

Trilingual cross-linguistic co-activation: Comparison of heritage Russian, L2-Hebrew and L3-English

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Studies from the past two decades have demonstrated that both languages of a bilingual may be activated by input in only one language (Marian and Spivey, 2003; Dijkstra and Kroll; Kroll and Bialystok, 2013; Gastmann and Poarch, 2022). Missing from coactivation research is the impact of additional languages within the linguistic system. Likewise, coactivation studies are missing from L3 research, and would yield increased understanding of cross-linguistic influence in trilingual lexical access (Lemhöfer, 2023). To bridge these gaps, we investigate lexical coactivation among trilingual heritage speakers (Heritage-Russian, Dominant L2-Hebrew, and L3-English). We ask whether the coactivation effects will echo previous findings on bilinguals, ie. that all known languages are activated simultaneously, or whether there will be an activation imbalance depending on language dominance or order of acquisition. Studying heritage speakers allows us to separate these factors, as their first language is usually weaker than subsequent ones (Benmamoun et al., 2013).

In the present study, 48 adult participants completed a MINT vocabulary assessment (Gollan et al., 2012) and an eye-tracking experiment in each of their three languages. Using the visual world paradigm, we presented 40 frames in three blocks (one block per language), with 10 frames in each of 4 conditions: 1-language activation, 2-language activation (ie. English-Russian, English-Hebrew), and 3-language activation. Eye gazes and mouse-click reaction times (RTs) were analyzed as a function of target and competitor languages, number of competitors, and language proficiency.

Our results showed that participants were most proficient in L2-Hebrew, followed by L3-English, and then HL-Russian. In the eye-tracking experiment, although accuracy was not affected by competition condition, RTs and eye-fixation proportions saw slow-down and distraction in the presence of cross-linguistic competitors. Co-activation was observed through eye-fixation proportions and RTs to different extents across the three experiments. In the HL, both of the stronger languages were co-activated, as indicated by eye-fixation proportions. However, only conditions that included a Hebrew competitor yielded slower RTs. In the participants' dominant SL-Hebrew, no co-activation was observed. Finally, in the intermediate L3, both the strongest and the weakest languages were co-activated, diverging from HL findings. Thus, the current study makes a considerable contribution to our understanding of the dynamics of trilingual language processing. Taken together, our findings paint a picture of a highly interactive multilingual lexicon, in line with findings from prior studies on bilingualism.

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