Recency of immersion in L2 environment more important than L2 proficiency in speech segmentation

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Speech segmentation is a language-specific skill: each language provides different cues for optimally segmenting the continuous speech stream into words. When exposed to a novel language, listeners have been shown to use those segmentation cues that they are familiar with from their native language (L1).

Learning a second language (L2) entails learning to use the prosodic segmentation cues appropriate for that language. Whereas many studies have addressed the influence of the L1 on segmentation of L2 or novel languages, it is yet unclear how L1 and L2 segmentation strategies might compete in highly proficient L2 learners. In order to assess the prominence of L1 vs. L2 prosodic segmentation strategies, this study investigates which segmentation cues take precedence when listeners are exposed to a novel language. It assesses to what extent proficiency in the L2 and recent exposure to the L2 affect the use of L1 versus L2-specific segmentation cues in segmenting novel-language speech.

Participants were (1) native listeners of French, (2) native listeners of English without functional knowledge of French, and (3) native listeners of English with a high proficiency in French as an L2 (assessed with a cloze test) who had lived in a French-speaking country for at least three months. Importantly, all participants were living in the USA at the time of testing. The native listeners of French and the L2 learners of French had been selected to vary in the amount of time elapsed since their last stay in a French-speaking country.

In an artificial language learning experiment, participants were tested on their use of a segmentation cue that matches French but not English prosody, namely a high tone on word-final syllables. The word-final high F0 is expected to be a useful segmentation cue for French listeners, because accented syllables in French occur at the right edge of the Accentual Phrase and are word-final; in non-utterance-final positions, they have higher F0 and longer duration than the corresponding unaccented syllables. It is not expected to be a useful segmentation cue for (monolingual) English listeners, because in English, accented syllables tend to be word-initial, with F0 rise, increased amplitude and, to some extent, increased duration signaling this word-initial prominence.

During a training phase, 30 participants were exposed to a 20-minute speech stream consisting of six trisyllabic words without any phonetic word-boundary cues except the word-final high F0. In the subsequent test phase, they were tested on their recognition of the trained words.

The results showed no effect of French proficiency for the L2 learners. There was, however, a strong effect of recent linguistic exposure: performance increased with decreasing time in the USA since the last stay in a French-speaking country. Surprisingly, the recency of immersion in an L2 environment thus turned out to override L2 proficiency. These results indicate that recent linguistic exposure is a crucial factor influencing listeners' use of prosodic cues in speech segmentation. This suggests that speech-processing routines are much less rigid and more adaptive than previously assumed.