Beyond Boundaries: Statistical Learning in Word Segmentation among Monolingual and Bilingual Infants

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Identifying words in speech is crucial for language acquisition (Hohle, Bijeljac-Babic, & Nazzi, 2019). Despite challenges, infants use acoustic and distributional cues for segmentation (Thiessen, Hill, & Saffran, 2005). Statistical learning is vital, especially for bilingual infants who must navigate conflicting cues between languages (Weiss, Schwob, & Lebkuecher, 2019). The present study aimed to investigate how monolingual and bilingual infants segment two interleaved artificial languages using statistical information. To do this, four different artificial languages were created two in which the interleaved languages were congruent (Exp.1), and two in which they were incongruent (Exp. 2). In the congruent experiment there was no overlap in syllables between the two languages, and if the statistical information in both languages was aggregated, transitional probabilities remained 1.0 within words, and .33 between words, meaning the languages could potentially be understood and segmented together as one big language. In the incongruent experiment, the two languages shared 4 out of 12 syllables. This means that if the statistical information present in the two languages was aggregated, the syllabic transitional probabilities would change both within and between words, making segmentation in each language difficult. Preliminary analyses of 41 bilinguals and Thirty-seven monolinguals (Mage= 366 days; SD=67 days; Range= 236-449; 43 females) revealed that in Exp. 1 when the interleaved artificial languages were congruent, bilingual infants successfully segmented words, showing a familiarity preference, while monolingual infants did not. Similarly, in Experiment 2, with interleaved incongruent artificial languages, bilingual infants distinguished between heard words and part words, displaying this time a novelty preference. Monolingual infants did not show evidence of word segmentation. These results demonstrate that bilingual infants are capable of tracking two distinct sets of statistical information simultaneously even when having conflicting information whereas monolingual infants struggled to segment speech when presented with two interleaved languages.