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Proceedings of the Annual Meeting of the Cognitive Science Society

Title

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Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 22(22)

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Publication Date

2000

Peer reviewed

Of Words, Birds, Worms, and Weeds: Infant Word Learning and Lexical Neighborhoods.

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How specific are infants' representations of words? Do words that sound similar to each other present any special difficulties, or benefits, in early lexical acquisition? That is, experience in encoding certain kinds of phonotactic sequences and metrical patterns could facilitate the acquisition of new word-to-world mappings (Jusczyk, 1997). Alternatively, competition from existing lexical items that share similar phonotactic and phonetic properties could also inhibit children's ability to encode a new item (see Luce & Pisoni, 1998; Marslen-Wilson, 1989; McClelland & Elman 1986; Norris, 1994). Thus, for example, children who know the word, "hat," could conceivably learn the word, "had," more quickly than a phonetically unrelated word because their experience with the "ha-" sound structure makes forming an acoustic package easier. On the other hand, competition from the "hat" representation, could make "had" very difficult to learn and inherently confusable with "hat."

Two studies are reported that examine infants' abilities both to detect the similarity among such "lexical neighbors," words that differ by a single phoneme, and to learn a referent for a novel neighbor after an exposure to a high number of these similar sounding words. In all studies, the lexical neighbors were constructed of CVC non-words that differed in the initial consonant, the vowel, or the final consonant of a prototype. All lists were controlled for word phonotactics, frequency, and their relation to English lexical neighborhoods.

In study 1, 15-month-old infants exhibited a novelty preference for a neighborhood prototype, after being familiarized in the head turn preference procedure with twelve lists of twelve neighbors. The mean looking time in seconds, with the standard error in parentheses, to the novel and prototypical words was 7.95 (0.52) and 6.70 (0.68), respectively. This suggests that, even by 15 months, infants are capable of detecting the neighborhood similarity among words.

In study 2, 17-month-olds were tested on their ability to learn the referent of two novel prototypes after being exposed to their respective lexical neighbors. In one condition, the high-density condition, six lists of twelve neighbors were

used. The low-density condition utilized six lists of three neighbors plus nine filler items. Results obtained with the intermodal preferential looking procedure indicated that word learning was significantly better in the low density condition, both in overall looking times and in infant reaction times to the targeted word. The mean difference in looking times between the target and non-target in the high- and low-density conditions was -0.14 (0.14), and 0.59 (0.21) seconds, respectively.

Taken together, these results fit well with current models of spoken language recognition, many of which suggest a competitive effect for words arising from dense lexical neighborhoods. However, preliminary results from a control study seem to indicate that some exposure to a neighborhood may be better than no exposure at all. Thus, 17-month-old infants that were tested on their word learning ability after being exposed to twelve lists of only filler items performed worse than those from the low-density condition reported above did. This suggests that some exposure to lexical neighborhoods might facilitate and strengthen infants' ability to form a representation of the new word, while too much exposure might fatigue the system and/or introduce strong competitive effects.

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