Best Practices for Evaluation of Dyslexia and SLD in Reading

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Development of Reading:

Investigating “typical” to find what’s “atypical”

Reading & Language

Oral Language
- Receptive (Listening)
- Expressive (Speaking)

Written Language
- Receptive (Reading)
- Expressive (Writing)

Acquisition of Language versus Reading

- Language is a NATURAL process
- Reading is an LEARNED process

Phonological Skills
- Receptive – Language by ear
- Expressive – Language by mouth

Orthographic Skills
- Receptive – Language by eye
- Expressive – Language by hand

Language to Literacy Model
Jan Wasowicz (2000)

- Comprehension
- Decoding & Spelling
- Phonics
- Phonological Awareness
- Oral language
- Auditory Processing
- Speech Perception

*importance of language by ear & mouth
Developing Language Competence (ASHA, 2001)

What is the connection between oral and written language?

- Oral language provides the foundation for the development of reading and writing;
- the relationship between oral language and literacy development is reciprocal in nature, with interconnections originating in early childhood;
- children with speech and language impairments are at increased risk for difficulties with early and conventional literacy development; and
- intervention for oral language can positively influence literacy development, and vice versa.

3 Phases of Reading Development

- Phase 1: Letters and sounds
  - Learn letter names and sounds

- Phase 2: Phonic decoding
  - Combine letter-sound knowledge with phonological blending to sound out familiar words

- Phase 3: Orthographic mapping
  - Efficiently expand sight word vocabularies

Developing Reading Skills

- Decode single, pronounceable words accurately and fluently (non-words).
- Decode real words accurately and fluently.
- Integrate word decoding and sentence comprehension.
- Read for comprehension.

Phonological Code: Developmental sequence

- Learn to rhyme (preschool)
- Perceive syllable structure of words (Kdg)
- Manipulate phonemes in monosyllabic words (end of 1st)
- Segment phoneme & rime units in polysyllabic words

Orthographic Awareness: Developmental sequence

- Recognize & produce letter-like symbols (preschool)
- Produce letters (Kdg)
- Represent written words in memory
  - Code whole written words (Kdg/1st)
  - Then single letters in words
  - Finally, letter clusters (by 3rd)

History: A Look Back

- Aptitude-treatment models
  - Targeted visual learners with sight words & auditory learners with synthetics phonics approach
  - Research does not support “visual learners” and “auditory learners”
  - Instead
    - Orthographic (not visual) & phonological (not auditory) processes involved in word recognition
    - Orthographic & phonological are part of a language system; not a sensory system
    - Word recognition requires BOTH processes
    - Students are NOT exclusively visual or auditory learner; but a mix of both
**History: A Look Back**

- 1970's Reading considered visual-perceptual process
  - Reading is a language process
  - Process training of visual-perceptual or visual-motor skills did not transfer to improved reading
  - Visual training can improve tracking but this also did not improve reading skills

**Lots of entities have a lot to say about Reading**

It is a politically charged topic in education
Enter the US Congress...

**National Reading Panel, 2000**

- Of the 100,000 articles on reading published since 1966, 98% were discarded by the panel
- Identified 5 "pillars" to reading success

**National Reading Panel (2000) Five Components of Reading**

- Reading Comprehension
- Fluency
- Vocabulary
- Phonics
- Phonological Awareness

**National Reading Panel Conclusions for K-1 children (summarized Feifer, 2007)**

- the younger the child, the better the outcome
- "at-risk" child responds best to small group instruction (3:1), with phonological awareness training combined with explicit phonics instruction
- highly trained teachers achieve the best results

**National Reading Panel Conclusions for K-1 children (summarized Feifer, 2007)**

- frequency of instruction (4-5 days per week) was more effective than sporadic instruction (2 days per week)
- gains were maintained in most children at long-term follow up
- following characteristics were associated with poor outcomes:
  - a) attention or behavior concerns
  - b) low socioeconomic status
  - c) poor verbal skills
  - d) poor rapid naming skills
### National Reading Panel Conclusions Grades 2 - 6 (summarized by Feifer, 2007)

- Children at this age respond to explicit phonological instruction, though gains not as strong as with younger children.
- Children at this age less responsive to explicit phonological instruction, though did better in 1-to-1 or small group.
- More intensive work for a longer duration required.

- Spelling & fluency did not improve much, though some improvement with reading comprehension.
- Computer instruction an effective aid, but not effective by itself.
- The following characteristics were associated with poor outcome:
  - a) attention or behavior concerns
  - b) low socioeconomic status
  - c) poor verbal skills
  - d) poor rapid naming skills

### Why are older children less responsive to intervention?

- Neural Darwinism – Use it or lose it.

  Ratey (2001) “neurons which fire together, wire together”

### Formula for Reading

**Simple View of Reading**

\[ R = D \times LC \]

Reading = Decoding \times Linguistic Comprehension

### Components of Word Level Reading

- Cipher Knowledge
  - Using the code of written English to pronounce words
  - Recognizing that letters represent phonemes

- Word-specific knowledge
  - Familiarity with a word or word part
  - “Sight word knowledge is built up from basic letter-sound knowledge & experience with specific words” – Kilpatrick, 2015

### Components of Linguistic Comprehension

- Vocabulary – semantic knowledge
- Syntactic-grammatical knowledge
- Background knowledge
- Working memory
- Attention
- Interencing
- Comprehension monitoring
- Nonverbal visual-spatial skills
**Alphabetic Principle**

The **alphabetic principle** is the understanding that words are made up of letters and letters represent sounds. If a child understands these letter-sound associations, s/he is on the way to reading and writing words.

**Alphabetic Principle**

- Alphabetic Awareness: Knowledge of the letters of the alphabet coupled with the understanding that the alphabet represents the sounds of spoken language and the correspondence of spoken sounds to written language.
- Alphabetic Understanding: Understanding that the left-to-right spellings of printed words represent their phonemes from first to last
- Phonological Recoding: Translation of letters to sounds to words to gain lexical access to the word (meaning).

**Phonological Awareness**

- **Phonological Awareness**
  1. Recognizing Word/Sentence Length
  2. Rhyming
  3. Syllabication
  4. Segmenting Onset/Rime
  5. Phonemic Awareness
     awareness of individual sounds/phonemes in spoken words

**Phonemic Awareness Skills**

- Identifying Sounds
- Categorizing Sounds
- Blending Sounds
- Segmenting/Sounds
- Deleting Sounds
- Adding Sounds
- Substituting Sounds

**The Connection Between Phonological Awareness and Phonics**

Phonics

1. Letter / Sound Associations
2. Decoding (reading words)
3. Encoding (spelling)

**Importance of Phonics Instruction**

- Systematic and Explicit Phonics Instruction Leads to:
  - Understanding of alphabetic principle
  - Significant improvement in Kindergarten and first grader's word recognition, spelling, and reading comprehension
  - Benefits regardless of socioeconomic status of the students
Could we have missed something?

• Reading researchers cite additional skills (beyond the National Reading Panel and most conventional curriculum programs) that impact reading

• Instruction in specific skills that have shown significant gains in reading is available

• Schools and DOE’s are slow to accept the research

• WHY?

Reading Research and Practice

• Is there a gap between reading research and classroom practice?

• Example: It was well established in 1980 that Phonemic Awareness was an essential element for successful reading. However PA was not integrated into classroom and instruction. Importance not widely acknowledged until the National Reading Panel in 2000.

• Why the 20 year delay?

Could we have missed something?

• Yes, Orthographic Mapping
  
  “The most important scientific discovery you’ve never heard of”

• Definition: The mental process used to store words for immediate, effortless accessibility.
  
  –Mechanism for sight word learning

• Orthographic Mapping is the process children use to turn unfamiliar written words into instantly accessible (recognizable) sight words. (Kilpatrick, 2015)

• Requires letter-sound knowledge, the alphabetic principle, phonological awareness, blending, & vocabulary (Kilpatrick, 2015)

Reading Research and Practice

• "A Chasm exists" between scientific research into literacy and classroom practice. Quote from American Federation of Teachers (Kilpatrick, 2015)

• Most teachers are unaware of the vast amounts of reading research being conducted annually

• Sally Shaywitz “expresses frustration” over the relative lack of dissemination and practical application of these remarkable advances (2003).

• Undergraduate and graduate textbooks on literacy that were designed to train teachers drew very little from the empirical findings on reading (Kilpatrick, 2015)

Reading Research and Practice

• The Reading Wars of the 1980’s
  
  –Heated debates about Whole Language, Phonics, and Reading

  –Many states legislated against scientifically sound reading practices

  –Balanced Approaches were considered unpopular in 1980’s

• Inaccessibility of research articles, journals, etc.
Dyslexia is a specific learning disability that is neurological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction.

Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge.

The Neurobiology of Reading (Typical)

The Neurobiology of Reading (Typical)

Vocalization, Articulation (Inferior Frontal Gyrus)

Word Analysis (Parieto-Temporal)

Word Recognition, Automaticity (Occipito-Temporal)

Neural Signature for Dyslexia: Inefficient Posterior Reading Systems

Non-impaired vs. Dyslexic

fMRI Activation: Non-impaired vs. Dyslexic Individuals

Dyslexia Identification and Services in Texas

Texas Education Code (TEC)§38.003 defines dyslexia and mandates testing and the provision of instruction

State Board of Education (SBOE) adopts rules and standards for administering testing and instruction

TEC §7.028(b) relegates responsibility for school compliance to the local school board

19 (TAC)§74.28 outlines responsibilities of districts and charter schools in the delivery of services to students with dyslexia

The Rehabilitation Act of 1973, §504, establishes assessment and evaluation standards and procedures for students (34 C.F.R. Part 104)

Dyslexia Definition (in Texas)

Texas Education Code (TEC)§38.003 definition:

1. “Dyslexia” means a disorder of constitutional origin manifested by a difficulty in learning to read, write, or spell, despite conventional instruction, adequate intelligence, and sociocultural opportunity.

2. “Related disorders” include disorders similar to or related to dyslexia such as developmental auditory imperceptions, dysphasia, specific developmental dyslexia, developmental dysgraphia, and developmental spelling disability.
Dyslexia Screening

TEC §38.003(a) requires students to be screened or tested, as appropriate, for dyslexia and related disorders at appropriate times in accordance with a program approved by the SBOE. Screening must occur at the end of the school year of each student in kindergarten and each student in the first grade.

Additionally, students enrolling in public schools in Texas must be assessed for dyslexia and related disorders “at appropriate times” (TEC §38.003(a)).

TX Handbook: Dyslexia Difficulties

- Students identified as having dyslexia typically experience primary difficulties in phonological awareness, including phonemic awareness and manipulation, single-word reading, reading fluency, and spelling.
- Consequences may include difficulties in reading comprehension and/or written expression.
- These difficulties in phonological awareness are unexpected for the student’s age and educational level and are not primarily the result of language difference factors.
- Additionally, there is often a family history of similar difficulties.

TX Handbook: Primary Dyslexia Characteristics

- Difficulty reading words in isolation
- Difficulty accurately decoding unfamiliar words
- Difficulty with oral reading (slow, inaccurate, or labored)
- Difficulty spelling

TX Handbook: Reading/Spelling Characteristics

- Segmenting, blending, and manipulating sounds in words (phonemic awareness)
- Learning the names of letters and their associated sounds
- Holding information about sounds and words in memory (phonological memory)
- Rapidly recalling the names of familiar objects, colors, or letters of the alphabet (rapid naming)

TX Handbook: Consequences of Dyslexia

- Variable difficulty with aspects of reading comprehension
- Variable difficulty with aspects of written language
- Limited vocabulary growth due to reduced reading experiences
**TX Handbook: Associated Academic Difficulties**

- May also have problems in written expression, reading comprehension, and mathematics
- Most common co-occurring disorders are ADHD & specific developmental language disorders
- May also experience symptoms such as anxiety, anger, depression, lack of motivation, or low self-esteem

**Depends upon**

- Where you live
- How the terms are defined

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**Despite claims to the contrary, it is incontrovertible that there are many people who struggle to learn to read (decode) for reasons other than poor teaching. While this condition is widely known as dyslexia, achieving a clear, scientific, and consensual understanding of this term has proven elusive.**

The Dyslexia Debate
Elliot & Grigorenko, 2014

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**History of Dyslexia**

- Dates back to 19th century as "word blindness"
- "Dyslexia" first used in 1887 by an ophthalmologist
- Professionals now see dyslexia as Language-based
  - But public still defines as a Visual problem

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**Dyslexia and Reversals in Writing**

- **Myth:** Dyslexia is a visual problem – dyslexics see words backwards and letters reversed.
  **Fact:** This was proven inaccurate by a study by Vellutino. He asked dyslexic and non-dyslexic students to reproduce a series of Hebrew letters that none of them had ever seen before. The dyslexic students were able to perform the task just as accurately as the non-dyslexic students, showing that their dyslexia did not affect their eyesight.
- **Myth:** Any child who reverses letters or numbers has dyslexia.
  **Fact:** Up to a certain point, it is considered normal for children to reverse their letters and numbers, and is actually quite common. However, if this does not stop after two years of handwriting instruction, it becomes a red flag for dyslexia.

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**PROBLEMS**

- Wide ranging incidence rates from 3% to 20%
- Researchers don’t agree on the nature and features of "dyslexia."
  - Definitions for research different from defining for educational resources
- Research is not clear on the cause of early reading difficulties
PROBLEMS

- Dyslexia is supposed to be brain based (not environment/poor teaching) but difficult to tease out the difference
- Lack of agreement about role of IQ
- Label of dyslexia doesn’t suggest intervention different from those for other poor decoders

Dyslexia Symptoms

- Difficulty with decoding single words
  - All poor decoders or just a subset??
- May also have problems with comprehension, fluency, motivation
  - Fletcher calls this “Decoding bottleneck”
- Symptoms have included poor phonological awareness, working verbal memory, weak spelling, slow processing, impaired verbal fluency, frequent letter reversals, and more...

UNEXPECTED?

- Definitions often include “unexpected poor performance”
  - Difficult to define unexpected
  - Based on intelligence testing? Or failure to respond to intervention?
- Shaywitz says within a “sea of strengths”
  - But some poor readers have flat cognitive profiles
  - Certainly not everyone with dyslexia is gifted...
- IQ does not appear to predict which poor readers will be successfully remediated

Only Smart Kids ??

Special difficulties processing the phonological features of language, that can co-exist with above average, average, or below average general intellectual ability.

Arkansas Dyslexia Resource Guide 2014

Who has Dyslexia?

- Struggles with accurate single-word decoding
- Struggles with accurate and/or fluent decoding
- Scores at lower end on a test of reading accuracy or fluency
- Decoding difficulties cannot be explained in alternative ways
- Significant discrepancy between decoding performance & IQ
- Decoding difficulty is unexpected
- Decoding skills contrast with strengths in other domains
- Decoding problems are biologically determined
- Decoding problems marked by associated cognitive difficulties (phonological, rapid naming, working memory deficits)
- History of very poor spelling
- Discrepancy between decoding and listening comprehension
- Fail to make progress in decoding with high-quality, evidence-based intervention

The belief that those with dyslexia are high-functioning poor readers, rather than those who represent the full continuum of intellectual ability, has continued to persist despite all evidence to the contrary.

The Dyslexia Debate
Elliot & Grigorenko, 2014
### General Agreement on

- Importance of phonological awareness, especially in the early years
- Importance of early intervention for reading difficulties
- Instruction should be structured, comprehensive, and individualized
  - Highest effect sizes for early intervention (1st grade) and smaller group sizes
  - Lack of evidence for visual/auditory training, visual-motor activities, vision therapy, tinted lenses, biofeedback, fatty acids

### Cognitive Deficits in Dyslexia

- **Primary: Phonological deficit**
- Also have been researched:
  - Rapid Naming
  - Working Memory
  - Auditory processing
  - Visual processing

### Although the phonological deficit theory continues to dominate, the notion of a single homogeneous deficit is now recognized as inadequate. Phonological weakness, seemingly the most influential cognitive component, cannot account for the difficulties of all those with reading disability.

The Dyslexia Debate  
Elliot & Grigorenko, 2014

### Dyslexia is often synonymous with

Reading Disability  
Reading Disorder  
Learning Disability in Reading  
Specific Reading Disability  
Specific Reading Difficulty

*Sometimes used to refer to a more specific group of poor decoders*

### The Paradox of Dyslexia

Amy has difficulty reading the word *volcano*.


When shown a picture of a volcano, she retrieves *tornado*, a word that sounds similar.
The Paradox of Dyslexia

Once Amy hears the word volcano, it’s clear she knows exactly what it means.

What we all know... (is impressive!)

- We all know reading disabilities when we see them. (No operational model, psycho-educational testing, score wizardry, psychometric gymnastics, or state regulations needed)
- No matter how you operationalize the concept or diagnosis/identify a learning disability, it does come down to some type of discrepancy.
- Again - with no testing or scores involved - dyslexia is determined here from the fact that Amy's reading skills are discrepant from her level of knowledge. (This is what we mean by "unexpectedness" when we talk about a learning disability.)

Dyslexia Facts

- In the US, NIH research has shown that dyslexia affects 5-10% of the population
- Some people may have more mild forms, while others may experience it more severely.
- Dyslexia is one of the most common causes of reading difficulties in elementary school children.
- Only 1 in 10 children with dyslexia will qualify for an IEP and receive special education services

Why is it more desirable to have dyslexia than a reading disability?

- Dyslexia is a meme
  - Unit of cultural transmission
  - Meme survives because it’s easy to understand, communicate & remember
  - Not because it is true, useful, or potentially harmful

Mascolo says.....

- "Overall, it can be useful to adopt a “shared language” when speaking of SLD - a group of terms that we can filter other diagnostic labels through so that we can readily understand what is being talked about"
- The importance of a shared language...

Qualifying for Special Education

1. Student has an IDEA disability condition
2. Student has a need for special education and related services

Specially Designed Instruction (SDI) = adapting the content, methodology, or delivery of instruction to address the unique needs of the student that result from the disability
Types of Reading Difficulties

\[ R = D \times LC \]

<table>
<thead>
<tr>
<th>Strong Language Comprehension</th>
<th>Weak Language Comprehension</th>
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<tbody>
<tr>
<td>Strong Word Reading</td>
<td>Typical Reader</td>
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<tr>
<td>Weak Word Reading</td>
<td>Dyslexic or Compensator</td>
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<tr>
<td></td>
<td>Mixed Reading Difficulty</td>
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</tbody>
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Importance of Understanding the Written Word

- The snables tramped the mengs to the dwip. The dwip fropped. The Mengs clambed a sib boogle. The snables gicked and gicked.

- What did the snables do first?
- What happened to the dwip?
- What kind of boogle did the Mengs clamb?
- What did the snables eventually do?
- Why can you answer these questions? What do you know?

What do we know about Reading Problems?

Students have persistent reading and/or writing problems for different reasons.
- Word reading and spelling may be impaired relative to verbal comprehension
- Handwriting and/or spelling may be impaired relative to verbal comprehension
- Language processing and verbal expression may be impaired relative to verbal comprehension

What do we know about Reading Problems?

- Students have persistent reading and/or writing problems for a variety of reasons.
- One reason is dyslexia, which is impaired word reading and spelling relative to verbal comprehension, in a profile of otherwise normal cognitive and language development.
- Students with dyslexia may also have dysgraphia.
- Dysgraphia is impaired handwriting and/or spelling relative to verbal comprehension, despite otherwise normal cognitive and language development.
- Dysgraphia may or may not occur simultaneously with dyslexia.

Reading Facts:

- Many referrals are due to Reading Comprehension weaknesses
- For best results intervening with young children, focus on:
  - Alphabetic Principle
  - Phonemic Awareness
  - Fluency

Virginia Beringer Research Findings

1) Early intervention makes significant difference, can improve skills of at-risk learners to expected levels.
2) Intervention instruction must be explicit.
3) Balanced and integrated approach for reading/writing instruction is most effective.
4) Phoneme awareness and decoding skills are crucial for learning to read.
Berginger Research Findings

5) Not the same thing:
   - qualifying student as LD for special education services
   - diagnosing a specific learning disability
6) Students do NOT outgrow reading/writing disabilities over time. Critical developmental periods for instruction.
7) Instruction can occur in a variety of general and special educational settings.
8) Intervention should facilitate the development of a functional reading and writing system.

Basic Definitions

Phonology – How sounds (phonemes) are organized and used to produce meaning

Orthography – How sounds are represented by written or printed symbols (graphemes)

Morphology – How words are formed or structured (from morphemes)

Beringer: Types of Learning Disabilities
Scientifically supported diagnosis is as important as scientifically supported instruction.

3 Research-Supported Specific Written Language Disabilities
- Dyslexia, or a Specific Reading Disability
- Oral/Written Language LD
- Dysgraphia

Differential Diagnosis Related to Coding of Three Word Forms

- The nature of the specific written language deficit is related to the coding operation (storage and processing for phonological, orthographic, and morphological word forms) that is impaired.
- Those with orthographic coding impairment only are likely to have dysgraphia.
- Those with orthographic coding and phonological coding impairment are likely to have dyslexia.
- Those with impaired orthographic, phonological, and morphological/syntactic coding are likely to have OWL LD.

Relationship between Word Form Deficit and Diagnosis
Not all Reading Problems are Dyslexia
(Berninger, 2006)

- **Dyslexia** is a specific type of reading disability affecting accuracy and rate of reading real words, phonological decoding, oral reading of passages, and written spelling.

- Dyslexia: Phonological core deficit in storage, phonological loop, and executive functions.

- Except for phonological processing, oral language skills are spared and comprehension is good.

Not all Reading Problems are Dyslexia
(Berninger, 2006)

OWL LD

- In oral and written language learning disability (OWL LD), oral language skills, including comprehension, are impaired in addition to the same skills that are impaired in dyslexia.

- Preschool history of some difficulty learning oral language

- Problems in decoding, reading words, oral reading fluency, and/or reading comprehension

Phonological vs Orthographic Processing

- **Orthographic processing** involves recognizing and remembering the spatial orientation and sequence of language symbols. When individuals with orthographic processing disorders attempt to read, their brains have trouble perceiving and/or processing the direction and sequence of written language.

- **Phonological processing** disorder and orthographic processing disorders refer to the particular brain processes at work in people who experience difficulty when they read. An individual who has a phonological processing disorder will have difficulty perceiving and manipulating the phonemes that would enable them to “hear” the sounds of the words they read.*


Phonological Processing and Working Memory

- Phonological processing is important to reading by supporting the role of working memory in reading comprehension (Rayner, Pollatsek, Ashby, & Clifton, 2011).
**Importance of Research Supported Diagnosis**

Research supported diagnosis is important because there are instructional implications.

- Students with dyslexia need more systematic and explicit instruction in word decoding than their grade level peers.
- Once they learn to decode, their reading comprehension typically develops normally.

**Importance of Research Supported Diagnosis**

- Students with a language learning disability need systematic and explicit instruction in oral language (morphological and syntactic awareness) and in reading comprehension and decoding.
- Students with dysgraphia need systematic, explicit (not incidental) handwriting and spelling instruction.

**Another View of Reading Disability Subtypes (Feifer)**

- Dysphonetic Dyslexia – difficulty sounding out words in a phonological manner (BRS)
- Surface Dyslexia – difficulty with the rapid and automatic recognition of words in print (RF)
- Mixed Dyslexia – multiple reading deficits characterized by impaired phonological and orthographic processing skills. It is probably the most severe form of dyslexia. (BRS/RF)
- Comprehension Deficits – the mechanical side of reading is fine but difficulty persists deriving meaning from print


**Learning Disorders Reading: Subtypes**

1. Phonological
2. Orthographic
3. Mixed Phonological-Orthographic
4. Language
5. Comprehension deficit
6. Fluency subtype
7. Global

Dysgraphia (often a co-occurring condition with one of the other listed subtypes)

**1. LD Reading Subtype: Phonological**

- Phonological is the core deficit
- Have difficulty mentally representing the sound patterns of the words in their language
  - Causes great difficulty in using the phonological route to reading and spelling
- Over-rely on visual and orthographic cues while reading
- May memorize whole words as a strategy for word recognition
- Sometimes referred to as dysphonetic or phonological dyslexia.

**LD Reading Subtype: Phonological**

These students
- rarely use letter-to-sound conversion
- have marked difficulty reading nonsense words
- typically show a relative strength in reading exception (irregular) words, which they have memorized

A phonological core deficit may be accompanied by deficits in cognitive processing and may impact functioning in other academic skills such as writing and spelling.
2. LD Reading Subtype: Orthographic

- Strong phonemic processing skills
- Strong listening comprehension skills
  - They know the answer to teachers’ questions.
  - They glean a lot of information from the classroom experience.
- Weak word recognition skills
- Weak orthographic coding
  - ability to hold word in memory and access the whole word pattern

LD Reading Subtype: Orthographic

- Have difficulty in using the visual-lexical route to reading and writing words.
- Instead, the phonological route to lexicon is used
- Tend to sound words out letter by letter, over relying on sound-symbol relationships.
- Pseudoword reading is typically better than real word or exception word reading because non-words are usually phonetically decodable

LD Reading Subtype: Orthographic

- Depend on sounding out words, but rarely hold the words in their sight word list (lexicon).
- Struggle with spelling new words.
- Generally writing is also a deficit for these children.
- Sometimes referred to as surface dyslexia, visual form dyslexia or dyseidetic dyslexia.
- Impacts learning to read and decode words, thus, impacting overall reading fluency

LD Reading Subtype: Orthographic

- More frequently occurring than either Phonological or Orthographic
- Causes great difficulty in using the phonological route to reading and spelling, as well as difficulty in using the visual-lexical route to reading and writing words
- Causes severe impairment in learning to read
  - They have no usable key to the reading and spelling code, and seemingly arbitrary error patterns are often observed.
- Difficulty mentally representing sound patterns of words in language

LD Reading Subtype: Mixed Phonological and Orthographic

- Strong in Listening Comprehension
  - Learn better with direct instruction and experiential learning
- Mixed LD reading is manifested in weaknesses in:
  - Phonological Processing
  - Decoding
  - Word Reading
  - Reading Fluency, and
  - Spelling

LD Reading Subtype: Mixed Phonological and Orthographic

- Students with a language impairment, sometimes referred to as Oral and Written Language Learning Disability (OWL-LD), (Grammatical) Specific Language Impairment (SLI or G-SLI), or Language Learning Disability (LLD), have problems in both oral and written language
- Students with OWL-LD show particular difficulty processing grammar and syntax.
- Adequate nonverbal cognitive ability is observed.
4. LD Reading Subtype: Language

- Weaknesses
  - Reading comprehension
  - Listening comprehension
  - Orthographic coding, and
  - Oral grammar

- Strengths
  - Word recognition
  - Decoding/nonsense word reading

5. LD Reading Subtype: Comprehension

- A specific comprehension deficit is sometimes referred to as hyperlexia.
- Hyperlexia can refer to
  - Students who exhibit poor language comprehension skills and exceptional word recognition and decoding skills OR
  - Students with poor language comprehension and relatively good basic reading skills
- Have difficulty with listening comprehension and reading comprehension
  - Read accurately and fluently, but fail to grasp the meaning of what they have read

6. LD Reading Subtype: Reading Fluency

- Students with poor reading fluency due to a naming speed deficit typically have adequate phonological processing skills
- Able to read and decode words accurately, but they read connected text very slowly
- Reading fluency deficits cannot be identified until word-reading skills are acquired; however, naming speed deficits may be identified earlier.
- Specific deficits in naming speed have been shown to impede reading fluency.

A Note About Rapid Naming

- RAN is a type of phonological processing.
- RAN of digits, letters, objects, or colors require efficient retrieval of phonological information from memory
- Unlike PA and Phonological Memory (both auditory-oral) rapid naming has visual components.
- Therefore, RAN is best thought of as being a HYBRID ability, in that successful performance depends on how fast an examinee can scan the visual stimuli and encode a phonological response.
- This is the same type of mixed modality ability that underlies decoding when reading aloud.
LD Reading Subtype: Reading Fluency

- According to the Double-Deficit Hypothesis, most students with reading disorders can be classified as one of two single-deficit subtypes that are relatively independent of each other (phonological or rate deficit) or as one combined double-deficit subtype.
- Weaknesses in reading fluency due to a naming speed deficit is sometimes referred to as a rate deficit or specific reading fluency deficit.
- Reading fluency is considered the bridge to comprehension; hence, slow reading fluency typically impedes comprehension.

LD Reading Subtype: Global

- Difficulty with all reading-related skills, including: word recognition, decoding, reading fluency, reading comprehension, and listening comprehension.
- A subset of students with a global reading impairment also show phonological processing deficits due to difficulty mentally representing the sound patterns of the words in their language.
- These students have low average verbal and nonverbal cognitive processing abilities (IQ standard scores between 70 and 90), but they do not exhibit deficits in adaptive functioning.

7. LD Reading Subtype: Global

- A global reading impairment is sometimes associated with the term nonspecific language impairment or, as a group, “garden variety poor readers”
- Students with global reading impairment are remarkably similar to younger children reading at the same grade level.
- Probably the most common profile of reading difficulty but not SLD (they don’t qualify).

Dyslexia Assessment Workflow:

A Best Practice Model for Addressing Dyslexia and Screening Mandates
First...

The path to address Dyslexia in schools should begin in **general education with universal screening.**

...and second...

The science tells us responding to dyslexia early is **CRITICAL!** We know that achievement gaps for students with dyslexia can be seen as early as first grade and persist.

**Screening Versus Assessment**

- "Screening" instrument--by definition--should quickly "sort" students into two groups: "at risk" vs. "not at risk."
- Data representing performance from those with and without the condition in order to validate the instrument for this purpose
- Minimal investment of resources (cost, time-on-task for student/teacher, etc.)
- In contrast, diagnostic/assessment instruments are intentionally designed to probe more broadly and deeply.
Limitations of a Screener

• A screener by definition is NOT COMPREHENSIVE
  • Does not provide a diagnosis
  • Should not be used to identify the degree of impairment
  • Should not be used to identify pattern of strengths and weaknesses
  • Error rates: Minimize False positive and False negatives

Screeners can be either…

Performance-based
(assessing skills)

or

Rating-based
(rating related characteristics/behaviors)

(most are performance-based)

Examples of Screeners for Reading or Dyslexia

• Pearson
  • Shaywitz Dyslexia Screen
    • Dyslexia Specific
    • Rating scale
  • aimsweb Plus
    • KTEA-3 and WIAT-III Dyslexia Index Scores

• Others
  • DIBELS Next
  • Istations (ISIP-ER)
  • TPRI
  • Measure of Academic Progress (MAP)

SCREENING
Figure 2.2. Criteria for English and Spanish Screening Instruments

<table>
<thead>
<tr>
<th>Kindergarten</th>
<th>First Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Phonological Awareness</td>
<td>• Phonological Awareness</td>
</tr>
<tr>
<td>• Phonemic Awareness</td>
<td>• Phonemic Awareness</td>
</tr>
<tr>
<td>• Sound-Symbol Recognition</td>
<td>• Sound-Symbol Recognition</td>
</tr>
<tr>
<td>• Letter Knowledge</td>
<td>• Letter Knowledge</td>
</tr>
<tr>
<td>• Decoding Skills</td>
<td>• Decoding Skills</td>
</tr>
<tr>
<td>• Spelling</td>
<td>• Spelling</td>
</tr>
<tr>
<td>• Listening Comprehension</td>
<td>• Reading Rate</td>
</tr>
<tr>
<td>• Reading Accuracy</td>
<td>• Reading Accuracy</td>
</tr>
<tr>
<td>• Listening Comprehension</td>
<td>• Listening Comprehension</td>
</tr>
</tbody>
</table>

End of year No later than Jan 31st

Why are we screening so many areas?

TEC §28.006, Reading Diagnosis
This state statute requires schools to administer early reading instruments to all students in kindergarten and grades 1 and 2 to assess their reading development and comprehension.

Additionally, the law requires a reading instrument from the Commissioner’s approved list be administered at the beginning of grade 7 to any student who did not demonstrate proficiency on the reading assessment administered under TEC §39.023(a).

After Screening: Interpretation

• Parents/guardians have the right to request a referral for a dyslexia evaluation under IDEA or Section 504 at any time.

• Districts must ensure that evaluations of children suspected of having a disability are not delayed or denied because of implementation of tiered interventions or RTI.
Universal Screening and Data Review for Reading Risk Flowchart - Figure 2.5

- Multiple sources of quantitative & qualitative data

Combining Two Methods to Make Screening Process More Precise

- Screener identifies approximately 20% of a typical classroom as “at-risk”, more if it’s a Title 1 classroom
- A Hybrid Screening Method: 2-Stage Performance and Rating
  1. Use Reading measure (such as aimswebPlus) to determine performance
     • Shows us who is having difficulty reading
     • Validates question of “poor reading performance”
  2. After 6-8 weeks with student in classroom, teacher completes the Shaywitz DyslexiaScreen
     • Shows us who is “at-risk” specifically for Dyslexia
     • Gives us better idea for “next steps”

Shaywitz DyslexiaScreen

- Brief teacher survey for identifying students at-risk for dyslexia.
- Intended for use with students experiencing academic difficulties, but can also be used to screen all students.
- Therefore…universal or Tier 2 capable
- 5 minutes (or less) using an online form
- Digital administration and scoring
- The classification accuracy data indicate moderately high sensitivity and specificity

What does the SDS measure?

Observational Ratings Analyze:
1. Phonological,
2. Linguistic, and
3. Academic performance

Ratings based on classroom teacher observations
• Subjectivity limited because teacher answers questions after having worked with student daily for 6-8 weeks.
Forms

- The Shaywitz DyslexiaScreen offers four forms:
  - **Form 0**: Grade K (Ages 5-6) consists of 10 items.
  - **Form 1**: Grade 1 (Ages 6-7) consists of 12 items.
  - **Form 2**: Grade 2 (Ages 7-8) consists of 10 items.
  - **Form 3**: Grade 3 (Ages 8-9) consists of 10 items.

Reports

- Results include a simple classification:
  - **At Risk for Dyslexia** or
  - **Not At Risk for Dyslexia**

- Two report options: Individual or Group

Classification Accuracy

- **Sensitivity (True Positives)**
  - Proportion of students identified with dyslexia who are classified as At Risk for Dyslexia by the teacher ratings

- **Specificity (True Negatives)**
  - Proportion of students identified as typical readers and classified as Not At Risk for Dyslexia by the teacher ratings

Classification Accuracy

(Based on National Clinical Study)

<table>
<thead>
<tr>
<th>Shaywitz DyslexiaScreen™</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>ROC Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form 0 (Kindergarten)</td>
<td>.73</td>
<td>.71</td>
<td>.87</td>
</tr>
<tr>
<td>Form 1 (Grade 1)</td>
<td>.70</td>
<td>.88</td>
<td>.89</td>
</tr>
<tr>
<td>Form 2 (Grade 2)</td>
<td>1.00</td>
<td>.75</td>
<td>.92</td>
</tr>
<tr>
<td>Form 3 (Grade 3)</td>
<td>.94</td>
<td>.82</td>
<td>.94</td>
</tr>
</tbody>
</table>
How do we evaluate screener effectiveness?

- **4 points of data**
  1. **Reliability**
     - Reflection of error
  2. **Sensitivity and Specificity?**
     - True + and False +
     - True – and False –
  3. **Area Under the ROC (receiver operating characteristic) Curve (AUC)**
  4. **Clinical Studies**
     - How does it perform?
     - Effect size (differentiates between 2 groups)

What is Area Under ROC Curve (AUC)?

- **History:** Developed during World War II to analyze radar and help operators decide whether a blip on the screen represented an enemy target, a friendly ship, or just noise.
- **Plot true positive rate against the false positive rate across various thresholds.**
- **Tests Discrimination:** Gives an indication of binomial group distribution (with and without)
  - .5 AUC is chance accuracy (worthless, flip a coin)
  - 1.0 AUC indicates perfect test
  - .80 - .90 + range indicates good to excellent

Examples of Screener Effectiveness

<table>
<thead>
<tr>
<th>Test or index score</th>
<th>Grade/Age</th>
<th>Subtests/Items</th>
<th>Mean reliability</th>
<th>Effect size</th>
<th>AUC</th>
<th>Administration time (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodcock Dyslexia/reading</td>
<td>Kindergarten</td>
<td>10 items</td>
<td>.87</td>
<td>1.48</td>
<td>.81</td>
<td>&lt; 5</td>
</tr>
<tr>
<td>Woodcock Dyslexia/reading</td>
<td>1</td>
<td>12 items</td>
<td>.90</td>
<td>0.96</td>
<td>.88</td>
<td>&lt; 5</td>
</tr>
<tr>
<td>Woodcock Dyslexia/reading</td>
<td>2</td>
<td>10 items</td>
<td>.92</td>
<td>1.47</td>
<td>.82</td>
<td>&lt; 5</td>
</tr>
<tr>
<td>K-1.5.6: Finding Composite</td>
<td>1-3/6, Age 4-7</td>
<td>Reading, Language, Math</td>
<td>96</td>
<td>1.72</td>
<td>.89</td>
<td>10-20</td>
</tr>
<tr>
<td>KTEA3 – Revised</td>
<td>5-7/6, Age 7-21</td>
<td>Letter &amp; Word Recognition, Spelling, Math Computation</td>
<td>96</td>
<td>2.11</td>
<td>.93</td>
<td>20</td>
</tr>
</tbody>
</table>

**Notes:** AUC = Area Under the Curve estimate (Cutoff = 50, 1.0 represents perfect accuracy, .5 represents random guesses). The KTEA3 Dyslexia Composite is the only subtest that provides a report standard score. Higher reliability is expected for the Woodcock Dyslexia/reading test, which is supported by its excellent sensitivity and specificity. The dyslexia group mean score significantly differs from those of participants without dyslexia who completed an extensive-norming study. However, the sensitivity and specificity of a new screener may be lower than that of an existing screener. This study is published after the 2018 edition of this publication. Therefore, the sample size may be too small to draw robust conclusions. The results of this study should be interpreted with caution.

How should I interpret screener results?

- **At Risk for Dyslexia** considerations include:
  - Increasing the frequency and duration of interventions
  - Selecting a more intensive intervention program
  - Closely monitoring the student’s academic performance
  - Referring the student for a more comprehensive diagnostic evaluation.

- **A student classified as Not At Risk for Dyslexia**
  - Language and academic skills may be monitored and supported within the general academic setting.
- **Remember, screeners do not provide a diagnosis.**

Dyslexia Index Scores - Purposes

- **Screening**
  - Results differentiate between individuals with and without dyslexia.
- Brief administration time & clinical sensitivity
- Identify which students require more frequent progress monitoring, more intensive instruction or intervention, or a comprehensive psychoeducational evaluation.

KTEA3 Dyslexia Index scores

- **Identify risk for dyslexia in Kd – 12th grade or ages 5 through 25**
- **Obtain Dyslexia Index score in 20 minutes or less**
- **A single score such as the Dyslexia Index is not sufficient to diagnose dyslexia. Rather, a diagnosis of dyslexia is based on a convergence of evidence gathered from multiple sources.**
**Dyslexia Index Scores - Purposes**

- **Evaluation**
  - The KTEA-3 Dyslexia Index scores can serve as a starting point for a more comprehensive psychoeducational test battery.
  - If the Dyslexia Index results suggest that further testing is necessary, administer the KTEA-3 Comprehensive Form.
  - All standard scores from the Dyslexia Index subtests can validly be applied to a more extensive assessment using the KTEA-3 Comprehensive Form.

**KTEA3 Dyslexia Index scores**

- Two Dyslexia Index scores are provided for the KTEA–3: one for grades K–1, and another for grades 2–12.
- Each of these Dyslexia Index scores are obtained by administering three subtests from either Form A or Form B of the KTEA–3.
- The materials needed to administer and score the Dyslexia Index subtests are available as part of the KTEA–3 Comprehensive Form.

**Predictors of Dyslexia: Early Grades**


- **Best Diagnostic Predictors:**
  - Letter knowledge (name/sound)
  - Rapid automatic naming
  - Phonological awareness

(Kirby, Parrila, & Pfeiffer, 2003; Schatschneider & Torgesen, 2004)

**Predictors: Later Grades**

Breaux & Lichtenberger (2016)

- **Best Diagnostic Predictors:**
  - Decoding fluency
  - Text reading fluency

*Not measures of phonological awareness and rapid automatic naming.*

(Schatschneider & Torgesen, 2004).
### Dyslexia Index Score Interpretation

<table>
<thead>
<tr>
<th>Standard Score</th>
<th>Risk for Dyslexia</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;70</td>
<td>Very Low</td>
</tr>
<tr>
<td>70-87</td>
<td>Low</td>
</tr>
<tr>
<td>88-91</td>
<td>Elevated</td>
</tr>
<tr>
<td>92-94</td>
<td>Moderate</td>
</tr>
<tr>
<td>95-76</td>
<td>At Risk</td>
</tr>
<tr>
<td>≥76</td>
<td>Very High</td>
</tr>
</tbody>
</table>

Suggested Interpretive statement:
The examinee's Dyslexia Index score indicates that the risk for dyslexia is in the **at risk** range. These results on their own are not sufficient to identify or diagnose dyslexia. A comprehensive evaluation is recommended.

---

### WIAT3 Dyslexia Index scores

- **Early Reading Skills**
- **Spelling**
- **Penmanship Decoding**
- **Oral Reading Fluency**
- **Spelling**

**WIAT-III Dyslexia Index Grades 6-12+**

---

### KTEA3 Dyslexia Index scores

**Classification Accuracy**

<table>
<thead>
<tr>
<th>Score</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>ROC Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>KTEA-3 Dyslexia Index Grades K-1</td>
<td>≥ .95</td>
<td>≥ .85</td>
<td>≥ .90</td>
</tr>
<tr>
<td>KTEA-3 Dyslexia Index Grades 2-12+</td>
<td>≥ .94</td>
<td>≥ .74</td>
<td>≥ .80</td>
</tr>
</tbody>
</table>

---

### Dyslexia Index Scores: Features and Benefits

- Excellent reliabilities (.90s) at every age/grade
- Strong clinical sensitivity
- Administration times range from 12-20 minutes for each score
- Composite structures are based on clinical data as well as a strong empirical foundation
- Results are easy to interpret: 6 categories of Risk for Dyslexia (ranging from very low to very high)
- Manual provides recommendations for next steps
- Response Booklet pages for Spelling subtest (applies to Grades 2-12+ scores) are included as reproducible forms

---

### History and Background Considerations:

- The examinee’s Dyslexia Index score indicates that the risk for dyslexia is in the **at risk** range. These results on their own are not sufficient to identify or diagnose dyslexia. A comprehensive evaluation is recommended.
How do I select tests for Diagnostic Assessment?

- Test selection for Diagnostic Assessment should evaluate key components of Dyslexia
  - Strengths
  - Response to treatment (effective instruction)
  - Potential areas of weakness
    - Symptoms
    - Cognitive Correlates
    - Risk Factors
  - Psychometric support vs theoretical support
    - Test for reading vs. for dyslexia

2014
TX Dyslexia Handbook: Special Ed?

Special education and the assessment through IDEA 2004 may occur when dyslexia is associated with factors complicating dyslexia, thus requiring more support than what is available through the general education dyslexia program.

Referrals

Suspicion of Dyslexia or a Related Disorder
What type of instruction is needed?

✓ Standard protocol dyslexia instruction
OR
✓ Specially designed instruction under IDEA
✓ defined under IDEA as “adapting . . . the content, methodology, or delivery of instruction”
✓ Must address the unique needs of the child that result from the child’s disability and must ensure access to the general curriculum so that the child can meet the state’s educational standards (34 C.F.R §300.39(b)(3)).

TX Dyslexia Handbook (unchanged)
Areas for Assessment
Academic Skills
✓ Letter knowledge (name and associated sound)
✓ Reading words in isolation
✓ Decoding unfamiliar words accurately
✓ Reading fluency (both rate and accuracy are assessed)
✓ Reading comprehension
✓ Spelling

Cognitive Processes
✓ Phonological/phonemic awareness
✓ Rapid naming of symbols or objects

Possible Additional Areas
✓ Vocabulary
✓ Listening comprehension
✓ Verbal expression
✓ Written expression
✓ Handwriting
✓ Memory for letter or symbol sequences (orthographic processing)
✓ Mathematical calculation/reasoning
✓ Phonological memory
✓ Verbal working memory
✓ Processing speed
Two Types of Assessment from Sattler

- Focused = “detailed evaluation of a specific area of functioning
- 504 Evaluation (Dyslexia)
- Diagnostic = “detailed evaluation of a child’s strengths and weaknesses in several areas such as cognitive, academic, language, behavioral, emotional and social functioning”
- Full Individual and Initial Evaluation (FIIE)

Comprehensive Instruments for Reading

<table>
<thead>
<tr>
<th>Publication date</th>
<th>WRMT-III</th>
<th>KTEA-3</th>
<th>WIAT-III</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>2014</td>
<td>2009</td>
<td></td>
</tr>
</tbody>
</table>

| User Qualifications | B | B | B |

| Age | 4.6 – 79:11 | 4.0 – 25:11 | 4.0 – 50:11 |
| Grade | K-12 | PreK – 12 | PreK - 12 |

| Alternate forms | A & B | A & B | No |

| Error analysis | Percent incorrect | Normative Percent correct |
| Q-interactive | No | Yes | Yes |

Dyslexia Assessment

<table>
<thead>
<tr>
<th>WRMT-III</th>
<th>KTEA-3</th>
<th>WIAT-III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phonological Awareness</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Rapid Naming</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Letter Knowledge</td>
<td>Yes</td>
<td>Y (within Letter &amp; Word ID and qualitively)</td>
</tr>
<tr>
<td>Decoding</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Word Recognition</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Fluency</td>
<td>Y (passages)</td>
<td>Y (sight words, nonsense words, silent)</td>
</tr>
<tr>
<td>Spelling</td>
<td>NO</td>
<td>Y</td>
</tr>
<tr>
<td>Reading Comprehension</td>
<td>Y (sentences)</td>
<td>Y</td>
</tr>
</tbody>
</table>

Letter Knowledge

WRMT-III
Letter Identification

PAL-II
Letters

WIAT-III *
Early Reading Skills

KTEA-3 *
Letter Checklist
Letter and Word Identification

WRAT-5 Word Reading

WORD RECOGNITION

KTEA-3
Letter & Word Recognition

WIAT-III
Word Reading

WRMT-III
Word Identification

WRAT-5 Word Reading
**Best Practices for Dyslexia and LD Reading**

**Anise Flowers, Ph.D.**

**Pearson Clinical Assessment**

---

**DECODING**

- **KTEA-3**
  - Nonsense Word Decoding

- **WIAT-III**
  - Pseudoword Decoding

- **WRMT–III**
  - Word Attack

- **PAL-II**
  - Pseudoword Decoding

---

**FLUENCY**

- **KTEA-3**
  - Word Recognition Fluency
  - Decoding Fluency*
  - Silent Reading Fluency
  - Fluency Composite*

- **WIAT-III**
  - Oral Reading Fluency

- **WRMT–III**
  - Oral Reading Fluency

- **PAL-II**
  - RAN-Words, Morphological Decoding Fluency, Sentence Sense

- **GORT-5** (Gray Oral Reading Test, 5th edition)

---

**READING COMPREHENSION**

- **KTEA-3**
  - Reading Comprehension

- **WIAT-III**
  - Reading Comprehension

- **WRMT–III**
  - Passage Comprehension

- **PAL-II**
  - Does It Fit?, Sentence Sense (Accuracy), Sentence Structure

- **WRAT-5**
  - Sentence Comprehension

- **GORT-5**
  - Comprehension

---

**SPELLING**

- **KTEA-3**
  - Spelling

- **WIAT-III**
  - Spelling

- **PAL-II**
  - Word Choice

- **WRAT-5**
  - Spelling

---

**UNDERLYING CAUSE:**

**PHONOLOGICAL AWARENESS**

- **CTOPP-2** (Comprehensive Test of Phonological Processing)
  - Phonological Awareness Composite - Elision, Blending Words and either Phoneme Isolation or Sound Matching subtests

- **KTEA-3**
  - Phonological Processing

- **WRMT–III**
  - Phonological Awareness

- **PAL-II**
  - Rhyming, Syllables, Phonemes, Rimes

- **WIAT-III** (Wechsler Individual Achievement Test)*
  - Early Reading Skills (mixed skills)

---

**UNDERLYING CAUSE:**

**RAPID NAMING**

- **CTOPP-2**
  - Rapid Naming Composite

- **KTEA-3**
  - Object Naming Facility
  - Letter Naming Facility

- **WRMT–III**
  - Rapid Automatic Naming

- **PAL-II**
  - RAN-Letters, RAN-Letter Groups
Case Study: Meghan

- **Grade:** 1 (September)
- **Age:** 6-years 2-months at time of testing

**Background Information:**
- Meghan was assessed at the request of her kindergarten teacher and her parents, who were concerned about her progress in learning to read.
- The teacher reported that she appeared engaged during lessons that involved phonological analysis and when being read to.
- Her parents reported reading to her nightly, an activity that she loved.
- The assessment was conducted to obtain a more complete picture of Meghan’s development in learning to read.

Meghan’s WRMT-III Score Summary

<table>
<thead>
<tr>
<th>Standard Score</th>
<th>Percentile Rank</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letter Identification</td>
<td>71</td>
<td>3</td>
</tr>
<tr>
<td>Phonological Awareness</td>
<td>90</td>
<td>25</td>
</tr>
<tr>
<td>Rapid Automatic Naming</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Readiness Composite</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Word Identification</td>
<td>86</td>
<td>18</td>
</tr>
<tr>
<td>Word Attack</td>
<td>88</td>
<td>21</td>
</tr>
<tr>
<td>Basic Skills Composite</td>
<td>86</td>
<td>18</td>
</tr>
<tr>
<td>Word Comprehension</td>
<td>93</td>
<td>32</td>
</tr>
<tr>
<td>Passage Comprehension</td>
<td>90</td>
<td>25</td>
</tr>
<tr>
<td>Reading Comprehension</td>
<td>91</td>
<td>27</td>
</tr>
<tr>
<td>Listening Comprehension</td>
<td>97</td>
<td>42</td>
</tr>
</tbody>
</table>
**Meghan: Description of Performance**

**Rapid Automatic Naming**
- Meghan did not receive a score for this test because she was unable to name three of the letters during the Number and Letter Naming trial.

**Meghan: Interpretation**

**Letter Identification:**
- Meghan correctly recognized 13 letters, so her percentile rank was only 3 (a performance well below average for a student beginning first grade).
- Suggests she will find grade-level letter identification tasks extremely difficult.
- Her RPI was 44/90, indicating she is performing with only 44% success those letter identification tasks performed with 90% success by average beginning first graders.

**Phonological Awareness:**
- Meghan’s percentile rank was 25, which is in the average range.
- She correctly answered all of the items on First-Sound Matching and Last-Sound Matching.
- In Rhyme Production, she was able to produce words that rhymed with the key word in 4 out of 6 instances, involving –ay, -at, -oil, and –ot.
- However she was able to correctly answer only three Blending items and two Deletion items.

**Word Identification and Word Attack**
- Meghan answered only one Word Identification item correctly, earning a 14/90 RPI, indicating that she is expected to find nearly impossible those tasks that average beginning first graders are expected to perform with 90% success.
- She also answered only one Word Attack item correctly, resulting in a percentile rank of 21.
  - Although this score is considered average with respect to other first graders, her RPI of 47/90 suggests that decoding tasks will be perceived as very difficult for her.

**Meghan’s KTEA-3 Score Summary**

<table>
<thead>
<tr>
<th></th>
<th>Standard Score</th>
<th>Percentile Rank</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Object Naming Facility</td>
<td>94</td>
<td>34</td>
<td>Average</td>
</tr>
<tr>
<td>Word Recognition Fluency</td>
<td>74</td>
<td>4</td>
<td>Low</td>
</tr>
<tr>
<td>Spelling</td>
<td>70</td>
<td>2</td>
<td>Low</td>
</tr>
<tr>
<td>Written Expression</td>
<td>68</td>
<td>2</td>
<td>Very Low</td>
</tr>
<tr>
<td>Written Language Composite</td>
<td>67</td>
<td>1</td>
<td>Very Low</td>
</tr>
</tbody>
</table>
Meghan: Description of Performance

Object Naming Facility

- Meghan was administered this subtest from the KTEA3 since she was unable to complete number and letter naming on the WMRT-III.
- Her score of 94 was in the Average range.

Word Recognition Fluency

- Meghan was administered this subtest from the KTEA3 since she was unable to read passages on the WMRT-III.
- Her score of 74 was in the Low range. Meghan was only able to read 3 words correctly.

Written Language

- Meghan obtained a score of 70 (Low) on the KTEA-3 Spelling subtest due to her limited ability to write letters or words.
- She was administered the Level 1 items for the KTEA-3 Written Expression subtest. Meghan had difficulty with writing some letters, as well as words. Her score of 68 is in the Very Low range.

Meghan: Conclusions

- Meghan appears to have characteristics of Dyslexia.
- She can match initial & final sounds & produce rhymes; but she needs to identify more letters, especially consonants.
- Megan also needs practice in writing her letters and basic sight words.
- Meghan could benefit from increased practice on the phonological skills of phoneme deletion and blending.
- She may benefit from learning sight words through repeated exposure.
- Meghan may also benefit from instruction regarding applying her phonological skills to sounding out unfamiliar words.

Do you screen cognitive ability for 504 evaluations? What tests do you use?

Pearson Level B assessments:
- KBIT-2
- Ravens-2

US DOE Oct 2015

- The purpose of this letter is to clarify that there is nothing in the IDEA that would prohibit the use of the terms dyslexia, dyscalculia, and dysgraphia in IDEA evaluation, eligibility determinations, or IEP documents.
US DOE Oct 2015

- Under the IDEA and its implementing regulations “specific learning disability” is defined, in part, as “a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia.” See 20 U.S.C. § 1401(30) and 34 CFR § 300.8(c)(10) (emphasis added).

Specific Learning Disorder (with specifiers; DSM-5)

1. Specific learning disorder with impairment in reading includes possible deficits in:
   - Word reading accuracy (BRS)
   - Reading rate or fluency (RF)
   - Reading comprehension (RC)
   - DSM-5 diagnostic code 315.00.

   - Note: Dyslexia is an alternative term used to refer to a pattern of learning difficulties characterized by problems with accurate or fluent word recognition, poor decoding and poor spelling abilities.

What must be considered for SLD?

“Basic psychological processes” must be considered

- memory
- processing
- attention
- visual
- auditory

- sensori-motor
- mental control
- problem-solving
- language use

8 Areas of Specific Learning Disability (SLD) in IDEIA:

- Basic Reading Skills (BRS)
- Reading Comprehension (RC)
- Reading Fluency (RF)
- Math Calculation (MC)
- Math Problem Solving (MPS)
- Written Expression (WE)
- Oral Expression (OE)
- Listening Comprehension (LC)

Specific Learning Disorder (with specifiers; DSM-5)

2. Specific learning disorder with impairment in written expression includes possible deficits in:
   - Spelling accuracy (WE)
   - Grammar and punctuation accuracy (WE)
   - Clarity or organization of written expression (WE)

   - DSM-5 diagnostic code 315.2.

Approaches to Pattern of Strengths and Weaknesses Analysis

(Hale, Flanagan, & Naglieri, 2008)

- Most prominent research-based:
  1. Concordance-discordance method (C-DM; Hale & Fiorello, 2004)
  3. Cross battery assessment approach (Flanagan, Ortiz, & Alfonso, 2013)
PSW Approaches

- Commonalities:
  - Rule out exclusionary factors as part of the definition of a learning disability
  - Identify a cognitive processing weakness that is related to the achievement weakness
  - Identify one or more areas of strength that are unrelated to the achievement weakness
- However, they also do differ in several key areas, including the criteria for defining strength and weakness.

What is PSW

- Requires the identification of a processing weakness,
  - Differentiates between SLD and underachievement (for other reasons).
  - SLD requires individualized instruction responsive to processing strengths and weaknesses
- Is important given current thinking that only using RTI is not sufficient for diagnosing SLD (Flanagan, Fiorello, & Ortiz, 2010; Hale et al., 2010; Hale, Kaufman, Naglieri, & Kavale, 2006).

Methodological and Statistical Requirements for PSW

- The scores comparisons must be significantly different (discrepancy) meet criteria for SLD identification:
  - processing strength vs achievement weakness
  - processing strength vs processing weakness
- Is there a consistency between the achievement weakness and the processing weakness
  - Rationale for SLD

Diagnostic Achievement Tests: Primary Areas

<table>
<thead>
<tr>
<th>Key areas for SLD assessment</th>
<th>PSW-5 grade 5-12, ages 9-25</th>
<th>PSW-5 grade 6-8</th>
<th>PSW-5 grade 13 &amp; 14, ages 9-17</th>
<th>PSW-5-8 grades 5-12, ages 9-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phonics alphabet knowledge</td>
<td>Letter and Sound Recognition</td>
<td>Letter</td>
<td>Letter</td>
<td>Letter</td>
</tr>
<tr>
<td>Reading fluency</td>
<td>Letter</td>
<td>Letter</td>
<td>Letter</td>
<td>Letter</td>
</tr>
<tr>
<td>Word reading</td>
<td>Letter</td>
<td>Letter</td>
<td>Letter</td>
<td>Letter</td>
</tr>
<tr>
<td>Reading Fluency</td>
<td>Letter</td>
<td>Letter</td>
<td>Letter</td>
<td>Letter</td>
</tr>
<tr>
<td>Spelling</td>
<td>Letter</td>
<td>Letter</td>
<td>Letter</td>
<td>Letter</td>
</tr>
<tr>
<td>Working memory and working memory tasks</td>
<td>Working Memory</td>
<td>Working Memory</td>
<td>Working Memory</td>
<td>Working Memory</td>
</tr>
<tr>
<td>Reading vocabulary</td>
<td>Letter</td>
<td>Letter</td>
<td>Letter</td>
<td>Letter</td>
</tr>
<tr>
<td>Reading strategy</td>
<td>Letter</td>
<td>Letter</td>
<td>Letter</td>
<td>Letter</td>
</tr>
<tr>
<td>Working memory and working memory tasks</td>
<td>Working Memory</td>
<td>Working Memory</td>
<td>Working Memory</td>
<td>Working Memory</td>
</tr>
<tr>
<td>Phonological awareness</td>
<td>Letter</td>
<td>Letter</td>
<td>Letter</td>
<td>Letter</td>
</tr>
</tbody>
</table>

Diagnostic Achievement Tests: Secondary Areas

<table>
<thead>
<tr>
<th>Key areas for SLD assessment</th>
<th>WISC-V grade 5-12, ages 6-15</th>
<th>WISC-V grade 6-8, ages 7-17</th>
<th>WISC-V grade 9-11, ages 10-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary areas:</td>
<td>Reading Comprehension</td>
<td>Reading Comprehension</td>
<td>Reading Comprehension</td>
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<tr>
<td></td>
<td>Listening Comprehension</td>
<td>Listening Comprehension</td>
<td>Listening Comprehension</td>
</tr>
<tr>
<td></td>
<td>Orthographic Processing</td>
<td>Orthographic Processing</td>
<td>Orthographic Processing</td>
</tr>
</tbody>
</table>

Key Cognitive Processing Areas for a Dyslexia Evaluation (WISC-V)

<table>
<thead>
<tr>
<th>Cognitive processing area</th>
<th>WISC-V index name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditory working memory (phonological memory)</td>
<td>Auditory Working Memory Index (AWMI)</td>
</tr>
<tr>
<td>Rapid automatization</td>
<td>Naming Speed Index (NSI)</td>
</tr>
<tr>
<td>Verbal comprehension and reasoning</td>
<td>Verbal Comprehension Index (VCI)</td>
</tr>
<tr>
<td>Processing speed</td>
<td>Processing Speed Index (PSI)</td>
</tr>
<tr>
<td>Long-term storage and retrieval</td>
<td>Storage and Retrieval Index (SRI)</td>
</tr>
<tr>
<td>Association memory (learning efficiency)</td>
<td>Symbol Translation Index (STI)</td>
</tr>
</tbody>
</table>
The WISC–V is linked with the WIAT–III and the KTEA–3

- Dyslexia Group: difficulty with immediate paired associate learning, naming speed, verbal comprehension, and working memory.
  - The mean scores for the dyslexia group were significantly ($p < .01$) lower than those of the matched control group for all primary index scores except the Processing Speed Index ($p < .05$), with largest effect sizes observed for the Working Memory Index (WMI) and the Verbal Comprehension Index (VCI).
  - Mean standard scores for the dyslexia group ranged from 89 to 93 on the primary index scores. All global composites had large effects as well. (Breaux & Lichtenberger, 2016)

WISC-V and SLD Evaluation

- 5 Factor model to help identify processes related to Reading, Math, and Writing
- Quantitative Reasoning highly predictive of academic success
- Visual and Auditory presentation of stimuli for working memory
- Complimentary measures specifically developed for SLD assessment
  - Rapid naming
  - Visual-Verbal Associative Memory
  - Process scores to identify specific cognitive issues

Subtests/Composites Recommended for Dyslexia Testing

WISC-V:
- Verbal Comprehension Index
- Auditory Working Memory (AWMI) and Working Memory (WM)
- Processing Speed Index (PSI)
- Naming Speed Index (NSI)
- Symbol Translation Index (STI)

What about letter or number reversals?
  - Analyze rotation error scores on Block Design, Coding, and Symbol Search

KTEA3 and Measuring Orthographic Processing

- The KTEA-3 Orthographic Processing Composite (SP + LNF + WRF) subtests involve processing orthographic representations by retrieving them from LTM (Spelling) or recognizing/naming them with automaticity (WRF+ LNF).
  - In this way, it involves both the receptive (reading) and expressive (spelling) components of orthographic processing.
  - The Orthographic Processing Composite score produced large effect sizes for the SLD and language disorder clinical groups.

Orthographic Processing
- Spelling
- Letter Naming Facility
- Word Recognition Fluency

Reading-Related Subtests and Composites

- Sound-Symbol
  - Phonological Processing
  - Nonsense Word Decoding
- Reading Fluency
  - Word Recognition Fluency
  - Decoding Fluency
  - Silent Reading Fluency

Anise Flowers, Ph.D.
Pearson Clinical Assessment
Oral Language Subtests and Composites

Oral Fluency
   Associational Fluency
   Object Naming Facility

Oral Language
   Associational Fluency
   Listening Comprehension
   Oral Expression

KTEA-3

Subtests/Composites Recommended for Dyslexia Testing

KTEA-3:
Orthographic Processing Composite – Spelling, Word Recognition Fluency, and Letter Naming Facility

Associational Fluency subtest

Sound-Symbol Composite – Phonological Processing and Nonsense Word Decoding

Letter Checklist Directions

The Letter Checklist includes uppercase and lowercase letters of the English alphabet. The purpose of this checklist is to evaluate an examinee’s ability to name all the letters of the alphabet and/or give their sounds. Certain letters, such as and a, are shown more than once in different line styles in order to assure that each of these letters is named correctly. There are no normative scores associated with this subtest. Following standard administration procedures is not required.

The Letter Checklist materials are reproducible. If you choose to print the lowercase and uppercase letters on a double-sided letter card, use paper with sufficient thickness to prevent letter on the other side from showing through (which could make letter recognition more difficult for the child).

Directions: Tell the examinee that you will show him or her some letters that are all lowercase or all uppercase, as appropriate. You may ask the examinee to provide the letter name, letter sound, or both. Consider recording one dot in the response box for each correct response with no pause or hesitation, which would give a rough indication of the speed of response.

Letter Checklist

KTEA-3 Letter Checklist: Lowercase

Letter Checklist

Behavioral Observations

<table>
<thead>
<tr>
<th>Error</th>
<th>Description</th>
<th>Checkmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Confusion of sounds (e.g., M/A)</td>
<td>X</td>
</tr>
<tr>
<td>2.</td>
<td>Confusion of letters (e.g., K/R)</td>
<td>X</td>
</tr>
</tbody>
</table>

Letter Checklist

G M Q E
I U J R
Y L C K

Letter Checklist

Anise Flowers, Ph.D.
Pearson Clinical Assessment
**PAL-II**

**Process Assessment of the Learner**

Virginia Beringer, Ph.D.

An integrated assessment and intervention package

---

### Reading Subtests

<table>
<thead>
<tr>
<th>Domain</th>
<th>Subtest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phonological Decoding</td>
<td>Pseudoword Decoding</td>
</tr>
<tr>
<td></td>
<td>Accuracy &amp; Fluency</td>
</tr>
<tr>
<td>Morphological Decoding</td>
<td>Find the True Fixes</td>
</tr>
<tr>
<td></td>
<td>Morphological Decoding Accuracy and Fluency (anchored to accuracy levels)</td>
</tr>
<tr>
<td>Silent Reading Fluency</td>
<td>Accuracy and Fluency (anchored to accuracy levels)</td>
</tr>
</tbody>
</table>

### Writing Subtests

<table>
<thead>
<tr>
<th>Domain</th>
<th>Subtest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handwriting</td>
<td>Alphabet Writing</td>
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<tr>
<td></td>
<td>Copying Task A</td>
</tr>
<tr>
<td></td>
<td>Copying Task B</td>
</tr>
<tr>
<td>Orthographic Spelling</td>
<td>Word Choice</td>
</tr>
<tr>
<td>Narrative Compositional Fluency</td>
<td>Compositional Fluency</td>
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<tr>
<td>Expository Note Taking and Report Writing</td>
<td>Expository Note Taking and Report Writing</td>
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<td></td>
<td>Cross-Genre Compositional and Expository Writing</td>
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</table>

### Reading-Related Subtests

<table>
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<tr>
<th>Domain</th>
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</thead>
<tbody>
<tr>
<td>Orthographic Coding</td>
<td>Receptive Coding</td>
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<td>Expressive Coding</td>
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<tr>
<td>Phonological Coding</td>
<td>Rhyming</td>
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<td></td>
<td>Syllables</td>
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<td></td>
<td>Phonemes</td>
</tr>
<tr>
<td></td>
<td>Rimes</td>
</tr>
<tr>
<td>Morphological/Syntactic Coding</td>
<td>Are They Related?</td>
</tr>
<tr>
<td></td>
<td>Does It Fit?</td>
</tr>
<tr>
<td></td>
<td>Sentence Structure</td>
</tr>
<tr>
<td>Verbal Working Memory</td>
<td>Letters</td>
</tr>
<tr>
<td></td>
<td>Words</td>
</tr>
<tr>
<td></td>
<td>Sentences: Listening</td>
</tr>
</tbody>
</table>

### Reading-Related Subtests (cont.)

<table>
<thead>
<tr>
<th>Domain</th>
<th>Subtest</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAN/RAS</td>
<td>RAN–Letters</td>
</tr>
<tr>
<td></td>
<td>RAN–Letter Groups</td>
</tr>
<tr>
<td></td>
<td>RAN–Words</td>
</tr>
<tr>
<td></td>
<td>RAS–Words and Digits</td>
</tr>
<tr>
<td></td>
<td>Oral Motor Planning</td>
</tr>
<tr>
<td></td>
<td>Finger Sense</td>
</tr>
<tr>
<td></td>
<td>Finger Localization</td>
</tr>
<tr>
<td></td>
<td>Finger Recognition</td>
</tr>
</tbody>
</table>

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Learning to read & write requires children to code into memory written words, and then relate units of these written words to corresponding units of spoken words.

The relationship between a sound and a written symbol.
Orthographic Coding - Receptive Coding

- Ability to code whole written words into memory and then to segment each word into units of different size.
- Child reads a written word from a stimulus book then
  - without looking at the word, decides whether:
    - whole words,
    - single letters,
    - or letter groups,
  correspond to the letters in words coded in memory

What is Dysgraphia?

- Best defined as a neurodevelopmental disorder manifested by illegible and/or inefficient handwriting due to difficulty with letter formation.
- Result of deficits in graphomotor function (hand movements used for writing) and/or storing and retrieving orthographic codes (letter forms) (Berninger, 2015).
- Secondary consequences may include problems with spelling and written expression.
- The difficulty is not solely due to lack of instruction and is not associated with other developmental or neurological conditions that involve motor impairment.

What is Dysgraphia?

- Dysgraphia is related to dyslexia as both are language-based disorders.
- Dyslexia = impairment is with word-level skills (decoding, word identification, spelling).
- Dysgraphia = written language disorder in serial production of strokes to form a handwritten letter.
- Involves both motor skills and language skills—finding, retrieving and producing letters, which is a subword-level language skill.
- The impaired handwriting may interfere with spelling and/or composing, but individuals with only dysgraphia do not have difficulty with reading (Berninger, Richards, & Abbott, 2015).

TX Dyslexia Handbook (unchanged)

Areas for Assessment

- Academic Skills
  - Letter formation
  - Handwriting
  - Word/sentence dictation (timed and untimed)
  - Copying of text
  - Written expression
  - Writing fluency (both accuracy and fluency)
- Cognitive Processes
  - Memory for letter or symbol sequences (orthographic processing)

Possible Additional Areas

- Phonological awareness
- Phonological memory
- Working memory
- Letter retrieval
- Letter matching


Efficacy of Intervention

It has been shown in multiple empirical studies that a large proportion of students at risk for reading difficulties, as well as students with severe reading disabilities, can develop and maintain normalized reading skills when provided with the right kind of intervention.

--- Kilpatrick, 2015
### Linking Assessment to Intervention

- Requires good instruments
- Well trained clinicians
- Well trained teachers and special educators

**A mechanism in place for bringing data together to problem-solve in an attempt to offer the most effective instruction and interventions to children.**


### Cognitive Skills related to Reading Abilities

- Phonemic Awareness
- Verbal Reasoning/Vocabulary (Comprehension)
- Rapid Automatic Naming (Fluency)
- Working Memory (Decoding)
- Processing Speed (Fluency, Comprehension)
- Associative Memory (Decoding)

- All inform content and delivery of instruction

### Reading Intervention/Instructional Practices

**MOST IMPORTANT IDEA:**

- Know what you are dealing with
  - Review all data on child (parent and teacher reports, writing samples, state test results, observations, comprehensive assessment results, behavior ratings, etc.) to determine what type of READING DISORDER
  - Enlist assistance from Student Support Teams (SST’s) for expertise (reading coaches, reading specialists, reading experts, etc.) to align intervention plan with the child’s specific needs and strengths

### Intervention Types

- **Differentiate between Direct Interventions (remediation) and Accommodations**
- **Intervention:** any technique, product, or approach that intends to address directly an identified area of weakness through remediation
- **Accommodations:** any technique or support that intends to alleviate the symptomatology associated with an identified area of weakness (e.g., circumventing the impact of a processing speed weakness via extended time - - the symptom is not “Gs deficit” – that's the problem; the symptom is “unfinished assignments” - - when you extend time you alleviate the symptom and assignments are completed.


### Examples of Links to Intervention Tools

(Pearson or distributed partner)

1. Intervention Guide for Learning Disability (LD) Subtypes
2. Process Assessment of the Learner (PAL) Research-Based Reading and Writing Lessons
3. KTEA–3 teaching objectives and intervention statements (complete error analyses)
4. WIAT–III intervention goal statements (complete error analyses)
5. SPELL-Links/Class-Links

### Intervention Guide for LD Subtypes

- Evaluates patterns of performance that are consistent with research-supported LD subtypes
- Summarizes how a child fits each subtype
- Provides a description of intervention characteristics & recommendations of research-supported instructional programs
How does it work?

- Organizes data by hypothesized LD subtypes
- Determines if data is sufficient and consistent with one of the hypothesized subtypes

Intervention Guide for LD Subtypes

Purpose: What it is and isn’t

- Provides targeted intervention suggestions based on research-supported LD subtypes.
- Does not identify or diagnose SLD
- Does not address difficulties attributed to SLD exclusionary criteria (e.g., sensory impairment, intellect. disability, ELL, emotional/behavioral issues)

Intervention Guide for LD Subtypes

7 reading-related subtypes

- Phonological
- Orthographic
- Mixed Phonological-Orthographic
- Language (OWL-LD, SLI, LLD)
- Comprehension
- Fluency/Naming speed
- Global

Intervention Guide for LD Subtypes

10 hallmark indicators: skills/abilities that define or differentiate between subtypes

Cognitive ability
RAN
Orthographic coding
Spelling
Listening comprehension
Phonological processing
Non-word reading
Word recognition
Reading comprehension
Reading fluency

Intervention Guide for LD Subtypes

5 ancillary indicators: skills/abilities that are used to tailor recommendations.

Handwriting legibility & speed (dysgraphia)
Verbal comprehension & reasoning
Auditory verbal WM
Processing speed
Perceptual reasoning

Intervention Guide for LD Subtypes

Step 1

Select the area(s) of intervention for the student:

- ✔ Reading
- ✔ Spelling
- Written expression (future)
- Math (future)
Intervention Guide for LD Subtypes

Step 2
Determine the relative skills & abilities for each of the hallmark and ancillary indicators
• Indicate if the skill is a weakness or a strength
• Consider 2 or more sources of information when rating each skill/ability
• Enter additional data in the open fields

Step 3: Generate Report
Report components:
- Description of subtype
- Pattern of Strengths and Weaknesses
- Suggestions for Intervention

General Approach
Naming Speed (if RAN is a weakness, discuss as double-deficit)
Language Processing: Phonological Processing, Vocabulary
Basic Reading
Reading Comprehension
Reading Fluency
Spelling
Handwriting (if handwriting legibility/speed is a weakness)

Examples of Evidence-Based Programs

Intervention Guide for LD Subtypes
Essentials to remember
- The focus is intervention, not diagnosis
- The skill profile relies on judgment, not calculation
- Interventions are not guaranteed, expect some trial-and-error

Essentials to remember
Differential diagnosis is critical to developing effective interventions, but every child is ultimately a single case study. Don’t attempt to make children fit the category to which they should belong. Each one is an individual with unique strengths and needs.


Intervention Guide
Evaluate each skill/ability.
Consider two or more sources of information when determining areas of weakness. Enter additional scores or observations in the open fields as needed.

Intervention report for Meghan Green
What are the areas of Intervention?

Select Areas of Intervention:
- Reading
- Spelling

This first release of this Intervention Guide for LD Subtypes includes select subtests of reading-related learning disabilities. Additional content may be added in future releases based on customer feedback regarding the usefulness of this tool.
Examples of Evidence-based Programs

**ALPHABETIC PHONICS**
- Author: C.A., R.
- Publisher: Silver Burdett Co.
- Description: 2nd, 3rd, 4th, 5th, 6th, 7th, 8th
- Grade Range: PK-3

**ANIMATED LITERACY**
- Author: J. Smith
- Publisher: John Wiley & Sons, Inc.
- Description: 3rd, 4th, 5th, 6th, 7th, 8th
- Grade Range: PK-6

**LINDAMOOD PHONEMIC SEQUENCING (LP) PROGRAM FOR READING, SPELLING, AND SPEECH**
- Author: Lindamood, P. C., & Lindamood, P. D.
- Publisher: Percepto, Inc.
- Description: 3rd, 4th, 5th, 6th, 7th, 8th
- Grade Range: 3-9

**Mixed Phonological-Orthographic subtype**

Description of Subtype: Mixed Phonological-Orthographic

(Student’s) pattern of performance across key cognitive, language, and academic domains is similar to that of students with mixed phonological/orthographic deficits...

**Double-Deficit**

(Student’s) areas of weakness indicate a double deficit in phonological processing and naming speed. Students with double deficits in phonological processing and naming speed sometimes experience even greater reading difficulty due to difficulty with both the orthographic and phonological aspects of reading...

**Dysgraphia**

(Student’s) poor handwriting legibility and automaticity suggests that (he) may also benefit from interventions designed for students with dysgraphia, which is a disorder that affects handwriting and spelling...
Intervention Guide for LD Subtypes

Teach relationships between layers of language (phonology, orthography, morphology, syntax, semantics).

- Ask [Student] to spell groups of words with suffixes that mark tense or number. For example, include words with plural endings pronounced /ez/ (horses, pieces), /s/ (bats), or /z/ (knees) (Berninger & Fayol, 2008).

Write for communication

- After alphabet writing work, incorporate writing tasks that involve composing for an audience, such as writing a letter or sharing a story with peers (Berninger, 2012).
- Emphasize legibility and good form, not necessarily perfect penmanship. Reinforce the goal of writing as effective communication.

Interventions: Phonological Reading Disorder

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Program</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PreK–1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>K–1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Examples of Evidence-Based Intervention Programs

Table showing interventions for different age groups:

- Grade 2–Adult: This sequential multisensory program facilitates individual or small group 60–90 minute lessons in decoding and encoding, emphasizing phoneme segmentation, blending, syllabication, and vocabulary building.

- Grade K–5: Teaches phonemic awareness, sound/symbol recognition, and syllabication involving kinesthetic/tactile memory among other multisensory strategies. Strands for reading comprehension, written expression, and linguistics are optional.

Interventions: Phonological Reading Disorder

Over Age 7

<table>
<thead>
<tr>
<th>Grade</th>
<th>Program</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>K–1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PreK–1</td>
<td></td>
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</tbody>
</table>

Interventions: Phonological Reading Disorder

Under Age 7

<table>
<thead>
<tr>
<th>Grade</th>
<th>Program</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>K–1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PreK–1</td>
<td></td>
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</tr>
</tbody>
</table>

Examples of Programs:

- Grade 2–Adult: XXX Reading System
- Grade K–5: XXX Reading–Spelling Program

Interventions: Phonological Reading Disorder

Grade 2–Adult

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilson Reading System</td>
<td>Provides direct instruction with a decoding strand including phonemic awareness, sound/symbol recognition, word building, sentence comprehension, written expression, and vocabulary building.</td>
</tr>
</tbody>
</table>

Grade 3–Adult

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRA Corrective Reading</td>
<td>Reinforces low proficiency phoneme awareness, blending, and segmenting; emphasizes phoneme awareness, blending, and segmenting.</td>
</tr>
</tbody>
</table>

Grade 4–Adult

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
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</thead>
</table>

Grade 5–Adult

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
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Interventions: Phonological Reading Disorder

Grades 3-7
- Phonological Analysis and Wending/Direct Instruction Program (PHAB/DI): Word Identification Strategy Training Program (WIST)
  - Love, S. H., Greenough, T. A., & Fujisaki, L. C. (2000) Considering deficits in phonological processing and naming speed (aka Double-Deficit) small group instruction of a total of 35 hours provided as 60 minute sessions four times a week was implemented with some improvements noted excepting naming speed.
- Grades 1-7 Phonological Analysis and Blending/Direct Instruction Program (PHAB/DI); Word Identification Strategy Training Program (WIST)
  - Lovett, M. W., Steinbach, K. A., & Frijters, J. C. (2000) Considering deficits in phonological processing and naming speed (aka Double-Deficit) small group instruction of a total of 35 hours provided as 60 minute sessions four times a week was implemented with some improvements noted excepting naming speed.

Grades 2-6
- Spelling Mastery
  - U.S. Department of Education (2014, January). Explicit teaching of spelling skills (with some overall writing improvement) to individuals or whole classes in daily 15-20 minute sessions using phonemic (for sound-symbol correspondence), morphemic (for prefixes, suffixes, and word bases and segments), and whole-word strategies.
- Grades 2-6 Peer-Assisted Learning Strategies (PALS Reading)
  - U.S. Department of Education (2012, June) Improving reading fluency and comprehension through peer tutor/tutee turn-taking roles involving three activities: Partner Reading/Retelling, Paragraph Prediction and Production. Each session is 30-35 minutes long and 3-4 times per week. (PALS Math optional.)
  - Grades 9+ (14-19 y.o.)
    - Same-Language-Subtitling (SLS)
      - McCall & Craig (2009) shows improvements in reading comprehension using a 12 week, 15-20 minute per day karaoke-style intervention including repeated viewing, cloze-style worksheets and development of a subtitled multimedia file.
  - U.S. Department of Education (2010, July). Primarily for improving reading fluency and incorporating some aspects of reading comprehension, the series of programs provide texts, audio CD’s and/or software for individual student use, and enables progress monitoring.

Interventions: Phonological Reading Disorder

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Interventions: Phonological Reading Disorder

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Interventions: Phonological Reading Disorder

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SPELL-2

Word Study
- Sounds
- Letters
- Meanings

Spelling Word Study
- Encoding (spelling) and pattern-specific approach; each lesson includes oral language (speaking, listening), encoding, decoding, vocab, reading fluency, connected writing, editing written work
- Meets CCS for reading, writing, listening, speaking
- Appropriate for all students: Special Ed, Speech-Language Impaired, ELL, Title I, Dyslexia, Tiers 1, 2, 3 (strong phonological focus is especially critical for Dyslexia, SLI, ELL, LLD)
- Multi-linguistic (5 blocks)
- Integrated reading-writing-spelling

OK
PA
SEM
MOI
MK

SPELL-2
Spelling Performance Evaluation for Language and Literacy

SPELL-Links to Reading & Writing

Word Study
- Phonological Awareness (PA)
- Orthographic Knowledge (OK)
- Mental Orthographic Images (MOI)
- Semantic & Vocabulary Knowledge (SEM)
- Morphological Awareness & Knowledge (MK)

SPELL-2

K – Adult (2011)
- TE, T2, T3, especially 4th, 5th, Dyslexia, Ass.
References


Additional References

Texas Dyslexia Handbook 2018
https://tea.texas.gov/academics/dyslexia/
Melody Musgrove, Director, Office of Special Education Programs (OSEP) Memorandum to State Directors of Special Education: A response to intervention (RTI) process cannot be used to delay/deny an evaluation for eligibility under the Individuals with Disabilities Education Act (IDEA)

Office of Special Education Programs (OSEP) Dear Colleague Letter: Policy guidance on the use of the terms dyslexia, dyscalculia, and dysgraphia. October 23, 2015