Dyslexia/Reading Disability: Best Practices for Assessment and Intervention

Jarice Butterfield, Ph. D., CBIS & Stacy Tolkin, M. A., LEP

SBCSELPA Website: www.sbcSELPA.org

Note: These PPT slides are a framework for the presentation and does not represent all of the information in its entirety.
Agenda

Introduction to Reading Disabilities/Dyslexia

Section 1
- Assessment of Reading Disabilities/Dyslexia
- Scenario Activity

Section 2
- Reading Error Analysis & How Assessment Informs Intervention
- Scenario Activity
Participants will gain knowledge of:

• The laws related to Dyslexia including the Code of Federal Regulations, California Education Code, and Assembly Bill 1369

• Reading intervention research and the definition of intensive intervention.

• General assessment considerations, including considerations for English Learners

• Available resources for the assessment of reading disabilities/dyslexia

• Assessment tools both informal and formal for the following areas:
  • Primary & Secondary Reading and Writing Difficulties
  • Cognitive Abilities: Contributing Factors Areas of Processing that Impact Reading

• Conducting an error analysis based on assessment

• Recommendations for remediation and Intervention
Why is the Word “Dyslexia” the Elephant in the Room???

Introduction to Reading Disabilities/Dyslexia
What is dyslexia in the context of a reading disability?
Overview of the regulations

By Jarice Butterfield
What We Know about Struggling Readers?

Why should we care about struggling readers?

12.5 million children struggle with some aspect of reading, nearly 20% of all school age children (NCES, 2011). With regular instruction, children do not outgrow reading difficulties.

A child who is a poor reader at the end of first grade has an almost 90% chance of remaining a poor reader at the end of Grade 4 (Juel, 2008) and at least a 75% chance of being a poor reader as long as they are in school (Francis et al., 1995).
Early Intervention is Important!

- According to NICHD it takes 4 times as long to intervene and remediate a reading disability in 4th grade versus in kindergarten! (Fletcher, Lyon, et al., 2007)

- Intensive, explicit and systematic evidence-based program (EPB) of instruction is needed to remediate children identified as “at risk” for a reading disability / dyslexia.
Neuroscience of Dyslexia

Dyslexia is a neurobiological disorder with brain patterns that reflect poor phonological and orthographic processing (Shaywitz et al. 1998)

These patterns include, but are not limited to, function and structure of the left-hemisphere language regions such as the left temporo-parietal region related to phonological processing, and the left occipitotemporal region related to orthographic processing (Linkersdörfer et al. 2012)
Neuroscience of Dyslexia Continued

BRAIN PATTERNS THAT DYSLEXC
STUDENTS MAY SHOW

BRAIN PATTERNS THAT NON-
DYSLEXC STUDENTS MAY SHOW

LEFT FRONTAL REGION: Important for compensation

LEFT TEMPORO-PARIETAL REGION: Important for phonological processing and grapheme-phoneme association

LEFT OCCIPITO-TEMPORAL REGION: Important for orthographic processing
What We Know About Dyslexia

• Is neurobiological in origin

• Is characterized by accurate or fluent word recognition; poor spelling and decoding

• Is frequently caused by or associated with a deficit on phonological processing and/or orthographic processing

• Is unexpected in relations to cognitive levels of functioning
Characteristics of Dyslexia

• Inability to sound out words

• Limited sight-word vocabulary

• Listening comprehension exceeds reading Comprehension

• Limited response to instruction and intervention
Figure 3.1. A representation of Bloom and Lahey’s taxonomy of language. Developed by Nancy Cushen White and used with permission.
“(i) General. Specific learning disability means 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.”
"Dyslexia" means a specific learning disability that is neurological in origin and characterized by difficulties with accurate 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 the growth of vocabulary and background knowledge. Other characteristics include, but are not limited to, difficulty in acquiring language skills;
California Education Code 56025.5
(Continued)

inability to comprehend oral or written language; difficulty in rhyming words; difficulty in naming letters, recognizing letters, matching letters to sounds, and blending sounds when speaking and reading words; difficulty recognizing and remembering sight words; consistent transposition of number sequences, and letter reversals, inversions, and substitutions; and difficulty in replication of content.
California Education Code 56031.5

"Specific learning disability" includes dyslexia, dyscalculia, dysgraphia, auditory and visual processing disabilities, and related disorders.
California AB 1369

California Department of Education (CDE) to develop Program Guidelines by 2017-18 for dyslexia to be used to assist regular education and special education teachers and parents to identify and assess pupils with dyslexia and to plan, provide, and evaluate and improve educational services, as defined with pupils with dyslexia.

Include “phonological processing” in the description of basic psychological processes.

The Guidelines are now available at: http://www.cde.ca.gov/sp/se/ac/documents/cadyslexiaguidelines.pdf
California Education Code 56049

(a) On or before January 1, 2017, the Superintendent shall develop program guidelines for dyslexia or other reading and writing dysfunctions to be used to assist regular education teachers, special education teachers, and parents to identify, assess, plan, provide, evaluate, and improve educational services to pupils.

(b) The program guidelines shall include characteristics typical of pupils with dyslexia or other reading and writing dysfunctions, and evidence-based strategies for their remediation.
California Education Code 56049

(Continued)

(c) The Superintendent shall consult with teachers, administrators, school psychologists, and other educational professionals involved in the identification and treatment of dyslexia or other reading and writing dysfunctions.

(d) The Superintendent shall disseminate the program guidelines and provide technical assistance regarding their use and implementation to parents, teachers, administrators, other education professionals, and faculty members in teacher training programs of institutions of higher education.
California 5 CCR § 3030 (b) (10) Eligibility Criteria

“Specific learning disability means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may have manifested itself in the imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The basic psychological processes include attention, visual processing, auditory processing, phonological processing, sensory-motor skills, cognitive abilities including association, conceptualization and expression.”
California Education Code 56337.5

a) A pupil who is assessed as being **dyslexic** and meets eligibility criteria specified in Section 56337 and subdivision (j) of Section 3030 of Title 5 of the California Code of Regulations for the federal Individuals with Disabilities Education Act (20 U.S.C. Sec. 1400 and following) category of specific learning disabilities is entitled to special education and related services.

b) If a pupil who exhibits the characteristics of **dyslexia** or another related reading dysfunction is not found to be eligible for special education and related services pursuant to subdivision (a), the pupil’s instructional program shall be provided in the regular education program.
Dyslexia is a specific learning disability that is neurobiological 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.
Specific Learning Disorder

The symptoms of specific LD must have persisted for at least 6 months, even though interventions that target those difficulties were provided. Furthermore, the affected academic skills must be substantially and quantifiably below levels expected for the person’s age (SS 78 greatest diagnostic certainty) and cause interference with academic or occupational performance or with activities of daily living (based on a clinical synthesis of the individual’s history, school reports, and psychoeducational assessment).
The learning difficulties are **not accounted for by intellectual disabilities**, by uncorrected problems with visual or auditory acuity, or by lack of language proficiency, inadequate educational instruction, or psychosocial adversity. The academic domains and subskills that are impaired are specified within each of the following domains: reading (**word reading accuracy, reading rate or fluency, reading comprehension**), written expression (**spelling accuracy, grammar and punctuation accuracy, clarity or organization of written expression**), and mathematics (**number sense, memorization of arithmetic facts, calculation fluency or accuracy, accurate math reasoning**). Finally, the severity of the LD is identified.
DSM-5 further requires that the learning difficulties "manifest as a range of observable description behaviors or symptoms (Criterion A1-A6). At least one symptom must persist for a period of 6 months despite interventions targeting the symptom. A synopsis of the qualifying symptoms is presented below:

1. Inaccurate or slow and effortful word reading, frequently guesses words, or has difficulties sounding out words.
2. Difficulty understanding what is read.
3. Difficulties with spelling.
4. Difficulties with written expression (such as multiple grammatical and punctuation errors, poor paragraph organization, written expression lacks clarity).........
Diagnostic and Statistical Manual of Mental Health Disorders (DSM V)

Specific Learning Disorder (Continued)

**Mild:** Some difficulty in one or two academic domains, but mild enough that the individual may be able compensate or function well when provided appropriate accommodations or support services.

**Moderate:** "Marked" difficulties in one or more academic domains so that the individual is unlikely to become proficient without intervals of specialized and intensive teaching during the school years. Some accommodations for at least part of the day may be needed at school, home or work to complete activities accurately and efficiently.

**Severe:** Severe difficulties in learning skills affecting several academic domains, so that the individual is unlikely to learn those skills without ongoing individualized and specialized teaching for most of the school years. Even with appropriate accommodations and/or services the individual may still not be able to complete activities efficiently.
Dyslexia in the Context of Gen Ed per California Department of Education

Multi-Tiered System of Supports: Students with Dyslexia and Other Struggling Readers

- **Tier 3**: Evidence-based individualized intervention (1-3 students/teacher)
  - Ex: Sonday System
  - Intensified Progress Monitoring
- **Tier 2**: Evidence-based targeted small group intervention (3-5 students/teacher)
  - Ex: Wilson Fundations program
  - Progress monitoring
- **Tier 1**: Evidence-based general education reading program
- **All Students**: Universal screening

* CDE does not endorse any specific reading intervention.
Reading Intervention Research

Tier I
- Conduct universal screening to determine student risk levels
- Provide core research based reading program & ELD services

Tier II
- Monitor & track academic & language acquisition growth
- Research based intervention
  - Small groups
  - Progress monitoring/ data tracking

Tier III
- Referral To Special Education
- Frequent, intensive, Evidence-based intervention
  - Lower student/teacher ratio
  - Frequent progress monitoring
  - Longer duration
- Referral to Special Education

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How is “INTENSIVE” Defined?

Intensive Defined by:

- Frequency of intervention - Daily
- Duration (45-90 minutes depending on length of time intervention is provided)
- Adult to pupil ratio – 1:3 or 4 in elementary

Vaughn, et. al., 2010 “Why Intensive Interventions are Necessary For Students With Severe Reading Difficulties”

#1 factor found to impact successful RtI outcomes was EXPERIENCE OF TEACHER

Tilly & Van Der Heyden; LRP 2011
Distinguishing a Disability from a Language Difference

• Are linguistic error patterns typical of the student’s native language

• Compare patterns of errors to “like peers”

• Compare patterns of linguistic errors to other students with learning disabilities

• Compare rate of progress in targeted intervention to that of “like peers”
Examples of Common Reading and Spelling Mistakes Not Due to Dyslexia in English Learners (ELs)

Spanish L1
- Pronunciation error example not due to “dyslexia”: “drogstore” for “drugstore”
- Spelling error example not due to “dyslexia”: “rack” for “rock”, “mekin” for “making”
- Errors due to limited English knowledge: “botle” for “bottle”
SECTION 1

Assessment of Reading Disabilities/Dyslexia

By Stacy Tolkin
# Purposes for Reading/Dyslexia Assessment

<table>
<thead>
<tr>
<th>Purpose of Assessment</th>
<th>Type of Assessment</th>
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<tbody>
<tr>
<td>Universal screening to determine if student needs intervention</td>
<td>Informal</td>
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<tr>
<td>Targeted screening to determine intervention needs</td>
<td>Informal</td>
</tr>
<tr>
<td>Ongoing Progress Monitoring</td>
<td>Informal</td>
</tr>
<tr>
<td>Eligibility for special education</td>
<td>Formal and Informal</td>
</tr>
<tr>
<td>Ongoing IEP goal development and monitoring</td>
<td>Formal and / or informal</td>
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</table>
Commonly Used Standardized Measures

<table>
<thead>
<tr>
<th>Test Name</th>
<th>Age Range</th>
<th>Abilities</th>
<th>Publisher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehensive Test of Phonological Processing (CTOPP)</td>
<td>5–0 to 24–0</td>
<td>Phonological awareness (blending, decoding words, sound matching), phonological memory (memory for digits, nonword repetition), and rapid naming</td>
<td>PRO-ED</td>
</tr>
<tr>
<td>Kaufman Test of Educational Achievement (KTEA-II)</td>
<td>4–6 to 90+</td>
<td>Phonological awareness, associational fluency naming facility</td>
<td>Pearson</td>
</tr>
<tr>
<td>Lindamood Auditory Conceptualization Test, 2nd ed. (LAC-2, 2004)</td>
<td>5–0 to 18–11</td>
<td>Isolated phoneme patterns, tracking phonemes, counting syllables, tracking syllables, tracking syllables and phonemes</td>
<td>PRO-ED</td>
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<td>(continued)</td>
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</table>
Informal Assessment

Rapid Reference 5.5

Informal Assessment of Phonological Awareness

1. Word Discrimination
   I'm going to say two words and I want you to tell me whether they are the same or different. For example, if I say "star, star," you would say "same." If I say "horse, rock," you would say "different." Now you try one dog-tree.
   Additional words: sheep, sheep, bird-couch, hill-hall

2. Rhyme Recognition
   I am going to say three words and I want you to tell me the two words that end the same or rhyme. If I say: What rhymes with cat... hat or sun? You would say hat because cat and hat end the same or rhyme. Now you do one. What rhymes with fun... hat or run?
   Additional words: bed—red, red, meal—mil, milk, seat, house—horse or mouse?

3. Rhyme Production
   I'm going to say two words that rhyme. I'm going to say two words that rhyme with sea and dog.
   Additional words: hop, tan, back

4. Syllable Blending
   I am going to say the parts of a word and then say the parts together fast. (Pause about 1/2 second between parts.) If I say cup... cake, fast it would be cupcakc. Sun... shine would be sunshine. Now you do one. What is boy... ball?
   Additional words: playground, bookend, sun set, down town
Helpful Hints and Self Tests

TEST YOURSELF

CAUTION

DON'T FORGET
WJ-IV Dyslexia Profile

Section II: Scores

1. Letter/sound associations
   - phonemic awareness
   - letter-sound associations

2. Reading Fluency
   - Reading Rate
   - Text S. Reading Fluency
   - Text T. Reading Fluency
   - Text U. Reading Fluency

3. Sight Word Knowledge
   - Word Identification
   - Word Attack
   - Sight Word Knowledge

4. Phonological Knowledge
   - Phoneme deletion
   - Phoneme addition
   - Phoneme substitution

5. Writing
   - Letter-word knowledge
   - Writing fluency
   - Writing accuracy
   - Writing expression

Primary and secondary reading and writing difficulties/consensus

Section III: Summary

A. Primary and Secondary Reading, Spelling, and Writing Difficulties

B. Cognitive and Language Abilities: Possible Contributing Factors

C. Learning and Behavior: Inattentive Type

D. Attentional Indicators

Evaluation

Date: ____________________

School: ____________________
**The Big 3 Side by Side**

The Big 3 Side by Side

<table>
<thead>
<tr>
<th>Area Tested</th>
<th>WASM III Cluster/Test</th>
<th>WASM IV Cluster/Test</th>
<th>WASM V Cluster/Test</th>
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<td>Auditory Processing</td>
<td>WASM III Cluster/Test</td>
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<td>General Memory</td>
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<td>Working Memory</td>
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<td>Short-Term Working Memory</td>
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<td>Reading Comprehension</td>
<td>WASM III Cluster/Test</td>
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<td>Reading Vocabulary</td>
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<td>Writing Vocabulary</td>
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<td>Word Recognition</td>
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<td>Reading Fluency</td>
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<td>Writing Fluency</td>
<td>WASM III Cluster/Test</td>
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**Assessment Tools Used for the Assessment of Reading Disability:**

Psychological Processing Related to Academic Achievement

<table>
<thead>
<tr>
<th>Processing Areas</th>
<th>Oral Expression</th>
<th>Listening Comprehension</th>
<th>Written Expression</th>
<th>Basic Reading Skills</th>
<th>Reading Fluency Skills</th>
<th>Reading Comprehension</th>
<th>Math Calculation</th>
<th>Math Problem Solving</th>
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<td>Attention</td>
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<td>Sensory-Motor</td>
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<td>Cognitive: Conceptualization</td>
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<td>Cognitive: Expression</td>
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<td>Cognitive: Association</td>
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Interpretation Guide (see appendix for specific information):
- ● indicates strong evidence
- ○ indicates convincing evidence
- □ indicates partially convincing evidence
Assessment Considerations...

- How are basal scores established?
- WIAT III: Subtests start points are determined by grade of enrollment not reading grade level (PsychCorp, p.60)
- Less subtests on standardized assessments can be given to students in PK/K
- Do you need secondary measures?
- Assessment of English Learners (ELs)
- Effects of remediation

Primary
Reading and Writing Difficulties

LETTER SOUND
BASIC READING SKILLS
READING FLUENCY
SPELLING
PHONEME-GRAPHEME KNOWLEDGE

By Jarice Butterfield
5 Critical Components of Proficient Reading

Phonemic Awareness

Phonics

Fluency

Vocabulary

Comprehension
Letter Sound

Use informal measures to supplement the WJIV, WIAT III or KABC assessment data for low level or very young students

Letter Identification

- Case: Lower __/26  Upper __/26
- Letter Sounds: C __/21  V __/5 (short)
Basic Reading Skills

**WJIV**
- Letter-word Identification
- Word Attack

**WIAT III**
- Word Reading
- Pseudoword Decoding

**Kaufman Test of Educational Achievement, Third Edition (KTEA-3)**
- Letter & Word Recognition
- Letter Naming Facility
- Nonsense Word Decoding
Reading Fluency: Rate and Accuracy

**WJIV**
- Oral Reading
- Sentence Reading Fluency
- Sentence Reading Fluency
- Word Reading Fluency

**WIAT III**
- Oral Reading Fluency
  - Supplemental - 30 Second Window
    - Word Reading Speed
    - Pseudoword Decoding Speed
  - Rate, Accuracy, and Fluency Scaled Scores

**KTEA-3**
- Silent Reading Fluency
- Word Recognition Fluency
- Decoding Fluency
Other Reading Fluency Tools: Rate and Accuracy

Grey Oral Reading Tests-Fifth Edition (GORT-5)

- Rate
- Accuracy
- Fluency
Spelling

**WJIV**
- Spelling
- Spelling of Sounds

**WIAT III**
- Spelling

**KTEA-III**
- Spelling
Other Spelling Measures

Word Identification and Spelling Tests (WIST)

• Spelling
Phoneme-Grapheme Knowledge

**WJIV**
- Word Attack
- Spelling of Sounds

**WIAT III**
- Early Reading Skills (Grade PK-3)
  - *Information only Grades 4 and Up*
- Pseudoword Decoding

**KTEA-3**
- Nonsense Word Decoding
- Phonological Processing Associated with Fluency
Secondary Reading and Writing Difficulties

READING COMPREHENSION
(NOT DUE TO A LANGUAGE PROCESSING DEFICIT)
WRITTEN EXPRESSION

By Jarice Butterfield
Reading Comprehension

**WJIV**
- Passage Comprehension
- Reading Recall
- Reading Vocabulary

**WIAT III**
- Reading Comprehension
  - *Must start at enrolled grade level*

**KTEA-3**
- Reading Comprehension

(other) **Grey Oral Reading Tests-Fifth Edition (GORT-5)**
- Comprehension Scaled Score
Written Expression

**WJIV**
- Writing Samples
- Sentence Writing Fluency

**WIAT III**
- Sentence Composition
- Sentence Combining and Sentence Building
- Score can be misleading due to separate parts
- Essay Composition
- Manual and Quick Scoring Guide
  - Word Count and Theme Development and Text Organization
  - Focuses on fluency – 10 Minutes
Written Expression (Continued)

KTEA-3
• Written Expression

Other Measure: Test of Written Language – Fourth Education (TOWL-4)
Activity - Partner Turn and Share

1) What standardized tool do you currently use for determining eligibility?

2) How and when do you validate any weak subtest scores?
Informal Measures of Academic Assessment Related to Dyslexia/Reading Disabilities

By Jarice Butterfield
How and When to Use Informal Measures of Academic Assessment

• Use for universal screening to determine targeted areas of need in reading

• Use for pre-referral screening to determine if a student may need formal testing to determine the presence of a learning disability

• Use for ongoing benchmark tracking to determine progress made

• Use in conjunction with formal measures of reading / dyslexia to validate areas of weakness

• Use for annual assessment for IEP benchmark reporting and progress towards meeting reading goals
Phonological Awareness Informal Measures Commonly Used

- CORE Phoneme Deletion Test (grades K-3)
- CORE Phonological Segmentation Test (grades K-1)
- CORE Phoneme Segmentation Test (grades 2-12)
- Literacy Resources Inc. (LRI) - [http://www.literacyresourcesinc.com/resources/assessments/](http://www.literacyresourcesinc.com/resources/assessments/)
- QPAS – available at [www.hpedsb.on.ca/ec/services/cst/elementary/literacy/documents/November2013QPASwithFAQ.pdf](http://www.hpedsb.on.ca/ec/services/cst/elementary/literacy/documents/November2013QPASwithFAQ.pdf)
Decoding and Word Attack Informal Measures Commonly Used

• CORE Phonics Surveys
• CORE Graded High-Frequency Word Survey
• Phonics Assessment Based on Orton Gillingham by Jarice Butterfield
• San Diego Quick Assessment (both phonics and sight word recognition)
• DIBELS 6th Edition
• Read Naturally Quick Phonics Screener
• Reading A-Z Phonics Assessment
• Basic Phonics Skills Test (BPST)
Decoding and Word Attack Informal Measures Commonly Used Continued

- Texas Primary Reading Inventory (TPRI)
- Ekwall/Shanker Reading Inventory
- Dynamic Indicators of Beginning Early Literacy (DIBELS)
- Predictive Assessment of Reading (PAR)
High Frequency Word / Word Attack
Informal Measures Commonly Used

• Project Read Red Word (irregular word lists compiled by Jarice Butterfield)

• CORE High-Frequency Word Survey

• San Diego Quick Assessment

• DIBELS

• Fry Sight Word Lists

• Dolch Sight Word Lists

• Reading A-Z High Frequency Words Assessment
<table>
<thead>
<tr>
<th>Suspected Area of Difficulty</th>
<th>Recommended Tools</th>
</tr>
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<tbody>
<tr>
<td>Phonological awareness</td>
<td>LMB LAC Test; LRI Phonemic Awareness Assessment; Cool Tools Reading Assessment [<a href="https://www.literacyresourcesinc.com/resources/assessments/">https://www.literacyresourcesinc.com/resources/assessments/</a>]; Q-Pass Phonemic Awareness Test; CORE Phonemic Awareness</td>
</tr>
<tr>
<td>Phonetic Coding (Phonics)</td>
<td>OG Phonics Assessment Tool; CORE Phonics Survey; BPST Phonics Screener, Dibels; Cool Tools Reading Assessment</td>
</tr>
<tr>
<td>Orthographic Processing (automaticity of reading words – high frequency word recognition weaknesses)</td>
<td>Project Read Red Word List; CORE High Frequency Word Lists; San Diego Quick Assessment (CORE); WJIV Word Attack; WIAT Psuedo Word</td>
</tr>
<tr>
<td>Reading Fluency</td>
<td>CORE Graded Reading Assessments; Read Naturally Bench Mark Assessor or Fluency Progress Monitor; Dibels Fluency Assessing Reading Fluency by Rasinski [<a href="http://education.ucf.edu/mirc/Research/PR_El_assessing-fluency.pdf">http://education.ucf.edu/mirc/Research/PR_El_assessing-fluency.pdf</a>]</td>
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</table>
Partner Turn and Talk

What are your favorite informal reading measures for:

1) Universal screening?
2) Determining targeted intervention?
3) Ongoing Progress Monitoring?
Cognitive Abilities: Contributing Factors to Reading Disabilities/Dyslexia

- Phonological Awareness
- Orthographic Awareness
- Memory
- Rapid Naming
- Processing Speed

By Stacy Tolkin
# Phonological v Orthographic Awareness

<table>
<thead>
<tr>
<th>PHONOLOGICAL AWARENESS</th>
<th>ORTHOGRAPHIC AWARENESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>The ability to recognize that words are made up of a variety of sound units. The term encompasses a number of sound related skills necessary for a person to develop as a reader.</td>
<td>The system to form, store, and recall words from memory. Readers look at letters and words on the page and use their knowledge of sound/symbol relationships to sound out tricky words. Eventually the visual memory of this word makes it a solid memory in the brain to be called on later. A word memorized in its entirety is called a sight word. Otherwise, every word we read or write would have to be sounded out, meaning that reading and writing would take a lot longer.</td>
</tr>
</tbody>
</table>
Phonological or Orthographic?!?!?

<table>
<thead>
<tr>
<th>PC and OP</th>
<th>ACH</th>
<th>WIAT-III</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Test 7: Word Attack*</td>
<td>Word Reading*</td>
</tr>
<tr>
<td></td>
<td>Test 16: Spelling of Sounds*</td>
<td>Pseudoword Decoding*</td>
</tr>
</tbody>
</table>

**Phonological**

Phoneme Blending
Convert the phonemes into a single, unified form

**Orthography**

Grapheme Parsing
Convert a letter or letter group into a grapheme string

Phoneme Assignment
Determine what phoneme corresponds to each of the graphemes

Phonological Awareness

\((Ga:PC)\)

<table>
<thead>
<tr>
<th>Phonological Awareness (PC)</th>
<th>Auditory Processing</th>
<th>WIAT III</th>
<th>KTEA-3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>COG</strong></td>
<td><strong>Early Reading Skills</strong></td>
<td><strong>Phonological Processing</strong></td>
</tr>
<tr>
<td></td>
<td>Test 5: Phonological Processing</td>
<td>(Grades PK-3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test 12: Nonword Repetition</td>
<td></td>
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<tr>
<td><strong>Phonetic Coding</strong></td>
<td><strong>QL</strong></td>
<td><strong>Pseudoword Decoding</strong></td>
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<tr>
<td></td>
<td>Test 3: Segmentation</td>
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<tr>
<td></td>
<td>Test 7: Sound Blending</td>
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<tr>
<td></td>
<td>Test 9: Sound Awareness</td>
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</tr>
</tbody>
</table>
Phonological Awareness (Continued)

**Comprehensive Test of Phonological Processing (CTOPP-2)**

- Phonological Awareness Composite
  - Elision, Blending Words, and Sound Matching (Ages 4 – 6)
  - Elision, Blending Words, and Phoneme Isolation (Ages 7 – 24)
- Alternate Phonological Awareness Composite (Ages 7 – 24)
  - Blending Nonwords and Segmenting Nonwords
Phonological Awareness (Continued)

Lindamood Auditory Conceptualization Test Third Edition (LAC-3)

The Phonological Awareness Test 2 (PAT 2)

Test of Auditory Processing (TAPS-3)
  • Word Discrimination
  • Phonological Segmentation
  • Phonological Blending
Phonological Awareness (Continued)

Differential Ability Scales II (DAS-II)
• Phonological Processing

Feifer Assessment of Reading (FAR)
• Phonological Index
  • Phonemic Awareness*
  • Nonsenseword Decoding
  • Isolated Word Reading Fluency
  • Oral Reading Fluency
  • Positioning Sounds*
Phonological Awareness (Continued)

Clinical Evaluation of Language Fundamentals-Preschool-2 (CELF-Pre2)
- Phonological Awareness

Tests for Auditory Processing Disorders for Children (SCAN-3:C)
- Filtered Words

NEPSY II
- Phonological Processing
Orthographic Awareness

\((OP)\)

*MUST* have letters or words, not shapes, designs or pictures, otherwise more of a Processing Speed task.

<table>
<thead>
<tr>
<th>Orthographic Awareness (OP)</th>
<th>COG</th>
<th>WISC-V</th>
<th>KTEA-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test 4: Letter-Pattern Matching</td>
<td></td>
<td>Naming Speed Literacy</td>
<td>Spelling</td>
</tr>
<tr>
<td>Test 11: Number-Pattern Matching</td>
<td></td>
<td></td>
<td>Letter Naming Facility</td>
</tr>
<tr>
<td>ACH</td>
<td>Test 1: Letter-Word Identification</td>
<td>WIAT-III</td>
<td>Word Recognition Fluency</td>
</tr>
<tr>
<td></td>
<td>Test 3: Spelling</td>
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</tr>
</tbody>
</table>
Orthographic Awareness (Continued)

Jordan Left Right Reversal Test 3 (Jordan-3)

Dynamic Indicators of Basic Early Literacy Skills (DIBELS-6)

FAR
  • Orthographical Processing
# Memory

**Auditory Memory Span (Gsm:MS)**

**Short-term Working Memory (Gsm:MW)**

**Associative Memory (Glr:MA)**

<table>
<thead>
<tr>
<th>Memory (Glr and Gsm)</th>
<th>Associative Memory (Glr:MA)</th>
<th>Associative Memory</th>
<th>Associative Memory</th>
<th>Associative Memory</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>COG</strong></td>
<td><strong>WISC-V</strong></td>
<td><strong>KABC-II</strong></td>
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<td></td>
<td><strong>OL</strong></td>
<td>Immediate Symbol Translation</td>
<td>Rebus &amp; Rebus Delayed</td>
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<tr>
<td></td>
<td>Test 5: Sentence Repetition</td>
<td>Recognition Symbol Translation</td>
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<tr>
<td></td>
<td><strong>COG</strong></td>
<td><strong>Memory Span</strong></td>
<td><strong>Memory Span</strong></td>
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</tr>
<tr>
<td></td>
<td>Test 18: Memory for Words</td>
<td><strong>WISC-V</strong></td>
<td><strong>KABC-II</strong></td>
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<tr>
<td></td>
<td></td>
<td>Picture Span</td>
<td>Number Recall</td>
<td></td>
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<td></td>
<td></td>
<td>Integrated Spatial Span</td>
<td>Word Order</td>
<td></td>
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<tr>
<td></td>
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<td>Digit Span Forward</td>
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<tr>
<td></td>
<td></td>
<td><strong>Short-Term Working Memory</strong></td>
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<tr>
<td></td>
<td></td>
<td><strong>WISC-V</strong></td>
<td><strong>KABC-II</strong></td>
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<td>Digit Span Backwards</td>
<td>Word Order</td>
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<td></td>
<td></td>
<td>Letter-Number Sequencing</td>
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<tr>
<td></td>
<td></td>
<td>Integrated Sentence Recall</td>
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</tbody>
</table>
Memory (Continued)

Test of Auditory Processing (TAPS-3)
• Numbers Forward (MS) and Reversed (MW)
• Word and Sentence Memory (MS)

CTOPP-2
• Phonological Memory Composite
  • Memory for Digits (MS) and Nonword Repetition (MS)

Universal Nonverbal Intelligence Test –Second Edition (UNIT2)
• Symbolic Memory (MS/MW)
Memory (Continued)

Cognitive Assessment System – Second Edition (CAS2)
• Sentence Repetition (MS)
• Visual Digit Span (MS)
• Word Series (MS)
• Sentence Questions (MW)

Wide Range of Assessment and Learning – Second Edition (WRAML2)
• Sound Symbol (MA)
• Sound Symbol Delay (MA)
Memory (Continued)

NEPSY II

• Repetition of Nonsense Words (MS)
• Sentence Repetition (MS)
• Word List Interference (MS/MW)
• Inhibition (MW)
• Memory for Names (MA)
• Memory for Names Delayed (MA)
Memory *(Continued)*

Clinical Evaluation of Language Fundamentals – Fifth Edition (CELF-5)
  • Recalling Sentences *(MS)*

Clinical Evaluation of Language Fundamentals – Preschool-2 (CELF-Pre2)
  • Recalling Sentences *(MS)*
  • Recalling Sentences in Context *(MS)*
Rapid Naming
*Speed of Lexical Access (LA)*

**CTOPP-2**

- Rapid Symbolic Naming Composite
- Rapid Digit Naming and Rapid Letter Naming
- Rapid Non-Symbolic Naming Composite (Alternative for Ages 4-6)
- Rapid Color Naming and Rapid Object Naming
Rapid Naming (Continued)

**NEPSY-II**
- Speeded Name

**DAS-II**
- Rapid Naming

**FAR**
- Rapid Automatic Naming
- Verbal Fluency
Rapid Naming (Continued)

**CAS2**
- Expressive Attention

**RAN/RAS: Rapid Automatized Naming and Rapid Alternating Stimulus Tests**
- Colors
- Letters
- Numbers
- Objects
### Processing Speed (Gs)

<table>
<thead>
<tr>
<th>Processing Speed (Gs)</th>
<th>COG:</th>
<th>WISC-V:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test 4: Letter-Pattern Matching</td>
<td></td>
<td>Coding</td>
</tr>
<tr>
<td>Test 17: Pair Cancellation</td>
<td>Symbol Search</td>
<td></td>
</tr>
<tr>
<td>Test 11: Number-Pattern Matching</td>
<td>Cancellation</td>
<td></td>
</tr>
</tbody>
</table>

**NEPSY-II**
- Design Fluency

**FAR**
- Visual Perception
Processing Speed *(Continued)*

**DAS-II**
- Speed of Information Processing

**CAS2**
- Planned Codes
- Number Detection
- Planned Matching Numbers
- Receptive Attention
Activity – Part I

Determine the Contributing Cognitive Factors (areas of weak processing) for Jimmy:

- Phonological Awareness
- Orthographic Awareness
- Memory
- Rapid Automatic Naming
- Processing Speed
SECTION 2
READING ERROR ANALYSIS AND HOW ASSESSMENT INFORMS INTERVENTION
Oral Reading Error/Miscue Analysis

• Omissions
• Insertion
• Substitution
• Gross mispronunciation of a word
• Hesitation
• Inversion
• Disregard of punctuation
Miscues in Reading are Significant when...

- The meaning of the sentence is altered and the student does not correct the miscue.
- A nonword is used in place of a word
- A partial word is substituted for the word or phrase
- A word is pronounced for the student
Miscues are not significant when...

• The meaning of the sentences undergoes no change or minimal change
• They are self-corrected by the student
• They are applicable in the student’s dialect
• They are later read correctly in the same passage
Error Analysis of Assessment Results

**Step 1:** Documentation of the *types of miscues/errors* seen during both formal and informal assessment

For example:

- Student knew the letter sounds of b, p, d, w, s, n, m and t
- Student knew short vowel sounds of a, e, and o
- Student could decode 80% of CVC words but missed the words “bud” substituted “bad” and “did” substituted and “ded”
- Student could decode nonsense words with known letter sounds only
- Student could not decode irregular, high frequency words that could not be phonetically decoded
- Student inserted the word “the”
- Student inverted the letter “b” for “d”


Error Analysis of Assessment Results (Continued)

**Step 2:** Analysis of the error patterns seen in relation to the *processing deficits* - noted if this data is available

**Step 3:** Statement of *hypothesis* about why student is making the patterns of errors seen (is it is weakness in phonological processing or orthographical processing and underlying processing issues)
Sample Statement:
Student did very well with all areas of phonological processing. Her area of relative weakness was in deleting occasional sounds such as she read “be” for “bet”. She was able to phonetically decode most Consonant-Vowel-Consonant (CVC) words such as “bed”, “cat” and “top”. When reading words, Student seemed to be impulsive at times, not taking the time to read words she did not know. Timed tests seemed to increase her impulsivity.
Sample Statement Continued:
She did not self-correct even when reading in context. Her greatest area of struggle was in reading irregular high frequency words that could not be sounded out such as “the” or “would”. It appears her greatest area of weakness is in orthographical processing as she is not able to visually memorize words as a whole or as a gestalt. This is most likely due to her processing weakness seen in the area of working memory.
# Academic Assessment Error Analysis

<table>
<thead>
<tr>
<th>PROCESSING DEFICIT</th>
<th>ERROR PATTERNS</th>
<th>SUGGESTED REMEDIATION</th>
</tr>
</thead>
</table>
| **Phonological Awareness** | ▪ Inability to repeat a rhyme  
▪ Inability to read a word when one letter is removed and another letter is substituted (ran, can, man)  
▪ Weak letter-sound correspondence  
▪ Weak blending sounds to read the word – student sounds out c-a-n and says “came”  
▪ Student reads the beginning of the word and guesses at other parts – student reads “bet” for “beast” | ▪ Multi-sensory, systematic, part to-whole instruction with emphasis on matching auditory input with tactile and visual input  
▪ Early Primary years: OG based programs - LMB Lips, Project Read Phonology, Wilson Reading  
▪ 3rd Grade on: OG based programs - Sonday, Barton or non OGLMB program Seeing Stars |
## Academic Assessment Error Analysis
*(Continued)*

<table>
<thead>
<tr>
<th>PROCESSING DEFICIT</th>
<th>ERROR PATTERN ANALYSIS</th>
<th>SUGGESTED REMEDIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Memory</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Auditory memory</td>
<td>- Student does not know letter-sound correspondence</td>
<td>- Daily Visual to auditory frequent review of high frequency sight words using Apps such as Dolch Word drills, etc.</td>
</tr>
<tr>
<td>- Short term memory</td>
<td>- Reads “d” for “b” or “short a sound for e”</td>
<td>- Multi-sensory, systematic, part to-whole instruction with emphasis on matching visual input with tactile and auditory input</td>
</tr>
<tr>
<td>- Associative memory</td>
<td>- Student is unable to read any irregular sight words</td>
<td>- Fast Forward or Earobics or other computer based programs with emphasis on strengthening auditory processing</td>
</tr>
<tr>
<td></td>
<td>- Student attempts to phonetically decode all high frequency words that are regular and can be decoded even though they have seen them many times</td>
<td></td>
</tr>
</tbody>
</table>

By Jarice Butterfield, Ph. D.
# Academic Assessment Error Analysis (Continued)

<table>
<thead>
<tr>
<th>PROCESSING DEFICIT</th>
<th>ERROR PATTERN ANALYSIS</th>
<th>SUGGESTED REMEDIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processing Speed</td>
<td>▪ Student has very low reading fluency</td>
<td>▪ Repeated drills using programs such as Fast Forward, or other brain training apps or programs</td>
</tr>
<tr>
<td>▪ Cognitive speed</td>
<td>▪ Student has poor comprehension due to slow reading fluency</td>
<td>▪ Repeated, daily practice of reading out loud at the student’s readability level</td>
</tr>
<tr>
<td>▪ Perceptual speed</td>
<td>▪ Student can read words if allowed extra time</td>
<td></td>
</tr>
<tr>
<td>Rapid Naming (RAN)</td>
<td>▪ Student struggles to state letter sounds when shown visual</td>
<td>▪ Repeated drills using programs such as Fast Forward, or other brain training apps or programs</td>
</tr>
<tr>
<td></td>
<td>▪ Student can read words if allowed extra time</td>
<td>▪ Daily Visual to auditory frequent review of high frequency sight words using Apps and reading aloud daily</td>
</tr>
<tr>
<td></td>
<td>▪ Student can sound out words very slowly but has trouble bringing back to the whole as it is labored</td>
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</tbody>
</table>
### Academic Assessment Error Analysis (Continued)

<table>
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<th>PROCESSING DEFICIT</th>
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<th>SUGGESTED REMEDIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Visual Processing</strong></td>
<td>▪ Letter reversals in spelling and/or reading</td>
<td>▪ Multi-sensory, systematic, part-to-whole instruction with emphasis on matching visual input to auditory and tactile input</td>
</tr>
<tr>
<td>▪ Visual discrimination</td>
<td>▪ High frequency word reading</td>
<td>▪ Use of Orton Gillingham based programs such as Project Read Phonics or LMB Lips if there are letter reversals due to visual discrimination issues</td>
</tr>
<tr>
<td>▪ Orthographic Awareness</td>
<td>▪ Labored nonsense or unfamiliar word reading due to inability to recognize word parts or linguistic patterns</td>
<td>▪ Sunday, Barton or other OG based programs that are strong in visual areas – 1st choice in LMB Seeing Stars</td>
</tr>
<tr>
<td></td>
<td>▪ Student can read high frequency words that are “regular or decodable” but not words that are “irregular” such as “the”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Student makes letter reversals or whole word</td>
<td></td>
</tr>
</tbody>
</table>
Effective Approaches for Teaching Students with Dyslexia

*California Education Code* Section 56335(a) defines educational services for students with dyslexia as follows:

‘educational services’ means an
✓ evidence-based,
✓ multisensory,
✓ direct,
✓ explicit,
✓ structured,
✓ and sequential approach to instructing pupils who have dyslexia.”
Remediation of Orthographic Processing

**Students need *direct instruction strategies that increase visual memory of words as “gestalts”***

- Teach high frequency irregular words first as they cannot be blended and sounded out with use of “phonics” (Project Read Red Words)
- Teach high frequency irregular words using visualization combined with oral and tactile strategies to increase memory
- Teach all high frequency words through multi-sensory frequent repetition strategies (tap and say each letter, close eyes and visualize word, etc.)
- Use computer programs or Apps such as “Dolch Sight Words” – note these include irregular and regular high frequency words
- Practice spelling high frequency words through repeated dictation
Remediation of Phonological Awareness

**Students need direct instruction in phonological processing strategies –how do sounds relate to printed words**

- 5-18 hours of total instruction time based on need
- Sequence of learning:
  - auditory rhyming songs
  - sentence segmentation
  - syllable segmentation & blending
  - onset rime blending & segmentation
  - blending and segmentation of individual phonemes in words
Remediation of Phonetic Blending

Students need *direct instruction phonics strategies* –blending sounds into words fluently

- Teach letter sounds through multi-sensory strategies such as use of sand trays, glue cards, visualization, etc.
- Begin with short vowel sounds and consonants that can be maintained such as /s/ and /m/ (see Orton Gillingham sequence)
- Teach how to segment and blend phonemes in words with letters using multi-sensory strategies (tiles, finger blending, tapping with fist, visualizing, etc.)
- Teach spelling simultaneously through use of tiles, finger spelling, etc.
Remediation of Multi-syllabic Word Decoding

**Students need direct instruction in linguistic structures such as syllabication in English**

- Students need direct instruction in concept of syllabication – open and closed syllable, syllabication patterns VCV, VCCV, VCCCV, VCLE, etc.
- Use of manipulatives such as tiles, blocks, finger blending, fist tapping or visualization to sound out each letter and then bring back to the whole for each syllable and,
- Blending each syllable together to form the multi-syllabic word
- An alter strategy is to “chunk” words into parts such as separation of pre fixes, suffixes from root words, etc.
Activity – Part II

Targeted interventions based on weakness demonstrated

• Make recommendations for targeted, specific recommendations for student in the given scenario, to include frequency, duration, adult to student ratio, etc.
Thank You!

Contact Us...

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