Building a proto-lexicon: does input variability matter?
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Infants earliest word form representations develop during the first year of life. By six months old infants have been shown to recognize their own name [e.g. 1] and other frequent words such as ‘mommy’ or ‘hand’ [e.g. 2]. Models of developmental speech perception assume that word form representations in the proto-lexicon are formed through tracking the distributional statistics of the infants’ input [e.g. 3]. These early representations are thought to be overspecified, a perspective that is supported by reports that infants struggle to recognize words across linguistically irrelevant changes in acoustic-phonetic form such as speaker’s gender or accent [e.g. 4, 5].

Given that children’s early lexical representations are thought to be crucially dependent on the distribution of sounds they are exposed to in their language environment, an interesting question is how different language input environments might affect early word form representations. For example, if children are exposed to multiple variants of the native language, how does this experience impact children’s early lexical representations? Three recent studies have examined how varied accent exposure affects lexical representations in toddlers [6–8]. A two-year-old is already a rather sophisticated language user, with a notable lexicon and the ability to accommodate to previously unfamiliar accents after only short exposure [9]. Younger infants have yet to acquire these skills, and thus many questions remain regarding the effect of accent exposure on very early lexical development.

The current study investigates the impact of exposure to more than one accent variety of the native language on the structure of word form representations in the proto-lexicon. Infants with multi-accented input encounter speakers with different phonemic distributions. Little is known about how infants cope with this variability and how it influences the formation and specificity of lexical representations. Does the increased variability delay the formation of word form representations compared to infants with a more homogeneous input? Or does the proto-lexicon develop at a similar pace, but multi-accented infants’ representations are less specified, allowing them to cope with surface form variation better? As a first step to answering these questions, we compared mono- and multi-accented six-month-olds’ sensitivity to mispronunciations in one of the earliest word-forms acquired; their own name.

Due to the different role vowels and consonants have in the lexicon we tested infants’ sensitivity to mispronunciations of each. Vowels have more variable pronunciations and are a significant source of accent variation. Consonant pronunciations are more stable, and adult listeners rely more heavily on consonants than vowels for lexical access [10]. Conversely, infants are argued to build prototypical representations of vowels before consonants [11], a proposal that is supported by recent experimental evidence [12]. Multi-accented infants are exposed to extensive variability in the distribution of vowel pronunciations in their input, which may encourage them to attend to consonants more closely than vowels early on, and thus be more sensitive to consonant mispronunciations than vowel mispronunciations.

Using a modified version of the Headturn Preference Procedure [cf. 1, 12], infants’ listening time to repetitions of correct pronunciations (CPs, e.g. Henry) of their name was compared to listening time to either a vowel mispronunciation (V-MPs, e.g. *Hinry) or consonant mispronunciation (C-MPs, e.g. *Senry). Mono-accented infants’ parents spoke Canadian English, and multi-accented infants had at least one parent who spoke a different variety of English. All infants were monolingual. Listening time was measured by how long the infant maintained a headturn towards a light in the side of the booth and a hidden speaker playing the stimuli. Mispronunciations were of vowel height, roundness or place of articulation, and consonant voicing, place or manner of articulation. The mispronunciation was distinct from the accented caregiver’s pronunciation of the name. If infants are sensitive to mispronunciations of their name we expect them to prefer, and listen longer to, CPs than MPs.

To date 46 infants have participated (mean age = 5 months, 29 days). Mean listening times to CPs and MPs by accent-exposure group and mispronunciation type are presented in Figure 1. As expected,
mono-accented infants show a significant sensitivity to vowel mispronunciations, \(t(23)=2.33, p=.03\), listening longer to CPs (\(M=12.35s, SD=4.08\)) than V-MPs (\(M=10.68, SD=3.29\)). However, preliminary results suggest that multi-accented infants do not exhibit sensitivity to vowel mispronunciations, \(t(8)=.09, p=.9\), listening equally long to CPs (\(M=13.81, SD=3.38\)) and V-MPs (\(M=13.6s, SD=4.34\)). Preliminary results also suggest that mono-accented infants are not sensitive to consonant mispronunciations, \(t(12)=-.14, p=.9\), listening equally to CPs (\(M=11.29s, SD=2.9\)) as C-MPs (\(M=11.42, SD=4.17\)).

Results indicate mono-accented infants’ vowel representations are more specific than their consonant representations. They are more sensitive to mispronunciations of vowels than consonants in their own name. The same is not true for multi-accented infants. Infants exposed to multiple accents of their native language are not sensitive to vowel mispronunciations in their own name. This suggests that vowel representations in the multi-accented infant’s proto-lexicon are less well specified than those of the mono-accented infant, as multi-accented infants are more accepting of surface form variation.

This study exposes important differences in the structure of the proto-lexicon depending on the amount of variability the infant is exposed to. It contributes to growing body of evidence that monolingual children cannot be treated as a homogeneous group, highlighting the theoretical need to consider linguistic diversity in the infant’s environment.