

German infants' discrimination of the English /æ/-/ε/ contrast: evidence from a cross-sectional and a longitudinal study

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Young infants can discriminate most non-native sounds, but the discrimination ability decreases within the first year of life due to perceptual attunement. However, most studies tested infants' perception cross-sectionally, without examining within-group change. To this end, the current study tested German infants' discrimination ability of the English /æ/-/ε/ contrast both cross-sectionally and longitudinally using the visual habituation technique. In Experiment 1, 96 German-learning infants were tested cross-sectionally at 5-6, 8-9 and 12-13 months. Linear mixed-effects models revealed that while the 5-6-month-olds did not discriminate the contrast, the 8-9- and 12-13-month-olds discriminated it only when sounds were changed from /ε/ to /æ/, in line with previous findings suggesting that changes from central to peripheral in the F1/F2 vowel space are more noticeable than in the reverse direction. Moreover, the 8-9-month-olds showed a novelty preference, while the 12-13-month-olds showed a familiarity preference. In Experiment 2, the infants tested at 5-6 months in Experiment 1 were tested again at 8-9 and 12-13 months. 15 infants completed the three experiments. Here, only the 12-13-month-olds discriminated the contrast but only when habituated with /æ/. They showed a novelty preference in Experiment 2. Overall, both study designs yielded converging results suggesting non-discrimination at 5-6 months and the gradual development of discrimination ability across the first year of their life, which challenges the assumptions of perceptual attunement. We propose that the perceptual sensitivity for a non-native vocalic contrast can improve during development. The difference in perceptual asymmetry tells us that the direction of asymmetry is not universal and can be altered by exposure. The difference in looking preference was probably due to the effect of repeated experiments, corresponding to an earlier finding. In sum, cross-sectional and longitudinal results overlap broadly; however, the effect of repeated experiments must be carefully considered when interpreting longitudinal studies.