



Student Research Day Abstract Book

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Keynote speech

Maria Shvedova, Vasyl Starko

GRAC: a Reference Corpus of the Ukrainian Language with Regional Annotation

The General Regionally Annotated Corpus of Ukrainian (GRAC; uacorporus.org) is a general-purpose reference corpus of Ukrainian that can be compared to the British National corpus, or COCA and COHA American corpora. What sets GRAC apart from these corpora is the distinctive feature of regional markup: all the texts are annotated with regard to the part of the country, or diaspora, to which the author or the media is related. The standard Ukrainian, due to its complex history, exhibits significant regional variation. Diaspora (including the one in Canada) has also been an important factor in the history of Ukrainian. Taking this variation into account is both a challenge for any comprehensive research into Standard Ukrainian, and constitutes an object of inquiry in its own right. In this talk, we present and motivate the principles of regional markup realized within GRAC and discuss issues of territorial representativity, including the language of the Ukrainian diaspora. We then present case studies of regional variation of the Ukrainian investigated in a large corpus.

Session 1

Fareeha S. Rana

Temporal expectancy violations affect the perceptual grouping of syllables

Timing in literature has often been evaluated along the scope of speech rate (tempo) or phoneme/syllable duration. Limited work examines how a variable rate of presentation—how non-isochrony—affects speech perception. The current experiment explores the effect of unexpected timing variations on the perceptual grouping of syllables. Participants were auditorily presented with sequences of paired syllables. At the end of each sequence, they were asked to indicate which of two pairs of syllables they had heard and were evaluated on the accuracy and reaction time (RT) of the response. A portion of the syllable sequences contained a timing expectancy violation—either a gap that was smaller (early deviant) or larger (late deviant) than expected. We hypothesised that the presence of a timing deviant would result in poorer recall by disrupting the grouping of syllables in the sequence, and that this effect would be modulated by the type of timing deviant. Specifically, we expected late deviants to result in poorer recall than early deviants due to orienting effects. Results support our hypothesis, with participants performing best for sequences with no timing deviants, and poorest for sequences with late timing deviants. This has implications for how temporal variability is processed in speech.

Heather Wild

Valence effects in the wild: Analysing word learning in language learning apps

One of the nagging questions in applied linguistics is how to make language learning easier. Snejfjella et al. (2020) found that words with positive emotional valence like vacation are easier to learn than negative words like flu. Participants also recalled words better when they were learned in positive sentences than in negative sentences. However, these findings were based on highly controlled experiments using non-words. So, do valence effects survive in real-world language learning environments? We analysed data from a popular language learning app, Lingvist (<https://lingvist.com/>), to determine how word learning is influenced by (i) the valence

of the words themselves (e.g. vacation vs. flu), and (ii) the valence of the context in which novel words are presented (e.g. I had a lovely time on __ vs. I was fighting a terrible __).

Initial results show that valence of the word and valence of the context sentence are both significant predictors of successful learning. The more positive the conditions the more likely learners are to succeed. The finding that positivity boosts language performance can be directly applied to improving language apps. Additionally, by replicating the effects found in previous studies, we conclude that valence effects do indeed survive in the wild.

Lauren Broeders, Emma Naylor, Alix Warnell

Working Memory in Musicians vs Non-musicians

Previous research suggests that individuals with no musical training have a smaller working memory capacity and are less successful at recalling when there is interference present (Talamini et al, 2016, Lee et al, 2007, Franssen et al, 2005). In this study, we explore performance of participants with musical training compared with those without musical training in a task thought to measure working memory, or the amount of information maintained while performing a task. In our study we asked what the relationship between musical training and working memory says about the overall structure and processes of the working memory system.

We utilize a complex span task (Daneman et al. 1980) to test whether musical training affects performance in the task. We presented simple sentences aurally and visually, then added irrelevant stimuli (interference). This is to uncover what modality allows musicians and non-musicians to process stimuli more efficiently. We predict that musicians will have a larger working memory capacity compared to non-musicians, as well as faster recall ability when presented with auditory stimulus opposed to visual stimuli, and that musicians have a stronger ability to block out irrelevant music.

Preliminary results support our hypothesis, however, this is a small sample and conclusions can not yet be drawn.

Session 2

Fiza Ahmad

Does rhythmic ability help with learning foreign words?

When adults learn foreign languages, the lack of semantic context forces them to rely on rhythm and temporal cues to successfully learn words. These cues characterize the prosody of a language, which include the rhythm, stress, and intonation of speech. In this study, we utilized Urdu prosody to explore the relationship between an individual's temporal pattern awareness, and their ability to learn a foreign language. Participants completed three tasks that tested their rhythmic repetition ability: Tone Rhythm Repetition Task; Jabberwocky (nonword) Sentence Repetition Task; and a Foreign Sentence Repetition Task; the results from which were correlated with their performance on an Urdu word-learning task. We predicted that a high score during the rhythm reproducibility tasks would correlate positively with the proportion of correctly recalled Urdu words during the word-learning task. We found that some rhythm tasks showed a positive correlation with foreign word learning. This study could provide insight into the relationship between rhythm and word acquisition.

Daniil Gnetov

Word length, frequency, and predictability effects in eye-movements in reading English: a systematic comparison of 12 language backgrounds.

Reading proficiency in a first language is a robust predictor of reading behaviour as reflected in the patterns of eye movements. There is evidence to suggest that reading proficiency also modulates the reader's sensitivity to classical "benchmark" effect of eye-movements during reading: word length, word frequency, and word predictability. However, the nature of those interactions in second language reading is unknown due to only a handful of studies done on this topic. In this study we investigate the role of reading proficiency in modulating the benchmark effects of eye-movements during reading in English as a first and second language.

We used eye-movement data from the Multilingual Eye-Movement COrpus (MECO L2, www.meco-read.com), collected from over 450 participants in 12 countries (including Canada)

reading Wikipedia-style texts in English. Word frequency and word predictability estimates were obtained using FastText models pre-trained on English Wikipedia corpus. Participants' reading proficiency was estimated as composite z-scores from a battery of tests tapping into component skills of reading.

The results of word-level analysis of eye movements point to the strong interactions of proficiency level with all three benchmark effects. More proficient readers are less sensitive to word length and frequency effects, but more sensitive to word predictability.

Megan Karabin

Linguistic complexity and creativity across the COVID-19 pandemic: a corpus analysis

This study investigated language behaviour of older adults before and during the COVID-19 pandemic. Linguistic complexity (LC)—a measure of lexical and morphosyntactic richness—is an index of both cognitive functioning and creativity. The increased physical and social isolation during the pandemic yielded reports of heightened levels of creativity as well as cognitive decline, bringing forth two counter-directed predictions: (1) given the threat to cognitive functioning posed by the pandemic, LC may steadily decrease following the onset of the pandemic, or; (2) consistent with the creativity boost reported during lockdowns, LC may be greater after the onset of the pandemic. We analyzed the syntactic and lexical complexity of texts from the CoSoWELL corpus (v1.0), a collection of personal narratives written by 1028 mature adults (55+) collected at five test sessions spanning before (t1) and after (t2-t5) the beginning of the pandemic. Four lexical variables (three variants of type-token ratio; noun-verb ratio) and four syntactic variables (embeddedness, D-ratio, longest dependency path; mean length utterance) were used to calculate LC. All measures saw statistically significant gains from t1 to t2, and further increased across subsequent test sessions. These findings confirmed the second hypothesis and, we argue, support a pandemic-related boost to creativity.

Evonne Syed

How do we learn the meanings of words? Investigating semantically related vs. unrelated novel word learning

Studies have shown that children learn new vocabulary better when it is presented in semantically related sets. However, research on meaning relationships in adult novel word learning is limited. This experimental study employs a word learning paradigm to examine how adults learn semantically related words. Novel words (e.g., plurk and wurge) with related (e.g., fast and slow) and unrelated (e.g., hot and slow) intended meanings were learned when embedded in multiple linguistic contexts. In Experiment 1, participants read passages containing novel words that either formed antonym pairs or were semantically unrelated. In Experiment 2, new participants read passages containing novel words without any semantic relationship. After reading, participants were tested on semantic learning of the novel words through post-tests tapping into memory recall and recognition. The results showed no effect of semantic associations on learning of novel words, contrary to previous research with children. Additionally, reading times were significantly faster for words that were presented without an antonym pair; the semantic relation increased the cognitive effort of reading, likely due to the need to form overlapping representations in the mental lexicon. These findings help inform current linguistic literature and language learning methods.

Posters

Mariam Bekhet, Nadia Lana

Accent or Attitude? Investigating the Relationship Between Accented English and Psychological Valence Ratings

Whether we realize it or not, our attitude towards accented speakers goes beyond the actual phonetic and acoustic differences of their speech. We might associate some accents with romance and charm, whereas others are perceived as aggressive and unpleasant. Television and films in Western culture have frequently presented Arabic and Russian accented English as antagonistic or villainous. This research project investigates how accents, labels, and the psychological valence of speech can modulate participant ratings. 104 participants recruited online were presented with audio samples of historically stereotyped foreign-accented English and asked to rate the valence of each sample on a scale of 1(negative) to 9 (positive). Participants

heard the recordings of one monolingual English speaker and two bilingual Russian/English and Arabic/English heritage speakers. To avoid individual speaker differences, the same heritage speaker provided sentences in (1) their natural unaccented English and (2) a truthful imitation of a strongly accented speaker (Arabic or Russian). This study also explores the relationship between valence ratings and MPAAE scores (Measure of Prejudice Against Accented English), a 36-item questionnaire presented to participants after the audio rating portion.

Claire Church, Savannah Inacio, Rachel Keizerwaard

The Role of Semantic Association Priming and Processing Tasks on Working Memory

This research investigates the effects of interference and distraction on the recall of words held in working memory. We examined the extent to which semantic association priming and complex span tasks (operation and reading span) affect word recall. We investigated multitasking abilities and the brain's ability to share resources as they relate to linguistic processing. Research suggests that semantic priming with words that are associated with target words hinders recall. When there are many similar items in the working memory, they interfere with one another (Van Dyke & McElree, 2006). Moreover, it is suggested that task switching (between math and language) may also limit accurate recall (Connell & Lynott, 2011), due to an increased cognitive load. We manipulated sentence comprehension and math equations using complex span - a task that combines processing of sentences or equations and recall of words, measuring recall accuracy and sentence/equation comprehension. We primed participants with words that either matched or did not match the recall words. We predicted that recall would be hindered in the match condition, and that recall would be inhibited for the operation span condition, as switching between domains is suggested to result in difficulties. Results from this complex span experiment will be presented.

Ava Homiar

The influence of musical training on visuospatial working memory processing in musicians with dyslexia

Typical reading children learn to recognize the orientation and shape of the English alphabet using visuospatial working memory skills, as well as associate letters with the corresponding symbol when decoding unfamiliar words, numbers and objects—an essential skill for reading

and writing. However, individuals with dyslexia have decreased capacities in visuospatial working memory. Previous research highlights that musical training can improve visuospatial working memory processing by mapping sound onto visuospatial information (Neuhoff et al., 2002). To test the influence of musical training on visuospatial working memory in nonmusicians with and without dyslexia, and musicians with and without dyslexia, we will adapt the methodologies of Jakobson et al. (2008), Garcia et al. (2014) and Lipowska et al. (2011) in which musicians and nonmusicians drew detailed figures from memory, and individuals with and without dyslexia recalled a string of images and then sequenced them in reverse order. Our procedure will combine these tasks, where participants will complete a complex figure task and visuospatial reconstruction task to assess visuospatial constructional ability and working memory between participant groups with and without musical training. Our hypothesized results would point to the benefit of prolonged musical training in visuospatial working memory processing in musicians with dyslexia.

Torin Ong

How to Value Gender: an investigation into (a)symmetric nouns in English

In English, nouns like 'actress' and 'princess' are marked with an [-ess] morpheme that expresses the feminine gender. While the [-ess] that attaches to 'actor' and the [-ess] that attaches to 'prince' have the same morphological realization on the surface, there is evidence that they have distinct underlying syntactic structures. Previous research has shown that there is a difference between gender as an interpretation associated with the lexical semantics of a morpheme or word and gender as a feature determined by syntactic agreement. Based on their morphosyntactic behaviour, nouns like 'actress' are called asymmetric nouns, and nouns like 'princess' are called symmetric nouns. While the morphemes have the same pronunciation at a surface level, the assumption is that they must be associated with different underlying syntactic structures for them to yield distinct interpretations. The current study uses an acceptability judgement task to investigate how gender is realized on symmetric and asymmetric nouns in English, and how the structural environment that the noun is in (subject versus predicate position) affects participant acceptability ratings.

Raluca Petria

The influence of reading component skills on reading comprehension in L1 and L2 English speakers

Reading is a complex activity involving many component skills, from first seeing written characters, to processing information at the level of the word, sentence, and text. The simple view of reading is a model which posits that, broadly, reading consists of two components of equal importance: decoding and comprehension (Fries, 1963). Specific skills contribute to one of these two categories. Additionally, language age of acquisition (AoA) has a well-documented effect on reading ability. Second language (L2) speakers perform worse overall on tests of language ability than first language (L1) speakers, with later learners showing greater disadvantages. In the present study, we aim to further examine the intersection of these two influences. L1 and L2 speakers of English were assessed on a battery of tasks measuring reading comprehension and component reading skills. Analysis revealed expected strong main effects of L1/L2 speaker status and of several component skills. Notably, interactions were also detected between speaker status and vocabulary, spelling, and lexical decision ability. L2 speakers outperformed L1s in reading comprehension, when matched for ability on those aforementioned component scores. These findings are discussed in the context of the simple view of reading, and in the context of L1/L2 advantages more broadly.

Mackenzie Warner, Jarod Tai Chew, Kayley Fitzgibbon

The NPI Illusion and Working Memory

The NPI Illusion: A Study on a Grammatical Illusion and Working Memory

Grammatical illusions provide insight into how we encode and process syntactic structures. We are investigating the NPI (negative polarity item) grammatical illusion. The NPI illusion is a unique grammatical illusion. The only NPI licensors that elicit the illusion are quantifiers, such as “no” or “not a single”, while other grammatical illusions are less restrictive (Orth et al., 2020). While this has been established in previous research, the NPI illusion is a new area of research in linguistics. The purpose of this study is to further understand the underlying processes involved in the illusion. Our study explored whether the syntactic processing of this NPI illusion intersects with working memory, specifically if the degree of perceived grammaticality of NPI illusion sentences directly affects working memory. We compared NPI illusion sentences with and

without quantifier licensors, as quantifier licensors result in a greater degree of perceived grammaticality. We compared sentences with licensors “no” and “didn’t” in similar syntactic structures while including grammatical and ungrammatical baseline conditions. Preliminary results from a complex span task will be presented. The results will either suggest or deny that processes involved in perceived grammaticality are intertwined with working memory.