EXAMINATION OF LANGUAGE-SPECIFIC INFLUENCES IN INFANTS' DISCRIMINATION OF PROSODIC CATEGORIES

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ABSTRACT

Language-specific effects in perception of segmental contrasts appear by 10-12 months. Recent studies with connected speech suggest earlier emergence of sensitivity to some language-specific prosodic properties, but they have not examined linguistic prosodic contrasts. We tested 6-8 and 10-12 month olds on a discourse prosody contrast (question-statement) in native and non-native languages. Category discrimination was significant for native, nearly so for non-native, speech. Separate analyses found younger infants discriminated in both languages, older infants in neither, failing to support language-specific perception of this prosodic contrast.

1. INTRODUCTION

To acquire language, the infant must learn to recognize that certain sound patterns recur in native speech, whereas others do not. Adults show language-specific attunement in perception of phoneme contrasts, often finding it initially difficult to discriminate non-native segmental distinctions. But infants under 8 months discriminate both native and non-native contrasts. Difficulty distinguishing non-native contrasts appears by 10-12 months.

Infants must also learn the prosodic characteristics of the native language. Indeed, it has been argued that infants become attuned earlier to prosody than to segmental properties. Numerous recent findings appear consistent with this claim. Infants from 3 months to as young as 1-2 days prefer infant-directed speech (IDS) over adult-directed speech (ODS) of same length. However, native and non-native speech can be distinguished by infant-directed speech.

We tested 6-8 and 10-12 month olds on a discourse prosody contrast (question-statement) in native and non-native languages. Category discrimination was significant for native, nearly so for non-native, speech. Separate analyses found younger infants discriminated in both languages, older infants in neither, failing to support language-specific perception of this prosodic contrast.
each discourse category. A language-specific influence would be evident if categorial discrimination was better for native than for non-native sentences.

3. RESULTS

Mean fixation times in the last two thirds of the stimulus shift were compared to mean fixation times in the first two trials following the shift, in an Age x Language x Condition (categorial vs. arbitrary) x Shift (pre vs. post) ANOVA. Fixation times were longer at post-shift than pre-shift \(F(1,28) = 15.04, p < .006\), indicating overall discrimination. Simple effect tests found discrimination only in the categorial condition \(F(1,50) = 10.17, p < .001\), which was significant for English \(F(1,14) = 10.96, p < .005\) and nearly so for Spanish \(p = .058\). The Language x Condition interaction \(F(1,28) = 4.66, p < .04\) found that fixation times were highest in the English categorial condition, lowest in the English arbitrary condition. A nearly-significant Age x Condition x Language interaction \(p = .057\) suggested differences in younger and older infants’ response patterns.

We therefore tested the possibility that language-specific effects were reliable for only one age group, as in previous findings that language-specific effects in perception of segmental contrasts appear around 10-12 months. However, separate analyses failed to support language-specific effects for the prosodic contrast at either age. The 6-8 month olds discriminated the category change, but not the arbitrary change, in both English \(F(1,17) = 8.209, p < .01\) and Spanish \(F(1,17) = 14.42, p < .001\). The 10-12 month olds failed with both individual languages, showing marginal categorical discrimination overall \(p > .08\). Figure 3 shows these post-shift recovery patterns.

4. DISCUSSION

The present task required that the infants detect abstract commonalities among the diverse sentences within each category. The overall ANOVA suggested that, across ages, infants distinguished the different discourse categories of question vs. statement, but not between arbitrary groupings of the same sentences. Further research will be needed to determine the prosodic properties that guide infants’ perception of these categories. The Spanish questions were quite similar in their F0 contours, all showing final rise, which differed from the consistent F0 decline of the statements. But the F0 contours in each English category were quite variable, and were not distinguished by final rise vs. fall. Nonetheless, across ages the infants discriminated the English with better reliability than the Spanish categorial change, suggesting that final rise/fall was not the critical perceptual feature for them. Both languages showed a greater F0 range in questions than in statements; this property may have been more salient to the infants, either in both languages or at least in English.

Figure 3. Discrimination in each age and condition, displayed as mean post-shift fixation minus mean pre-shift fixation (bars show s.e.).

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