

## **Comparative Analysis of Conceptualisations of the Future in English, Russian and Georgian: Speech and Co-Speech Hand Gesture**

The conceptual metaphor TIME AS SPACE has been shown to be at work across many languages (Haspelmath 1997; Radden 2003). Related research on temporal co-speech gestures has been done in experimental psychology, anthropology and corpus linguistics, but we still need to better appreciate universal and culture-specific nature of relations between speech and temporal gestures (Cooperrider et al. 2014). Our paper contributes to this scholarship by comparing future conceptualisations in English, Russian and Georgian. More specifically it investigates similarities and differences in linear conceptualisations of the future in oral communication in these languages by focusing on speech and co-speech hand gesture using a corpus-driven analysis of ecologically valid media data. There have been recent corpus studies done on temporal co-speech gestures using media data in English (Valenzuela et al. 2020) and in Russian (Grishina 2017). But to the best of our knowledge, there have not been any studies done on temporal co-speech gestures in Georgian or indeed no comparative analysis performed on future conceptualisations via co-speech gesture in oral communication in these three languages.

As a first step we researched depictions of the future engaging empirically in data-driven analysis of video snippets, each 4 seconds long from a number of TV talk-shows in English and Russian. Those were selected based on corpus searches for ‘auxiliary verb ‘will’ + hands visible’ for English and ‘imperfective/perfective future + hands visible’ for Russian and subsequent manual annotation in ELAN and Rapid Annotator. Only manual search of Georgian data and subsequent annotation in ELAN was possible due to the lack of NLP tools for it. At least two coders annotated all data for speech and co-speech gestural units marking future. Six categories of speech units were identified which mark future contextually in the analysed video data for all three languages: 1) verbs in the future tense; 2) conditional clauses and counterfactuals; 3) modal verbs; 4) time expressions, including future expression, and expressions and adverbs marking future in the context; 5) verbs in the present tense with future references; 6) words with ‘future’ semantics.

We analysed: 138 speech and 231 gestural units for English; 54 speech and 65 gestural units for Russian, and 68 speech and 90 gestural units for Georgian. The majority of analysed instances were produced by one host with the assumption that her multilingualism did not influence the way she conceptualised the future in communication in a specific language (including gesture) (see Azar, Backus, Özyürek, 2020). Nevertheless, we performed small-scale comparisons using speech-gesture occurrences by other hosts (native speakers of languages under study) to check for potential interference between languages.

Our comparative analysis focused on the parameters of axis, direction and orientation of hand gesture co-occurring with speech ‘future’ units from the above-mentioned 6 categories. On these parameters it revealed no difference in how English, Russian, or Georgian speakers use co-speech temporal hand gestures in oral communication in TV shows. A particular gestural trait marking the future was found to be common to all three languages. We view this as a significant observation since English and Russian belong to different language groups and Georgian, unlike English and Russian, does not belong to the Indo-European language family.

The datasets we developed for this study will be made available with our paper once it is published.

#### Acknowledgements:

This study was made possible thanks to AHRC-DFG research funding.

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