

Using L+H* accents to predict referents in the L1 and the L2: The role of exposure

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Introduction: Native English- and native German-speaking adults can use contrastive accents to predict upcoming referents (e.g. Ito & Speer, 2008, for English; Weber, Braun, & Crocker, 2006, for German). For example, adults show earlier eye movements to a red book when hearing *Click on the blue book. Click on the RED...* (where CAPS indicate a contrastive L+H* accent) compared to *Click on the blue book. Click on the red...* (without a L+H* accent). This eyetracking study investigates whether L2 learners can use L+H* accents predictively in their L2 and whether such predictive processing depends on exposure.

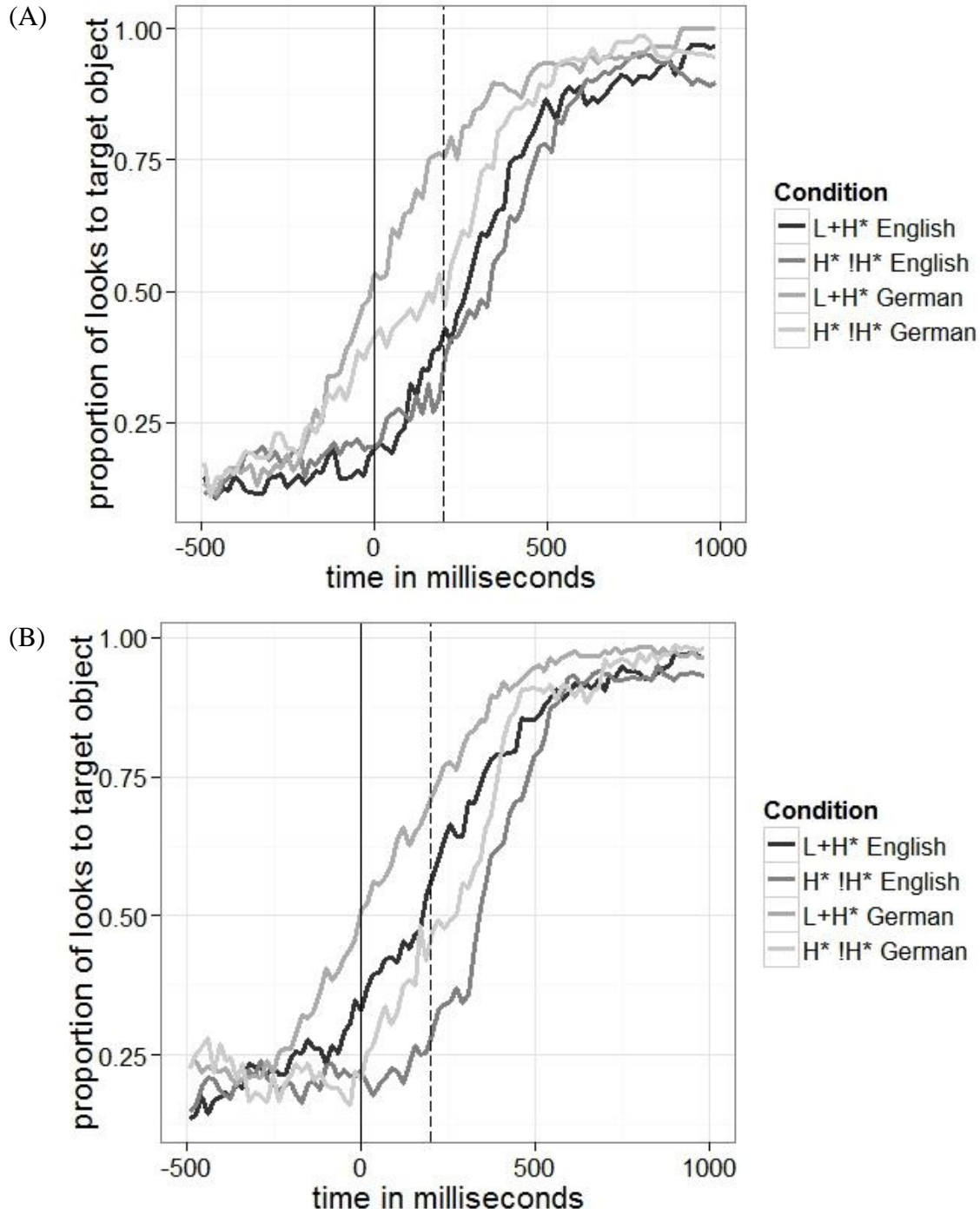
Method: 18 native German intermediate to advanced L2 learners of English participated in four experiments in which they followed spoken instructions (produced by a German-English bilingual) to click on two successive objects, e.g. *Click on the blue book. Click on the RED/red book*. Each participant experienced two sessions, one in English and one in German, (half starting with the German and half with the English session). Sessions were about a week apart and comprised an experiment, then an exposure part, and another experiment.

Experiment trials: Two successively mentioned objects differed only in colour (colour contrast), only in object type (object contrast), or in both (no contrast). Instructions to click on the second object were produced either with a L+H* accent on the adjective, a L+H* accent on the noun, or more neutral H* (adjective) !H* (noun) intonation. Importantly, prosody was not informative with respect to contrast type. For example, *Click on the blue book. Click on the RED...* equally frequently preceded *book* and *house*. **Exposure trials:** Participants again heard pairs of instructions with colour, object and no contrasts, and clicked on the mentioned objects. Here, however, prosody provided reliable information about the type of contrast. For example, a L+H* accent on the colour adjective was always followed by a repeated noun (*Click on the blue book. Click on the RED book*).

Results: The results focus on colour contrasts with L+H* on the adjective and H* !H* intonation. Figure 1 shows participants' proportion of looks to the target object (e.g. red book) in German and English for both L+H* and H* !H* intonation before exposure (1A) and after exposure (1B). We fit mixed logit models with looking vs. not looking at the target picture as response variable for the region of interest (see Figure 1). Before exposure, looks to the target object were reliably earlier in German compared to English (estimate = 0.78226, $z = 16.947$, $p < 0.0001$). We also explored a reliable language by prosody interaction (estimate = -0.12862, $z = -2.885$, $p < 0.01$) by fitting separate models for German and English. Looks to the target object for L+H* compared to H* !H* intonation were marginally earlier in German (estimate = -0.6078, $z = -1.897$, $p = 0.058$), but not in English (estimate = -0.3631, $z = -0.938$, $p = 0.348$). After exposure, looks to the target object were reliably earlier in German compared to English (estimate = 0.39406, $z = 10.929$, $p < 0.0001$) and for L+H* compared to H* !H* intonation (estimate = -0.54931, $z = -2.476$, $p < 0.05$). There was also a reliable language by prosody interaction (estimate = -0.07386, $z = -2.033$, $p < 0.05$).

Discussion: The results show faster reference resolution in the L1 compared to the L2. In addition, we find predictive prosodic processing both before and after exposure in the L1, but only after exposure in the L2. This suggests that (recent) exposure plays an important role in listeners' ability to use L+H* accents to predict upcoming referents in the L2. We suggest that participants exhibited implicit learning during the exposure phase, which allowed them to use L+H* accents predictively following exposure.

Figure 1: Proportion of looks to the target object before exposure (A) and after exposure (B). The solid vertical line at 0ms is aligned with the end of the adjective (*RED/red*) and the dashed vertical line is at 200ms. The region of interest lies between these lines. Due to the delay involved in planning and executing an eye movement, this region involves only predictive looks to the target (i.e. as a result of hearing *RED/red*, not as a result of hearing the beginning of the noun).



References:

Ito, K. & Speer, S. R. (2008). Anticipatory effect of intonation: Eye movements during instructed visual search. *Journal of Memory and Language*, 58(2), 541-573.

Weber, A., Braun, B., & Crocker, M. W. (2006). Finding referents in time: Eye-tracking evidence for the role of contrastive accents. *Language and Speech*, 49(3), 367-392.