Effects of Single-Letter Pretraining on Overselective Attention to Words in Young Children

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Purpose

- Children with overselective attention attend to only a limited number of stimulus elements in a compound display. This investigation determined if overselective attention occurred in young children when words were presented. Assessing if young children display overselective attention to words is important since attending simultaneously to individual letters within words is critical for word recognition.

- Computer technology was used to administer multiple stimulus-control tests to provide greater precision in identifying the presence and intensity of overselective attention to words. In one test, word choice was determined when the S+ word appeared with three comparison words that differed by only one letter. If the child consistently selected the S+ word despite appearing with comparison words differing by only one letter in each spatial position, attention to each letter of the S+ word was revealed. A second test measured response topographies by using a touch screen that automatically recorded which letters the children touched when words were presented.

- The effect of single-letter pretraining on how young children attended to words was also examined in this investigation. Determining the amount of single-letter pretraining that is necessary before simultaneous attention to multiple letters occurs is another approach for assessing the intensity of overselective attention to words.

Method

- *Four young children (6-7 years of age) of typical development participated. A Macintosh computer automated the sessions, and a touch screen was fitted to the monitor screen.*

- *Each child was presented a word discrimination in which the S+ and S- words were presented simultaneously on the computer screen. The children were required to select the S+ word to obtain reinforcement. If the S- word was selected, reinforcement was not provided (See Fig. 1).*

- *The word discrimination was presented after differing amounts of single-letter pretraining were provided. During single-letter pretraining, stimulus control by each letter of the S+ word was obtained by making two letters common to both the S+ word and three S- words and consistently pairing each letter of the S+ word with reinforcement (See Fig. 2). Pretraining trials and the word discrimination were repeated until the word discrimination was presented six times to each child.*

- *Each time criterion accuracy was achieved for the word discrimination, a test was administered. In the test, the S+ word appeared with three comparison words that differed by only one letter. In a generalization test, the S+ word appeared with three comparison words, which differed by one novel letter (See Fig. 3). The purpose of the tests was to determine how many letters of the S+ word each child was attending to. Because a touch screen was employed, which of the letters the children touched each time word pairs appeared on the computer screen was also recorded.*

Figure 1

Word Discrimination

(+)   (-)

B A G   R E D

Figure 2

(+)   (-)

B A G   R A G

(Letter B Pretraining)

(+)   (-)

B A G   B E G

(Letter A Pretraining)

(+)   (-)

B A G   B A D

(Letter G Pretraining)

Figure 3

Word-Discrimination Test

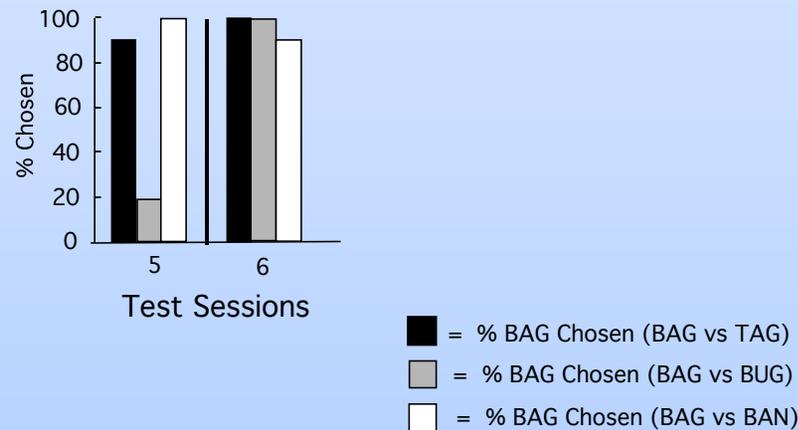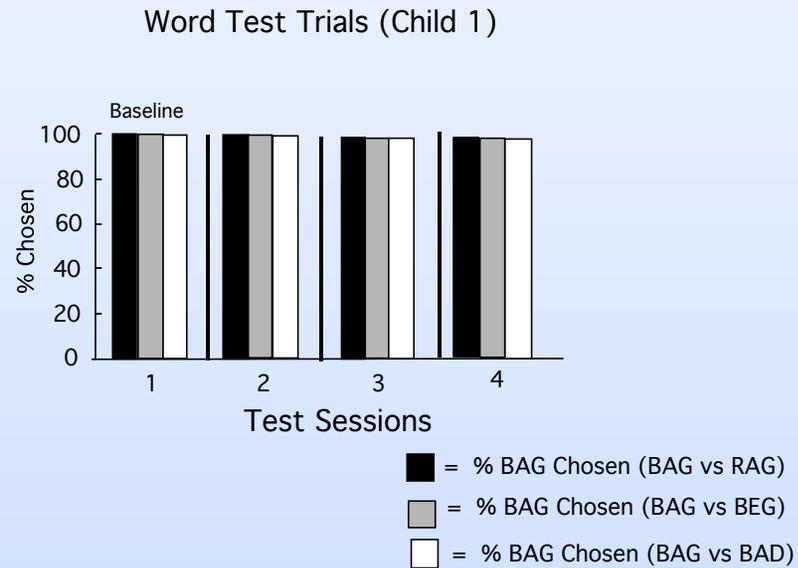(+)   (+)

B A G   R A G
B A G   B E G
B A G   B A D

Word-Generalization Test

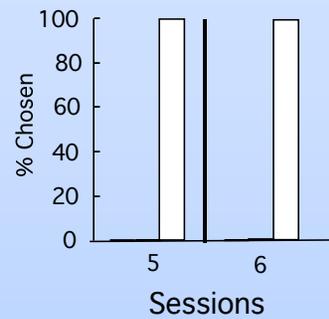(+)   (+)

B A G   T A G
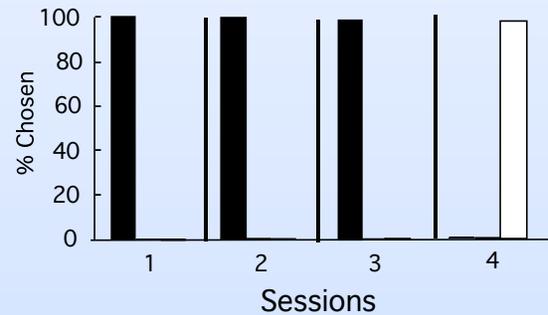B A G   B U G
B A G   B A N

Results & Discussion

- *Young children differed in how they attended to words both before and after single-letter pretraining was provided. While the children responded identically to individual letters during pretraining, they displayed a variety of attentional patterns when the same pretrained letters appeared in a word-discrimination task.*

- *The type of response measurement affected the detection of their overselective attention to words. Two of the four children displayed persistent overselective attention when word choice was assessed. When response topographies were recorded, however, all four children consistently revealed selective attention to words with few exceptions.*

- *Utilizing multiple tests provided a fine-grain analysis of how children attended to words and identified individual differences that wouldn't have been discovered if only a single test had been utilized. Although young children differed in how they attended to words, overselective attention was eliminated for two children and reduced for a third child following single-letter pretraining.*

- *Employing computer technology to administer similar procedures to identify and eliminate overselective attention to words would result in more individualized and effective reading programs. This is especially important for children with learning and developmental disabilities where improving their visual attention in their early years is critical in facilitating their later development and academic progress.*
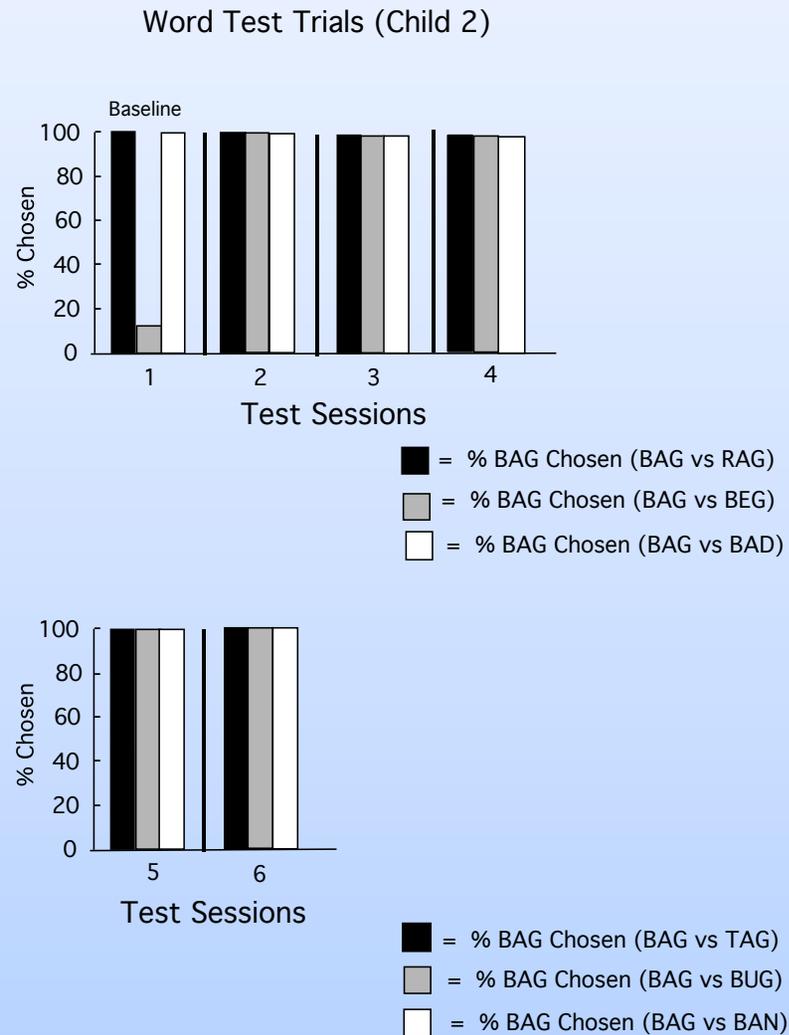
Results: Word Test Trials (Child 1)

Word Test Trials (Child 1)

Baseline

% Chosen

Test Sessions

■ = % BAG Chosen (BAG vs RAG)
▨ = % BAG Chosen (BAG vs BEG)
□ = % BAG Chosen (BAG vs BAD)

% Chosen

Test Sessions

■ = % BAG Chosen (BAG vs TAG)
▨ = % BAG Chosen (BAG vs BUG)
□ = % BAG Chosen (BAG vs BAN)

Results: Word Discrimination (Child 1)

Word Discrimination (Child 1)
BAG (+) RED (-)

Results: Word Test Trials (Child 2)

Word Test Trials (Child 2)

Baseline

■ = % BAG Chosen (BAG vs RAG)
▨ = % BAG Chosen (BAG vs BEG)
□ = % BAG Chosen (BAG vs BAD)

■ = % BAG Chosen (BAG vs TAG)
▨ = % BAG Chosen (BAG vs BUG)
□ = % BAG Chosen (BAG vs BAN)

Results: Word Discrimination (Child 2)

Word Discrimination (Child 2)
BAG (+) RED (-)

Results: Word Test Trials (Child 3)
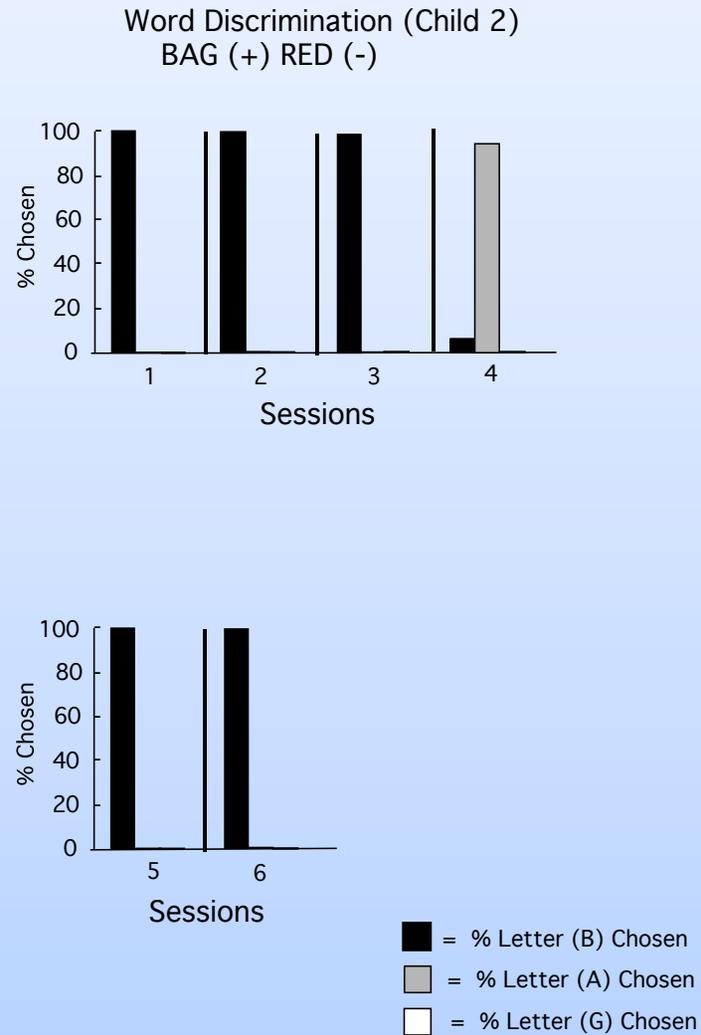
Word Test Trials (Child 3)
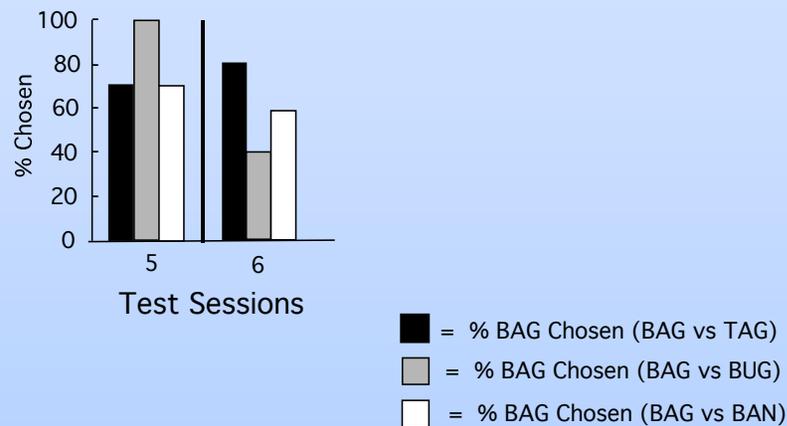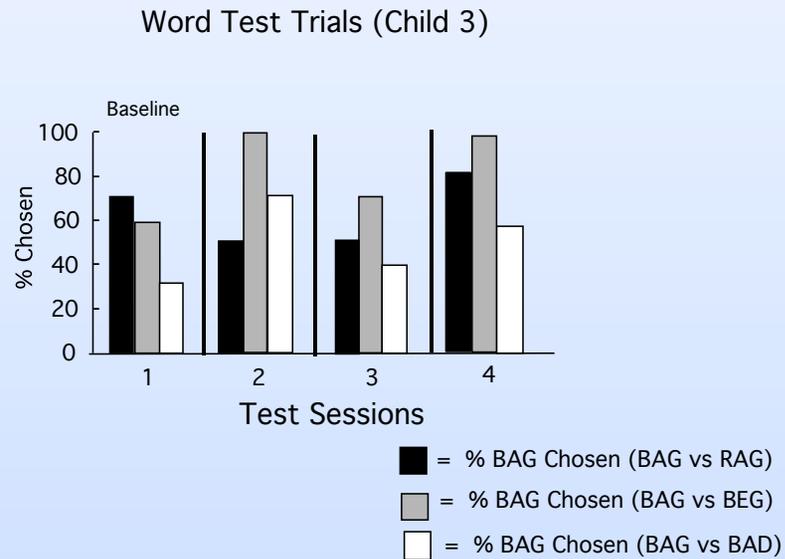
Results: Word Discrimination (Child 3)

Results: Word Test Trials (Child 4)
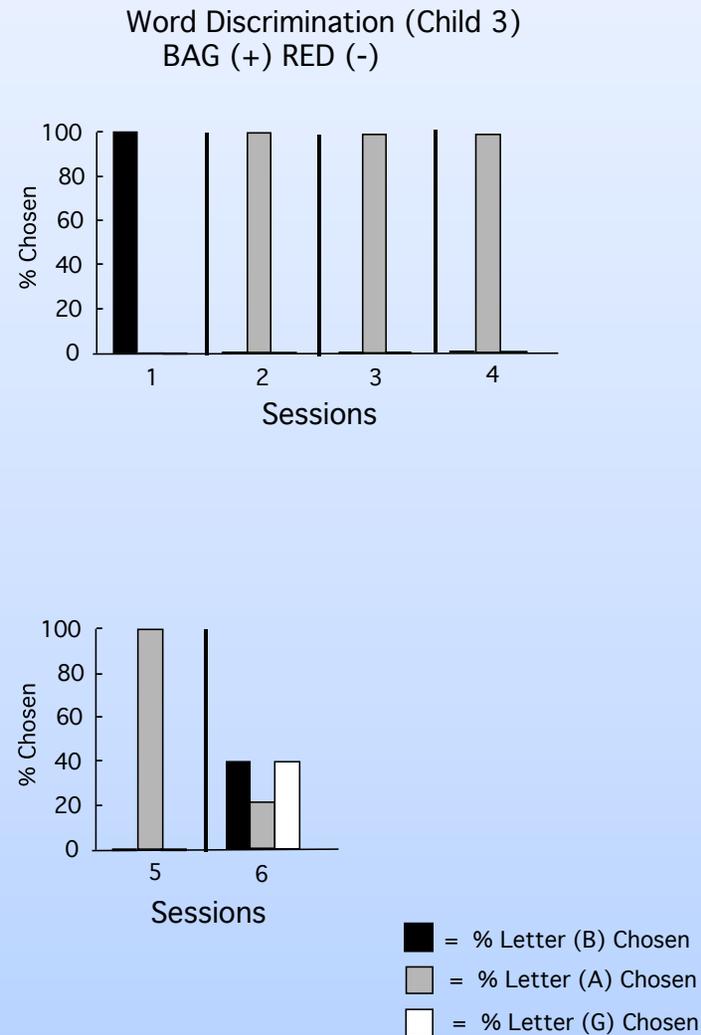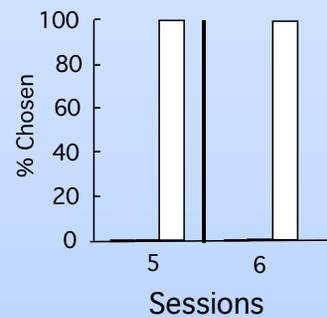

Word Test Trials (Child 4)
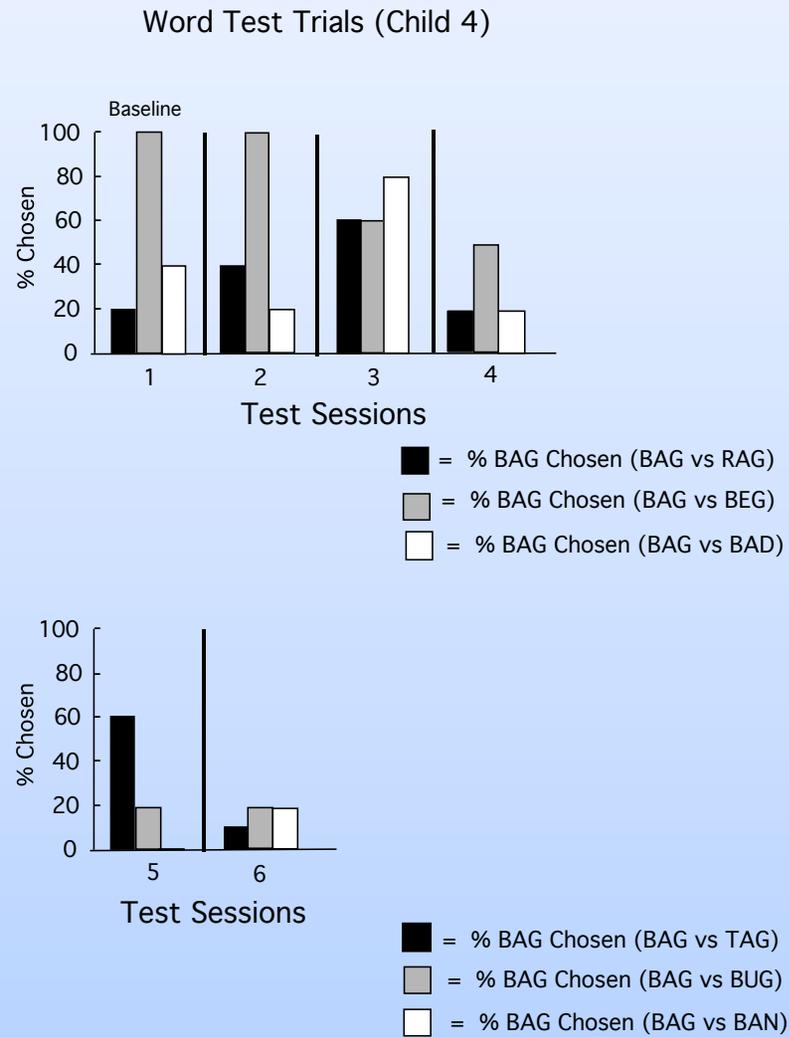
Results: Word Discrimination (Child 4)

Word Discrimination (Child 4)
BAG (+) RED (-)