

Perception of the East-Limburgian Dutch lexical tone contrast by Dutch 6-to-12-month old infants

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A newborn child will have to discover which units are lexically meaningful in its native language and which are not. Until now, most infant research has focused on the acquisition of native and non-native phoneme contrasts. Lexical tone, meaningful differences in perceived pitch at the word level, has received less attention. Yet, acquisition studies on phonemes and (the few on) tones both have repeatedly attested a similar pattern: Whereas infants start out as being sensitive to many of the world's phonetic contrasts, the second half of the first year of life is characterized by a decline in non-native discrimination abilities, while the discrimination of native contrasts improves under the influence of the ambient language ('Perceptual Reorganization', e.g. Kuhl et al. 2006, Mattock et al. 2008). In our research project, we investigate the acquisition of lexical tone in infants acquiring a (tonal) East-Limburgian dialect of Dutch, who have to learn that pitch is contrastive at the word level. Moreover, we compare these infants to infants acquiring (non-tonal) Standard Dutch, who have to learn that pitch differences are not functional at the lexical level. Our project offers a valuable contribution to the field of language acquisition: Apart from the fact that research on tone acquisition is scarce, our study focuses on infants growing up with languages that are both geographically and typologically close. This is not the case for the language combinations that were tested in earlier studies on tone acquisition (Yeung et al. 2013, Chen 2013, Liu & Kager 2011, Mattock et al. 2008, Mattock & Burnham 2006, a.o.).

Our investigation of the acquisition of a lexical tone system started with investigating whether Limburgian and Dutch 6-to-12-month-olds discriminate the Limburgian tonal contrast and whether this ability is subject to an age-related decline. These questions were addressed using the Hybrid Visual Habituation Procedure (Houston et al. 2007). Until now, data of Dutch six-month-olds ($n=22$, range 0;5.5 - 0;6.30), nine-month-olds ($n=18$, range 0;8.1 - 0;9.23) and 12-month-olds ($n=24$, range 0;11.3 - 1;0.20) have been collected and subject to preliminary statistical analyses.

A 2x3x2 mixed design ANOVA including a priori tests was run. Indeed, planned contrasts showed that the ability to discriminate a non-native tonal contrast changes during the first year of life, but not in line with Perceptual Reorganization: Six-month-olds behaved significantly different from nine-month-olds ($p = .05$, one-tailed) and 12-month-olds ($p = .02$, one-tailed): Six-month-olds did not discriminate the non-native tonal contrast ($F(1,58) = .03$, $p = .86$). Nine-month-olds approached significant discrimination ($F(1,58) = 3.2$, $p = .08$, more infants still being tested) and did not differ significantly from the 12-month-olds ($p = .43$, one-tailed), who showed discrimination ($F(1,58) = 6.0$, $p = .02$).

One possible explanation for the Dutch infants' developing sensitivity (instead of the expected loss of sensitivity) to the Limburgian lexical tones might be that the infants, at some point, start to map the perceived pitch differences in our experiment onto native intonation patterns. The ability of the Dutch infants to discriminate the Limburgian tones does not imply that they treat pitch differences in the same way as Limburgian infants. A comparison between the Dutch data and data to be collected with Limburgian learning infants will reveal whether the Limburgian infants outperform the Dutch infants, which is what we would expect in light of their tonal linguistic background.

Moreover, data from an ABX-discrimination task with Dutch adults are currently being analyzed to see whether the Dutch ever lose their ability to perceive the Limburgian tones. If they do, a next step would be to look at older Dutch infants to attest when the sensitivity to Limburgian tones declines. However, if the adults successfully discriminate the contrast, we still think that the Dutch do not attend to the Limburgian tones as signaling a lexical contrast. To prove this, our next experiment will be of a lexical nature, investigating the influence of tonal mispronunciations on word recognition with Limburgian and Dutch 18-to-24-month-olds.

References

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