13th Novi Sad workshop on

Psycholinguistic, neurolinguistic and clinical linguistic research

Book of abstracts

Novi Sad
April 25, 2026

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ISBN:
978-86-6065-977-6

URL
https://digitalna.ff.uns.ac.rs/sadrzaj/2026/978-86-6065-977-6

CIP - Каталогизација у публикацији
Библиотека Матице српске, Нови Сад

81'23(048.3)

NOVI Sad Workshop on Psycholinguistic, Neurolinguistic and Clinical Linguistic Research (13 ; 2026 ; Novi Sad)
Book of abstracts [Elektronski izvor] / 13th Novi Sad Workshop on Psycholinguistic, Neurolinguistic and Clinical Linguistic Research, Novi Sad, April 25, 2026 ; [editors Sabina Halupka-Rešetar, Nina Ilić]. - Novi Sad : Filozofski fakultet, 2026

Način pristupa (URL): https://digitalna.ff.uns.ac.rs/sadrzaj/2026/978-86-6065-977-6. - Opis zasnovan na stanju na dan 7.4.2026. - Nasl. sa naslovnog ekrana. - Bibliografija uz svaki apstrakt.

ISBN 978-86-6065-977-6

a) Психолингвистика - Апстракти

COBISS.SR-ID 191352585

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Poster 02: Ali Çağan Kaya, Berkay Bostan & İpek Pınar Uzun (Ankara University Brain Research Center (AU-BRC), Hacettepe University, Turkey): Looking for Harmony: Eye-Tracking Evidence for Morphophonological Mismatches in Turkish

Poster 03: Tijana Ašić (University of Belgrade; University of Kragujevac, Serbia), Vladan Plećević (Center for Applied Neurosciences, Dr. Plećević, Belgrade, Serbia) & Aleksandra Parojčić (Institute of Mental Health,

Belgrade, Serbia): From verbal memory to speech production: examining the language profile of individuals with chronic alcohol abuse

Poster 04: Maria Minina (HSE University, Russia): Integration of Information from Different Modalities in Communication: Speech-Gesture Mismatches

Poster 05: Maiia Alimova (HSE University, Russia): Pragmatic Information Transmitted by Gestures During Word Search

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PLENARY LECTURE

AI and Clinical-Neuro Linguistics Research: Applications, Opportunities, and Challenges

Frank Tsiwah
University of Groningen, Holland
franktsiwah@gmail.com

Artificial intelligence is increasingly being applied in clinical contexts, yet the assessment and treatment of adult speech and language disorders still rely heavily on manual transcription, time-intensive standardized testing, and fixed sets of treatment stimuli that limit generalization to everyday communication. This keynote examines what AI currently offers the field: automated speech and language analysis for assessment purposes, large language model–based tools for word retrieval and treatment in general, and scalable approaches to longitudinal monitoring of impairment and/or treatment progression. It asks what these technologies can meaningfully contribute to both clinical practice and research, and where the key bottlenecks remain. These advances are accompanied by persistent challenges, including limited and unrepresentative training data, the complexity of multilingual clinical populations, and the limited interpretability of model decision-making. Bridging this gap will require clinical neurolinguists to be involved not only in evaluation, but as active partners in the design and development of these systems.

WORKSHOP TALKS

The development of reading skills in monolingual and bilingual Russian-speaking children

Alexandra Korzhenevskaya[b], Olga Tuzhik[a,b], & Nina Zdorova[a]
[a] Russian Academy of Sciences, Institute of Linguistics, Russia
[b] HSE University, Center for Language and Brain, Russia
5alexa5ndra5@gmail.com

A very recurrent issue in studies on literacy revolves around the differences between the performance of bilingual and monolingual children. Several studies compared decoding accuracy, reading fluency, and comprehension between bilingual and monolingual children, often finding that bilinguals have comparable decoding skills but sometimes lower vocabulary and reading comprehension (Babayigit et al., 2022; Novita et al., 2022; Raudszus et al., 2018). However, bilingual children may show higher reading fluency, including reading comprehension, by the 4th grade compared to monolinguals (Baker et al. 2012 for Spanish-English bilinguals; Pawlicka et al. 2015 for Polish-English bilinguals). Still, the English-centric assessment bias limits the understanding of reading development in different languages.

The current study focuses on the development of reading skills in bilingual children who acquire literacy in Russian compared to Russian monolingual children. The study included three groups of bilingual children from grades 2 to 4: Russian-Adyghe (N = 71) and Russian-Tatar (N = 187) bilinguals from Russia and Uzbek-Russian bilinguals (N = 58) from Uzbekistan. The monolingual data was taken from the study by Zdorova et al. (2025) and included the reading outcomes of 266 Russian monolingual students from grades 2-4.

Oral reading fluency and comprehension in Russian were measured by LexiMetr, a reading assessment tool for Russian-speaking primary school students (Zdorova et al., 2025). This test comprises two texts to read aloud and six comprehension questions for each text. All the children completed the test by reading two texts aloud and answering the questions. The order of the texts was counterbalanced across grades.

Statistical analysis was performed in R (R Core Team, 2026). Reading outcomes were analyzed using linear mixed models with random intercepts for subjects and texts. Scores on oral reading fluency (words per minute) and reading comprehension were used as dependent variables. Fixed effects included grade, group (one monolingual and three bilingual groups), and their interaction.

Analysis of reading data revealed that monolinguals had significantly higher scores in oral reading fluency compared to Uzbek-Russian bilinguals in all grades and Russian-Adyghe bilinguals in the 3rd grade. Moreover, instead of a gradual increase in reading fluency, as seen in monolinguals, bilinguals showed a reading fluency development only between 3rd and 4th grade in the Russian-Adyghe bilingual group and between 2nd and 3rd grade in the Uzbek-Russian bilingual group. Russian-Tatar bilinguals showed results comparable to monolinguals. In addition, monolinguals showed higher reading comprehension scores than all bilingual groups in second grade. However, the difference in reading comprehension outcomes between monolinguals and bilinguals was not statistically significant in 3rd and 4th grade.

Thus, our results are consistent with those of studies in which monolinguals outperform bilinguals in reading comprehension in the initial stages of learning. However, reading fluency evolves differently among different groups of bilinguals, which indicates the need to study other factors that contribute to or hinder the acquisition of literacy skills in bilinguals.

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Acquiring *se*-verbs in Serbian: Evidence from spontaneous child speech

Nina Ilić[a] & Aleksandra Fee-Miranda[b]
[a]Faculty of Philosophy, University of Novi Sad, Serbia
[b]independent scholar
nina.ilic@ff.uns.ac.rs

Serbian *se*-marking surfaces across different types of verbs that share identical morphology but differ systematically in argument structure, semantic transparency, and event complexity. Because these verb types instantiate distinct syntactic and semantic configurations despite uniform surface structure, they offer a particularly revealing testing ground for theories of argument-structure acquisition.

Previous experimental research using visual-elicited production tasks with 3–5-year-old Serbian children reported high accuracy for reflexive verbs, but greater difficulty with anticausative and reciprocal verbs. These findings have been interpreted as suggesting that event-structural complexity constrains acquisition. However, elicited production tasks introduce additional processing and pragmatic demands, raising the question of whether lower accuracy necessarily reflects representational limitations. Evidence from spontaneous production is therefore crucial for evaluating these competing interpretations.

This study examines spontaneous production in longitudinal home recordings from the Serbian Corpus of Early Child Language (SCECL; CHILDES). The dataset comprises recordings of eight children between approximately 1;6 and 4;0; the present analysis focuses on the earliest developmental window (1;6–2;6) to capture the initial emergence of *se*-verbs. Child speech was extracted from CHAT transcripts and automatically annotated using the Stanza natural language processing toolkit (Qi et al., 2020) with the Serbian Universal Dependencies model. Verbal forms were identified based on Universal POS tags (VERB, AUX), and all child-produced instances of *se*-verbs were subsequently manually coded into five theoretically established categories (true reflexive, lexical reflexive, true reciprocal, lexical reciprocal, and anticausative). Manual coding incorporated argument-structure diagnostics and discourse context, with inter-coder reliability checks.

Preliminary findings from the 1;6–2;6 window reveal a clear age-related increase in the production of *se*-verbs. As expected, lexical reflexive verbs—associated with relatively transparent mappings between syntax and event structure—emerge earliest and most frequently. Importantly, however, spontaneous production also includes early tokens of anticausative and reciprocal constructions, despite their greater event-structural complexity. The presence of distinct *se*-verb types at the earliest observable stages of productive grammar suggests that children's underlying representations may be more articulated than elicited production data alone would indicate.

Taken together, these findings are broadly compatible with the Continuity Hypothesis, insofar as they point to the early production of what Snyder & Hyams (2015) term 'formally, but not semantically, reflexive clitic constructions (FRCCs)', corresponding to anticausative verbs in the present study. At the same time, the results leave open the possibility that performance-related and

interface factors contribute to variability across constructions. By integrating experimental findings with longitudinal corpus evidence, this study contributes to ongoing debates concerning the locus of developmental change in argument structure. Moreover, given that argument-structure impairments are frequently observed in developmental language disorders, early differentiation among *se*-verbs in spontaneous speech may provide a useful window into clinically relevant grammatical representations.

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SerBial-Q: Questionnaire on Usage of Two Serbian Alphabets

Lara Perić[a,b] & Dušica Filipović Đurđević[a,b]
[a,] Department of Psychology, Faculty of Philosophy, University of Belgrade
[b] Laboratory for Experimental Psychology, Faculty of Philosophy, University of Belgrade
lara.peric002@gmail.com

Serbian native speakers are fluent in two alphabets (Feldman & Barac-Čikoja, 1996; Helms-Park et al., 2016). In school, Cyrillic is taught first (age ~7), followed by Roman (age ~8). Although the speakers are fluent in switching between alphabets, there is evidence of bialphabetic context imposing cognitive load on lexical processing (Feldman & Turvey, 1983; Filipović Đurđević et al., 2013) and recruiting language control (Filipović Đurđević & Feldman, 2024). The established cognitive relevance of the bialphabetic context imposes the need of investigating the relationship between individual profiles of alphabet usage and the cognitive effects of bialphabetism. However, investigations of the statistics of alphabet usage are scarce. To assess the patterns of acquisition and usage of the two alphabets, we developed a questionnaire and administered it to a total of 187 native Serbian speakers (M_{age} = ~20). The sample consisted of two groups of first-year students from the Department of Psychology, Faculty of Philosophy, University of Belgrade, all native speakers of Serbian (N_1 = 76; N_2 = 111). In our sample, 92.51% of speakers reported of acquiring Cyrillic first, and 7.49% Roman. The mean age of acquisition was 5.37 for Cyrillic, and 6.58 for Roman. Most of the participants (61.75%) acquired Cyrillic at home, and 33.15% reported of acquiring it at school. On the other hand, the dominant mode of acquisition of Roman was at school (62.7%), with 33.3% acquiring it at home. Using a nine-point scale, where 1 denoted using strictly Cyrillic, and 9 denoted using strictly Roman, our participants reported of using Roman more frequently than Cyrillic when using cell phone for reading (7.68) and writing (8.39), as well as using computer for reading (7.54) and writing (7.53). When reading from print, the two alphabets were balanced (5.18), and the only scenario in which Cyrillic was estimated as more frequently used than Roman was writing by hand (3.89). To test the reliability, we compared the data from the two groups of participants and established high overlap. Validity will be checked by analysing predictive power of the collected questionnaire data on the reaction latencies in visual lexical decision task (ongoing analyses). We conducted cluster analysis in search for distinct profiles and observed three groups. Majority of speakers belonged to two groups, similar by the age and mode of acquiring Cyrillic as the first alphabet. The largest group (N=115) acquired alphabets mostly at school, whereas the second group (N=58) acquired alphabets at home and at earlier age. The third group was the smallest (N=14) and was distinct by the speakers acquiring Roman before Cyrillic. The usage patterns were similar, except for writing by hand, which differentiated speakers who typically write either in Cyrillic, Roman, of both alphabets. While corroborating the dominance of Roman, the data broke the stereotype of young speakers avoiding Cyrillic. On the contrary – it revealed that a significant proportion uses Cyrillic to write. At the same time, it revealed that the dominance of Roman alphabet was situational, determined by the convenience of it being the dominant alphabet in digital media (as also observed

by Đurić, 2019). The data on usage patterns will further be tested to explore its impact on language processing and language control.

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What's in a name?
The fusiform gyrus brain area and co-evolution of face-recognition and naming

Ljiljana Progovac
Wayne State University, USA
progovac@wayne.edu

The fusiform gyrus, in particular right BA 37, is directly implicated in face perception and recognition (Kanwisher & Yovel 2006; Grill-Spector, et al., 2017; Barton, 2022), but also in visual processing, metaphorical language, and, importantly, naming (Ardila, et al., 2015, provide a meta-analysis). I argue that the involvement of the fusiform gyrus area in humans in both face recognition and in naming is not a coincidence. Rather, the two have co-evolved in humans, as the enhanced face recognition was facilitated by the early emergence of language (see Benítez-Burraco & Progovac, 2024), specifically by the early simple syntactic strategies for naming people in memorable ways, consistent with the memory abilities of our ancestors at the time. Clear support for this hypothesis comes from a recent experiment with 99 neurotypical individuals, which found a correlation between better face-name recall and better face recognition ability, concluding that "the ability to learn and recall proper names is particularly important to face recognition" (DeGutis, et al., 2024). Moreover, many have found a strong advantage in face recognition for familiar over unfamiliar individuals, the former much more likely to be associated with names (e.g. Bruce, et al., 2001; Young & Burton, 2018). Further support for this hypothesis, in particular for its co-evolutionary dimension, comes from an fMRI study which found that the processing of ancestral-like (flat) verb-noun compounds ((1) overleaf), which are typically used for (derogatory) naming and nicknaming across different cultures (3), shows enhanced activation in the *right* fusiform gyrus area (BA 37), the area that is directly implicated in both naming and face recognition, including the lateralization on the right (e.g. Weibert & Andrews, 2015). These flat(ter) compounds (1), in contrast to their more hierarchical counterparts (2), resulted in increased activation (overleaf) in the inferior temporal gyrus and the right fusiform gyrus (BA 37/19) (Progovac, et al., 2018). Importantly, these verb-noun compositions have been analyzed as proxies or "living fossils" of the earliest stages of language evolution (Jackendoff, 1999; Progovac, 2015, 2016). The examples of this naming strategy preserved across languages tend to be highly expressive and metaphorical, as well as derogatory, which is also relevant for the emotional dimension and memorability. Some recent findings indicate that the fusiform face area (located in BA 37) also has functions implicated in emotion, including stronger activation by fearful faces than neutral faces (Guyer, et al. 2010).

The findings of the experiments above support the hypothesis that enhanced face recognition in humans co-evolved with the gradual emergence of language, in particular with syntactically simple but memorable naming strategies. This proposal identifies further frontiers for experimentally testing the involvement of the fusiform gyrus region in naming/nicknaming and face recognition, focusing specifically on the extent of their overlap in neurotypical vs. atypical populations where such processes are affected, including prosopagnosia (face-blindness) (Bodamer, 1947; Davies-Thompson,

et al., 2014); autism (van Kooten, et al., 2008; Nowicka, et al. 2016) and synesthesia (van Leeuwen, et al., 2011).

Examples (simpler V-N compounds (1) vs. more compositional N-V-er counterparts (2))

(1) pick-pocket, saw-bones, cry-baby, busy-body, worry-wart, tattle-tale, spit-fire, spoil-sport, hunch-back, turn-coat, play-boy, fall-guy, scape-goat, dip-stick, tell-tale, scoff-law, dare-devil, lack-wit, copy-cat

(2) boot-lick-er, trouble-mak-er, mind-read-er, heart-break-er, whistle-blow-er, woman-hat-er, match-mak-er, party-poop-er, head-turn-er, bone-crush-er, ball-break-er, bone-crush-er

(3) Serbian V-N equivalents: cepi-dlaka 'split-hair' (hair-splitter); guli-koža 'peel-skin' (who rips you off); vrti-guz 'spin-butt' (restless person, fidget); muti-voda 'muddy-water' (trouble-maker); jebi-vetar 'fuck-wind' (charlatan); vuci-guz 'drag-butt' (slow-moving person); gori-guzica 'burn-butt' (a person in trouble, burn-breeches); deri-muda 'rip-balls' (place name, a steep hill); kosi-noga 'skew-leg' (person who limps); jedi-vek, 'eat-life' (one who constantly annoys); podvi-rep 'fold-tail' (one who is crestfallen) (Mihajlović 1992)

Tables. *fMRI experiment results for processing of V-N compounds (Progovac et al. 2018)*

Simple Compounds > Complex Compounds						
Right Inferior Temporal Gyrus	37	42	−64	−2	5.44	364
Right Inferior Occipital Gyrus	19	40	−82	−10	5.06	
Right Fusiform Gyrus	37/19	34	−56	−10	4.62	
Left Cingulate Gyrus	24	−2	4	44	4.93	117
Right Cingulate Gyrus	24	2	−4	40	4.53	
Right Medial Frontal Gyrus	6	6	2	50	4.37	

Clusters identified by analyses comparing activation between Simple and Complex Compounds (clusters consisting of > 100 contiguous voxels at a threshold of $p < 0.005$).

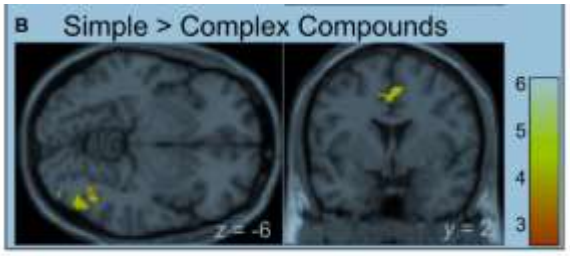

FIGURE 3 | Brain regions showing activation difference when processing Simple compared to Complex compounds. Activation maps are rendered on a brain template depicting regions showing higher activation during the processing of Complex compared to Simple Compounds **(A)**, or higher activation during the processing of Simple compared to Complex Compounds **(B)**. The threshold for depicting effects in activation map was set at $p < 0.001$ with 100 contiguous voxels.

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Words That Hurt: The Impact of Recipient and Message Characteristics on the Perception of Emotionally Hurtful Messages

Anđela Stojadinović & Milica Popović Stijačić
Faculty of Media and Communications, Belgrade, Serbia
andjela.stojadinovic.20241502@fmk.edu.rs

Understanding how individuals perceive the emotional tone of written messages is increasingly important in contemporary communication, particularly in online contexts where nonverbal cues are absent. Emotional signals in text-based communication are less clear due to the absence of nonverbal and contextual cues, increasing the potential for misinterpretation and making emotional tone more dependent on message characteristics and individual psychological traits (Altman et al., 2025; Byron, 2008; Derks et al., 2008; Israelashvili et al., 2019). The present study aimed to examine the extent to which empathy, rejection sensitivity, and interoceptive awareness contribute to the perception of warmth, coldness, and emotional painfulness in written messages.

A total of 255 participants aged 18 to 56 years (M = 25.84, SD = 8.17) took part in the study; 204 identified as female, 48 as male, and 3 as other. Participants evaluated short text messages previously categorized as warm, cold, or painful, and rated them along three dimensions: warmth, coldness, and emotional painfulness. The analyses distinguished between congruent models (e.g., warm messages evaluated on the warmth dimension) and incongruent models (e.g., warm messages evaluated on coldness or painfulness). Empathy was assessed using the Interpersonal Reactivity Index (IRI; Davis, 1983), rejection sensitivity with the Adult Rejection Sensitivity Questionnaire (A-RSQ; Berenson et al., 2009), and interoceptive awareness with the Multidimensional Assessment of Interoceptive Awareness (MAIA; Mehling et al., 2012). Participants also reported whether they had prior experience with personal psychological work.

The results indicated that individual psychological characteristics had a stable and substantial influence on the evaluation of emotional tone across message types. In congruent models (Table 1), affective empathy and interoceptive awareness consistently emerged as significant predictors of emotional evaluations. Rejection sensitivity showed a specific effect only for cold messages evaluated on the coldness dimension. In incongruent models, the predictive patterns varied depending on the specific combination of message type and evaluative dimension, suggesting that emotional misinterpretation is context-sensitive and not uniformly driven by the same traits. Specifically, perceived painfulness of warm messages was explained at 6.3% of the variance (R^2 = .063), with rejection sensitivity emerging as the only significant positive predictor (β = .16, p = .01). Even warm messages were perceived as more emotionally painful among individuals higher in rejection sensitivity. Cognitive empathy did not emerge as a significant predictor, likely due to the lack of contextual information required for perspective taking.

These findings demonstrate the central role of recipient characteristics in shaping the perception of emotional cues in written communication, showing that the same message may be interpreted differently depending on individual psychological profiles. The results contribute to a more precise

understanding of emotional interpretation in digital interactions and have implications for reducing misunderstandings in everyday, professional, and online communication.

Table 1. *Results of the regression analysis for predictors of the evaluation of warm messages on the warmth dimension, cold messages on the coldness dimension, and painful messages on the painfulness dimension*

Variables	B	SE B	95% CI	β	*t*	*p*	Tolerance	VIF
Warm messages – warmth								
EC	0.16	0.06	0.05, 0.26	0.20	2.77	**0.01**	0.78	1.29
PT	-0.001	0.05	-0.10, 0.10	-0.001	-0.02	0.10	0.81	1.24
RS	-0.001	0.01	-0.01, 0.01	-0.01	-0.15	0.89	0.98	1.03
IS	0.09	0.04	0.02, 0.17	0.16	2.38	**0.02**	0.85	1.17
Age	-0.003	0.004	-0.01, 0.004	-0.06	-0.82	0.37	0.73	1.37
Gender	0.11	0.07	-0.02, 0.24	0.11	1.52	0.13	0.89	1.12
Education	-0.01	0.04	-0.07, 0.07	-0.01	-0.28	0.87	0.73	1.37
Cold messages – coldness								
EC	0.32	0.09	0.15, 0.49	0.25	3.73	**<.001**	0.78	1.23
PT	-0.01	0.07	-0.15, 0.14	-0.004	-0.06	0.95	0.81	1.24
RS	0.03	0.01	0.01, 0.05	0.19	3.01	**0.002**	0.97	1.02
IS	0.16	0.06	0.05, 0.27	0.18	2.81	**0.005**	0.85	1.17
Age	-0.003	0.006	-0.01, 0.01	-0.04	-0.48	0.57	0.73	1.37
Gender	0.03	0.1	-0.16, 0.23	0.02	0.14	0.76	0.89	1.12
Education	-0.06	0.06	-0.17, 0.05	-0.08	-1.32	0.25	0.73	1.37
Painful messages – painfulness								
EC	0.18	0.85	0.01, 0.35	0.14	2.08	**0.04**	0.78	1.29
PT	0.13	0.07	-0.01, 0.27	0.12	1.82	0.07	0.81	1.24
RS	0.02	0.01	-0.002, 0.04	0.1	1.72	0.09	0.98	1.03
IS	0.12	0.06	0.01, 0.23	0.14	2.17	**0.03**	0.85	1.17
Age	0.01	0.01	-0.004, 0.02	0.08	1.21	0.23	0.73	1.37
Gender	0.19	0.09	-0.006, 0.38	0.12	1.86	0.06	0.89	1.12
Education	0.02	0.05	-0.09, 0.12	0.02	0.30	0.75	0.73	1.37

Notes. EC = empathic concern; PT = perspective taking; RS = rejection sensitivity; IS = *interoceptive awareness*.

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Morphological complexity effects in the adaptation of Serbian loan verbs in Gurbet Romani

Mirjana Mirić[a], Bojana Ristić[b], & Marko Simonović[c]
[a]Institute for Balkan Studies SASA, Serbia
[b]independent scholar
[c]University of Graz, Austria
mirjana.miric@bi.sanu.ac.rs

The study investigates the adaptation strategies of Serbian loan verbs in Gurbet Romani (GR) by Serbian-Gurbet Romani bilinguals. GR employs various indirect insertion strategies (Wohlgemuth 2009) for loanverb integration. Previous corpus studies show that Serbian verbs get integrated using two characteristic vowels: either *-o-* (Serbian *pisati* 'write' > Romani *pis**o**l*) or *i-* (Serbian *misliti* 'think' > Romani *misl**i**l),* the latter being the more common, default strategy overall (Mirić & Ćirković 2022, Simonović 2024). These corpus studies suggest that the choice of strategy might depend on the theme vowel class of the Serbian verb being adapted (Mirić & Ćirković 2022), and potentially on its morphological complexity (Simonović 2024).

However, these factors have not yet been experimentally investigated. In the current study, we test whether the choice of the adaptation strategy for Serbian verbs in GR depends on two factors: 1) the theme vowel class of the Serbian verb, and/or 2) the morphological complexity of the Serbian verb, specifically the presence of a derivational suffix.

The experiment, based on the sentence completion task, crosses Theme Vowel class (including the 3 most common classes in Serbian: *i-i, a-a, a-je*) and Morphological Complexity (*complex verbs*, i.e., containing a derivational suffix*, simple verbs*, i.e., without a suffix). If the adaptation strategy depends on the theme vowel of the Serbian verb, we expect more *i*-class adaptations with *i-i* verbs. If the adaptation strategy depends on the morphological complexity of the Serbian verb, we expect more default *i*-class adaptations with complex verbs.

The experiment was administered in person with 22 Serbian-Gurbet Romani bilinguals from eastern Serbia (through the Psytoolkit software). At each trial, the participants heard a researcher utter a sentence in Romani without a verb, followed by the Serbian verb they were instructed to adapt, see examples (1)–(6). The experiment included 48 experimental items and 20 fillers. The verb forms were balanced across person, number, and tense.

Responses in which participants did not use the target base verb or modified the portion of the base verb preceding the theme vowel were not analyzed. The statistical analysis using linear regression did not show the effect of the Theme Vowel, surprisingly, but it revealed a strong and significant effect of Morphological Complexity (Estimate = 5.78, SE = 1.43, z = 4.04, $p < .001$), see Figure 1. Complex Serbian loan verbs are always integrated with the characteristic vowel *-i-* in GR, regardless of the theme vowel class to which the Serbian verb belongs, e.g., *oduševi**i**saljem*, *planir**i**n*, *školu**i**sarda*. Additionally, in nearly half of the cases, even the simple loan verbs were

adapted with the characteristic *-i-* vowel, supporting the previous indication of the *-i-* characteristic vowel as the default strategy in this under-investigated Romani variety.
The findings will be discussed in light of psycholinguistic research showing that human language processing is highly sensitive to the complexity and morphological structure of words (Taft & Forster 1975; see Feldman & Milin 2018 for an overview).

Examples:

1. i-i class (simple)

Svako djive me _____ (čistim) amaro ćher. 'Every day I clean our house.'

2. a-a class (simple)

Anglal duj breš mo dad _____ (ofarbao je) amari ograda. 'Two years ago, my father painted our fence.'

3. a-je class (simple)

Akana but _____ (kajem se) kaj irisaljem kate. 'Now I regret returning here.'

4. i-i class (complex)

Kana mi phej dija ma o poklono, me _____ (oduševila sam se). 'When my sister gave me the present, I was thrilled.'

5. a-a class (complex)

Kana avel o milaj, me čhave _____ (planiraju) te džan po bazento. 'When summer comes, my children plan to go to the swimming pool.'

6. a-je class (complex)

Kana sama ande Nemačka mo dad thaj mi dej _____(školovali su) ma. 'When we were in Germany, my parents sent me to school.'

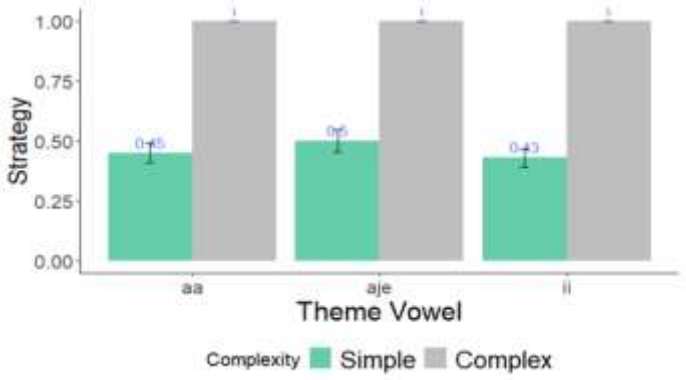

Figure 1. *Complexity and theme vowel class in the adaptation of Serbian loan verbs in Gurbet Romani (0 = -o-, 1 = -i-)*

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How AI tools shape cognitive engagement in language processing tasks: a case study with ChatGPT

George Georgiou
University of Nicosia, Cyprus
georgiou.georg@unic.ac.cy

Recent advances in artificial intelligence (AI) and natural language processing have led to the widespread availability of large language models (LLMs) capable of generating fluent, contextually appropriate text (Georgiou, 2025). As these systems are increasingly used in educational and academic writing contexts, an important psycholinguistic question concerns how access to LLMs may affect the cognitive processes underlying language production. Although adoption of such tools is growing (Adeshola et al., 2024), concerns have been raised that reliance on AI-generated text may reduce deep processing and active engagement during language tasks, potentially altering cognitive involvement in writing (Kosmyna et al., 2025; Lo et al., 2024).

Within psycholinguistics, student engagement can be understood as reflecting the degree of cognitive control, attention, and strategic processing invested during language use. Building on the tripartite model of engagement (behavioral, emotional, and cognitive; Fredricks et al., 2004), cognitive engagement is commonly defined as the mental investment and strategic effort applied during task execution. It encompasses effortful processing, sustained attention, self-regulation, and the active construction of meaning – processes that are central to written language production. However, despite the growing presence of LLMs in writing-related activities, relatively little empirical research has examined how these tools influence learners' online cognitive engagement during language production.

The present study investigates how generative AI tools, specifically ChatGPT, affect cognitive engagement during an academic writing task. Using a controlled experimental design, 40 university students (aged 25–47 years; balanced gender representation) from diverse academic backgrounds were randomly assigned to either an AI-assisted group, allowed to use ChatGPT, or a control group that completed the task without AI support. The groups did not differ in self-reported familiarity with AI chatbots. All participants completed a structured argumentative writing task, followed by the Cognitive Engagement Scale for AI (CES-AI), a four-item self-report measure developed for this study to capture key psycholinguistically relevant components of engagement: mental effort, sustained attention, deep processing, and strategic exploration. Items were rated on a five-point Likert scale.

To ensure measurement quality, common method bias and reliability/validity indicators were evaluated. Full collinearity variance inflation factors were below 3.3, suggesting minimal common method bias. Item loadings were strong (0.737–0.857), with high internal consistency and construct reliability (Cronbach's α = 0.881; composite reliability = 0.883). Convergent validity was satisfactory (AVE = 0.654), indicating that the latent engagement construct accounted for a

substantial proportion of variance in the observed items. Group differences were examined using a one-way ANOVA. The results revealed a significant effect of group on cognitive engagement scores, with the control group exhibiting significantly higher engagement than the AI-assisted group (see Figure 1).

These findings suggest that access to generative AI during writing may reduce the degree of active cognitive involvement in language production, consistent with accounts of cognitive offloading. Overall, the study contributes experimental psycholinguistic evidence on how AI-assisted writing may alter engagement-related processes during language production and highlights the need for pedagogical approaches that encourage active, reflective interaction with AI-generated content to support students' self-regulated learning and deep cognitive engagement.

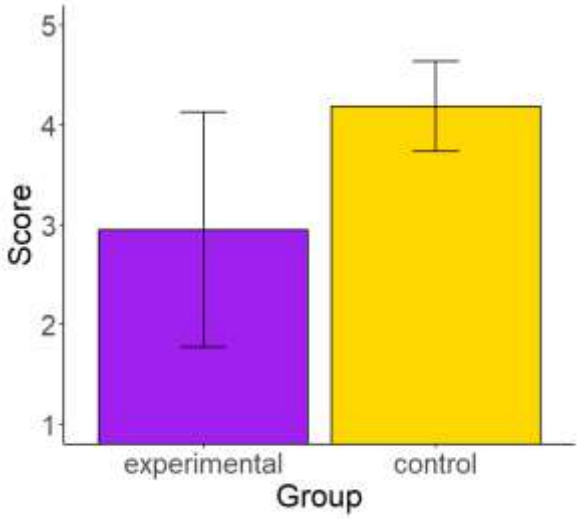

Figure 1. *Scores (Likert-point scale from 1–5) of the experimental and control groups in the CES-AI*.

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The use of eye-tracking in dementia and MCI research: systematic review of recent findings

Bruno Škomrlj & Ana Matić Škorić
Faculty of Education and Rehabilitation Sciences, University of Zagreb, Croatia
skomrlj22@gmail.com; ana.matic@erf.unizg.hr

Introduction: Given the global trend of an aging population, dementia has become a major public health concern worldwide. Mild cognitive impairment (MCI) is a state in which memory and general cognitive functions are more impaired than in normal aging, but less so than in people with dementia, and it is often considered a precursor to dementia (Alzheimer's type). Lately, eye-tracking while reading or conducting other tasks has been recognized as a potential non-invasive screening tool for MCI and dementia.

Aims and RQs: The aim of this study is to explore the use of eye-tracking in the research on language processing in people with mild cognitive impairment (MCI) and dementia. By conducting a systematic literature review, the paper seeks to answer the following questions:

1) which eye-tracking paradigms are most commonly used in the studies on language processing;
2) what are the most common eye-tracking measures observed in the papers;
3) in which eye movement parameters (observed measures) do people with MCI and dementia differ from the typically aging population;
4) which language levels and abilities are most often observed in these studies?

Methods: The study is grounded in the systematic review of recent literature. Two databases were inspected: Web of Science and Scopus. The search was based on the pre-defined search strings: ("eye tracking" OR "eyetracking" OR "eye-tracking" OR "gaze tracking")
AND
("MCI" OR "mild cognitive impairment" OR "dementia" OR "Alzheimer*")
AND
("language" OR "linguistic" OR "speech" OR "verbal" OR "communication").
The search was also filtered in the following way: publication type (only journal articles and book chapters); publication year (2020-2025); language of the publication (English). The papers that were the result of this advanced query have been exported to the Rayyan programme for conducting systematic reviews. A PRISMA-ScR flow diagram is used to present the process of search, exclusion, and selection of studies.

Preliminary results: Based on the search, 87 papers have been identified in Scopus, and 35 in WoS. 28 papers were resolved as duplicates, and the remaining 94 are currently being inspected. Reasons for exclusion so far are mostly study design (e.g., eye-tracking experiment not connected with language tasks) or population (participants not having MCI or dementia, or having other neurodegenerative diseases). The authors are currently going through the abstracts and full

publications, after which they will extract key findings. The obtained data will be presented by means of synthesis method according to the research questions.
Conclusions and contributions: The purpose of this paper is to explore the potential of using eye-tracking to infer patterns of language processing difficulties in MCI and dementia, which could ultimately bring us one step closer to the early detection of pathological patterns using this method.

Keywords: Dementia; Mild Cognitive Impairment; Eye-tracking; Systematic Review

Anaphora Resolution in Italian Mild Cognitive Impairment and Healthy Adults

Marco Simoni, Emanuela Sanfelici, Simone Orlando & Cristina Ruaro
University of Padova, Italy
marco.simoni.1@phd.unipd.it

This study examines whether syntax–semantics integration at the Conceptual–Intentional interface of the Language Faculty and broader cognition is compromised during the prodromal language deterioration associated with Mild Cognitive Impairment (MCI) (Lust et al. 2024). Specifically, we investigate anaphora resolution in Italian, where the distribution of null and overt subjects is shaped by syntactic configuration, topicality, and discourse-level prominence (Calabrese 1986; Carminati 2002; Frascarelli 2007; Rizzi 2018; Torregrossa et al. 2020). We hypothesize that individuals with MCI will exhibit decreased accuracy relative to Healthy Adults (HA) in resolving anaphoric dependencies, and that particular syntactic and semantic constraints selectively affect MCI performance.

Thirty-three participants (18 HA and 15 clinically diagnosed MCI) were administered an Italian adaptation of the Sentence Repetition Task (SRT) described in Lust et al. (2024). Forty-eight complex adverbial sentences were manipulated along three factors: (i) branching of the temporal clause with respect to the main clause (Left vs. Right), (ii) pronoun position with respect to its potential antecedent (Forward vs. Backward), and (iii) semantic plausibility (+/–). One condition specifically targeted anaphora resolution via binding (Right-Branching temporal clause with a Backward pronoun - RBB), with a Binding Theory Principle C violation, while the remaining conditions targeted coreference (RBF, LBB, LBF). Responses were scored for accuracy and errors on subject determiner phrases (DPs) (Calabrese 1986). Global cognitive functioning was assessed using the Mini-Mental State Examination (MMSE) (Magni et al. 1996). To explore correlations between cognitive abilities and linguistic performances, Verbal Working Memory (V-WM) and Verbal Short-Term Memory (V-STM) were measured using Digit Span Backward and Digit Span Forward tasks, respectively (Monaco et al. 2013).

The analysis revealed significant main effects of Diagnosis ($p < .001$) and Pronoun Position (Bonferroni-adjusted $p = .0016$), based on the Wilcoxon rank-sum test (Mann–Whitney U). HA participants were significantly more accurate (mean accuracy = 97.5%) than MCI participants (mean accuracy = 80.8%), and overall accuracy was higher in Forward than in Backward conditions (Figure 1). Further within-group non-parametric analyses using the Wilcoxon signed-rank test showed that MCI participants performed significantly worse in Backward compared to Forward sentences (Bonferroni-adjusted $p = .018$), whereas HA performance was not affected by either syntactic or semantic manipulation (see Table 1 for a summary). No significant correlations were found between V-WM or V-STM measures and overall accuracy, nor with MCI accuracy across experimental conditions.

These preliminary findings corroborate our initial hypothesis, indicating that anaphora resolution is markedly more fragile in individuals with MCI than in HA. This vulnerability appears to be modulated by structural factors, namely the backward position of the pronoun with respect to its potential antecedent, which imposes an additional burden on the integration of syntactic and semantic cues. Moreover, the absence of significant correlations between memory measures and task performance suggests that the linguistic difficulties observed in MCI may arise independently of these cognitive abilities. Overall, the results identify syntax–semantics integration as a promising linguistic marker for distinguishing healthy from pathological aging.

Figures

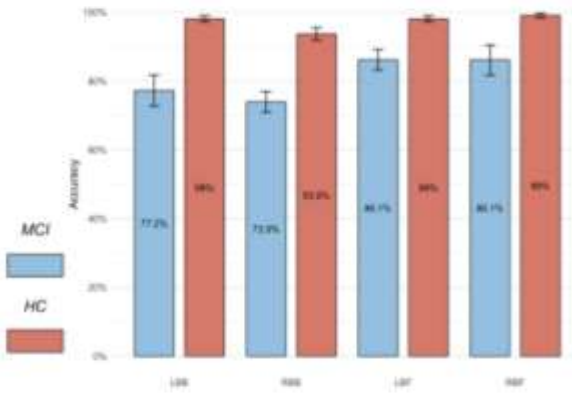

Figure 1: MCI and Healthy Adults accuracy at SRT for each condition.

Tables

	Overall *p (Bonf)*	HA *p (Bonf)*	MCI *p (Bonf)*
Diagnosis eff.	**< .001***	–	–
Branching direction eff.	.5988	.3953	1.000
Pronoun position eff.	**.0016***	.0871	**.018***
Semantic plausibility eff.	1.000	1.0000	1.000

Table 1: Diagnosis effect, Syntactic and Semantic conditions effect on overall and in-group accuracy.

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The Comprehension and Production of Counterfactuals in Individuals with Schizophrenia

Elif Yılmaz Çelik
Graduate School of Social Sciences of Middle East Technical University
elify980@gmail.com

Conditionals are structures involving two clauses: an antecedent where the condition is stated, and a consequent where the outcome is expressed. To talk about a factual event, we use *indicative conditionals*, which are *if p then q* statements and used to talk about situations that may happen. To mention imaginary alternatives that could have occurred but did not happen in reality, *counterfactual conditionals* are used. Turkish requires the use of conditional marker *-sA* to create a conditional statement along with tense markers (*-dI, -r, - AcAk*). In indicatives, the tense marker is first attached to the root of the verb, followed by adding the conditional suffix *-sA* to the verb conjugation. In counterfactuals, the conditional marker *-sA* is affixed before the tense marker. Turkish counterfactuals are considered complex structures due to their compact morphological structure, the semantic difference arising from the change in the position of the conditional marker and dual meaning representation. In addition to morphological and semantic difficulties, counterfactuals necessitate certain cognitive requirements, such as counterfactual reasoning and theory of mind.

This study aimed to investigate the comprehension and production of counterfactuals by individuals with schizophrenia. Being a complex condition, schizophrenia involves impairment in certain cognitive functions which are necessary for the use of counterfactuals, particularly in theory of mind and counterfactual reasoning (Brüne, 2005; Contreras et al., 2016). In terms of language abilities, individuals with schizophrenia have been found to exhibit lower performance or use less complex structures compared to healthy individuals (Walenski et al., 2010; Ziv et al., 2022). We hypothesized that individuals with schizophrenia would show poorer performance in comprehension and production of counterfactuals due to cognitive and linguistic deficits reported in the condition.

Two experiments were conducted to assess comprehension and production. The comprehension experiment was composed of a truth-value judgement task where participants saw an indicative or a counterfactual sentence and marked three alternative outcomes as “possible”, “impossible” or “unsure”. The alternative outcomes for the conditional sentences were written based on the truth-value table for conditionals (see Table 1). In the production experiment, a dialogue-completion task was created where participants read a short scenario and completed a dialogue by adding correct affixes. 40 schizophrenic individuals and 40 control participants took part in these experiments. Before the experiments, clinicians administered the Structured Clinical Interview for DSM-5, Trail Making Test A and B, and Positive and Negative Syndrome Scale to the participants in the schizophrenia group.

The results of a linear mixed model indicated that individuals with schizophrenia performed significantly worse in both comprehension and production of counterfactuals with lower accuracy rates compared to the control participants, indicating a deficit in counterfactual sentence comprehension and production. Education emerged as a significant predictor in the schizophrenia group for improved comprehension and production of counterfactuals. These findings suggest that counterfactual comprehension and production deficits should be considered a key target in cognitive/linguistic rehabilitation programs for individuals with schizophrenia, and highlight the potential role of education in mitigating linguistic and cognitive impairments associated with the disorder.

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Table 1. *Truth Table for the Conditional*

p	*q*	*p* → *q*
True	True	True
True	False	False
False	True	True
False	False	True

Acoustic patterns of vowel production in Cypriot Greek adults with autism spectrum disorder

Georgios P. Georgiou[a] & Maria Paphiti[b]
[a]University of Nicosia
[b]European University Cyprus
georgiou.georg@unic.ac.cy

Acoustic correlates of autism spectrum disorder (ASD) have been reported most consistently for aspects of prosody, yet the literature remains heterogeneous across tasks, languages, and analytic choices, with many effects small-to-moderate and not universally replicable (Asghari et al., 2021; Fusaroli et al., 2017). Cross-linguistic work further suggests that some acoustic patterns may be language- or context-dependent rather than global ASD markers (Lau et al., 2022). This motivates controlled, segment-focused designs in underrepresented languages to clarify which acoustic dimensions remain differentiating when communicative and pragmatic demands are minimized. We tested whether Cypriot Greek adults with ASD (*n* = 11; *n*females = 2; *M*age = 26; *SD* = 6.9) and controls with neurotypical development (ND) (*n* = 7; *n*females =2; *M*age = 24.6; *SD* = 6.8) differ in vowel production across vowel space metrics (area, dispersion, formant ranges) and token-level acoustic measures indexing prosody (F0), articulation (F1–F3), timing (duration), intensity, and voice quality/phonatory stability (jitter, shimmer, HNR). The two groups did not differ in terms of chronological age and educational background, but differed in the autism and empathy quotients, with individuals with ASD demonstrating significantly higher and lower scores, respectively. Participants completed a scripted reading task on a PC monitor using phonotactically legal two-syllable pseudowords in four contexts (/ˈsVsa/, /sVˈsa/, /ˈVsa/, /VˈsaV = /i e a o u/), yielding 80 productions per speaker (5 vowels × 4 contexts × 4 repetitions). Their recordings (Zoom H5; 44.1 kHz/16-bit) were segmented and analyzed in Praat, with midpoint formant and F0 extraction, manual duration labeling, and standard perturbation/harmonicity measures. Formants were Lobanov-normalized to reduce anatomical variability; F0 was normalized in semitones relative to each speaker's median. Bayesian hierarchical models estimated global group effects and vowel-by-group interactions, with posterior credible intervals and evidence ratios used for inference. Across all vowel space metrics, posterior group effects were consistently negative but small and highly uncertain, indicating no robust ASD–ND differences in vowel space area, dispersion, or formant ranges; within-group variability dominated, with VSA showing the greatest residual variability (Figure 1). Token-level models likewise showed no reliable global group effect on F0, F1–F3, duration, intensity, or voice quality. Where differences emerged, they were vowel-specific and measure-specific: strongest evidence clustered in F0 (notably /e/, /a/, and especially /o/), with selective effects in formant domains (F1 for /e/; F2 for /a/ and /o/; F3 for /i/ and /a/). Duration showed substantial ASD–ND overlap; jitter, shimmer, HNR, and intensity did not reach thresholds for strong evidence (Figure 2). These findings argue against broad, uniform acoustic signatures of ASD in Cypriot Greek under reduced

communicative demands, aligning with calls for theory-driven, context-sensitive, and cross-linguistic cumulative approaches. Clinically and methodologically, they caution against using aggregate vowel space or generic voice-quality indices as standalone diagnostic indicators and instead support finer-grained models that target vowel-conditioned patterns and individual variability, which may better accommodate the selective nature of acoustic divergence observed in ASD.

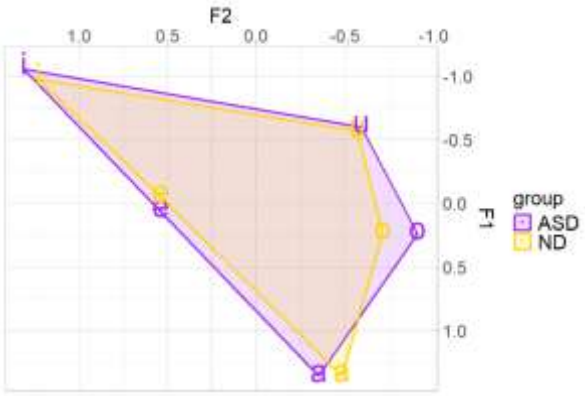

Figure 1. *Vowel space of speakers with ASD and speakers with ND*

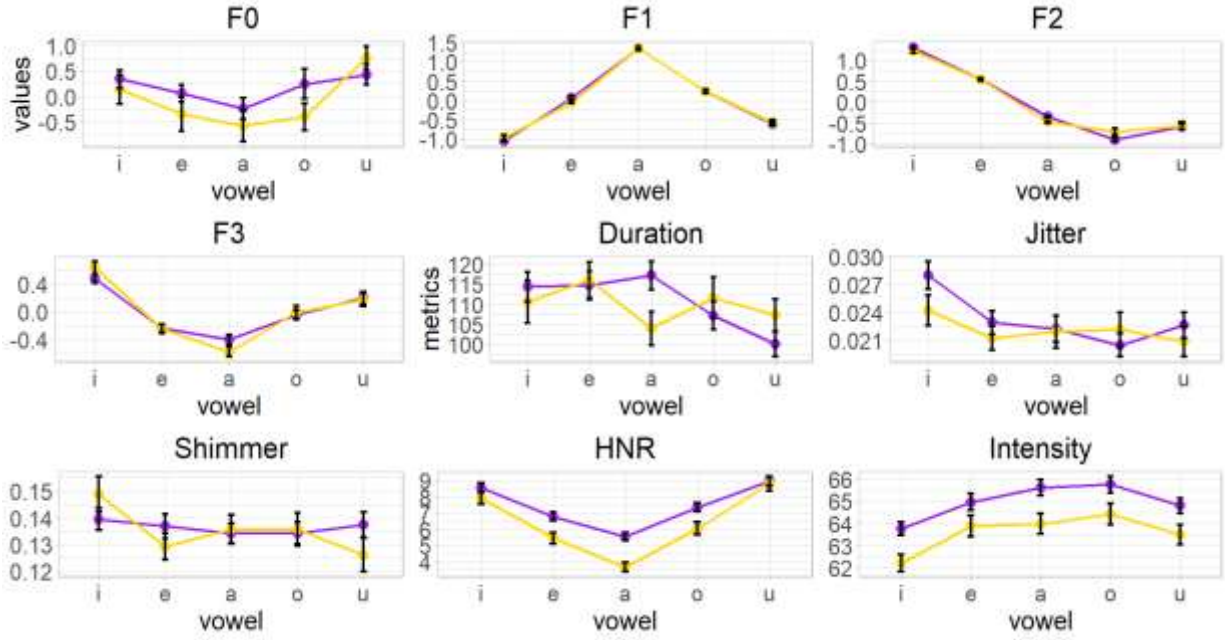

Figure 2. *Acoustic measures of native vowels among speakers with ASD and speakers with TD*

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POSTER PRESENTATIONS

A Within-Subject Comparison of Semantic and Orthographic Priming RTs (Pilot Study). A Proto-Coherence Hypothesis

Ivana Bogdanović
University of Freiburg, M.A. Language and Cognition, Germany
ivana.bogdanovic@email.uni-freiburg.de

RT differences in semantic priming with lexical decision tasks are typically interpreted as an index of how strongly and how quickly semantic context modulates lexical access, given that RT facilitation for related targets reflects pre-activation of semantic and lexical representations by the prime. Orthographic priming, in contrast, is mainly used to probe inhibitory and facilitatory effects of lexical neighbourhood structure on word recognition.
Fast priming studies report robust homophone/orthographic priming at 29–35 ms, whereas semantic priming emerges only slightly later and is more fragile, suggesting earlier form-based activation and later semantic integration. Survival and distributional analyses further show that semantic priming effects on RTs appear from roughly 260 ms and are strongest in the slow tail, indicating that semantic context is especially recruited when recognition is difficult or slow. This raises the question posed by Ryskin et al. (2020): to what extent do predictions feed back from higher-level (semantic/syntactic) to lower-level (orthographic/phonological) representations?
In sum, orthographic priming is commonly associated with early, form-based processing (bottom-up), whereas semantic priming is assumed to engage higher-level meaning-based representations (top-down coercion). However, the present pilot study does not aim to contrast these mechanisms directly, but rather uses these two separable conditions with respect to RTs to lay the groundwork for the hypothesis that the similarity function operating across these two processing paradigms may be the same. The common ground for both conditions is regarded as the coherence relation, that is, the likelihood of closeness between stimuli that is understood in Gestaltist terms, i.e. “making sense” together, and being recognized as holistic percepts (Holler & Levinson, 2019, p. 641), whether motivated by frequency and mutual information in corpora, or edit distance, and other associative relations, when considered within the visual paradigm.
The present pilot study therefore investigates whether orthographic and semantic priming paradigms can be modeled as parametrically differentiated instantiations of a shared processing structure. This hypothesis is referred to here as the proto-coherence hypothesis.
Data were collected from 18 advanced L2 speakers of English in a within-subject masked priming experiment using PSIbex, with primes presented for 42 ms. Participants completed both orthographic (proto-coherent) and semantic (symbolically/semantically coherent) prime–target conditions. Analyses were restricted to correct trials in order to focus on processing dynamics reflected in RTs rather than **on** response failures.
The results show that orthographic and semantic priming differ reliably in raw RT magnitude, with semantic priming yielding faster responses on average. Crucially, once RTs are normalized within

conditions, the two distributions converge in shape and become statistically similar, consistent with membership in the same location–scale family. Mixed-effects modeling further shows that, after accounting for shared predictors and random effects, no condition-specific residual structure remains attributable to priming type. Bayesian model comparison further supported the absence of condition-specific residual structure.

Limitations

As a pilot study with a small sample size, the repeated singular fit warnings indicate that the dataset is insufficient to robustly estimate random variation at the level of individual participants or target items; accordingly, statistical power in the present analyses derives primarily from the fixed effects (the experimental conditions) rather than from the random-effects structure. Moreover, the study is agnostic with respect to processing architecture, timing, and information flow, and does not attempt to isolate bottom-up from top-down processes. The proposed continuum between proto-coherence and symbolic coherence should therefore be understood as reflecting differences in constraint dominance within a shared functional mapping.

Looking for Harmony: Eye-Tracking Evidence for Morphophonological Mismatches in Turkish

Ali Çağan Kaya, Berkay Bostan & İpek Pınar Uzun
Ankara University Brain Research Center (AU-BRC), Hacettepe University
alicagank@gmail.com
berkaybostan@hacettepe.edu.tr
bekar@ankara.edu.tr

Turkish exhibits backness- and roundness-based vowel harmony (Kabak, 2011; Kabak & Weber, 2013), which has been shown to cause processing difficulties in previous behavioural studies (Scharinger et al., 2011; Ylinen et al., 2016; Aygüneş & Taşdemir, 2020; Tokaç & Cole, 2024). Harmony perception is expected to induce a surprisal effect when suffixes do not follow harmony rules when attached to roots in Turkish. Building on a series of earlier pupillometric and behavioural experiments investigating harmony-induced surprisal effects and congruency judgements (e.g., Kaya et al., 2025), we designed a follow-up eye-tracking experiment to examine whether vowel harmony mismatches also lead to overt reanalysis behaviour during word processing. In this eye-tracking experiment, pseudowords were suffixed with the derivational morpheme {-sAl} and the inflectional morpheme {-lAr}, both of which have two vowel-harmonic variants. This study aims to explore how vowel harmony mismatches in different morphological contexts affect real-time visual processing during silent reading. The experiment was conducted with 20 adult native speakers of Turkish. Eye tracking was employed to capture online processing differences by measuring gaze behaviour, specifically fixation durations and regressions, which are sensitive indicators of increased processing difficulty. The stimuli consisted of 360 bisyllabic CVC.CVC pseudowords (240 experimental items and 120 fillers) distributed across four conditions defined by a 2 × 2 design: MorphemeType (inflectional vs. derivational) × Harmony (harmonic vs. disharmonic). In each trial, participants viewed a visual representation of the pseudoword in carrier sentences, and their eye movements and gaze durations were tracked. The eye-movement measures included first-pass fixation duration, total gaze duration, and the probability of regressions to the stimulus. Eye-movement data were analysed using linear mixed-effects models with MorphemeType and Harmony as fixed effects and random intercepts for participants and items. The preliminary results showed that disharmonic suffixes elicited longer gaze durations and higher regression rates than harmonic forms, which indicates an increased processing difficulty and reanalysis. Together with earlier pupillometric and behavioural findings, these results provide converging evidence that vowel harmony violations in Turkish trigger surprisal-driven processing costs across complementary psychophysiological and eye-movement measures.

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From verbal memory to speech production: examining the language profile of individuals with chronic alcohol abuse

Tijana Ašić[a], Vladan Plećević[b], & Aleksandra Parojčić[c]
[a]University of Belgrade, University of Kragujevac
[b]Center for Applied Neurosciences "Dr. Plećević", Belgrade
[c]Institute of Mental Health, Belgrade
tijana.asic@gmail.com

Our research aimed to examine those language abilities in individuals (our patients), which are known to be affected by the chronic alcohol abuse: we were focusing on the relationship between verbal memory, expressive (speech production, related to Broca's area, but also to other cortical and subcortical parts) and impressive speech (comprehension, related to Wernicke's area, but also the prefrontal cortex and inferior parietal lobe).

The sample included 15 subjects with a history of alcohol dependence for at least five years. Neuropsychological and psycholinguistic assessment included testing of verbal memory, nomination (lexical access), and receptive vocabulary using standardized test instrumentation. The following tests were used: Boston Naming Test (BNT), Peabody Picture Vocabulary Test - Third Edition (PPVT-III), Rey Auditory Verbal Learning Test (RAVLT), and a subscale Repetition of Words and Sentences from Boston Diagnostic Aphasia Examination (BDAE). The research was conducted at the Center for Applied Neurosciences "Dr. Plećević", Belgrade, and the Institute of Mental Health, Belgrade.

In the analysis of the responses obtained from our patients, we tried to examine the patterns of the functioning of verbal memory, nomination, expressive and impressive language, as well as on assessing the interrelationships between these domains.

The results show that the greatest impairments (in addition to the expected dysarthria – a motoric problem) occur in the domains of nomination, memory of cues and questions, understanding complex structures, metaphors, and humor. All the participants in the language tests had problems to retrieve a right word and also to access the logical (or temporal) relation btw the parts of complex sentences. In addition, the proper understanding of metaphors and irony took much longer than we expected and sometimes led to misunderstandings.

The results of our investigation are relevant for understanding neurological activity related to the following areas: syntax, propositional semantics, pragmatics, and text-linguistics. The findings are discussed in the context of the possible role of verbal memory in the emergence of language difficulties in individuals with chronic alcohol abuse. The main focus is on the importance of neuropsychological and neurolinguistic assessment and its implications for clinical neuropsychological and speech therapy practice.

Keywords: chronic alcoholism; language abilities, verbal memory, expressive speech, impressive speech, nomination

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Integration of Information from Different Modalities in Communication: Speech-Gesture Mismatches

Maria Minina
Higher School of Economics, Moscow, Russia
mariaminina.work@gmail.com

Gesticulation is an integral part of human communication, known to aid speech production (Kita, 2000; Krauss et al., 2000). However, its role for listeners remains less clear. While eye-tracking studies show listeners typically fixate on speakers' faces, they do attend to gestures when auditory input is degraded (Gullberg & Holmqvist, 1999). A seminal work by McNeill et al. (1994) demonstrated that gesture-speech mismatches impact listeners' event representations. They compared three categories of mismatches, and *manner* gestures were shown to have the strongest effect, i.e. the depiction of *how* actions are performed was especially influential. The study, however, left many questions unresolved, which is why we decided to conduct a similar experiment more than 30 years later.

Our experiment specifically contrasts *manner* gestures (verb-oriented) with *shape* gestures (noun-oriented, describing object properties). The primary question of the present study is how exactly mismatched gestures will influence information integration and cognitive load.

Twelve native Russian speakers, wearing Pupil Invisible eye-tracking glasses, watched a video of a narrator retelling a cartoon fragment containing matched and mismatched instances of both gesture categories. After viewing, participants retold the story and answered a list of questions regarding the plot.

Linear mixed-effects models revealed no significant difference in fixation patterns and duration between matching and mismatching gestures — which is in line with previous works, — as well as between *shape* and *manner* categories. As for behavioral data, most participants answered all the questions correctly, and overall verbal recall accuracy was high. In their own retellings, however, participants reproduced gestures from the stimulus more frequently if those gestures had been mismatched by *shape*. In any condition, participants always produced gestures congruent with their own speech — thus effectively "correcting" the narrator's "mistakes".

The results suggest that verbal and manual channels are integrated into a single, congruent mental representation. While verbal information dominated recall, the increased gestural reproduction in mismatch contexts indicates that gesture-speech incongruity increases processing load, prompting gestural encoding as a mechanism for information packaging, in consonance with the Information Packaging Hypothesis (Kita, 2000).

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Pragmatic Information Transmitted by Gestures During Word Search

Maiia Alimova
Higher School of Economics, Moscow, Russia
sauroshan@gmail.com

According to the lexical retrieval hypothesis (LRH), gestures can facilitate lexical search (Krauss & Hadar 1999). This study extends the scope of the hypothesis from exclusively iconic gestures to gestures that have pragmatic meaning, such as those that structure discourse or reflect the interaction between interlocutors. Episodes of speech disruptions in normal speech and in individuals with aphasia (IWA) are examined, and their accompanying gestures are analyzed to identify patterns of correlation between the type of disruption (context), the form, and the presumed meaning of the gesture. It is assumed that different types of aphasia will use different strategies of gesticulation during pauses and self-correction.

The study uses data from a corpus collected by the Language and Brain Center, as well as narrators' recordings from the Russian Multichannel Corpus (https://multidiscourse.ru) to expand the control group. In both cases, the stimulus material is "Pear Film" which informants are asked to retell. Speech disruptions are classified according to (Podleskaya & Kibrik 2007); the annotation also takes into account the duration of filled and silent pauses (where short is <500 ms and long is >500 ms). The form of the gesture was annotated using E.A. Grishina's (2017) classification, and the meaning was also annotated based on Grishina's typology, as well as on a model of discourse markers' classification projected onto the sign language paradigm (Lopez-Ozieblo 2020). During the annotation, some person-specific variations in informants' gestures were grouped into broader categories, similar to how gestures from the Palm Up Open Hand family with varying degrees of reduction are united into a single prototype based on the main kinesiological components in Cienku (2021). This approach levels out the influence of individual gestural characteristics on further analysis.

The analysis of preliminary results of recordings' markup of IWA (n=4) and the control group (n=2) showed that healthy patients typically exploit a predominantly interactive function of pragmatic gestures, expressed by the Palm Up Open Hand family. The presumed meaning in this case is a signal to the interlocutor expressing the desire to retain the right to speak. For patients with fluent and non-fluent aphasia, there is greater variability and idiosyncrasy; in addition to interactive gestures, cognitive gestures signaling difficulties are also common during pauses, hesitations, and self-corrections. Interactive gestures are also used to check understanding: in such cases, head movements directed at the interlocutor "check" the comprehensibility of the statement. Patients with non-fluent aphasia also often remain in one position (the peak point of the gesture) for a long time (e.g., throughout the entire pause).

Thus, for healthy individuals and IWA, the pragmatic component of gesticulation serves different purposes: in the first case, it shows the interlocutor the intention to continue speaking. In the

second case, it can serve to indicate the presence of a struggle. A promising avenue for further research would be to study the differences between types of aphasia (e.g., afferent and efferent) and expand the sample size.

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Ways of speech intelligibility evaluation – a comparison between human agents and ASR systems

Bernadett Dam, Árpád Berta, László Tóth & Livia Ivaskó
University of Szeged, Hungary
ivasko@hung.u-szeged.hu

Motor speech disorders can often lead to reduced intelligibility and communication difficulties, ultimately affecting the person's quality of life. In recent years, several initiatives have been launched to improve the processing of disordered speech (e.g., Tröger et al., 2024). However, these initiatives differ in their methodology and their degree of success.

We are working on a collaborative project called the 'Dysarthria' project at the University of Szeged with two main goals in mind. First, we conduct a detailed analysis of dysarthric speech while considering etiological aspects. Secondly, we aim to find solutions that intend to improve the intelligibility of dysarthric speech using automatic procedures.

Here, we present the results of a study that focuses on the intelligibility of Hungarian dysarthric speakers. We asked trained and untrained listeners to rate the level of intelligibility of dysarthric speech samples. Trained listeners included people educated in speech analysis (e.g., speech and language pathologists), and the second group consisted of native Hungarian speakers untrained in speech-related topics. We then compared their ratings with the error rates of automatic speech recognition (ASR) systems. In a previous work, we give account of an automatic speech evaluation method using four ASR systems, two of which were developed specifically for Hungarian (Berta et al., 2026); however, none of them were trained on dysarthric corpora.

In this study, we selected 15 dysarthric speech samples from the Hungarian Dysarthria Database (Jenei et al., 2022). Our dataset contained recordings from 7 mild, 5 moderate, and 3 severe dysarthric speakers. We also included samples from 5 control speakers.

All of these samples were evaluated by the invited human participants and the above-mentioned automatic speech evaluation systems. Findings will be presented based on their ratings. Not only can the results themselves be explained for future implementation, but the perspectives of the two ways of evaluation as well. While human agents are capable of referring to those features which can be recognized as relevant items to make a comparison, automatic speech recognition systems can detect target words by speech-to-text conversion.

As a conclusion, we discuss the results of the different evaluation methods and what the differences between the ratings of these three groups could imply about intelligibility.

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Bilingual-Bimodal Italian Language-LIS (Lingua dei segni italiana) Teaching as a Tool for Language Acquisition and Social Inclusion

Sara Pasquet
University of Bergamo, Italy
sara.pasquet@unibg.it

The contribution starts from the results of an experiment conducted in Italy and Estonia (whose methods and main results are discussed in S. Pasquet, L. Revelli (in print)), on a sample of 350 speakers, 10 of whom were deaf, and focuses on the data relating to the latter. The aim of the research was to identify the differences in the vocabulary produced by different categories of Italian speakers.

The production of deaf students participating in the test is, quantitatively speaking, certainly lower than that of their hearing peers. This finding correlates with the now well-established belief that language acquisition requires a child to be exposed to it from birth and that the physiological structures necessary for learning are intact and functioning (C. Bertone, F. Volpato 2012). The data from this small sample clearly show that deaf adolescents are often disadvantaged in acquiring a first language, especially if they come from hearing families or those of foreign origin. Several studies confirm that oral language cannot be the first language for a child born deaf or who becomes deaf in the early years of life (D. De Santis 2010; C. Branchini, L. Mantovan 2022): because they cannot hear, deaf children are unable to acquire spoken language at the same pace and in the same way as hearing children. However, if exposed to sign language, they acquire it with the same ease and according to the same stages as hearing children in acquiring spoken language. This demonstrates that their language ability, as well as their cognitive abilities, are perfectly intact. Despite this, deaf children rarely find themselves having acquired, according to natural times and rhythms, the only language fully accessible to them.

Therefore, a teaching approach that can certainly be effective consists in adopting visual methodologies, experiential and practical approaches; in short, a bilingual-bimodal teaching method (S. Pasquet 2025). Here, we will share some brief reflections based on five years of experience working at a technical-professional institute in Turin specialized in education for deaf teenagers (I.S.I.S.S. “A. Magarotto”), where the bilingual-bimodal teaching method was applied in various situations, with the support of language interpreters in the classroom. Factors that promoted effective and engaging teaching for deaf students included:

- Extensive use of visual methodologies: images, videos, and concrete objects to represent basic linguistic concepts.
- Experiential and practical approaches, which focus on language learning through everyday situations (or simulations of situations). In this case, role-play or dramatization techniques are used.

• Introduction of digital technologies and online platforms for videos, images, and interactive materials.

• Bimodal-bilingual approaches, which enable synergistic learning of LIS and Italian: for example, teachers can use LIS to explain even moderately complex grammatical concepts, such as verb tenses, pronouns, and prepositions.

• Fundamentals of logogenia and logochromy: the former is based on the principles of generative grammar and, starting from the assumption that language is innate in each of us and simply needs to be activated through input (usually auditory, for hearing people), uses visual input with deaf students and leads to the creation of actual "written dialogues", which allow the student to develop greater syntactic and morphological awareness. Finally, logochromy uses the support of colours to enhance the learning of the syntactic and grammatical rules of the language (Leonetti 2023).

In conclusion, this contribution will show how in the school context LIS has proven to be a fundamental bridge for inclusion and relationship-building of deaf students with their hearing peers, as well as an effective tool for language acquisition.

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Cognitive Retrospective Transfer of L3 to L2 in Article Context Among Native Turkish Speakers

Gokhan Aksoy
Koç University, Turkey
gaksoy20@ku.edu.tr

Background and Research Question: Current multilingualism literature has focused primarily on the influence of the first language (L1) on the second (L2), or on cognitive transfer from L1/L2 to L3 (e.g., Rothman's Typological Primacy Model, 2011). However, the retrospective transfer mechanism has not been sufficiently addressed (Bardel & Falk, 2007). This study examines the extent to which learning a language with a complex article system (such as German or French) modulates the article usage in English among native Turkish speakers. Since Turkish does not have a distinct article system, positive transfer from a third language to a second language (English) in terms of articles is possible.

Theoretical Framework: According to the Cumulative Enhancement Model (Flynn et al., 2004), all previously and currently learned languages contribute to a person's linguistic repertoire. In this context, we suggest that learning a language with an article system that has high morpho-syntactic transparency (like der/die/das in German) increases one's metalinguistic awareness. This cognitive shift may enable them to retrospectively re-evaluate the article category (L2) in English. Therefore, learning can transform article usage in English from a meaningless, language-specific rule into a universal requirement.

Experimental Design and Analysis: In this study, participants will be divided into two groups. The first group will consist of bilingual individuals who can speak Turkish and English. The second group will consist of multilingual individuals who are proficient in a language with more than one definite article, such as German or French, in addition to Turkish and English. To control for educational differences, participants will be selected from among students of the same university.

The groups will first be assessed in terms of their English proficiency. Each participant will be given a score based on their answers. The aim is to prevent the difference between the groups from stemming solely from their English knowledge. Furthermore, participants' proficiency in a third language will also be measured. Through a short elimination task, having at least A2 level language skills in a third language will be considered a minimum requirement for participants in the second group.

Participants will be presented with sentence completion and grammar assessment questions. The questions will focus on the use of definite articles in English. To allow for a more nuanced analysis of the responses, the questions will be categorized according to three linguistic functions: Anaphoric usage, structural usage and abstract/institutional usage. In Turkish, the first of these morpho-syntactic signs is used through suffixes, but the other two have no specific use.

Therefore, examining these three distinctions for native Turkish speakers could yield meaningful results. The primary dependent variable in this study will be the accuracy of the use of the English definite article in the specified contexts.

Expected Contribution*:* Our research focuses on backward L3→L2 transfer. In this way, it aims to provide a measured but original contribution to the multilingual acquisition literature. The results of the experiment could be helpful in understanding the mechanisms of cognitive transfer between languages. The project may broaden discussions on typological and metalinguistic awareness related to the dynamic expansion of linguistic repertoire.

Additional Information

Experimental Task Details: The experimental test battery consists of 40 items (20 Completion, 20 Grammaticality Judgment Task). The General Understanding Test items contain both grammatical and non-grammatical misleading items to test the stability of participants' mental representations of the English definite article.

Explanation regarding the use of specific articles

Anaphoric Usage: Cases where the definite article refers to a previously mentioned noun.

Structural Usage: Use of "the" to indicate degrees of superlative in comparative situations.

Abstract/Institutional Usage: The definite article referring to unique, systemic entities such as the sun or radio.

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