

The effects of bilingual cross language activation on visual object search

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People who regularly use multiple languages concurrently activate information from all known languages, called “non-selective activation” in psycholinguistics. Evidence comes from cognates, words overlapping in form and meaning across languages, like “SAXOPHONE” in German and English, and interlingual homographs (IH) words sharing form but not meaning across languages like “HUT” meaning “HAT” in German. Previous research suggests that in bilinguals processing of cognates is facilitated, whereas processing of IH is impaired compared to language-unique words (LU).

Here we investigated how non-selective activation interacts with visual processing. German-English bilinguals performed a word-cued object search in a 10-image array with their eye-movements being recorded. Search difficulty was manipulated through cross-language ambiguity using English-LU, cognate or IH cues. In addition to random distractors, search arrays included no-competition or semantic-competition for all cues (e.g., GUITAR for SAXOPHONE) and translation-competition (non-target meaning of the IH) for IH (e.g., HAT for HUT).

The results reveal IH interference but no cognates facilitation effect. Semantic competitors received more attention than random distractors, but both received fewer and shorter fixations than translation competitors. This demonstrates coactivation of semantically related concepts during language processing as competitors are responded to with longer and more frequent fixations than random distractors. We hypothesize that competitors receive more attention because they provide contextual information that solves cross-language ambiguity and guides visual search, which is further evidenced by processing facilitation on trials that include semantic or translation competitors. Overall, these results suggest that language non-selective activation interacts with visual processing.

Keywords: Bilingualism, non-selective activation, visual search, eye-tracking

Presentation type: Poster Presentation

Session: