Early acquisition of word-level accent: a cross-linguistic infant study

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Infants show an early sensitivity for the rhythmic properties of languages. New-borns and 2-month-olds can already discriminate languages from different rhythm classes and even within the same rhythm class when their native language is one of the two languages presented in a high-amplitude sucking paradigm (Jusczyk & Tompson, 1978; Mehler et al., 1988; Nazzi et al., 1998). At 4 months of age one electroencephalography study has shown language specific-discrimination of different stress patterns (trochaic vs. iambic) by German- and French-learning infants when presented with a single non-word (Friederici et al., 2007). However, when using the head-turn preference paradigm and also presenting a single non-word, a language-specific preference has only been found at 6 months of age, not yet at 4 months of age, and also only for German-learning infants, but not for French-learning infants (Höhle et al., 2009). English-learning infants also show a preference for the trochaic stress pattern of their native language at 9 months of age, but not yet at 6 months of age, when presented with segmentally varied words (Jusczyk et al., 1993).

Since different outcomes have been found for different languages, we compared the previous findings to infants learning metrically opposed languages; namely infants learning Dutch (initial/ pre-final stress) and infants learning Turkish (final stress) between 4 and 8 months of age, using the same methodology and stimuli. Our hypothesis is that Dutch-learning infants will show a language-specific trochaic preference at 6 months of age, but not yet at 4 months of age, when presented with a single non-word (/nɔldɑf/), comparable to German-learning infants. For the Turkish-learning infants the hypothesis is two-sided; on the one hand they may pattern with the French-learning infants and not show a preference at all, or they may show a language-specific iambic preference, because Turkish a has word-final accent, whereas French actually does not have word-level accent.

Instead of using the traditional head-turn preference paradigm, an innovative single visual target preferential listening paradigm using eye-tracking is employed to test the emergence of a rhythmic preference. Similar to the head-turn preference paradigm, we measure the interest of the infants towards the auditory stimuli by measuring their looking time during the presentation of the two different stress patterns. Do Dutch- and Turkish-learning infants show a language-specific rhythmic preference and at what age does this preference appear? In total, 90 Dutch-learning and 90 Turkish-learning infants aged 4, 6 and 8 months have been tested. The results of the Dutch-learning infants show that they do not present a rhythmic preference at 4 months of age, but that they do show a language-specific trochaic preference at 6 months of age. However, the Turkish learning infants show a trochaic preference at 4 months age and no rhythmic preference at 6 months of age. We try to interpret these results by investigating the development of familiarity and novelty preferences during the experiment, as well as by taking a closer look at the individual preferences of the infants within the different language and age groups. The interpretation of the results may have implications for theoretical ideas ranging from the existence of an innate trochaic bias to the categorization of languages in rhythm classes, for example, whether Turkish should be grouped with pitch-accent languages such as Japanese, as proposed by Levi (2005).