Phonological effects in wordform learning

Overview

Word-learning involves associating a meaning to a form; in order to learn the association, the form itself must be learned. The phonological grammar has been implicated in a variety of speech perception and production phenomena such as phonetic categorization (Moreton, 2002), speech errors (Goldrick, 2002), and epenthetic vowel repairs for unattested clusters (Dupoux et al., 1999). Does the phonological grammar also affect the acquisition of novel wordforms? To address this question, a word-learning experiment was conducted in which native English speakers were asked to associate novel disyllables with alien pictures, i.e. learn alien names. The results showed that the default trochaic pattern of English facilitated novel wordform processing, as well as learning the meaning-form association.

Methods

Visual stimuli. 40 alien pictures (Gupta et al., 2004).

Auditory stimuli. 60 CVCV and 60 CVCVC segmental templates (e.g. /bamo/, /pogaf/) were produced with both an iambic and a trochaic stress pattern, including normal English phonological processes such as flapping and vowel reduction.

Nonword properties. Nonwords varied from moderately to very acceptable, as assessed by a preliminary nonword acceptability judgement experiment and computational modeling (Daland *et al*., in press).

Participants. About 100 native English speakers.

Stimulus lists. Participants were randomly assigned to a stimulus list. Each list contained 40 nonword *targets* to be associated with an alien picture -- half iambic, half trochaic; half CVCV, half CVCVC. The remaining items consisted of lexical decision foils and nonword repetition foils. Foils vs. targets and trochaic vs. iambic were counterbalanced across lists.

Tasks. Participants completed an exposure phase (targets paired with alien pictures), a nonword recall task (lexical decision), a nonword repetition task, an additional exposure phase, a 4AFC picture identification (hear the target, select the matching alien), and picture naming (see the alien, produce its name).

Preliminary Results

Nonword recall. A facilitatory effect of stress pattern was observed in both reaction time and accuracy. RT: Trochees were rejected as unfamiliar significantly faster than iambs; there was no difference in acceptance as familiar. Accuracy was higher overall for trochees; however, there was a response bias toward iambs yielded higher accuracy for familiar iambs than trochees.

Picture identification. There was no effect of stress on picture identication RT. Accuracy was significantly higher for trochees than iambs.

Conclusion

The default trochaic stress pattern of English facilitates the acquisition of novel wordforms and form-meaning associations in English-speaking adults.

References

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