



NEUROPSYCHOLOGY  
DIAGNOSTIC CENTER LLC

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ATTENTION • PERCEPTION • MEMORY • MOOD • MOTOR

**“See-N-Read™”: A BRIEF NEUROSYSTEMS OVERVIEW OF VISUAL  
PATHWAYS GOVERNING READING:  
A NEUROPSYCHOLOGICAL PERSPECTIVE**

Reading is a complex function, requiring a working relationship with multiple brain areas. It is important to recognize the contribution of each area of the brain involved in reading, however, the focus of this synopsis is to address the contribution of visual pathways, especially cortical pathways (higher level visual brain areas).

Many very bright children and adults, who do not have vision problems, struggle with words affecting reading rate, fluency accuracy, and comprehension. There are various underlying reasons for these difficulties, yet it is important to understand that the brain can reorganize itself, as well as develop new connections and pathways.

The occipital area of the brain is the cortical brain center of the visual system. There is a hierarchy within this visual system. Primary areas are responsible for visual sensations. Secondary areas are responsible for the synthesis (analysis and coding) of visual stimuli. This area converts projections of incoming visual stimuli into complex visual perception. Individual visual pieces of stimuli are coded into visual patterns relying on well-modulated eye movements to do so. The tertiary visual brain area connects visual stimuli with other sensory pathways, and aids in visual spatial organization, such as understanding the spatial positions of the lines of letter. Deeper, sub-cortical brain areas, associated with visual attention, efficient light-dark modulation and efficient speed/rate of eye movement influence the individual pathways and how we focus, analyze, and store visual information within the visual brain.

Briefly, I will note that these visual perceptual pathways of the left brain hemisphere are quite different in function than those of the right hemisphere. The left hemisphere pathways are very closely associated with speech. This is why, for example, if someone has difficulty recognizing the visual formation of letters, yet the sound/phonetic cue is efficient (requiring intact auditory pathways), the associated visual-auditory speech centers may prompt visual recognition.

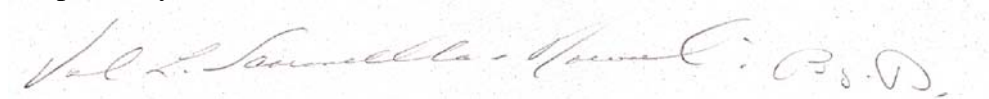
Another very important point in understanding the working relationship of brain areas for all learning, not just reading, is that the brain is the only organ in the human system that learns with complexity and both reorganizes itself, and forms growth from internal/body cues and from environmental cues. **THE BRAIN LEARNS!**

The SEE-N-READ™ is a good example of an environmental-external cue which promotes the working relationship of visual brain pathways necessary for reading. The SEE-N-READ™ can aid in developing reading rate, accuracy, fluency, and comprehension. It can reduce pattern glare. Pattern glare is created by spacing between lines of text (i.e., lines on a striped shirt often appear to move). The SEE-N-READ™ blocks pattern glare resulting in more efficient eye scanning (eye moving from point to point) and eye fixations (eyes fixed at a certain point). The user can also control the rate/pace of vertical movement of the SEE-N-READ™ thereby with practice, further increasing reading efficiency. It can aid in preventing unnecessary head, neck, and eye-hand incoordination, due to inefficient eye movement and inefficient focusing. Fatigue, body strain, head tilt, and headaches when reading can be decreased. It can also lessen having to use your finger to guide your eyes, which can slow down reading rate.

The SEE-N-READ™ was developed by dedicated educators. It is a guide for developing the reading process. We can continue to improve reading skills at any age. The SEE-N-READ™ is encouraging for the user because easy use makes it adaptable and motivating. Practice with the SEE-N-READ™ can help make reading skills more automatic, which encourages reading for pleasure.

Congratulations to the SEE-N-READ™ developers. You have the ability to touch the lives of many.

Respectively (*sic*),



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