Visual fixation as a measure of rhythmic preference: infant eye-tracking

In this paper the acquisition of metrical structure is discussed. Metrical structure is defined by the position of stressed syllables in words. This structure is often delimitative, which means stress usually falls near the edges of a word. In initial stress languages a stressed syllable marks the onset of a word and in final stress languages a stressed syllable marks the offset of a word. According to the Metrical Segmentation Hypothesis (Cutler & Norris 1988), metrical structure can be used by infants to segment words from the speech stream. However, the evidence for this hypothesis comes mainly from initial stress languages (Höhle et al. 2009). Therefore, it is unknown whether this hypothesis is universal or language-specific and whether learners of final stress languages use different cues specific to their native language (Nazzi et al. 2006).

An acquisition perspective as well as a cross-linguistic perspective should be adopted to answer these questions. Therefore, infants learning metrically opposed languages are tested, namely infants learning Dutch (initial/ pre-final stress) and infants learning Turkish (final stress). The language-specificity hypothesis is tested for native language acquisition by infants aged 4 and 6 months. Instead of using the traditional head turn preference procedure, an innovative visual fixation paradigm using eye tracking is employed to first test the emergence of rhythmic preferences. The research questions are: Do Dutch- and Turkish-learning infants show a language-specific rhythmic bias? And if so, at what age does this preference appear?

The hypotheses are that Dutch- and Turkish-learning infants fail to show a rhythmic bias at 4 months of age, but that they have developed a language-specific rhythmic preference at 6 months of age, based on a distributional analysis of the input they receive in their native language. Thus far, 58 Dutch-learning and 12 Turkish-learning infants aged 4 and 6 months have been tested and the preliminary results show that the Dutch-learning infants do not present a rhythmic bias at 4 months of age, but that they do show a language-specific rhythmic preference at 6 months of age (figure below). However, more Turkish-learning infants will be tested in order to be able to interpret these results in a cross-linguistic perspective.

phonotactics@sns.it.

Figure

Error bars: 95% CI
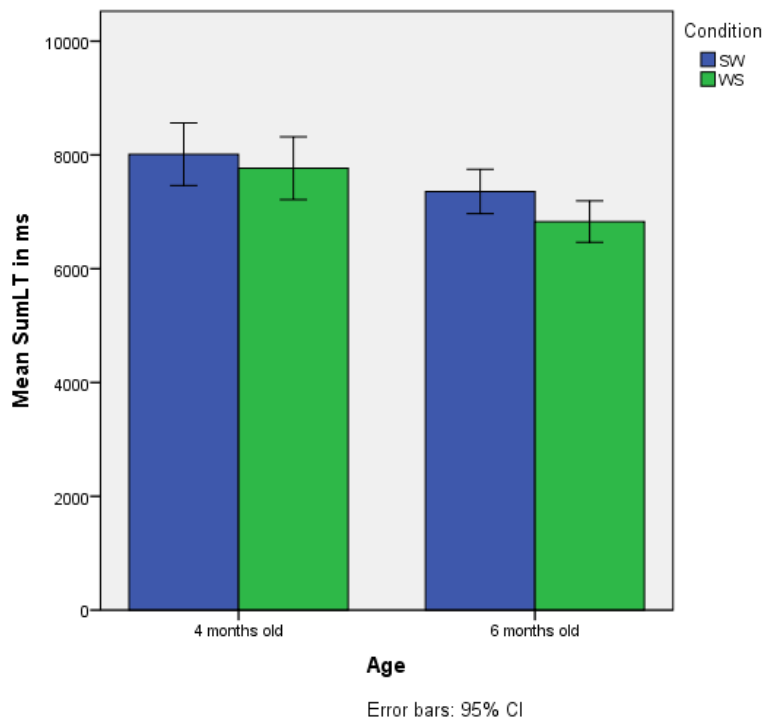
References

Cutler, Anne & Dennis Norris (1988). The role of strong syllables in segmentation for lexical access. *Journal of Experimental Psychology: Human Perception and Performance* 14, 113-121.

Höhle, B., Bijeljac-Babic, R., Herolda, B., Weissenborn, J. & Nazzi, T. (2009). Language specific prosodic preferences during the first half year of life: Evidence from German and French infants. *Infant Behavior and Development* 32, 262-274.

Nazzi, T., Iakimova, G., Bertoncini, J., Frédonie, S. & Alcantara, C. (2006). Early segmentation of fluent speech by infants acquiring French: Emerging evidence for cross linguistic differences. *Journal of Memory and Language* 54, 283–299.