

The influence of intonation on word recognition in German 18-24-month-olds

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German infants have been shown to be able to segment trochaic words from speech from around nine months of age [1-4]. These studies have highlighted the role of intonation in this task: [2] and [4], for instance, demonstrated that only high-pitched stressed syllables are interpreted as onsets of trochaic units by German nine-month-olds. Here we test whether such an initial reliance on high-pitched stressed syllables in German infants also pertains to referential word recognition. If this is the case, we predict faster recognition of objects on screen when they were produced with high-pitched stressed syllables ($H^*L-\%$, as in falling declarative intonation) as compared to low-pitched stressed syllables ($L^*H-\%H\%$, as in rising question intonation).

We designed a looking-while-listening study, in which German 18-24-month-olds saw 16 pairs of colourful objects side-by-side on screen ([5]); labels for object-pairs were matched for grammatical gender but differed in the onset consonant ([6]). One of the objects was named at the end of a falling declarative ($H^*L-\%$) or rising polar question ($L^*H-\%H\%$); intonation was manipulated within-subjects, within-items. Objects appeared 1.5sec before sentence onset (cf. [7]) and trials ended 3.5sec after target word onset. The target and its position on screen were counterbalanced across lists; trials were pseudo-randomized. Fixations were extracted at 60Hz and analysed using fasttrack ([8]) and gamms ([9]).

Preliminary analyses of 12 German children (19-24 months, mean=21.2, SD=2.4) showed earlier target fixations with increasing age and initially more fixations to the target in trials with a fall ($H^*L-\%$) compared to a rise ($L^*H-\%H\%$, see Fig. 1), which was significant 953-1148ms after target onset. Later on, the pattern reversed. Hence, intonation influences German infants' referential word recognition, such that targets with high-pitched stressed syllables are recognized earlier. In future work, we plan to include more varied sentences and word prosodic structures ([10]).

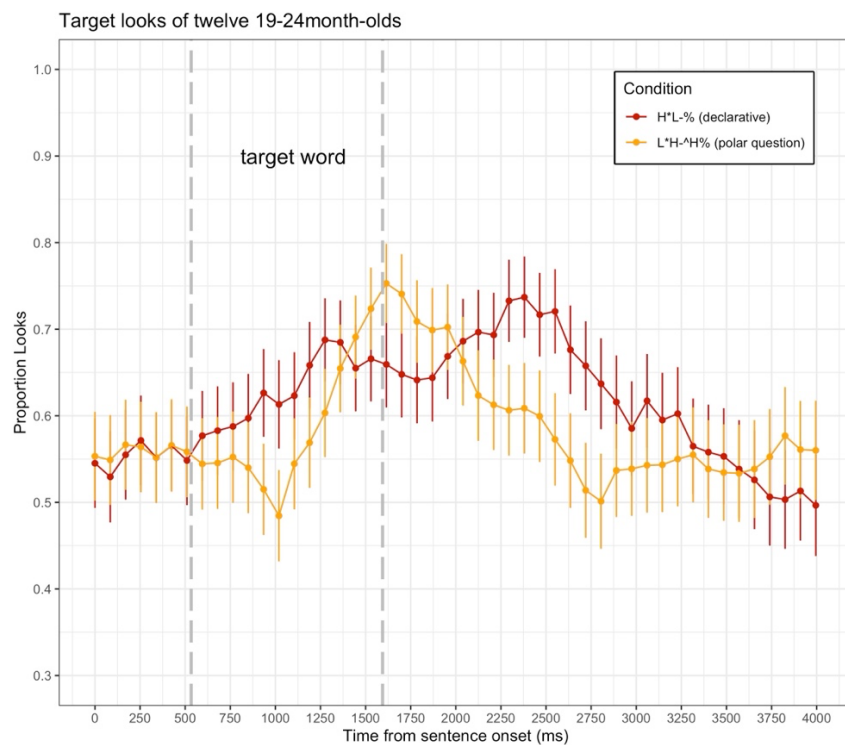


Figure 1: Proportions of target fixations over time in trials with a fall ($H^*L-\%$) compared to a rise ($L^*H-\%H\%$). Vertical dashed lines show averaged acoustic start and end of target word. Whiskers show +/- 1 standard error of the mean.

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