Stem Learning: Infants Segment the Morpheme /ing/ to Identify a Novel Word

To learn a language, infants must discern where words begin and end in the stream of speech. Attention to functional markers that signal the form class of novel words can assist infants in segmentation and in categorizing novel words. Hearing the function morpheme, the, for example, predicts that a noun will follow; hearing a syllable followed by the morpheme -ing predicts that the syllable carrying the ending was likely a verb. Indeed, 8-month-olds can segment function words such as determiners (e.g., mes in French) from continuous speech (e.g., Shi, 2007) and extract adjacent novel nouns (Shi, Cutler, Werker & Cruickshank, 2006; Shi & Lepage, 2008; Höhle & Weissenborn, 2000). However, it is unclear whether infants can detect bound morphemes like –ing and whether they segment morphemes from the verb stem (as in, running). If infants can segment the stem from the ending, then -ing may serve the twin functions of segmentation and categorization for infants. This would suggest that infants do not ignore endings even before they produce them, but rather, use them to decode the speech stream.

In a between-subjects design, 10- to 12-month-olds were familiarized to a nonsense syllable (creesh) + verb suffix (-ing) or nonsense suffix (-le) as they watched a colored checkerboard. After familiarization, three counterbalanced test blocks ensued. For example, if infants were familiarized to creeshing, they heard within each block tokens of the original stem (creesh) and a novel word (cree) that did not correspond to the correct stem. Infants in the control group who were familiarized to creeshle were also presented with the same test blocks. If infants segment –ing as a morpheme, then the creeshing group should show a preference for the novel word cree. Alternatively, infants in the creeshle group might not segment –le since it is not frequently heard and not a morpheme. They should show no difference in their looking times to creesh and cree.

Mean looking times during novel and familiar trials were compared in separate paired-samples t-tests for the second and third test blocks. (Typically, the first test block is omitted from the analysis as infants need time to notice that the stimuli have changed.) The creeshing group showed a significant difference between looking to the novel versus familiar words in the second block (p=.06) (Figure 1). Children looked significantly more to the checkerboard when they heard the novel word (M=10.68) than when they heard the familiar word (M=6.33). Infants in the creeshle group did not show any significant differences (Figure 2).

These results indicate that children segmented the morpheme –ing from the stem, suggesting that they recognized the stem as a unit. While we cannot claim that they recognized the original word as a verb, this finding suggests that even by 10 months, months before they will produce –ing, infants recognize its status as a separable ending from a syllable. Our research invites further investigation into how and to what extent infants use –ing to recognize and categorize verbs at the earliest stage of acquisition.

(499 words)
Figure 1. Infants’ looking during test trials (familiarized to creeshing)

Figure 2. Infants’ looking during test trials (familiarized to creeshle)
References


