How language constrains communication of affect: an EEG hyperscanning study of language-emotion interaction during a live word exchange game

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Emotional responses have been shown to be reduced in the second language (L2), but it is difficult to extrapolate the effects to real world communication between bilinguals from studies of individual participants. Here, we investigate for the first time how operating in a L2 context may affect responses to emotional words in bilinguals engaged in a communication game.

We tested 30 pairs of Polish-English bilinguals, half of which were couples involved in a romantic relationship for at least one year. Participants engaged in a game of word-picture matching involving negative and positive picture prompts, and corresponding negative or positive words. Participants underwent EEG recording in two separate booths. On each trial, both participants saw a picture accompanied by four words from which one participant (the Sender) selected the item that they thought was the best fit for the picture. Then, the other participant (the Receiver), saw either the selected item, or an alternative chosen randomly by the computer, and was asked to determine whether or not the displayed word was that selected by the Sender. Roles were reversed on each trial, and points were awarded for a correct judgment. The experimental design featured three predictors: Role (Sender, Receiver); Word Valence (positive, negative); Language (Polish, English). These are currently being tested in two experiments manipulating relationship status (Experiment 1: strangers, Experiment 2: partners).

In the analysis, we will focus on event-related potential (ERP) modulations elicited by critical stimuli (picture, displayed word, outcome of the trial) and variation of frequency power over time throughout the period separating the word display and the feedback. In particular, we will compute measures of entrainment between participants' EEG recordings over the same period.

In both experiments, we expect that emotional responses, as indexed by EEG, will be stronger when participants send or receive negative compared to positive information, but reduced when communication happens in an English (L2) as compared to a Polish (L1) context. Analysis of entrainment measures will be exploratory, focusing on the degree of synchrony between participants, which is expected to be affected by valence, language, as well as relationship status (comparison of Experiments 1 and 2). We hope to shed light on language of operation-emotion interaction in bilinguals engaged in an act of communication and to test the hypothesis that reduction in communicative effectiveness in L2 (especially in partners), may be compensated by desensitisation to negative content.