

Learning Disabilities: Understanding Patterns of Strengths and Weaknesses
Participant's Handout

NOTE: Please complete the Pre-Test for the LD module before continuing.

Learning Disabilities

“Given what we now know about LD, it is irresponsible to continue current policies that dictate inadequate early identification practices.”

From: Rethinking Special Education for a New Century, Chapter 12: Rethinking Learning Disabilities. *G. Reid Lyon, Jack M. Fletcher, Sally E. Shaywitz, Bennet A. Shaywitz, Joseph K. Torgesen, Frank B. Wood, Ann Schulte, & Richard Olson*

✓ What current policies were they criticizing? _____

✓ What is a specific learning disability? _____

General Principles

Professionals must know:

- State and federal laws and regulations
 - Definitions
 - Exclusionary factors
 - Criteria for identification
- Appropriate evaluation tools & procedures
- Research on learning disabilities
- Effective instructional practices

✓ Current definition of Specific Learning Disability (SLD): (IDEA, 2004, *Section 300.8(c)*) (10)

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Exclusionary Factors (IDEA, 2004)

Excludes learning problems that are primarily the result of:

- visual, hearing, or motor disabilities
- mental retardation
- emotional disturbance
- environmental, cultural, or economic disadvantage

Identification of Children with Specific Learning Disabilities (SLD)

IDEA, 2004: Section 300.307

- Must not require the use of a severe discrepancy between intellectual ability and achievement
- Must permit the use of a process based on the child's response to scientific, research-based intervention
- May permit the use of alternative research-based procedures

Criteria for Determining SLD:

Factor 1: Does not achieve adequately for the child's age or meet State-approved grade-level standards in one or more of the following areas when provided with learning experiences and instruction appropriate for the child's age or State-approved grade-level standards:

✓ What are the 8 areas to consider?

_____	_____
_____	_____
_____	_____
_____	_____

Requirement to Document Appropriate Instruction & Progress Monitoring

- Data that demonstrates child was provided appropriate instruction within general education settings AND
- Data-based documentation of repeated assessments of achievement at reasonable intervals (formal evaluation of progress).

Not SLD if achievement problem is due to lack of appropriate instruction in reading or math.

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Criteria for Determining SLD (continued)

Factor 2:

Child's progress in 1 (or more) of the 8 areas is not sufficient to meet age or grade-level standards when his or her response to scientific, research-based intervention is part of determination process.

OR

Child exhibits a pattern of strengths and weaknesses in performance, achievement, or both relative to age, grade-level standards, or intellectual development that is determined by the group to be relevant to the identification of SLD.

Factor 3: Are the findings in Factors 1 and 2 primarily a result of:

- Visual, hearing, or motor disability
- Mental retardation
- Emotional disturbance
- Cultural factors
- Environmental or economic disadvantage
- Limited English proficiency

Summary: Three factors are needed:

1. Under-achievement
2. Insufficient progress OR pattern of strengths and weaknesses....
3. Not primarily the result of.....
 - Exclusionary factors
 - Lack of appropriate instruction
 - Limited English proficiency

Appropriate Tools and Procedures

- Directed to use a variety of assessment tools and strategies
- Cannot rely on a single procedure as sole criterion
- Professional discretion
 - Appropriate technical qualities
 - Knowledge of what the test does and does not measure

Documentation Required for Eligibility Determination

- Statement that the child has a specific learning disability
- Basis for making the determination
- Relevant behavior and relationship to academic functioning
- Educationally relevant medical findings (if any)
- Whether the child does not achieve adequately for age or meet grade level standards
- Does not make sufficient progress OR exhibits a pattern of strengths and weaknesses
- Determination regarding exclusionary factors

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Status of IQ/Achievement Discrepancy Procedure for LD Eligibility

- May not be the sole determinant of SLD identification
- May be included in the determination process
- May not use simple difference method (IQ-ACH)
- Must use a standard regression procedure
 - Usually included in conormed tests offering IQ/Achievement discrepancy calculations
 - Correction for regression is required when not built into tests used

Regression

The higher the correlation between IQ/ACH, the smaller the effect of regression.
The lower the correlation between IQ/ACH, the greater the effect of regression.
Occurs whenever predictor (IQ) is not perfectly correlated to area predicted (ACH).

References to Consult

The Statute www.nichcy.org/reauth/PL108-446.pdf
<http://idea.ed.gov>

Final Part B Regulations www.nichcy.org/reauth/IDEA2004regulations.pdf
<http://idea.ed.gov>

Texas <http://framework.esc18.net>
(Commissioner's Rules & Guidance) www.tea.state.tx.us/special.ed

Cognitive Abilities

- Important component in determining SLD
- Helpful when determining a pattern of strengths and weaknesses
- Provides information about intra-individual differences
 - Diagnostic value
 - Assists in developing appropriate interventions

CHC Theory Provides a Common Taxonomy

- Multiple-factor view of intelligence (Broad and narrow abilities)
- Empirically-based
- Raymond Cattell, John Horn, and John Carroll = CHC theory

Crystallized Intelligence (Gc): _____

Fluid Reasoning (Gf): _____

Long-term Retrieval (Glr): _____

Short-Term Memory (Gsm): _____

Visual Processing (Gv): _____

Auditory Processing (Ga): _____

Processing Speed (Gs): _____

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KABC-II measures Gc, Gf, Glr, Gsm, and Gv

5 Scales: Knowledge, Fluid Reasoning, Sequential, Learning, Visual

Stanford Binet 5 measures Gc, Gf, Gsm, Gv (& Quantitative Reasoning)

5 Scales: Knowledge, Working Memory, Fluid Reasoning, Quantitative Reasoning, Visual Processing

WISC-IV measures Gc, Gf/Gv, Gsm, Gs

4 Indexes: Verbal Comprehension, Perceptual Reasoning, Working Memory, Processing Speed

WJ III measures Gc, Gf, Glr, Gsm, Gv, Ga, Gs

7 Factors: Comprehension-Knowledge, Fluid Reasoning, Long-term Retrieval, Visual-Spatial Thinking, Auditory Processing, Short-term Memory, Processing Speed

Know What Your Test Does and Does Not Measure

Test	Gc	Gf	Glr	Gv	Ga	Gsm	Gs
KABCII							
SB5							
WISCIV							
WJ III							

✓ Place a check in the column for each ability that the test measures.

Abilities Defined

Gc Verbal ability	Store of acquired knowledge, cultural and linguistic background
Gf Fluid Reasoning	Mental flexibility, deductive and inductive problem-solving abilities
Glr Long-Term Retrieval	Process of storing and retrieving information, associative memory
Gsm Short-Term Memory	Immediate memory, working memory and memory span, limited capacity system
Gv Visual Processing	Perception and manipulation of visual shapes or forms, visual-spatial thinking
Ga Auditory Processing	Perception and processing of auditory input, phonological awareness and processing
Gs Processing Speed	Automaticity, fluency, cognitive speed

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Relationship to Academics

Gc Verbal ability	Strong and consistent across all academics and ages
Gf Fluid Reasoning	Significant across all academics, especially with higher level skills
Glr Long-Term Retrieval	Significant and moderate across all academics, especially in primary grades
Gsm Short-Term Memory	Significant across all academics, Working memory especially relevant to higher level skills
Gv Visual Processing	No significant relationship as measured in IQ tests currently except with higher level math.
Ga Auditory Processing	Significant relationship across all academics during early grades
Gs Processing Speed	Significant to all academics especially in early to mid-grades

Oral Language

✓ Which cognitive abilities are most closely related to oral language?

Importance of Oral Language

- Lack of oral language and literacy exposure and interaction from birth-preschool years can result in deficits in phonemic awareness and word reading.
- Impaired knowledge of sounds, vocabulary concepts, and print concepts result from lack of opportunity to listen and interact with language in multiple contexts.
- Language is the foundation for learning.

Mind the Language Gap

It is much more difficult to “close the gap” in broad knowledge and verbal skills than it is in word reading skills.

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Tests of reading comprehension at third grade and up are increasingly sensitive to individual differences in verbal knowledge and reasoning.

Importance of Phonemic Awareness

A deficit in phonemic awareness is the major factor impeding development of the alphabetic principle.

✓ What is the alphabetic principle? _____

A deficit in phonemic awareness significantly impacts the ability to develop accurate and fluent word reading capabilities.

✓ Why would limited PA impact accurate and fluent word reading?

A deficit in phonemic awareness can lead to compromised comprehension.

✓ How can a deficit in PA lead to compromised comprehension?

In Kindergarten:

1. Assess phonemic awareness
2. Assess ability to name letters and numbers
3. Assess ability to provide letter sounds

These are strong predictors of difficulties learning to read.

Developmental Sequence

- Rhyming: most preschoolers and kindergartners are able to rhyme words
- Count Syllables: most first graders can count syllables, blend syllables, delete part of a compound word
- Perform all types of phonemic activities: most second graders

Rapid Automatized Naming (RAN)

Ability to rapidly retrieve and label visual symbols

A.) **Phonological connection:** RAN tasks correlate highly with other phonological skills; shows a unique causal relationship with early literacy. (Torgesen and Burgess, 1998)

B.) **Orthographic connection:** RAN related to visual and speed components needed for reading; disruption in automatic process of quick word recognition (Bowers and Wolf, 1993).

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Early Warning Signs: Preschool

- Late talking, compared to other children.
- Pronunciation problems.
- Slow vocabulary growth, often unable to find the right word.
- Difficulty rhyming words.
- Trouble learning numbers, the alphabet, days of the week.
- Extremely restless and easily distracted.
- Trouble interacting with peers.
- Poor ability to follow directions or routines.

Reading

“Children who get off to a poor start in reading rarely catch up. We wait---they fail. But it does not have to be this way.”

From:

Rethinking Special Education for a New Century, Chapter 12: Rethinking Learning Disabilities
G. Reid Lyon, Jack M. Fletcher, Sally E. Shaywitz, Bennet A. Shaywitz,
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Early Identification/Intervention

“Exclusion From the Basic Right to Learn”

- Since underlying causes of early reading difficulty are similar for children regardless of placement/services, early intervention should occur through regular education.
- Special education professionals should become specialists in prevention.
- Without early intervention, the poor reader does not catch up (CT. study)

Early Warning Signs: K-4

- Slow learning connection between letters and sounds
- Confuses basic words (was/saw, then/them).
- Makes consistent reading and spelling errors including letter reversals (b/d), inversions (m/w), transpositions (felt/left), and substitutions (house/home)
- Transposes number sequences (14 for 41) and confuses arithmetic signs (+, -, x, /, =)
- Slow recall of facts
- Slow to learn new skills, relies heavily on memorization
- Impulsiveness, lack of planning
- Unstable pencil grip
- Trouble learning about time
- Poor coordination, unaware of physical surroundings, prone to accidents

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“We estimate that the number of children who are typically identified as poor readers and served through either special education or compensatory education programs could be reduced by up to 70 percent through early identification and intervention programs.”

From: Rethinking Special Education for a New Century, Chapter 12: Rethinking Learning Disabilities. *G. Reid Lyon et al.*

✓ What do you think of this quote? Agree? Disagree? Why?

Predictors of Reading

1. Phonemic awareness
2. Speed & accuracy of reading single words
3. Vocabulary
4. Background knowledge
5. Knowledge of semantics and syntax
6. Knowledge of writing conventions
7. Verbal reasoning ability
8. Ability to recall and remember verbal information

Alphabetic Principle

- Good readers have figured out that letters and letter patterns represent segmented units of sounds (phonemes).
- Poor readers have difficulty making this connection.

Remember: A deficit in phonemic awareness is the primary culprit.

Hereditary Factors (*Shaywitz, 2001, Overcoming Dyslexia*)

1. There is a genetic cause for some types of reading disability
2. Deficits in phonemic awareness are the primary hereditary factor
3. Family history is a key indicator of risk

Phonology versus Orthography

- Phonology: the sounds of a language
- Orthography: the marks of a writing system, including the spelling patterns of a language

Reading and spelling nonwords that adhere to English spelling rules requires both abilities.

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Characteristics of Phonological Reading Disabilities

Early Speech/Language Difficulties

- Articulation errors
- Mispronunciations of multisyllabic words

Decoding/Encoding

- Trouble remembering sound-symbol relationships
- Confusion with similar-sounding sounds
- Difficulty sequencing sounds in a word
- Overreliance on whole-word, context, or visual clues
- Trouble pronouncing phonically regular nonsense words
- Difficulty using phonological analysis (omits or adds sounds or letters)
- Slow reading rate

Characteristics of Orthographic Reading Disabilities

Symbols/Decoding/Encoding/Calculating

- Difficulty learning how to form symbols
- Confusion of symbols similar in appearance (e.g., b for d, n for u)
- Trouble with near- and far-point copying tasks
- Tendency to reverse or transpose letters or numbers
- Trouble remembering how words look
- Trouble reading exception or irregular words
- Trouble with accurate and rapid word recognition; slow reading speed
- Tendency to use different spellings for the same word
- Tendency to omit word endings
- Overreliance on phonological rather than visual features
- Trouble learning and retaining basic math facts
- Difficulty counting in a sequence (e.g., counting by 2)
- Trouble with multistep math problems

- ✓ Why is it important for children to acquire good phonemic decoding skills (phonics) early in reading development? _____
-

Reasons for Difficulties in Reading Comprehension

- phonological deficits
- word recognition/decoding deficits
- vocabulary deficits & inadequate background knowledge
- lack of familiarity with semantic and syntactic structures
- lack of knowledge about different writing conventions
- lack of verbal reasoning ability
- limited ability to remember and/or recall verbal information

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Determining the Presence of a Reading Disability

- Oral Language to Reading
- Listening Comprehension to Reading Comprehension
- Oral Vocabulary to Reading Vocabulary
- Basic Reading Skills to Comprehension
- Real Words to Nonsense Words
- Reading Fluency to Fluency on other types of tasks (math, writing, cognitive)

✓ Reading Disability: Yes, No, Maybe?

- Write down what you think.
- Explain your thinking.
- What other information do you need?

Reading Composite	93
Basic Reading Skills	74
Reading Comprehension	92
Real Words	88
Nonsense Words	70
Reading Fluency	89
Reading Vocabulary	94
Oral Language	115
Listening Comprehension	110
Oral Vocabulary	112

Written Language

Predictors of Those at Risk for Written Language Disabilities:

- Early grades: weakness in speech sound awareness
- Later grades: difficulty understanding spelling rules, word structures, and letter patterns
- Orthographic memory problems: visual memory difficulty with words and letters only

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Developmental Stages of Spelling

1. Prephonetic: Strings letters (and sometimes numbers) together randomly
2. Semi-phonetic: Represents sounds with letters, but mostly consonants and long vowels are represented.
3. Phonetic: Spells words the way they sound.
4. Transitional: Incorporates common spelling patterns.
5. Correct spelling: Uses knowledge of phonology, orthography, morphology, and semantics in spelling.

✓ Review Slide: Spelling Errors

What's this person's developmental stage of spelling? _____

Handwriting

Automaticity of letter retrieval and formation is key.

- predicts quality of composition (Berninger, et al)
- frees up cognitive energy for higher-level tasks (e.g. organization, creative development, etc.)

Difficulties may be related to a combination of factors (fine-motor problems, difficulty with orthographic memory, opportunity for instruction, practice, and reinforcement of skills)

Basic Writing Skills

Teach handwriting and spelling as tools for communicating ideas.

- Begin writing exercise with a warm-up in handwriting or spelling.
- Move to planning, writing, reviewing, and revising text.
- Better progress when low-level skills are integrated into higher-level activities.

Written Expression

Planning what to write is difficult for beginning and disabled writers.

Provide guided assistance

- composition prompts (story starters)
- teacher queries (what else can you think of?)
- graphic organizers
- explicit modeling (teacher thinks aloud)

Teach self-regulation strategies

- What I think, I can say, what I say, I can write
- Plan, Write, Review, Revise (PWRR)

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Determining the Presence of a Writing Disability

- Writing speed to ideation
- Ideation to oral language abilities
- Spelling on expressive writing tasks to tests of spelling.
- Writing fluency to other fluency measures

✓ Writing Disability: Yes, No, Maybe? *Note: 6th grade student*

- Write down what you think.
- Explain your thinking.
- What other information do you need?

Writing Composite	61
Basic Writing Skills	63
Written Expression	71
Spelling real words	60
Spelling nonsense words	67
Writing Fluency	68
Oral Language	61
Listening Comprehension	63
Oral Vocabulary	70

Mathematics

Common Characteristics of Individuals with Math Disabilities

- Trouble remembering basic facts
 - Trouble storing &/or retrieving basic facts
 - Trouble inhibiting facts
- Use of immature problem-solving procedures
- Trouble sequencing steps in complex problems

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Qualitative Considerations for Math

Does the individual demonstrate visual confusion?

- visual-motor coordination
- spatial organization of numbers on the page

Distinguish between errors resulting from visual confusion and errors resulting from math difficulty.

What is the individual's processing speed?

- performance on math fluency task
- performance on a cognitive speed task

Qualitative Analysis

Calculation

- Errors typically rule governed (misunderstands, misapplies, or makes up own rule)
- Observe manner used to solve problems. Were inefficient processes used? Were they developmentally appropriate?

Math Fluency/Timed Fact Tests

- Errors: inattention to signs, lack of understanding of operation, poor fact knowledge
- Correct, few completed: lack of automaticity, slow processing speed

Observe Behaviors & Strategies Employed

- A. Examinee comments, expressions, gestures
- B. Uses finger counting
- C. Know facts rapidly and automatically
- D. Skips certain types of problems
- E. Look at errors
 1. Is the concept understood?
 2. Are answers sensible?
 3. Source of the confusion?
 4. Pattern to mistakes?
 5. Trouble with basic facts?

Relationship to Reading

- Over 50% of math disabled also have reading disabilities
- Common memory problem (fact retrieval & letter-sound/word retrieval)

✓ **What cognitive ability may affect retrieval of facts and letter-sounds?**

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Possible Subtypes of Math Disability (Geary, 2000)

- Procedural disorder characterized by:
 - using developmentally immature procedures
 - developmental delay in understanding the concepts underlying the procedures
 - frequent errors in the execution of the procedures
 - difficulty sequencing the multiple steps in complex procedures
- Semantic disorder characterized by:
 - limited ability to retrieve math facts
 - facts retrieved are frequently wrong
 - error responses associated with the numbers
 - solution time for correct solutions is not systematic
- Visuospatial disorder characterized by:
 - difficulty with spatial representation of numbers
 - place value errors
 - difficulties in area of math that depend on spatial, e.g., geometry

✓ **Math Disability: Yes, No, Maybe?** **Note: 7th grade student**

- Write down what you think.
- Explain your thinking.
- What other information do you need?

Math Composite	78
Basic Math Skills	68
Math Reasoning	81
Math Fluency	58
Oral Language	94
Listening Comprehension	96
Oral Expression	93

NOTE: Please complete the Post-Test for the LD module. Compare your results from the Pre- and Post-Tests.