

Flexibility of Form: How Infants' Phonological Knowledge Influences Word Learning

Word learning is seemingly effortless yet spectacularly complex. In a crowded auditory-visual world, infants must identify the phonological form of the word, locate and map the referent, store the information together, and then later recognize and/or retrieve the form-referent. While this sounds like a daunting task, infants move from saying about 6 words at 12 months to over 300 words by 24 months of age (Frank et al., 2016).

The rapid rate at which infants learn words raises the possibility that their developing knowledge of their native-language sound system helps them hone in on word forms. Indeed, before infants produce their first word, they are learning about the sound system of their native language(s). Between 10-12 months, infants demonstrate better discrimination of native-language consonants than non-native ones (Werker & Tees, 1984), and they show preferences for native-language sound patterns (Archer & Curtin, 2011). We will explore the role of the native sound system in facilitating word learning by focusing on infants' emerging sensitivity to the native sound categories (phonemes) and the phonological properties of lexical forms (content, function), between 12 to 18 months, a developmental period during which infants exhibit striking achievements in word learning.

In our 1st set of experiments, we examine whether infants accept non-native phonemes in novel word-forms as potential labels. We know 12-month-olds prefer phonotactically legal word forms (e.g., plak over ptak) as object labels, but they accept words that differ phonetically from typical English productions (i.e., Japanese words with devoiced vowels). Here we take the next step by examining whether infants consider phonotactically legal, content-like forms containing an illegal (non-native) sound as object labels. In our 2nd set of studies, we examine the phonological factors that make a word form a poor object label candidate. Previously, we found that infants accept content-like words (e.g., fep), but not function-like words (e.g., iv), as object labels. We will examine which phonological properties (onsets, word minimality) of these function-like forms lead infants to view them as less than optimal labels for objects. In both sets of experiments, we manipulate task parameters to explore the strength of phonological knowledge in constraining word-object mappings, examining task demands and cues to the referential nature of the task. Moreover, we examine whether early learners (12-month-olds) are more flexible than infants with greater experience (18-month-olds) in accepting a range of forms as object labels.

These studies will offer critical insight into how infants' preferences for particular forms narrows the search space for potential referents. It will further our understanding of the role that phonological knowledge plays in constraining mappings and clarify how changing the task affects infants' sensitivity to different word forms. We anticipate our research will contribute to a growing body of literature demonstrating that the early years are critical for children's optimal development. In this way, our research is relevant to policy-makers highlighting the need for programming and resources for very young children. By informing the public about the importance of the first 2 years of life in promoting language development, we can encourage stimulating interactions between caregivers and children. The results of our proposed research also will provide practitioners, such as speech-language pathologists, with information about the foundations of and mechanisms underlying word learning, one of the basic building blocks for acquiring linguistic structures.