

## **Dyslexia – A Neurodevelopmental Approach**

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In America the ability to learn is becoming a pressing topic of conversation in our homes, schools, the workplace, and even government agencies. Our nation worries about the education of its citizens. Companies are concerned about their workers' ability to learn. School budgets and limited staff struggle under the weight of federal mandates and the learning challenges of their students. Homeschool moms question their ability to teach. At the heart of the struggle is the debilitating diagnosis of dyslexia, affecting an estimated 5-15% or more of U.S. children, particularly boys. It has been called "the most frequently occurring learning disability and the most common disorder of childhood" (Richards et al, 1999).

### **What is Dyslexia?**

Dyslexia, the word that strikes fear and dread in the hearts of thousands of parents each year, is a complicated and controversial diagnosis. Parents hear this devastating diagnosis and are typically told that teaching coping and compensating skills is the only answer. They see this proverbial "pile of bricks" loaded on their child's back and are told he has to carry it around for the rest of his life. A definition used to describe, identify and treat this malady was proposed by the World Federation of Neurology in the 1960s. It states: "Dyslexia is a disorder manifested by difficulty learning to read despite conventional instruction, adequate intelligence, and socio-culture opportunity." (Catts & Kamhi p. 58). This definition focuses more on what dyslexia is *not* rather than what it is. Nevertheless, it was used for decades to label hundreds of thousands of people.

### **Exploring the Symptoms**

Over the past 100 years, dyslexic symptoms have been articulated by researchers, and include deficits in the areas of: phonological awareness, balance, motor control, visual discrimination, visual sequential processing, auditory processing, and listening skills. Problems are often characterized by reversing or transposing letters, clumsiness,

figure drawing errors, and heightened emotionality. It seems that more research has resulted in less understanding – not scientifically sound. But what is to be made of unexpected reading failure in otherwise average-functioning students (Kavale & Forness, 1998)?

Many professionals seem to be guilty of the one-size-fits-all solution. In spite of the varied symptoms, the tendency to treat all dyslexics in the same way results in confusion and ineffective treatment. It seems clear that with so many different symptoms, many aspects of human development are involved. Solutions, therefore, must be custom-fit to the individual.

### **What Could Be The Cause?**

Many hypotheses are proposed for the "cause". Some say it is a hereditary neurological disorder; others blame the structure and function of the brain. Still others trace the causes to auditory processing deficits, visual dysfunction and/or motor (cerebellar) dysfunction. Questions abound! Could primitive reflexes be interconnected? If so, could these interconnections be causing poor coordination of visual, vestibular and proprioceptive systems required for good feedback to the individual for reading? What influence do ear infections have? What is the role of cultural influences? The large amounts of time children have watched television and played video games, has caused them to stare straight ahead and try to read what is in the area of focus without moving their eyes (Corso, 1997). Also of concern is the resulting lack of physical activity (Healy, 1994 p. 171). This quagmire confuses parents and professionals alike.

### **Current Approaches**

For many years the traditional treatment for individuals with dyslexia has been a phonological approach first introduced by Samuel Orton (The Orton/Gillingham Method). Since Orton himself noted multiple symptoms of dyslexia, the neurodevelopmental question that begs answers is whether or not his treatment approach was too narrow. After all, many symptoms not related to phonology were apparent. Although the evidence in favor of the phonological weakness of

dyslexics has continued to dominate the scene recently, it does not diminish the importance of the visual perceptual problems that many dyslexics report (Stein, 1997) as well as the myriad of other symptoms with various causes.

#### The Neurodevelopmental (ND) Approach

It seems reasonable to NDs that dyslexia actually results from a combination of several different inefficiencies. Each case seems to have a unique set of causes that needs to be addressed. This involves looking at the child globally, developing specific activities based on the findings, in each case, treating the root causes. It is time to start looking at the whole child and focusing on the causes rather than the symptoms.

The ND Approach could be described as relating to *neuroplasticity*, the brain's natural ability to change and modify itself in response to changes in or enrichment of the environment (Ratey, 2001 p. 167) (see article online) Plasticity is present as long as a person lives, otherwise stroke victims would have no hope of regaining function. ND is the study of the brain's plasticity to make advancements regardless of the current condition of the individual. There is an understanding that abilities can be enhanced with brain stimulating activities when applied with specific keys: frequency, intensity, and short duration (see related article online) over a particular period of time. NDs believe that these three keys to input, used in the stimulation of an individual's auditory, visual, tactile, manual, language and mobility systems, are the solution to causing low or non-functioning parts of the brain to gain function, thus reducing dyslexic symptoms.

The unique perspective of The ND Approach relies on creating the right environment for the brain to heal the faulty wiring which causes dyslexic symptoms. Theoretically, The ND Approach views learning difficulties as symptoms of incomplete development and inefficient communication between brain and body. For instance, if an infant is not allowed to move from the stages of random movement into more specific coordinated movement and experience cross patterning activities gained through normal

progression of crawling and creeping; the organization of the brain will be left in an incomplete state. A surprising 75% of students with diagnosed learning difficulties never crawled (Corso, 1997). Crawling promotes a new level of brain organization, as indicated by more organized EEG brain-wave activity in the cerebral cortex.

#### Other Key Elements

NDs are keenly aware of the auditory system and the important role that it plays in the acquisition of reading skills. Auditory memory refers to the ability to take in pieces of information, hold them in your mind and manipulate them in the short-term (Ness, K. 1999). There is an understanding that language skills such as speech, reading, writing, and spelling develop only if the child has learned to listen (Goddard, 2002 p. 106). The auditory system is a major aspect of phonology. All auditory deficits negatively affect phonological processing. This explains why many dyslexics make slow or minimal progress from phonetic instruction, while others benefit greatly. Phonics is an auditory system that requires decoding and holding sounds together to achieve words. Because of this fact, it would follow that the better an individual's auditory processing ability, the easier it would be to utilize phonics. However, developing auditory skills is a challenge in a society which has become primarily visual. Developing advanced auditory processing is highly recommended by NDs to enhance the ability to decode unknown words as well as to hold concepts which enhance reading comprehension. When low auditory processing exists, a different reading strategy is required until the auditory deficit can be remediated.

NDs also agree with prominent researchers in learning disability history who noted issues with the visual system of dyslexics from eye-hand coordination to tracking and teaming, to central detail vision issues, etc. The visual system does not act alone but relies on the vestibular and proprioceptive systems for accurate information, confirming The ND Approach. An individual is indeed an integrated whole with different systems interacting and affecting

each other. Eye dominance (a subject too extensive for discussion here, see "Learning Disability" article online) has proven a key factor in correction of dyslexic symptoms. Orton (1938/1989), said that "eyedness... is not so widely recognized as handedness, but it is probably of equal importance" (p. 30). NDs have found that when eye dominance coordinates with the dominant hand and additional inefficiencies are addressed,

dyslexic symptoms diminish and often disappear entirely. Refer to a bar graph, which shows the percentage of individuals (presenting to the author as previously labeled dyslexic by other professionals) that had mixed dominance as well as low auditory and visual sequential processing.

### Conclusion

Despite longer school calendars, enhanced buildings, better teacher training, advanced methods and curriculum, home schooling or other one-on-one or tutoring type interventions, the percentage of students with reading disabilities still persists and even grows each year. It is the author's opinion that it is time for a paradigm shift and a fresh look look at these challenges through the lenses of the latest research in cognitive neuroscience! Individuals using The ND Approach have discovered that specific activities done each day address root causes of the symptoms of dyslexia. As the symptoms are addressed successfully, functional ability is realized. When the brain can function more efficiently, the symptoms of dyslexia are rare.

**A complete list of references and related articles can be found online at [www.littlegiantsteps.com](http://www.littlegiantsteps.com) – articles – Dyslexia, The Neurodevelopment Approach**

## Neurodevelopmental Test Results In Dyslexic-labeled Children

