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Real words and non-words learning under or without attention by children with SLI

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Introduction

There is an important comorbidity between SLI (Specific Language Impairment) and ADHD (Attention disorders and Hyperactivity disorders) – see Muller and Tomblin (2012). This suggests that attention difficulties, even if the children are not considered as with ADHD, could be a key factor to explain the language deficit.

Attention plays an important role when memorizing new words (Garagnani, Shtyrov and Pulvermüller, 2009). In the case of low attention, in a recognition task, subjects could not remember unknown words but only known words.

If low attention makes it difficult to remember unknown words, this could make it difficult to learn new words.

Hypotheses

1. All children (with SLI and controls) should have more difficulties to remember words under low attention condition than under high attention condition.
2. All children (with SLI and controls) should have more difficulties to remember non-words than real words.
3. Children with SLI will have specific difficulties to remember non-words under low attention condition.

Procedure

Subjects: 10 children with SLI (French-speaking, no bilingualism, no ADHD, no hearing, social or neurological identified deficit) – no severe deficit in comprehension (phonological-syntactic disorder).
10 control children matched for age

Language abilities were controlled used the ELO (Khomsî, 2001)

Training session:

8 words (4 real words and 4 non-words) were presented to the children under two conditions:

- With attention: children were asked to listen carefully to the material presented. They knew that there would be questions asked later about the material
- No attention: children were asked to play with toys. They knew that they would hear words, and that they would be asked questions about what they did with their toys and about the words that they might hear.

Testing session:

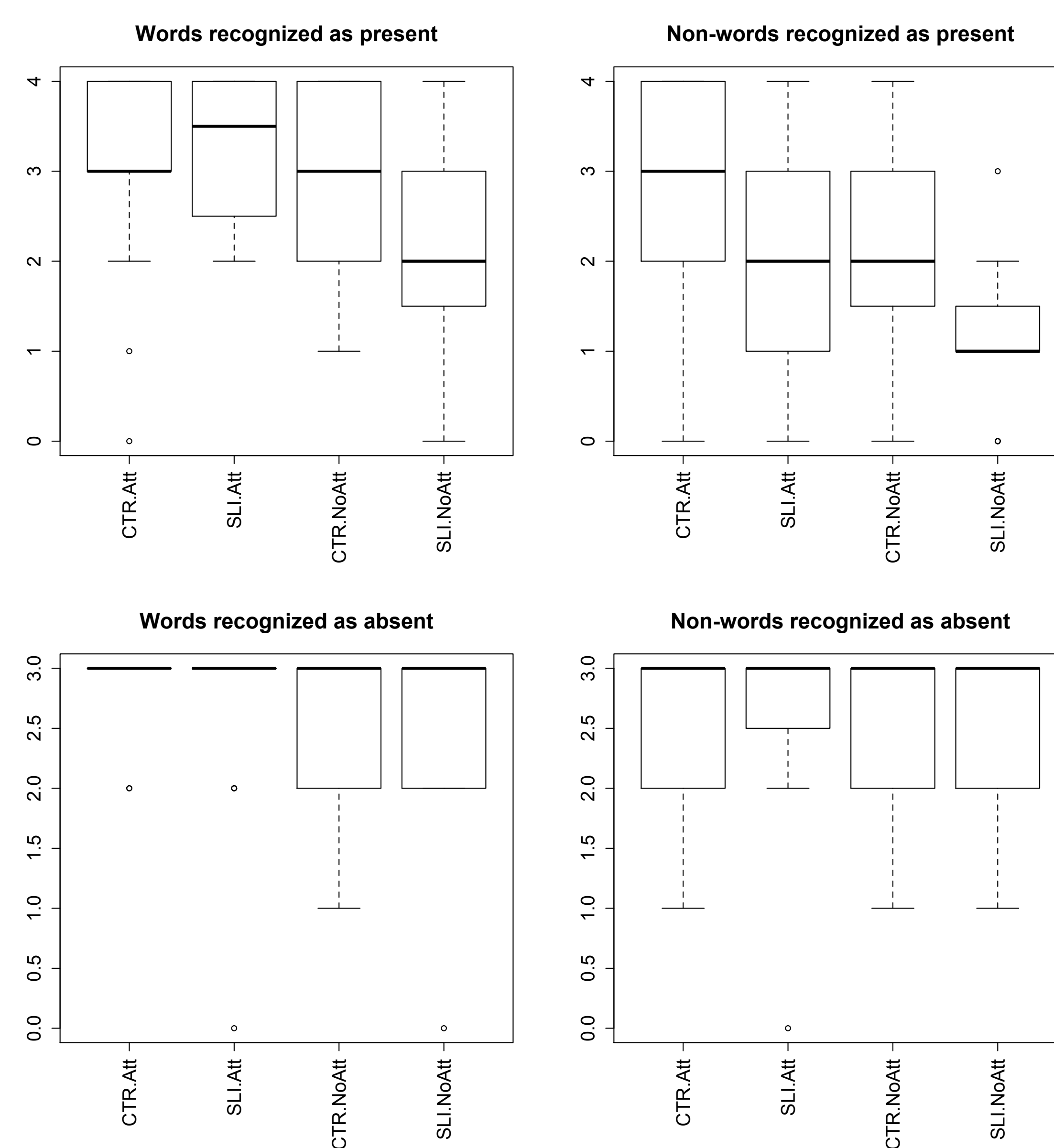
Children were presented 14 words (including the 8 they heard before) and were asked to say whether they think they heard it or not. For the no attention condition, they were told that not being sure about their answer was not a problem.

Garagnani, M., Shtyrov, Y., & Pulvermüller, F. (2009). Effects of attention on what is known and what is not: MEG evidence for functionally discrete memory circuits. *Frontiers in human neuroscience*, 3, 10.

Mueller, K. L., & Tomblin, J. B. (2012). Examining the Comorbidity of Language Impairment and Attention-Deficit/Hyperactivity Disorder: *Topics in Language Disorders*, 32(3), 228–246.

Results

Two word lists were used and passation was done in two orders: attention first and no attention second, or the opposite. There were no effect of list order nor passation order.



Results

- Controls were better than SLI: $F(1,78) = 7.66, p = .007$
- Results with attention were better than without attention: $F(1,78) = 12.3, p = .0007$
- Real words were better recognized than non-words: $t(153) = 4.62, p < .0001$
- There was a significant interaction between type of children (CTR vs. SLI) and attention (with attention vs. no attention), but only for real words, $F(1,76) = 5.88, p = .01$, and not for non-words.

Discussion

Real (known) words are easier to remember than non-words and attention helps to remember words for all children.

For children with SLI, the situation without attention appears to be especially difficult for real words. No special difficulties were found for non-words, but children with SLI had even lower scores for non-words with attention.

For all children, recognizing a word as absent was easier than recognizing it as present.

The difference in performance between children with SLI and control children was not specifically stronger for non-words without attention as predicted, but children with SLI had lower performance in comparison with control children only in the non-attention case. This suggests that a high level of attention is a specially required for children with SLI in recognition tasks.