecting agreement with the linearly closest conjunct, i.e. DP_{last} in SV, and DP_{1st} in VS word order (1). Importantly, CCA with VS has featured in a long-standing debate on the source of the conjunction - phrasal vs clausal (Arsenijević et al., 2019; Marušič et al., 2015; Citko, 2018; Munn, 1993; 1999; Bošković, 2009; Aoun et al., 1994).

Verb-Echo (fragment) Answers to Polar Questions (Holmbeg, 2016) provide a larger syntactic environment to test properties of CCA. Furthermore, Mendes and Ruda (2018) observe in Polish that CCA_{Last} is not a possible strategy in fragment answers to CCA_{1st} in questions with VS word order. They use this data to provide new evidence to argue for a phrasal source of CCA. Note that Mendes and Ruda (2018) take agreement to occur when the verb is higher than ConjP subject but before V+T extraction and TP-deletion ((6), see references Marušič et al., 2015; Willer-Gold et al., 2016; Willer-Gold et al., 2018). Following Mendes and Ruda in assuming that phrasal conjunct+CCA_{1st} is used in derivation of verb-echo answers, we can expect it to be an available agreement strategy when answering CCA_{Last} in SV questions (2) (Aljović et al., 2019). We refer to this option as *switch agreement*.

Based on these assumptions, we predict i) asymmetries in switch behaviour in answers to SV and VS questions, (3). Additionally, BCS and Slovenian (unlike Polish) morphologically express the auxiliary in the past tense. Auxiliary can be dropped under strong verum focus, (4) and (5), and should bear no relevance with respect to the derivation predicted by Mendes and Ruda. Therefore, we also predict ii) no difference in switch behaviour of verb-echo answers with and without an overt auxiliary when supported by an intensity expression.

We ran three forced choice experiments using verb-echo answers to polar questions. Subjects read questions (24 items with ConjP and 36 fillers) and were asked to choose one of the three possible answers (old agreement, agreement switch, default masculine plural

agreement). The auxiliary was present in Experiment 1 (4a), absent in Experiment 2 (4b), while both options were compared in Experiment 3 ((4) and (5)). Both SV (4) and VS (5) conditions were included in Experiment 3. For each experiment, data were collected at six research sites from 565 native speakers of BCS and Slovenian (Exp1:181, Exp2:191, Exp3:193).

Switch agreement occurred in 22,43% of the answers in Exp1, and in 20% of the answers in Exp2 (Figure 1). No significant differences were found between the aux and no-aux conditions in Exp3 (z=0.16; Figure 2), suggesting comparable availability of agreement switch with respect to auxiliary, and confirming (ii). LMEM analysis for Exp3 suggests word order asymmetry as switch answers drop significantly in VS compared to SV (from 28% to 15%, z=-7.73), but additional analyses reveal differences between sites. This requires an interpretation that takes into account factors such as preference for CCA, gender markedness, and dialectal differences. Finally, finding 15% of switch answers in VS makes it hard to either univocally confirm or refute hypothesis (i), but allows to discuss how to translate theoretical assumptions into testable experimental hypotheses.

(1)   a.   Veća   i   sednice   su   pomerene   za   petak BCS
              councils.NPL   and   meetings.FPL aux.PL moved.FPL   for   Friday
       b.   Za   petak su   pomerena   veća   i   sednice.
              for   Friday aux.PL moved.NPL   councils.NPL   and   meetings.FPL
              "Councils and meetings are moved to Friday."

(2)   A: Jesu li [ogledala i lampe] izložene u trgovini?
        were Q mirrors.N and lamps.F displayed.F in shop
        'Are mirrors and lamps displayed in the shop?'
   B: Da, izložena su. / Ne, kupljena su.
        yes, displayed.N were / no, bought.N were.
        'Yes, they are displayed./No, they are bought.'

(3)   A: Jesu li [ogledala i lampe] izložene u trgovini? SV-q
       B: Da, izložena su. -> SWITCH AGREEMENT
       B': Da, izložene su. -> OLD AGREEMENT
       B'': Da, izloženi su. -> DEFAULT AGREEMENT
       A: Jesu li u trgovini izložena [ogledala i lampe]? VS-q
       B: Da, izložena su. -> OLD AGREEMENT
       B': Da, izložene su. -> SWITCH AGREEMENT
       B'': Da, izloženi su. -> DEFAULT AGREEMENT

(4) a.   Jesu li veća i sednice pomerene za petak?   Nego šta nego …   su pomerena/e/i!
         aux Q councils.N and meetings.F moved.F for Friday Of course… aux.PL moved.N/F/M.PL
     b.   Jesu li veća i sednice pomerene za petak?   Nego šta nego …   pomerena/e/i!
         aux Q councils.N and meetings.F moved.F for Friday   Of course…   moved.N/F/M.PL

(5) a.   Jesu li pomerene veća i sednice za petak?   Nego šta nego …   su pomerena/e/i!
         aux Q moved.N councils.N and meetings.F for Friday   Of course… aux.PL moved.N/F/M.PL
     b.   Jesu li pomerene veća i sednice za petak?   Nego šta nego … pomerena/e/i!
         aux Q moved.N councils.N and meetings.F for Friday   Of course…   moved.N/F/M.PL
     "Are the councils and meetings moved to Friday. Yes, (they) (are) moved."

(6)
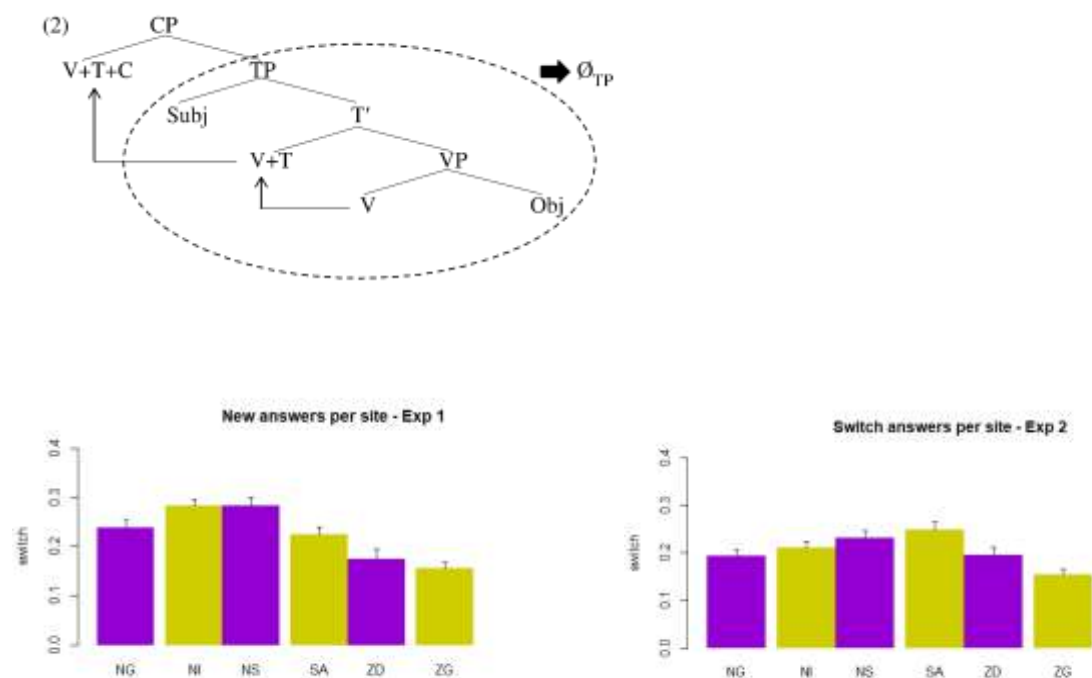
Figure 1. Switch answers per site in Exp1 and Exp2. NG = Nova Gorica, NI = Niš, NS = Novi Sad,
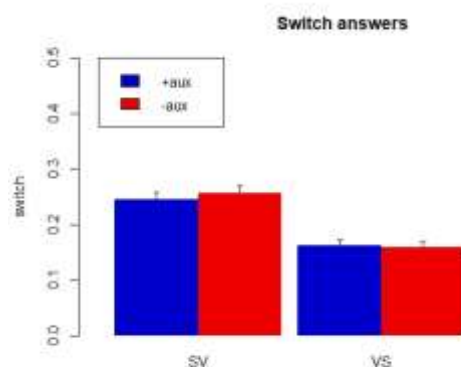SA = Sarajevo, ZD = Zadar, ZG = Zagreb

Figure 2. Switch answers per condition in Exp3. SV = Subject-verb order, VS = Verb-subject order, +aux = auxiliary presence, -aux = auxiliary absence

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**Predictive language processing of children with Autism Spectrum Disorder
and children with Developmental Language Disorder**

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Predictive language processing is a crucial ability that contributes to real-time sentence comprehension and concerns the ability of the interlocutor to predict the upcoming word based on the semantic characteristics of the utterance. Especially, it concerns the ability of using verb information to predict the following words (Andreu, Sanz-Torrent & Trueswell, 2012; Bridgwater, Kyröläinen & Kuperman, 2019; Zhou, Zhan & Ma, 2018), while the interlocutors do not wait to hear the whole utterance in order to understand their meaning (Pickering & Garrod, 2013; Verhagen, Mos, Backus & Schilperoord, 2018). Predictive language processing is associated with lexical development (Venker, Edwards, Saffran & Ellis Weismer, 2018) and encourages individuals to conduct a conversation (Bridgwater et al., 2019; Curcic, Andringa & Kuiken, 2019; Verhagen et al., 2018). Children with Autism Spectrum Disorder and children with Developmental Language Disorder show a delay in language development and their oral communication abilities are poor. The purpose of this paper is to critically review empirical literature on predictive language processing in children with Autism Spectrum Disorder (ASD) in comparison with children with Developmental Language Disorder (DLD). Studies that meet the established inclusion criteria were identified and reviewed. The present paper lists the similarities and the differences between children with ASD and children with DLD in predictive language processing. Children with DLD performed worse on predictive language processing tasks than children with ASD. The weaker performance of children with DLD is likely to be due to their syntactic and semantic deficits. The knowledge of how children of both groups process language stimuli benefits the scientific and educational communities.

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