Free recall of word lists differing in phonological similarity, word frequency, and phonotactic pattern frequency in SLI

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Abstract

Children with SLI have difficulty with verbal recall. In recall tasks, children with SLI recall fewer items than their typically developing peers. Some theories view this as an underlying cause of SLI, while others view memory deficits as resulting from a more pervasive linguistic deficit. In phonological similarity vs. dissimilar words. During rehearsal, traces of similar items interfere with one another so they are recalled less well. Children who use less efficient encoding strategies are less influenced by phonological similarity among items to be recalled.

Method

Participants

16 monolingual English-speaking children with SLI and 16 age-matched control children participated. All children had highly intelligible articulation and nonverbal IQ scores greater than 85. The children with SLI included 2 with E-SLI and 14 with ER-SLI, 9 females and 10 males aged 7.8 to 11.8. The age-matched control children included 8 females and 8 males aged 8.5 to 12.3.

Stimulus Materials

Eighty lists of CVC words ranging from two to six items in length were created. Two lists at each of five lengths varied along three orthogonal dimensions: phonological similarity, word frequency, and phonotactic probability.

The 1099 English CVC words rated high in familiarity were separated into high and low word frequency groups by a median split. They were then separated into high and low phonotactic probability groups by another median split. Thus, there were four groups of words: (1) high word frequency, high phonotactic probability (hi, hi pp); (2) hi w f, lo pp (3) lo w f, hi pp; and (4) lo w f, hi pp. Words from each of the four groups were combined into 20 lists, four at each length (2 - 6 items). Two lists at each length contained phonologically similar words; two contained phonotactically dissimilar words. Each word appeared in only a single list.

The 320 words were produced by a female speaker from the local dialect, with no duration differences due to w f or pp. Words were excised, normalized for volume, and concatenated into lists with a 1-s ISI. Time between lists was 5s for two-item lists, and increased with list length.

Procedure

Children were tested individually in a quiet room. They were told that they would be hearing lists of words, and that their job was to repeat them back in any order. In a blocked design, two-item lists were presented first, with list length increasing, concluding with six-item lists. Children’s responses were recorded for subsequent scoring. A word was scored as correct if it was repeated, with no restriction on order.

Results


2. List Length. Accuracy decreased as list length increased. This effect was the same for both groups.

3. Phonotactic Probability. All children recalled fewer phonotactically similar words. A significant group x similarity interaction revealed that children with SLI showed a smaller phonotactic similarity effect than controls.

4. Word Frequency. All children recalled more frequently-occurring words. This effect was the same for both groups.

5. Phonotactic Similarity. All children recalled more common phonotactic patterns (pp > f). A significant pp vs. f interaction revealed that this effect was significant for frequent words, but not for less frequent words. This was the same for both groups.

6. Serial Position Effects. In longer lists, all children recalled list initial and list final items at higher rates. This effect was the same for both groups.

Conclusions

1. Children with SLI recalled fewer items overall, but showed the same sensitivity as children with NLD to word frequency, phonotactic probability, and serial position. This suggests that they can use language knowledge for readintegration, to facilitate recall.

2. However, because they are less influenced by phonotactic similarity among items to be recalled, their phonological encoding processes are less efficient, at least when memory resources are exceeded.

References


Roodenrys, Hulme, & Schaith, (1993). The effects of phonological similarity on word recall. JCP, 110, 479-484.
