

# R E S E A R C H

## Neural Changes Following Remediation In Adult Developmental Dyslexia



Seeing Stars for  
Phonemic Awareness,  
Reading, and Spelling (SI)

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

Lindamood Phoneme  
Sequencing® Program for  
Reading, Spelling, and  
Speech (LiPS®)

### PROFILE:

#### Number of Subjects:

- 9 Lindamood-Bell
- 10 Control

#### Programs Implemented:

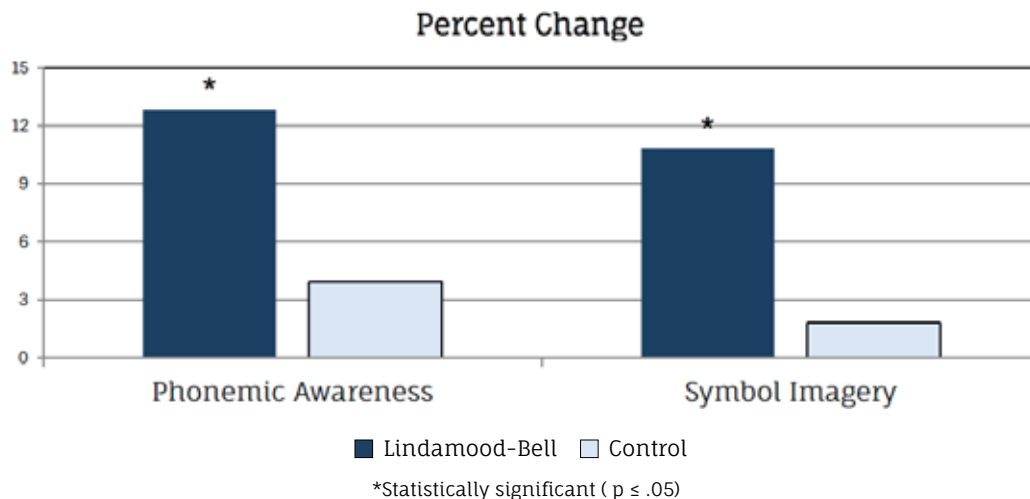
- Seeing Stars®
- Lindamood Phoneme Sequencing®
- Visualizing and Verbalizing®

#### Outcome Measures:

- Test of Auditory Analysis Skills
- Symbol Imagery Test
- Brain Activity (fMRI)

### BACKGROUND:

Georgetown University's Center for the Study of Learning in collaboration with Lindamood-Bell Learning Processes conducted an experiment involving adults with dyslexia. This study investigated the efficacy of the Seeing Stars, Visualizing and Verbalizing, and Lindamood Phoneme Sequencing programs, which develops symbol imagery, concept imagery, and phonemic awareness. Subjects were pretested on phonological processing assessments, received approximately 112 hours of Lindamood-Bell instruction, and were posttested. In addition, pre- and posttest brains scans were obtained using functional magnetic resonance imaging (fMRI). Instruction that was delivered by specially trained Lindamood-Bell staff



### RESULTS:

On average, Lindamood-Bell subjects demonstrated greater improvements, statistically, than comparison subjects on both measures. In addition, following instruction, Lindamood-Bell subjects had a larger increase in brain activity than comparison subjects. The results of this study support the Dual Coding Theory model of cognition and illustrate that instruction in the Lindamood-Bell programs lead to improved reading and increased brain activity.

### LOCATION:

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