Dyslexia: A Case Study
Adam Scheller, Ph.D.
Pearson Clinical Assessment

Agenda

• What is Dyslexia?
  • Understanding:
    1. Symptoms
    2. Causes/Correlates
    3. Risk Factors
  • A Model for Dyslexia Assessment
    • Screening
    • Diagnostic Identification
    • Intervention Possibilities
    • Thoughts on Progress Monitoring
  *In the context of this presentation assessments published by Pearson will be discussed.

Defining Dyslexia
(IDA, 2002; Cassidy-Mikulski Senate Resolution 275, 2015)

1. ...a specific learning disability that is neurobiological in origin.
2. ...an unexpected difficulty in reading for an individual who has the intelligence to be a much better reader...
3. ...language based...
4. ...characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities...
5. ...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...
6. ...secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge...

Dyslexia points

• Dyslexia is unexpected*
• Often (not always) present with an uneven cognitive profile
  • Basic skill deficits in light of strengths (such as reasoning, problem solving, vocabulary, and listening comprehension).
• Approximately 20% of the population shows symptoms of dyslexia.
• Dyslexia is a language-based reading disorder that often results in lifelong impact to an individual.

Hybrid Model

• School of thought: more is better
  • Identifications using a single criterion are prone to measurement error and show poor stability over time.
  • At minimum use more than one measure for the same construct…rinse and repeat.

• A hybrid model of dyslexia identification considers:
  1. Multiple sources of information
  2. The degree to which a student responds to effective instruction and/or intervention


• Poor response to instruction is considered an important symptom!
  • But it’s not enough

• Pre-reader Symptoms
  • alphabet writing, letter identification, and/or phonics (letter-sound correspondence).

• Reader Symptoms
  • decoding pseudowords, word reading, reading fluency (oral reading fluency, in particular), spelling, and written expression.
  • In addition, reading comprehension is poor relative to listening comprehension

Dyslexia: A Case Study
Adam Scheller, Ph.D.
Pearson Clinical Assessment

• Cognitive processing weaknesses
  • Not as easily observed.
  • Symptoms either attributed to or related to one/several of these processes
  • Phonological processing, RAN, Auditory WM considered key for dyslexia evaluation (IDA, 2016)


Consider Possible Strengths

• Possible strengths in:
  • Fluid reasoning and problem solving
  • Oral language (including listening, speaking, vocabulary, and grammar)
  • Math
  • The development of interventions/strategies should consider an individual’s cognitive processing strengths.

Why Use A Screener?

• Large numbers of children must be evaluated, to meet district/state criteria
• Referral process is not clearly established
  • Referral process has a poor “hit rate”
• Intervening early has benefits for prognosis
  • Large achievement gap between students with and without dyslexia is evident in kindergarten and first grade, and this gap persists through high school.
  • These findings strongly advocate for early identification and intervention for students at risk for dyslexia in order to close the achievement gap and prevent persistent academic failure.

Ferrer et al. (2015)

Limitations of a Screener

• Can not be used to provide a diagnosis
• Is not designed to identify the degree of impairment
• Can not be used to identify pattern of strengths or weaknesses
• What question are you trying to answer? Does this level of data suffice?

aimswebPlus and Shaywitz DyslexiaScreen

• What happens if my district already uses aimswebPlus?
• Several options
• Young children (K-1)
  • Consider using aimswebPlus for Benchmarking
  • Use SDS after 6-8 weeks of school to allow teacher time to get to know student
  • Use aimswebPlus for progress monitoring.

Case Study
**Dyslexia: A Case Study**

Adam Scheller, Ph.D.

Pearson Clinical Assessment

- 5 yrs. old
- Male
- 1st Grade
Dyslexia: A Case Study
Adam Scheller, Ph.D.
Pearson Clinical Assessment

Case Study SDS Individual Report

At Risk vs. Not at Risk

• At Risk for Dyslexia considerations may 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 evaluation.

• A student classified as Not At Risk for Dyslexia
  • Language and academic skills may be monitored and supported within the general academic setting.
Case Findings

<table>
<thead>
<tr>
<th>Skill Area</th>
<th>KTEA-3 Measures</th>
<th>KTEA-3 Results</th>
<th>WRMT-III Measures</th>
<th>WRMT-III Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letter Skills &amp; Knowledge</td>
<td>Letter/Word Recognition</td>
<td>SS=75</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Letter Naming Facility</td>
<td>SS=73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Word Reading</td>
<td>Word ID</td>
<td></td>
<td>SS=72</td>
<td></td>
</tr>
<tr>
<td>Receptive Vocabulary</td>
<td>Reading Vocabulary</td>
<td>SS=88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid Naming</td>
<td>Rapid Automatic Naming</td>
<td>SS=86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phonological Awareness</td>
<td>Phonological Processing</td>
<td>SS=83</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dyslexia: A Case Study
Adam Scheller, Ph.D.
Pearson Clinical Assessment

Academic Assessment

Key areas for dyslexia assessment

<table>
<thead>
<tr>
<th>KTEA-3 grades PK-12 ages 4-25</th>
<th>PAL-II grades K-6</th>
<th>WAT-III grades PK-12 ages 4-50</th>
<th>WRMT-III grades K-12 ages 4-79</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading Comprehension</td>
<td>Reading Comprehension</td>
<td>Does it fit?</td>
<td>Reading Comprehension</td>
</tr>
<tr>
<td>Listening comprehension</td>
<td>Listening Comprehension</td>
<td>Sentences: Listening</td>
<td>Listening Comprehension</td>
</tr>
<tr>
<td>Orthographic processing</td>
<td>Orthographic Processing</td>
<td>Composite</td>
<td>Receptive Coding</td>
</tr>
</tbody>
</table>

Copyright 2016. Pearson. All rights reserved
## Dyslexia: A Case Study
Adam Scheller, Ph.D.
Pearson Clinical Assessment

### Case Findings

<table>
<thead>
<tr>
<th>Skill Area</th>
<th>KTEA-3 Measures</th>
<th>KTEA-3 Results</th>
<th>WRMT-III Measures</th>
<th>WRMT-III Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading Comprehension</td>
<td>Reading Comprehension</td>
<td>SS=86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Listening Comprehension</td>
<td>Listening Comprehension</td>
<td>SS=95</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Dyslexia Index Score

- KTEA-3 Dyslexia Index for Grades K-1 includes three subtests:
  - Phonological Processing
  - Letter Naming Facility
  - Letter & Word Recognition

<table>
<thead>
<tr>
<th>Test or index score</th>
<th>Subtests/Items</th>
<th>Mean split-half reliability</th>
<th>KTEA-3 Dyslexia Index mean (SS)</th>
<th>Matched control mean (SS)</th>
<th>Effect size</th>
<th>Estimated administration time</th>
</tr>
</thead>
<tbody>
<tr>
<td>KTEA-3 Dyslexia Index</td>
<td>Phonological Processing + Letter Naming Facility + Letter &amp; Word Recognition</td>
<td>0.72</td>
<td>76.4 (7.4)</td>
<td>94.2 (12.8)</td>
<td>1.79</td>
<td>20 minutes</td>
</tr>
</tbody>
</table>

### Case Findings: KTEA-3 Dyslexia Index Score = 73

### Cognitive Assessment

<table>
<thead>
<tr>
<th>Cognitive processing area</th>
<th>WISC-V index score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditory working memory (phonological memory)</td>
<td>Auditory Working Memory Index (AWMI)</td>
</tr>
<tr>
<td>Rapid automatic naming</td>
<td>Naming Speed Index (N5)</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 (Pc)</td>
</tr>
<tr>
<td>Long-term storage and retrieval</td>
<td>Storage and Retrieval Index (SRI)</td>
</tr>
<tr>
<td>Associative memory (learning efficiency)</td>
<td>Symbol Translation Index (STI)</td>
</tr>
</tbody>
</table>
### Case Findings

<table>
<thead>
<tr>
<th>Cognitive Processing Area</th>
<th>WISC-V Measures</th>
<th>WISC-V Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditory Working Memory</td>
<td>Auditory Working Memory Index Score</td>
<td>SS=87</td>
</tr>
<tr>
<td>Rapid Automatic Naming</td>
<td>Naming Speed Index</td>
<td>SS=79</td>
</tr>
<tr>
<td>Verbal Comprehension and Reasoning</td>
<td>Verbal Comprehension Index</td>
<td>SS=88</td>
</tr>
<tr>
<td>Other Strengths (?)</td>
<td>Fluid Reasoning Index</td>
<td>SS=89</td>
</tr>
<tr>
<td></td>
<td>Perceptual Reasoning Index</td>
<td>SS=94</td>
</tr>
</tbody>
</table>

### Four Intervention Examples

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
4. WIAT–III intervention goal statements

### Group question

- What would you recommend based on these assessment findings?
- What could help this 1st grader succeed?
What’s the story about Age/Grade Equivalents? How are they created?

- It’s simply the median score of all the students at that particular point in time.
- E.g., of all the students in the 3rd month of grade 5, we took the absolute middle student’s score as the 5:3 grade equivalent!
- Grade: 5:3 = Grade 5, 3rd month in
- Age: 12:10 = 12 years, 10 months old

Thinking About Age/Grade Equivalents: Common Scenarios

- Susan was given the WIAT–III in November, and again a year later. The first test yielded a grade equivalent of 4:5; the second test yielded a grade equivalent of 5:1.
  
  **What does this tell us?**
  
  - Jason was given the WIAT – III in September, and again a year later. His first grade equivalent was 2:3; the second was 3:2.
  
  **What does this tell us?**
  
  **Can we compare Susan’s progress to Jason’s?**

How NOT to Use Age/Grade Equivalents

- You can not use equivalents to discuss progress made between tests!
  
  **Why?** Age & Grade Equivalents don’t use an equal-interval scale!
  
  - We learn different amounts of information at the start of a grade than at the end of a grade
  
  - We learn different amounts of information in earlier grades than in later ones
If using standardized testing to help inform progress monitoring… there is a better way!!

What is a Growth Scale Value (GSV)?

- Equal interval scale
- Measure ability on a developmental continuum
- Compare performance over time
  - Same measure
- Measure growth and track individual progress
  - Evaluate interventions

How about Standard Scores and Percentile Ranks?

Developmental Change
### Interpretation Scenario 1

<table>
<thead>
<tr>
<th>Scale</th>
<th>Standard Score Time 1</th>
<th>Standard Score Time 2</th>
<th>GSV Time 1</th>
<th>GSV Time 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letter/Word Recognition</td>
<td>79</td>
<td>85</td>
<td>492</td>
<td>520</td>
</tr>
<tr>
<td>Letter Naming Facility</td>
<td>75</td>
<td>75</td>
<td>482</td>
<td>515</td>
</tr>
</tbody>
</table>

### Interpretation Scenario 2

<table>
<thead>
<tr>
<th>Scale</th>
<th>Standard Score Time 1</th>
<th>Standard Score Time 2</th>
<th>GSV Time 1</th>
<th>GSV Time 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading Comprehension</td>
<td>85</td>
<td>79</td>
<td>427</td>
<td>460</td>
</tr>
</tbody>
</table>

### Interpretation Scenario 3

<table>
<thead>
<tr>
<th>Scale</th>
<th>Standard Score Time 1</th>
<th>Standard Score Time 2</th>
<th>GSV Time 1</th>
<th>GSV Time 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word Reading</td>
<td>90</td>
<td>75</td>
<td>492</td>
<td>492</td>
</tr>
<tr>
<td>Pseudo-word Decoding</td>
<td>85</td>
<td>72</td>
<td>482</td>
<td>475</td>
</tr>
</tbody>
</table>
Thanks for participating!!

Adam Scheller, Ph.D.
adam.scheller@pearson.com
Senior Educational Consultant

ALWAYS LEARNING

www.pearsonclinical.com
www.pearsonclinical.ca