NONVERBAL LEARNING DISORDER: Social, emotional and educational implications

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NONVERBAL LEARNING DISABILITY (NLD)

Neurodevelopmental Disorder involving white matter of brain (right hemisphere and/or corpus callosum)
THREE AREAS OF IMPACT

- Visual Spatial Organization
- Motoric
- Social—ability to adapt to new or novel situations and/or accurately read and respond to nonverbal cues
PREVALENCE

- 1 in 10 in LD population
- Likely 1-2% of population
- No gender difference
- Higher prevalence in cases with known neurologic impairment
LEFT BRAIN

- More gray matter
- Phonological processing
- Unimodal processing
- Ability to analyze and process into existing schema
- Sequential (step by step) processing
- Verbal sequential processing
- Logical
- Controls right side of body
RIGHT BRAIN

- More white matter—where associations are made and information is integrated
- Nonverbal and spatial reasoning
- Short and long term visual memory
- Personal space
RIGHT BRAIN CONT’D

- Mental rotation and spatial imagery
- Social cognition
- Constructing new schemas
- Process information globally and simultaneously
- Controls left side of body
For those with NLD, visual memory degrades in 1 to 3 seconds
For those with NLD it takes 5 to 7 times as long to acquire a new skill.
MEDICAL CONDITIONS ASSOCIATED WITH NLD

- Agenesis of the corpus callosum
- Velocardialfacial Syndrome
- Williams Syndrome
- Cornelia de Lange Syndrome
- Hydrocephalus
- Turner Syndrome
- Kleinfelter Syndrome
MEDICAL CONDITIONS CONT’D

- Sotos Syndrome
- Survivors of long-term treatment of cancers affecting brain and ALL
- Congenital hypothyroidism
- Fetal Alcohol Syndrome
- Fragile X Syndrome
- XXX Syndrome
- Neurofibromatosis
- Cerebral palsy
- Spina Bifida
We mediate our social interactions verbally but we use our visual spatial abilities to interpret and guide our social interactions.
Misperceive, mis-emit, or fail to emit subtle nonverbal information in exchanges with others.
Developmental Course of NVLD

- **Early Signs** (pre-first grade) often perceived as positives
  - Early language development
  - Strong rote learning
  - Frequent questioning
  - Comfort with conversation, especially with adults
  - Slower motor development
  - Separation anxiety
  - Dislike for spatial-organizational tasks
  - Asks many questions
Elementary Years are mixed

- Perceived as bright due to verbal skills
- Friendships present
- Conscientious re: schoolwork; works slowly
- Handwriting sloppy, slow/arduous
- Problems copying work from board
- Anxious in new situations
- Lack of “common sense”
- In trouble for talking, not completing work, inattentiveness
Developmental Course of NVLD

Middle School Years painful

- Perceived as underachieving and unmotivated
- Grades drop dramatically
- Poor study habits
- Disorganization problems with work and spatial orientation
- Peer problems emerge
- Anxiety or depression disorders emerge
Developmental Course of NVLD

High School Years and Beyond

- Increased academic difficulties
- Problems learning to drive and apprehension about driving
- Poor sense of direction
- Develops dependence upon others
- Shrinkage of peer group
- Increased anxiety and depression
- Underemployment as adult
- Problems in development of intimate relationships
Those with NLD exhibit more internalized forms of psychopathology than other LD and the normal population.
INTERNALIZED CONCERNS

- Shyness/Social Anxiety
- GAD
- OCD
- Depression
- Suicide
- Mood Regulation Disorder
ADHD IS OFTEN PRESENT

- Symptoms of ADHD--Inattentive
  - Difficulty engaging in tasks, especially those requiring nonverbal processing
  - Difficulty disengaging in verbal tasks (reading, talking, watching TV)
  - Self-regulation of action
  - Slow to process information
  - Inattentive to subtle cues
ASPERGER’S AND NVLD

- NVLD and Asperger’s are not the same
- NVLD may put someone at higher risk for having Asperger’s
- Those with NVLD are social and care about being social but are slower in processing input socially and do better in small groups
- Strategies for NVLD work for Asperger’s
INTERVENTION

- Diagnosis
- Parent and teacher education
- School planning
- Social-behavioral support
- Management of co-existing issues
  - Anxiety
  - Depression
  - ADHD
- Monitoring for developmental/emotional factors
Management of Co-Existing Issues

- Consider medication for any impairing issues
  - Anxiety, ADHD, obsessive-compulsive behaviors, depression

- Utilize counseling for any impairing issues
  - Individual counseling
  - Social skills groups
CLASSESSROOM ADAPTATIONS

- Never assume s/he understands
- Minimize timed work sessions
- Decrease visual distractions
- Allow for frequent questioning
- Allow for sub-vocalization
ACCOMMODATIONS FOR WRITING

- Limit copying and note-taking
- Reduce visual clutter on papers
- Reduce amount of writing required
- Use of word processor for all writing tasks
- Use of visual organizers for writing
- Provide time to allow for editing
ACCOMMODATIONS FOR MATH

- Allow use of graph paper to aid in calculations
- Limit “showing of work” once process known
- Allow calculator for problem solving
- Provide written/oral explanation of graphs, tables, etc.
- Allow use of manipulatives
ACCOMMODATIONS FOR READING

- When possible, provide experience or movie prior to student reading
- Allow extended time for reading tasks
- Provide comprehension supports allowed such as Cliff notes, books with pictures
- Teach comprehension strategies (mind-mapping, outlining, SQ3R, etc.)
SONAR

- **S**tructure, step-by-step, systematic
- **O**rganize life experiences
- **N**ever exceed capacities
- **A**ccentuate, accommodate, and reduce assimilation
- **R**eward, reinforce, and review
NVLD Resources

- The Sourcebook for NVLD
  - By Sue Thompson
- NVLD at Home
  - By Pamela Tanguay
- Internet sites under NVLD, NLD
  - NLDontheweb.org
  - NLDline.com
  - NLDA.org
- Syndrome of NVLD
  - By Byron Rourke
THANK YOU FOR COMING!

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