Weak conceptualisation of present perfect in Polish-English bilinguals: Evidence from eye-tracking and EEG

Even highly proficient foreign language speakers struggle with grammatical constructions absent in their native language (L1). One such example is the correct use of present perfect (PP) in English by L1 speakers of Polish, since it lacks a tense equivalent.

In the first experiment, we used eye-tracking to investigate reading patterns of highly proficient Polish-English bilinguals (N = 41) compared to a control group of L1 English speakers (N = 46). Eye movements were recorded during reading English sentences in PP for comprehension, which were either grammatical (e.g., starting with 'recently') or ungrammatical (e.g., starting with 'last year'). For L1 English speakers, we predicted significant differences in total reading time when they encountered the 'have/has + past participle' as a function of sentence grammaticality. Since, to the best of our knowledge, no similar study on grammatical tense has been conducted in bilinguals, we treated the between-group analysis as exploratory.

The analysis, performed with mixed effects linear regression modelling, showed that L1 English speakers took significantly longer to read the interest area in the ungrammatical than in the grammatical condition ($p < .001$). This difference was marginally significant for Polish-English bilinguals ($p = .075$).

In order to shed more light on the results, we are now conducting an EEG (electroencephalography) experiment with highly proficient Welsh-English and Polish-English bilinguals addressing the same research question. Importantly, Welsh has a clear PP equivalent, which is posited to facilitate PP processing in English. Data from Welsh-English bilinguals have already been collected, and data collection from Polish-English bilinguals is in progress. Given that EEG measures unconscious processing at the neural level, which can differ markedly from behavioural or even eye-tracking data, we hypothesise significant group differences. We predict a lower sensitivity to PP violations in Polish-English than Welsh-English bilinguals in the Left Anterior Negativity time window (250-400 ms) and the P600 (500-800 ms) time window. It is hoped that the results will inform us on the way Polish-English bilinguals conceptualise PP since it has no tense equivalent in their L1.