

**LANGUAGE-BASED LEARNING
DISABILITIES
AND THE NEURO-
PSYCHOLOGICAL EVALUATION**

Melody O'Neil, M.S. Ed

Associate Director of Admission, Landmark School



OVERVIEW

- When is a neuropsychological evaluation recommended?
 - Signs/red flags
- Understanding the evaluations
 - Test scores
 - Cognitive/IQ testing
 - Other Testing
- Specific Disorders and Intervention
 - Language-Based Learning Disabilities
 - Non-Verbal Learning Disabilities
 - ADHD
- Remediation Programs and accommodations



When is a neuropsychological evaluation recommended?

- Notice a difficulty or behavior and...
 - You don't know what is causing it
 - Don't know if services are warranted
 - Don't know what could help
 - Don't know how to deal with it



Risk Factors

- Family history
- Injuries/illnesses affecting neurological development
- Chronic ear infections
- Parental substance abuse
- Poor prenatal medical care and nutrition
- Prenatal injury or delivery complications
- Exposure to environmental toxins such as lead or toxic mold
- Poverty
- Abuse and neglect
- Exposure to trauma



Early Signs

PRESCHOOL

- Slow vocabulary growth, difficulty finding the right word
- Speaks later, may have pronunciation problems
- Difficulty rhyming words
- Trouble learning numbers, alphabet, days of the week, colors, shapes
- May be restless and easily distracted
- May have trouble interacting with peers



Early Signs

PRESCHOOL (continued)

- Difficulty following directions or routines
- Fine motor skills develop slower than expected
- “Copy cats”
- Aggressive
- Clumsy
- Accident prone



Early Signs

ELEMENTARY SCHOOL

- Slow to learn the connection between letters and sounds
- Confuses basic words (*run, eat, want*)
- Makes consistent reading and spelling errors including letter reversals (*b/d*), inversions (*m/w*), transpositions (*felt/left*), and substitutions (*house/home*)
- Transposes number sequences and confuses arithmetic signs (+, -, x, /, =)
- Slow to remember facts



Early Signs

ELEMENTARY SCHOOL (continued)

- Slow to learn new skills, relies heavily on memorization
- Impulsive, difficulty planning
- Unstable pencil grip
- Trouble learning about time
- Poor coordination, unaware of physical surroundings, prone to accidents
- Difficulty sitting still



Late Signs (mostly LD)

MIDDLE/HIGH SCHOOL

- Reverses letter sequences (*soiled/solid, left/felt*)
- Slow to learn prefixes, suffixes, root words, and other spelling strategies
- Avoids reading aloud, reading and writing assignments
- Trouble with word problems
- Difficulty with handwriting, awkward, fist-like, or tight pencil grip
- Works slowly
- Slow or poor recall of facts
- Poor grasp of abstract concepts



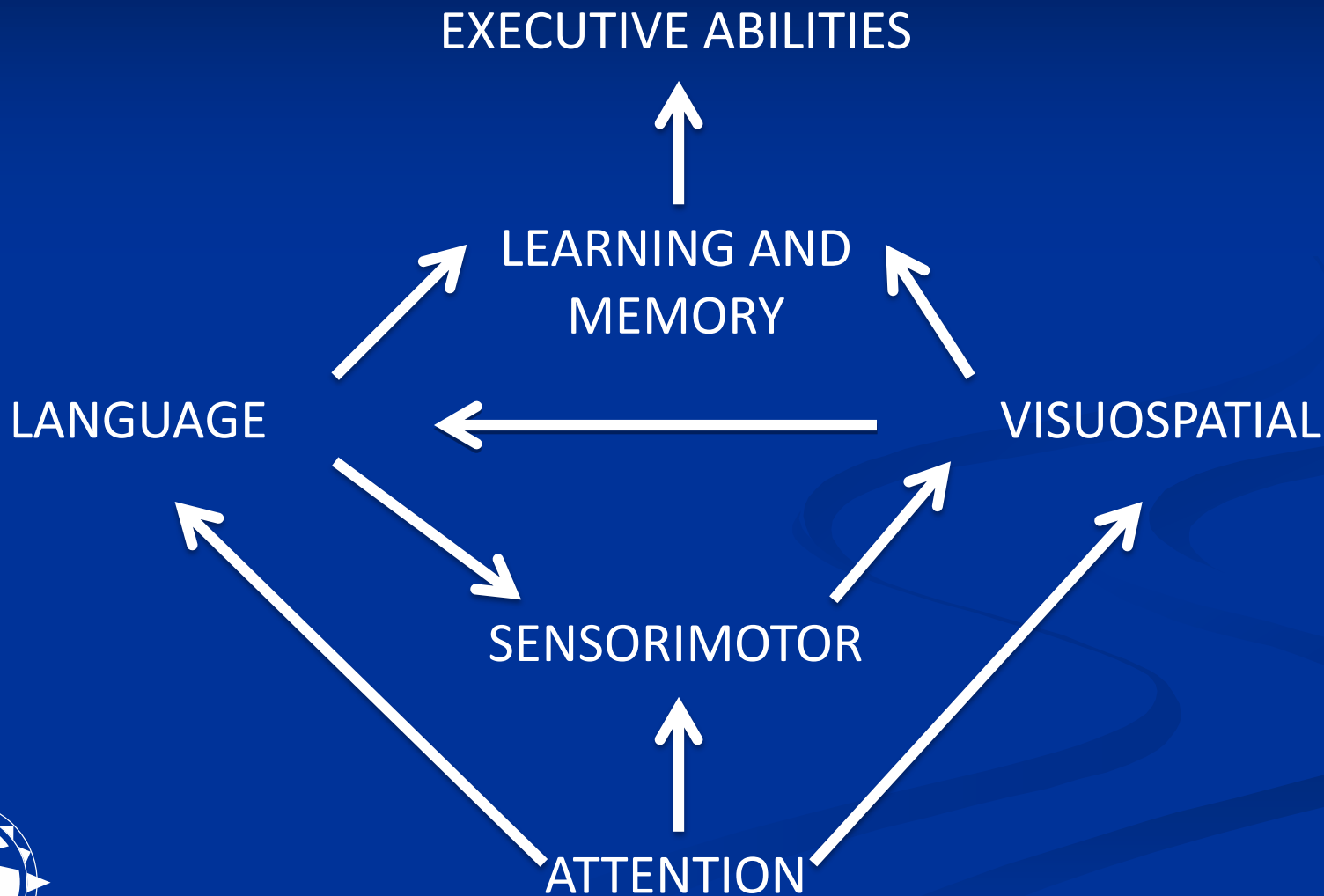
Late Signs (mostly LD)

MIDDLE/HIGH SCHOOL (continued)

- Either too little attention to details or too much
- Trouble summarizing
- Trouble with open-ended questions
- Misreads information/directions
- Difficulty working independently (without structure)
- Lower self-esteem, depression, anxiety
- Avoidance behaviors



Functional Organization of the Brain



Understanding the Evaluation

- To understand the evaluation, a basic understanding of scores is necessary



Understanding the Evaluation

■ Standard Scores (SDS)

- Most test scores can be expressed in SDS which allows comparison of performance across tests. The SDS has an average, (or mean), of 100, with a standard deviation of 15. Half of all individuals will obtain a SDS between 90 and 110, which are considered “average” scores.



Understanding the Evaluation

■ Subtest Scaled Scores (SS)

- A **SS** has a mean of 10 with a standard deviation of 3. Two-thirds of all individuals will obtain a SS between 7 and 13. SS between 8 and 12 are considered “average” because half of all individuals will fall within that range.



Understanding the Evaluation

- Percentile Rank (PR)

- Represents the percentage of children in the typical group who scored lower than the child. For example, a PR of 58 tells you that 58 percent of the children in the typical group had scores lower than your child's score.



Understanding the Evaluation

■ Grade Equivalent (GE)

- Difficult to interpret but indicates how a child's performance compares to the performance of children in a particular grade in the normative sample for that test. For example, a child in grade 3.6 who scores a grade equivalent of 1.3 is performing as well as average children in the third month of the first grade on that test.



Understanding the Evaluation

■ Neuropsychological Evaluation

- Can establish a diagnosis (differential diagnosis, rule out certain conditions)
- Determines if other evaluations are needed
- Looks at the process in addition to scores
- Guides interventions/accommodations



Understanding the Evaluation

- Neuropsychological Evaluation
 - History (medical, developmental, school, social, behavior)
 - Review of records
 - Behavior during testing/observations
 - Cognition/Intellectual skills
 - Attention, Executive functioning, Memory
 - Screening of sensorimotor and visuospatial skills
 - Language skills (screening and qualitative)
 - Educational evaluation (achievement)
 - Psycho-social screening



Understanding the Evaluation

- Cognitive testing (IQ)

- What does it mean?

Look for discrepancies among Index scores
(differences greater than 10 to 15 points)



Understanding the Evaluation

- Cognitive testing (IQ)
 - Usually Wechsler Intelligence Scale for Children
WISC-IV (WAIS-IV, ages 16+)
 - Full Scale (FS)
 - Verbal Comprehension Index (VCI)
 - Perceptual Reasoning Index (PRI)
 - Working Memory Index (WMI)
 - Processing Speed Index (PSI)



Understanding the Evaluation

- New as of October 2014....WISC-V
 - now with 5 indexes, including:
 - Verbal Comprehension Index (VCI)
 - Visual-Spatial Index (VSI)
 - Fluid Reasoning Index (FRI)
 - Working Memory Index (WMI)
 - Processing Speed Index (PSI)



Understanding the Evaluations

- Cognitive testing (IQ), WISC-V
 - FSIQ made up of five INDEXES
 - 1. **VCI**: measures verbal abilities utilizing reasoning and conceptualization
 - Subtests: Similarities and Vocabulary
(Comprehension & Information, optional subtests)
 - 2. **VSI**: measures manipulation of visual-spatial information
 - Subtests: Block Design and Visual Puzzles



Understanding the Evaluations

- **WISC-V, Indexes**

- **3. FRI:** measures inductive and deductive reasoning of nonverbal patterns
 - Subtests: Matrix Reasoning and Figure Weights (Picture Concepts & Arithmetic, optional subtests)
- **4. WMI:** measures attention, concentration and the ability to actively maintain information in conscious awareness, perform some operation or manipulation with it and produce a result
 - Subtests: Digit Span and Picture Span (Letter-Number Sequencing, optional subtest)



Understanding the Evaluations

- **WISC-V, Indexes**
 - **5. PSI:** measures speed of mental and graphomotor processing
 - Subtests: Coding and Symbol Search (Cancellation, optional subtest)



Understanding the Evaluation

■ Other Cognitive batteries:

- Differential Ability Scales (DAS)
- Reynolds IQ test
- Stanford Binet
- Woodcock-Johnson III cognitive battery
- Kaufman Assessment battery for children
- Cognitive Assessment System (CAS)
- Test of Nonverbal Intelligence (TONI)
- NEPSY



Understanding the Evaluation

- Attentional Measures:

- Computerized sustained attention
- Visual (Coding, Symbol Search, Cancellation from WISC)
- Letter cancellation
- Trail Making
- Fluency
- Auditory (some memory tests including working memory)



Understanding the Evaluation

- Sensorimotor Measures:
 - Observation
 - Many skills assessed by OT/PT
 - May see dynamometer, pegboard, finger tapping



Understanding the Evaluation

- Visual-spatial Measures:
 - Motor Free Visual Perception
 - WISC picture completion
 - Hooper Visual Organization test
 - Block Design from WISC
 - Coding & Cancellation from WISC
 - Beery Visual Motor Integration test
 - Rey–Osterrieth Complex Figure Test (ROCF)



Understanding the Evaluation

- Speech and Language Evaluations:

- Receptive

- Understanding words, sentences, and/or multiple meanings

- Auditory comprehension (simple and complex, following directions etc.)



Understanding the Evaluation

- Speech and language

- Expressive

Vocabulary, verb tense use, word recall, production of sentences of appropriate length, organization and sequencing of thoughts in a logical manner for oral output



Understanding the Evaluation

- Typical Speech and Language tests:

CELF-5 (Clinical Evaluation of Language Fundamentals)

TLC-2 (Test of Language Competence)

CTOPP-2 (Comprehensive Test of Phonological Processing)

PPVT IV (Peabody Picture Vocabulary Test)

EVT II (Expressive Vocabulary Test)

CASL (Comprehensive Assessment of Spoken Language)

TOAL (Test of Adolescent Language)

OWLS (Oral and Written Language Scales)



Understanding the Evaluation

- Assessing Memory:

Wide Range Assessment of Memory and Learning (WRAML-2)

California Verbal Learning Test (CVLT)

Children's Memory Scale (CMS)

Working Memory from WISC (WMI)



Understanding the Evaluation

- Executive Function:

Observations

Timed tests (WISC)

Concentration tests on WISC (Arithmetic, L/N)

Trail making B

Matrices

Similarities, Block Design, Picture Concept (WISC)

Wisconsin Card Sorting Test

Complex Figure



Understanding the Evaluation

- Psychosocial Measures:

History

Behavior Rating Scales, including:

Behavior Assessment Scale for Children
(BASC-2)

Child Behavior Checklist (CBCL)

Connors Rating Scales



Understanding the Evaluation

- Educational Measures:
 - Woodcock Johnson IV achievement (WJ-IV)
 - Wechsler Individual Achievement Test III (WIAT-III)
 - Kaufman Test of Educational Achievement



Understanding the Evaluation

- Reading
 - Phonological processing
 - Decoding (real words, nonsense words)
 - Fluency (rate and accuracy)
 - Comprehension



Understanding the Evaluation

- Written Expression
 - Spelling
 - Fluency
 - Text generation



Understanding the Evaluation

- Mathematics
 - Calculations
 - Fluency
 - Reasoning (word problems)



Understanding the Evaluation

- A battery usually needs to be supplemented by other tests
 - Reading Comprehension
 - Gates Maginitie
 - Nelson Denny
 - TORC-4
 - Reading (decoding and fluency)
 - GORT-5
 - CTOPP-2
 - WRMT-III
 - TOWRE



Characteristics of Learning Disabilities

Problems with:

- Reading (decoding, fluency, and/or comprehension)
- Spoken language
- Written language
- Reasoning abilities (some aspects)
- Visual-spatial processing/ visual-motor integration
- Hyperactivity and/or attention
- Organizational skills



Types of Learning Disabilities

- Different ways of categorizing LD.
 1. Language-Based LD (dominant hemisphere) vs Non-Verbal (non-dominant hemisphere) LD



Types of Learning Disabilities

2. DSM-V (medical terminology)

Developmental speech and language disorders

Academic skills disorders (reading, writing, mathematics)

“Other” a catch-all that includes certain coordination disorders and learning handicaps not covered by the other terms



Types of Learning Disabilities

3. Categorized based of processing problems
(auditory, language, visual-spatial, visual,
phonological etc.)



Types of Learning Disabilities

- Language-Based LD (LBLD) VS Non-Verbal LD (NVLD):

LBLD: Refers to a spectrum of difficulties related to the understanding of both spoken and written language. The number and severity of language difficulties individuals with LBLD experience vary widely.



Types of Learning Disabilities

- Typical areas of difficulty for individuals with LBLD:
 - Listening
 - Oral expression
 - Reading
 - Comprehension
 - Spelling
 - Written expression
 - Mathematics



Types of Learning Disabilities

- Specific diagnoses or “labels” for individuals with a LBLD may include:
 - Dyslexia
 - Reading Disability
 - Receptive/Expressive Language Disorder
 - Language Processing Disorder
 - Auditory Processing Disorder
 - Phonological Processing Disorder
 - Disorder of Written Language



Types of Learning Disabilities

- Language-Based LD (LBLD) VS Non-Verbal LD (NVLD):

NVLD: Refers to a spectrum of difficulties related to the processing of visual-spatial information, intuitive, evaluative, organization and global reasoning. The number and severity of difficulties individuals with NVLD experience vary.



Types of Learning Disabilities

- Typical areas of difficulty for individuals with NVLD:
 - Weak visual spatial and visual discrimination abilities (affects spelling)
 - Poorly developed organizational skills (affects written expression)
 - Difficulty making inferences and reasoning abstractly (affects reading comprehension)
 - Significant problems with mathematical reasoning
 - Limited social competence
 - Often lack flexibility in thinking, approach tasks rigidly
 - Visual-motor/integration



Types of Learning Disabilities

- Specific diagnoses or “labels” for individuals with a NVLD may include:
 - Visual Processing Disorder
 - Visual-Spatial Processing Disorder
 - Motor Skills Disorder
 - Visual-Motor Integration Disorder
 - Learning Disability NOS
 - Disorder of Written Language



Language-Based LD:

- Stronger visual-spatial integration
- Higher scores on Fluid Reasoning Index of WISC
- Big picture thinker
- Stronger math reasoning ability
- Phonological based reading disability (Dyslexia)
- Receptive/Expressive Language Disorder
- Stronger reading comprehension vs. decoding ability
- Stronger social/pragmatic language skills
- Benefits from visual aids/templates and graphic organizers
- Does better with visual and kinesthetic domains

Common for both LBLD and NVLD:

- Disorder of written expression
- Math disorder
- Weakness with encoding/spelling
- Grapho-motor issues
- Weaker working memory and/or processing speed
- Executive function disorder
- ADHD

Non-Verbal LD:

- Stronger verbal abilities
- Weaker visual-spatial integration/nonverbal reasoning abilities
- Lower scores on Visual-Spatial/Fluid Reasoning index of WISC
- Weaker math reasoning ability
- Stronger decoding vs reading comp skills
- Weaker big picture thinking, hyper-focuses on the details
- “Hyper-verbal”, uses verbal mediation
- Weaker social/pragmatic language skills
- Struggles with visual templates that include maps and webs



Remediation and Accommodations for LBLD

- Formal Speech and language therapy
- Formal reading remediation
- For more impaired students, simple and concrete instructions, repetitions and visual cues
- Provide alternative means of expression (artwork)



Remediation/Accommodations

General Strategies/Teaching Methodologies for LBLD:

- Ensure all students have ample and equal opportunities to express their ideas
- Give students time to retrieve words and formulate their sentences without interruptions
- Use sound, letter, gestural, picture and meaning related cues to aid students when they are having word retrieval difficulties



Remediation/Accommodations

General Strategies/Teaching Methodologies for LBLD:

- Encourage students to use cues on their own to retrieve specific words or to learn vocabulary words
- Have students orally syllabicate and articulate unfamiliar multi-syllabic words
- Insist that students spell unfamiliar words phonetically on their own, and ask for correct spelling after



Remediation/Accommodations

General Strategies/Teaching Methodologies for LBLD:

- Simplify the syntax and make explicit the steps when giving directions (especially important when giving homework)
- Ask open-ended questions to encourage elaboration of information from the students



Remediation/Accommodations

General Strategies/Teaching Methodologies for LBLD:

- Use of graphic organizers (e.g., pictures, webs, maps, charts) to enhance reading comprehension, oral expression and writing skills
- Oral rehearsal prior to reading and writing tasks
- Incorporate visual and hands-on materials
- Provide structured study guides
- Provide structured proof-reading guidelines for writing assignments



Remediation

Remedial reading instruction programs may include:

- Decoding/encoding
 - Lindamood Phonemic Sequencing, LiPS
 - Orton-Gillingham
 - Wilson Reading Program



Remediation

- Fluency
 - Read Naturally
 - Great Leaps
- Comprehension
 - Lindamood Bell Visualizing and Verbalizing



Remediation

- Others
 - LEAD (Logical Encoding and Decoding)
 - Megawords
 - Vowel-Power
 - Fast Forward



Accommodations

- Extended time
- Class notes
- Assistive technology
- Reader
- Scribe for exams
- Answer in booklet



Attention Deficit Hyperactivity Disorder (ADHD)

- Common behavioral disorder that affects an estimated 8% to 10% of school-age children (boys about 3 times more likely than girls to be diagnosed). Used to be known as ADD till 1994 when re-named ADHD and broken down into three subtypes, each with its own pattern of behaviors:
 - Inattentive type
 - Hyperactive-impulsive type
 - Combined type



ADHD Types

- Inattentive type, with signs that include:
 - Inability to pay attention to details
 - Tendency to make careless errors in school work or other activities
 - Difficulty with sustained attention in tasks/play
 - Apparent listening problems
 - Difficulty following instructions
 - Problems with organization



ADHD Types

- Inattentive type, with signs that include:
 - Problems with organization
 - Avoidance or dislike of tasks that require mental effort
 - Tendency to lose things like toys, notebooks or homework
 - Distractibility
 - Forgetfulness in daily activities



ADHD Types

- Hyperactive-Impulsive type, with signs that include:
 - Fidgeting or squirming
 - Difficulty remaining seated
 - Excessive running or climbing
 - Difficulty playing quietly
 - Always seeming to be “on the go”
 - Excessive talking
 - Blurting out answers before hearing the full question
 - Difficulty waiting for a turn or in line
 - Problems with interrupting or intruding



ADHD Types

- Combined type, with signs that include:
 - A combination of the other two types
 - Most commonly diagnosed type of ADHD
 - Overall difficulty controlling behavior



Diagnosing ADHD

- According to the DSM-V:
 - A child must display behaviors from one of the three subtypes before age 7
 - These behaviors must be more severe than in other kids the same age
 - The behaviors must last for at least 6 months
 - The behaviors must occur in and negatively affect at least two areas of a child's life
 - Must NOT be linked to stress at home/school/trauma



Related Problems to ADHD

- ADHD is often times found in conjunction with other problems, called coexisting conditions. About two thirds of kids with ADHD have one. The most common coexisting conditions are:
 - Oppositional Defiant Disorder (ODD) and Conduct Disorder (CD)
 - Mood Disorder
 - Anxiety Disorder
 - Learning Disabilities



Treating ADHD

- In most cases, ADHD is best treated with a combination of behavior therapy and medication. Different types of medications that may be used to treat ADHD include:
 - Stimulants*
 - Non-stimulants
 - Antidepressants



Treating ADHD

- Behavioral therapy attempts to change behavior patterns by reorganizing a child's home and school environment, giving clear directions and setting up a system of consistent rewards for appropriate behavior and negative consequences for inappropriate ones.



Treating ADHD

- Examples for behavioral strategies that may help a child with ADHD include:
 - Create a routine
 - Get organized
 - Avoid distractions
 - Limit choices
 - Change your interactions with your child
 - Use goals and rewards
 - Discipline effectively
 - Help your child discover a talent



ADHD in the Classroom

- Other tips and strategies for ADHD students to experience classroom success include:
 - Reducing distractions, modifying assignments, allowing extended time, providing structured organizational tools, allowing headphones, giving positive teacher reinforcement, involving school counselor/psychologist/OT, providing frequent breaks/opportunity to move around



Questions?



Landmarkschool.org