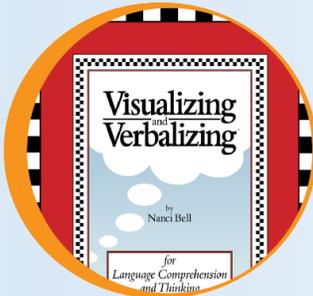




From Word Reading To Multisentence Comprehension: Improvements In Brain Activity In Children With Autism After Reading Intervention



Visualizing and Verbalizing for Language Comprehension and Thinking (V/V)

PROFILE:

Number of Subjects:

- 14 Visualizing and Verbalizing
- 11 Control

Age: 8-14

Program Implemented:

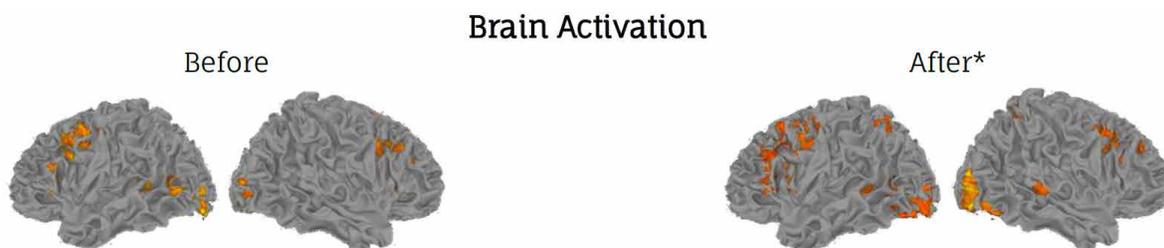
- Visualizing and Verbalizing®

Outcome Measures:

- Brain activation (fMRI)
- Gray Oral Reading Tests-4th (comprehension)

BACKGROUND:

The University of Alabama at Birmingham Department of Psychology in collaboration with Lindamood-Bell Learning Processes conducted a randomized controlled trial involving children with Autism Spectrum Disorders (ASD). This experiment investigated the constructs of Dual Coding Theory (DCT) using the Visualizing and Verbalizing (V/V) program, which develops concept imagery for comprehension. Functional magnetic resonance imaging (fMRI) was used to study the effect of V/V on brain activation in areas associated with comprehension. Before and after instruction, children's brains were scanned and they were administered a reading comprehension test. A similar group of children with ASD went through the same procedures but did not receive V/V instruction (i.e., control group). Children in the V/V group received approximately 200 hours of instruction over a 10 week period of time. Instruction was delivered by specially trained Lindamood-Bell staff. The figure below shows brain activation while children read multisentence passages before and after V/V instruction.



Note. *Statistically significant ($p \leq .05$). Figure used with author's permission.

RESULTS:

On average, the V/V group exhibited significantly greater brain activation during word, sentence, and multisentence tasks after instruction (multisentence shown in figure). In addition, The V/V group also had a significantly ($p = .04$) larger change in reading comprehension than the control group. The average standard scores before and after were 77.5 and 87.9 for the V/V group and 84.5 and 84.1 for the control group. Furthermore, researchers found that changes in reading comprehension significantly predicted changes in brain activation. The results of this study illustrate that instruction in the Visualizing and Verbalizing program supports the Dual Coding Theory model of cognition, leading to greater brain activation and improved comprehension for children with Autism Spectrum Disorders.

LOCATION:

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