



Dr. Moldover & Associates

Who Needs a Neuropsych?

Child neuropsychological evaluations can address four basic questions:

Is there a problem?

Child development is highly variable. Children mature and develop skills on different timetables. A child who demonstrates a delay or a challenging behavior may not actually be outside of the range of developmental variability. An evaluation can help to clarify whether or not there is a genuine concern.

What is the problem?

Learning and behavioral problems may be rooted in any number of underlying causes. An evaluation may help to clarify the actual diagnosis driving the concerns.

What do we do about the problem?

There are typically a wide variety of possible approaches for addressing any particular problem. An evaluation can lend insights into what is likely to be the most effective.

Are we making progress?

Developmental and educational gains can be hard to discern from one day to another. An evaluation can look at certain benchmarks and offer insight into whether interventions are yielding acceptable progress.

For information and a free copy of "Your Child's Assessment and Diagnosis: A Guide for Parents" visit us online at www.drmoldover.com

**NONVERBAL LEARNING
DISABILITIES**

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CONFUSION OVER NLD

- At least 10 other descriptive names for symptoms similar to NLD in the literature.
- No developmental process confirmed
- No agreed upon diagnostic criteria for entrance into a classification system, such as the DSM.
- Not specifically protected under educational law.

"DEFINING" NLD

- Developmental disorder
- Strengths
 - Verbal skills (?)
 - Non-Learning
- Deficits
 - Visual-spatial
 - Gross and fine motor skills
 - Executive functioning
 - Low Academic Skills
 - Social-Emotional functioning

DEVELOPMENT

- Developmental disorder
- Neuropsychological characteristics discernable by age 8 or 9 years.
- Language Milestones
- Motor Milestones
- Tactile Perceptual Problems

VERBAL SKILLS

- Hallmark of individuals with NLD is the contrast between relatively strong verbal abilities and weak nonverbal abilities
- Verbal Memory > Visual Memory
- Extensive vocabulary
- Decline in verbal ability during adolescence
 - Pragmatics and paralinguistic aspects of language

VISUAL-SPATIAL SKILLS

- Core deficit is in visual-motor integration and visual-spatial ability.
- Areas of difficulty:
 - Pattern construction
 - Puzzle arrangement
 - Spatial memory
 - Exhibit directional confusion
 - Navigating space
 - Display distorted sense of time

GROSS AND FINE MOTOR SKILLS

- Bilateral difficulties with fine and gross motor skills and coordination
- Fine motor: tying shoelaces, buttoning, zippering, dressing, handwriting
- Gross motor:
 - Described as clumsy and uncoordinated
 - Problems learning how to skip, ride a bike
 - Difficulty in gym class and with team sports

EXECUTIVE FUNCTIONING

- Frequently an area of difficulty
- Difficulties may be seen in following areas:
 - Sustaining attention
 - Working memory
 - Cognitive shifting
 - Planning and organization
 - Nonverbal problem solving, concept formation and hypothesis testing
 - Inhibiting
 - Self-monitoring
 - Transitioning between activities

ACADEMICS

- Strong early learning
- Begin to struggle in 3rd or 4th grade
- Reading
 - Advanced reading over math skills
 - Word recognition generally age appropriate
 - Over time decoding skills become more advanced than comprehension skills
 - Difficulty with comprehension of complex written text (paraphrasing text, identifying themes, making inferences)

ACADEMICS (CONTINUED)

Written expression

- Difficulty with organization of ideas
- Difficulty with physical act of writing
- Spelling typically intact, with errors predominantly phonetically accurate.

MATH

Seven common types of math errors

- Spatial organization errors: misaligning columns
- Visual detail errors: misreading the sign of operation or misplacing small details, like decimal points
- Procedure errors: failing to complete all the steps in a problem or completes them in the wrong order

MORE MATH

- Failure to shift psychological set errors: when a child is given a set of similar problems and fails to shift mental set when another type of problem occurs.
- Graphomotor errors: when a child's handwriting is so poor that they cannot read their work correctly.
- Memory errors: when a child cannot remember a particular math fact.
- Judgment and monitoring errors: when children attempt to independently solve math problems that are beyond their skills level, or when they lack insight into appropriateness of answers.

EVEN MORE MATH

- Difficulty with materials that are visually overwhelming (charts, graphs, maps, number lines, homework sheets).
- Difficulty judging size, weight, and distance and with telling time using an analog clock.

SOCIAL-EMOTIONAL

- Typically results in problems with interpersonal perception, social judgment and social interactions
- Difficulty with nonverbal communication (ambiguities, idioms, inferences, humor, sarcasm, facial expression, tone, gestures)
- Difficulty maintaining appropriate personal space
- Difficulties often lead to poor social skills and increased social isolation

SOCIAL-EMOTIONAL

- At a greater risk for experiencing low self-esteem and developing internalizing disorders
- Possibly at increased risk for suicide as adults.

DIFFERENTIAL DIAGNOSIS

• NLD vs. Autism Spectrum Disorder

- Individuals with ASD often have language impairment and demonstrate unusual patterns or stereotypes, which is typically not present in NLD
- Individuals with Asperger's Disorder often demonstrate narrow intense interests, while those with NLD do not
- Individuals with ASD considered to have more serious social deficits and do not seem to desire social connections. Individuals with NLD desire social connections, but have difficulty with the skills required for peer interactions.

ETIOLOGY

- Still largely undetermined, but research suggests is the result of right hemisphere dysfunction.
- Rourke's White Matter Theory
 - White matter connections are responsible for the flexible processing of complex or novel information, the ability to respond to changes in functional demands, and intermodal integration.
 - Right hemisphere: lower gray-to-white matter ratio than the Left hemisphere and has longer myelinated tracts, which provides ability to transfer information simultaneously.

ETIOLOGY (CONTINUED)

- Consequently, white matter dysfunction compromises the functioning of the right hemisphere more than the left.
- Damage to the development of the white matter pathway is thought to result in the manifestation of NLD: the more white matter that is impaired, the greater the likelihood of NLD.
- White matter model supported by the existence of NLD phenotype in disorders with documented white matter dysfunction (Williams Syndrome, Velocardiofacial Syndrome, early Hydrocephalus)


