



## **Treating Nonverbal Learning Disorders**

Nonverbal learning disorder (NLD) is a neurological syndrome consisting of specific strengths and weaknesses. The strengths include early speech and vocabulary development, remarkable rote memory skills, attention to detail, early reading skills development and excellent spelling skills. In addition, these individuals have the verbal ability to express themselves eloquently. Moreover, persons with NLD have strong auditory retention.

There are four major areas of functional weakness:

- **Motoric**: Lack of coordination, balance problems, and difficulty with graphomotor skills.
- **Visual-spatial-organizational**: Lack of mental imagery, poor visual recall, faulty spatial perception, difficulties with executive functions\* and problems with spatial relations.

\*Definition of executive function: Neuropsychological functions including, but perhaps not limited to, reasoning, decision making, planning, initiative, sequencing, inhibition, problem solving, planning, impulse control, establishing goals, monitoring results of action, self-correcting.

- **Social**: Lack of ability to comprehend nonverbal communication, difficulties adjusting to transitions and novel situations, and deficits in social judgment and social interaction.
- **Sensory**: Sensitivity in any of the sensory modes: visual, auditory, tactile, taste or olfactory.

A learning disorder means that the child is struggling to achieve academically. In the case of NLD, the areas of difficulty are diverse, and may vary considerably from child to child. They include:

- **Math**: Often children with NLD can achieve with math in the early grades. It may not be until later in primary school that they struggle. The problem is math concepts - they have difficulty understanding what the operations are trying to achieve and, as a result, are very reliant on the step-by-step processes.
- **Non-verbal and spatial thinking**: Many of our thought processes are non-verbal, or entirely without words and language. For a child with NLD even basic concepts such as time and money may be difficult. Abstract scientific concepts such as the weather may be a struggle. For others the impact is more spatial - they get lost easily, have

trouble with maps, and have difficulty with team sports where direction and movement are important.

- Writing: Getting thoughts onto paper can be a problem from the very start. This is because children can have trouble automating letter formation (so they always have to think about it), trouble organizing the letters and words on paper (with varying size and placement), and trouble planning the whole process of putting their thoughts into sentences to write.

Brain Power® can treat the processing and motor problems associated with NLD. You may notice that there is considerable overlap in symptoms between NLD and Dycalculia, but there are distinct differences between these disorders. The following treatment plan would be appropriate with someone suffering from NLD.

Like treating Dycalculia, treatment with Brain Power® needs to occur in stages. The treatment plan below is numbered to indicate the typical sequence of training. First, it will be necessary to develop visual and spatial perceptual abilities, motor skills and executive functions (#1).

Once adequate progress has been made on these tasks, then add training of basic numerical operations (addition and subtraction) (#2A). When adequate progress has been made on these tasks, add the tasks labeled 2B which will drive the ability to perform mental calculations to a level of high proficiency.



