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# Nonverbal Learning Disabilities: Information for Parents and Educators

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Nonverbal learning disabilities (NLD) comprise a category of learning challenges characterized by deficits in nonverbal areas such as visual-spatial processing, tactile perception, and complex psychomotor skills, as well as difficulties with novel, social problem-solving situations and some academic tasks involving judgment and comprehension.

The term “nonverbal learning disability” may be confusing, as individuals with NLD characteristics are actually quite verbal; in fact, verbal skills are an area of strength. Rather, these individuals have difficulty processing nonverbal information such as recognizing facial expressions, visual problem solving, and tasks involving motor skills. Children with features of NLD struggle with social interaction, as much of the information from a typical conversation is transmitted nonverbally (e.g., through facial expressions and body language). Some academic subjects such as geometry or geography involve accurate visual discrimination, while other subjects such as social studies demand higher-level language skills, which makes learning challenging for individuals with NLD.

Learning disabilities in general affect approximately 5% of school-age children, and the prevalence of NLDs is unclear due to a lack of a formalized diagnostic classification. However, NLD profiles are increasingly addressed in the professional research literature, as well as clinically, due to significant implications for learning and adjustment. NLD is important to identify so appropriate interventions may be put in place to reduce emotional and academic ramifications of these limitations and to optimize functioning at home and school.

## **CHARACTERISTICS AND DEVELOPMENT OF NLD**

NLD has been hypothesized to be a disorder of the brain’s prefrontal and right hemisphere function. When the white matter of the right hemisphere of the brain is deficient, executive functions such as self-monitoring, attention, working memory, organization, and problem-solving are affected, as are behavior regulation, expression of mood, and self-soothing. Research has suggested that individuals with NLD resemble individuals who have had documented injuries to their right hemisphere. Right-hemisphere functions such as visual-spatial, organizational, and nonverbal reasoning skills are weak in individuals with NLD, especially in contrast to their better-developed verbal skills. Some early developmental differences include physical inactivity, limited exploration, and uncoordinated motor skills.

## **Specific Characteristics of NLD**

Individuals with NLD have deficits in psychomotor coordination, which appear as clumsiness and difficulty orienting in space; they may misjudge distances of objects and bump into things. They often misinterpret social cues, have difficulty with novel social situations, and have challenges with pragmatic and semantic language. They may take things too literally, have trouble with idioms, and have difficulty reading between the lines of others’ intentions, often resulting in overreliance on previous experience in a rote, learned fashion, and related social awkwardness. However, individuals with NLD may nevertheless enjoy having conversations and using a wide vocabulary.

## **Strengths:**

- Well-developed reading decoding
- Good rote verbal memory

- Strong spelling skills
- Better-developed general language skills

**Weaknesses:**

- Difficulty with math calculation
- Relatively weak reading comprehension skills
- Problems with tactile perception/sensory processing
- Weak complex psychomotor skills
- Poor visual perception
- Weak handwriting and organizational skills
- Deficits in social perception, judgment, and interaction
- Hyperactivity in early childhood
- Lethargy and need for frequent breaks when studying in school-age children
- Impaired pragmatic language abilities in terms of the fluid use of segues (transitions), turn-taking, and awareness of pauses and rhythms of speech that also involve reading facial cues and having reduced gestures and limited emotion in facial expressions (flat affect)

**Causes of NLD**

While no definite cause has been identified, research indicates that children with NLD do not generally have any atypical history related to pregnancy or delivery. Research on the disorder suggests that symptoms arise from specific brain regions, with secondary deficiencies related to primary neurocognitive deficits.

**Impact of Symptoms**

Children with NLD experience both immediate and long-term consequences. They have reduced social intuition and may make literal interpretations of social language. They may be considered loners or socially awkward, compromising interpersonal peer relationships. Academic difficulties may result in frustration and struggles with homework involving mathematical reasoning and complex language comprehension. Poor coordination and visual-spatial skills may make team sports difficult for children with NLD.

In addition to learning and social challenges, these children are at risk for developing symptoms of anxiety and depression. They may also experience attention deficit hyperactivity disorder (ADHD). Without appropriate evaluation and intervention, individuals with NLD are at risk for misdiagnosis and social-emotional disturbances that may have adverse effects on adult functioning.

**DIAGNOSIS OF NLD**

Neuropsychologists arrive at diagnosis of NLD through the use of standardized psychometric tests, whereas clinical psychologists and other clinicians (such as

psychiatrists and clinical social workers) may rely more on clinical impressions. However, the general consensus about diagnosis is that some assessment of neurocognitive functioning is necessary to identify the NLD cognitive profile of assets and deficits, as well as clinical assessment of social skills, language processing, and general adjustment. A diagnosis of NLD includes identification of a discrepancy in intellectual functioning, with nonverbal skills being much lower than verbal abilities on standardized intelligence tests. Academic testing demonstrates discrepancies as well, with stronger rote language skills in comparison to weaker math and higher-order language and pragmatic skills.

Diagnosis of NLD can present challenges due to similarities and overlap of the NLD profile with disorders such as hydrocephalus, brain injury, Asperger syndrome, and other neurodevelopmental disturbances. The diagnoses of Asperger syndrome and NLD are not mutually exclusive, and there is some co-occurrence in features of poor social intuition and weaker visuospatial/perceptual skills. However, many individuals with NLD profiles do not meet the criteria for Asperger syndrome. Rather, the NLD profile relates more to a specific pattern of neurocognitive strengths and weaknesses.

Another way of viewing the two disorders is that individuals with Asperger syndrome have additional challenges in comparison to individuals with NLD, including restricted areas of interest and more profound social interactive difficulties. Individuals with NLD have intact perspective-taking abilities and emotional reciprocity, while these areas are more limited in children with Asperger syndrome.

**INTERVENTIONS FOR NLD**

As NLD is a multifaceted disorder, a comprehensive approach to intervention is critical. Utilizing the strengths of the individual is important when constructing intervention plans.

**General Strategies**

Generally, children with NLD benefit from educational accommodations, medication in some cases, social skills interventions, counseling, parent counseling, and systematic, planful social learning experiences.

**Educational supports.** Educational accommodations include consulting a speech-language pathologist to address social pragmatic skills, as well as an occupational therapist to delineate needs in the visual-motor integration and sensory integration areas. Specific educational accommodations that relate to weak math, writing, or reading comprehension may be facilitated

through more formalized plans at school (e.g., special education IEP or a Section 504 Plan). Parents and teachers should contact the school's special education team regarding the child's need and eligibility for these services.

**Medication.** Medication to address anxiety or symptoms of ADHD may be helpful, although due to several factors that contribute to the NLD profile, medication may have only a modest effect in the overall disorder. Consultation with the family physician or mental health provider will help clarify options and alternatives.

**Counseling and skill training.** Social skills intervention may be particularly beneficial in the context of the school in order to generalize to real-life peer interactions. Counseling can benefit the child by promoting coping skills, while parent counseling and training can encourage their involvement in the child's daily social learning experiences. Counseling services may be available through school mental health personnel and/or community providers.

**Social learning experiences.** Children with NLD tend to benefit from systematic, step-by-step approaches to learning, as well as immediate social feedback presented in a positive fashion. Planning ahead and discussing implications of social choices for new situations are helpful. Facilitating social interaction with hobby groups or clubs (through after-school programs and other community programs) may provide noncompetitive, structured situations to foster friendships.

### Strategies for Teachers

To help children with NLD, teachers can:

- Utilize multimodal instruction that emphasizes language and uses concise, stepwise directives and repetition; encourage self-talk for step-by-step problem solving
- Provide alternatives to paper-and-pencil activities when indicated (e.g., verbalizing learned material)
- Reduce visual stimuli on worksheets and provide alternatives to copying from board or book
- Allow additional time to complete tasks, chunk work, and provide positive feedback on effort and progress; consider shortened homework assignments
- Engage the child in daily problem solving or discussions about behavior congruent with social situations
- Have children verbally describe information to be learned to focus attention to important detail
- Use audiotapes or software that reads text aloud to augment reading during study time

- Encourage discussion of academic concepts in daily life with personal examples
- Ask the child to rephrase or summarize information he or she has read to assess comprehension, which may be discrepant from reading decoding abilities

### Strategies for Parents

To help children with NLD, parents can:

- Obtain a definite diagnosis with clear delineation of strengths and weaknesses so self-advocacy may be encouraged
- Help your child anticipate routines and schedules, and encourage use of checklists
- Provide stepwise assistance for difficult tasks with positive feedback for effort
- Discuss emotions, including stress, and encourage self-calming and problem-solving strategies
- Be alert to potential bullying and intervene (contact school personnel) when you suspect your child is being victimized
- Communicate regularly with your child's teacher about his or her progress in academic and social domains
- Be a verbal mediator for your child in terms of explaining social situations, answering questions, and providing suggestions
- Teach organizational skills and personal responsibility with chores
- Laugh with your child and assist him or her in appreciating and understanding humor

### SUMMARY

Nonverbal learning disabilities (NLD) are learning challenges that are hypothesized to originate from dysfunction in the right hemisphere of the brain. As children with NLD develop, they experience difficulty with visuospatial and visuomotor skills, poor pragmatic language, and deficits in social perception and social interactive skills. However, they often have strengths in verbal skills, rote learning, and auditory memory. Understanding each child's unique profile while building upon strengths will help parents and educators develop effective intervention plans at home and school.

### RECOMMENDED RESOURCES

#### Print

Mamen, M. (2007). *Understanding nonverbal learning disabilities: A common-sense guide for parents and professionals*. Philadelphia: Jessica Kingsley.

- Martin, M. (2007). *Helping children with nonverbal learning disabilities to flourish: A guide for parents and professionals*. London: Jessica Kingsley.
- Palombo, J. (2006). *Nonverbal learning disabilities: A clinical perspective*. New York: Norton.
- Whitney, R. (2008). *Nonverbal learning disorder: Understanding and coping with NLD and Asperger's—What parents and teachers need to know*. New York: Perigee.

**Online**

NLDline: <http://www.nldline.com>

Nonverbal Learning Disorders Association: <http://www.nlda.org>

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