

# A Model for Dyslexia Screening

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**Screening and Monitoring Student Reading: A Process for Dyslexia Screening**




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## Agenda and Disclosure

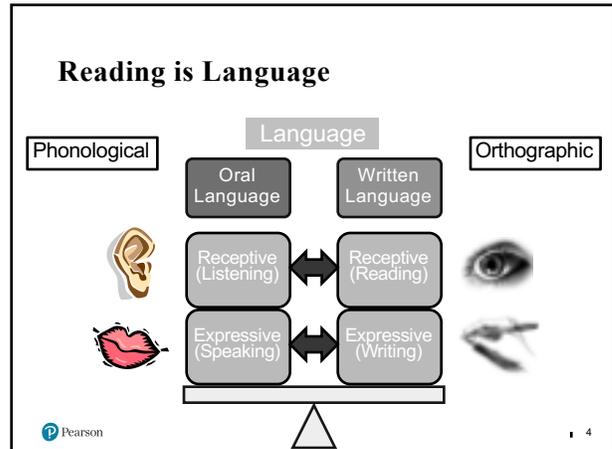
- What is Reading?
- Therefore... what is Dyslexia?
- State legislation
- How do we assess Dyslexia?
  - Best practices for what/how to assess
  - Screening
  - Monitoring Progress/Treatment Effectiveness
- A look at how aimswebPlus fits in this model.

Both Adam Scheller and Suzanne Wendt are employees of Pearson (financial disclosure), publisher of the assessments discussed in today's webinar.



## What is Reading?

*Investigating "typical" to find what's "atypical"*

## 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.



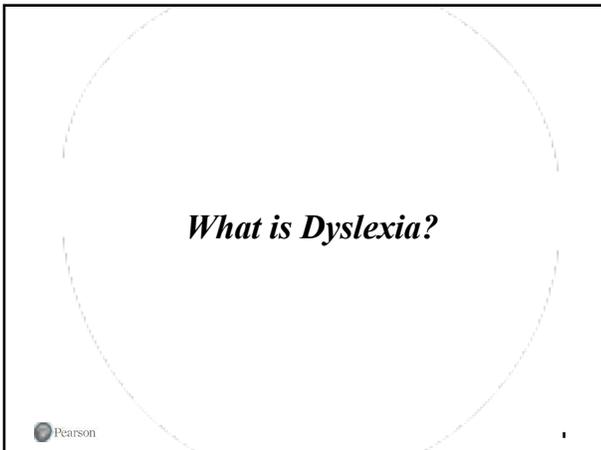
## Typical Development of Reading Skills

Pre-K  
↓  
Kindergarten  
↓  
Grade 1  
↓  
Grade 2/3  
↓  
Grade 3/4

- "Pre-reading": Letter ID, Rhyming, ID Letters/phonemes in spoken words
- Letter/sound correspondence
- Sight word development
- Decode new words accurately...fluently.
- Transfer oral language vocab to written language vocab
- Integrate word decoding and sentence comprehension.
- Read for comprehension



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### 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...

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### The Neurobiology of Reading

Neural Signature for Dyslexia:  
Inefficient Posterior Reading Systems

Nonimpairment      Dyslexia

© Sally Shaywitz, M.D., *Overcoming Dyslexia*

- ★ **Inferior Frontal Gyrus (Broca's Area):**  
Vocalization, Articulation
- ★ **Parieto-Temporal:**  
Word Analysis
- ★ **Occipito-Temporal (Wernicke's Area):**  
Word Recognition, Automaticity

(Adapted from Shaywitz S. *Overcoming dyslexia: a new and complete science-based program for reading problems at any level.* New York, 2003. Alfred A. Knopf. Copyright 2003 by S. Shaywitz. Adapted with permission.)

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### Dyslexia Points

- **Dyslexia is a language-based** reading disorder that often results in lifelong impact to an individual.

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### 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.

Ferrer, E., Shaywitz, B. A., Holahan, J. M., Marchione, K., & Shaywitz, S. E. (2010). Uncoupling of reading and IQ over time: Empirical evidence for a definition of dyslexia. *Psychological Science*, 21(1), 93-101.; International Dyslexia Association (2012). *Dyslexia basics: In just the facts*. Information provided by the International Dyslexia Association. Retrieved from [dyslexiaida.org](http://dyslexiaida.org).; Shaywitz, S. E. (2005). *Overcoming dyslexia*. New York, NY: Alfred Knopf.

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## Maine

**Dyslexia**

Review RSA 200:24-133 (Requires school administrative entities screen students in kindergarten through second grade who have difficulty in these areas:

- Phonological patterns/assessments;
- Sound-symbol correspondences;
- Oral language;
- Reading skills;
- Spelling patterns; and
- Writing skills.

Requires the Maine Department of Education implement annual screenings of all students in kindergarten through second grade. The information collected through screening of each teacher-in-charge and implementing appropriate instruction and intervention for all struggling readers, including those with the characteristics of dyslexia.

**Defining Dyslexia**

How does dyslexia align with the Educational/Student Assessment definition:

"Dyslexia is a specific learning disability that is neurobiological in origin. It is characterized by difficulties with accurate and/or fluent comprehension 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."

<http://maine.gov/doe/dyslexia> (retrieved 10/5/17)

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## New Hampshire

- **HB1644** was signed into law on June 16, 2016
- RSA 200:59-62
  - Provide definition for dyslexia
  - "requires public schools to screen students for dyslexia no later than November 30th of each school year beginning in kindergarten and first grade and to monitor student progress thereafter"
  - "requires districts to provide evidence-based instruction and accommodations to students identified as at risk for dyslexia or related disorders beginning no later than January 1, 2018"
  - "requires school districts to consider the results of independent evaluations prepared by a licensed reading or intervention specialist highly trained in dyslexia that have been obtained and submitted by the student's family"

<https://nh.dyslexiaida.org/wp-content/uploads/sites/22/2016/09/DYSLEXIA-LAW-PASSED-IN-NEW-HAMPSHIRE.pdf>  
(Retrieved 10/5/17)

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## Vermont

- No specific law addressing "Dyslexia"
- However...

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## Dyslexia in Schools



- Dyslexia vs. SLD-Reading?
  - Differences between "diagnosis" of neurobiological condition and educational condition
- Dyslexia (as a medically diagnosed condition) can qualify a student for 504 plan.
- However, Dyslexia (identified in either school as a learning disorder or medically) can qualify a student for special education with a Learning Disability in Reading if...
  - ...student also has documented impact in classroom/educational performance.

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## *A Model for Dyslexia Assessment*

*Identifying individuals with dyslexia is a multi-step process, between screening and assessment.*

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## Hybrid Model for Identification



- School of thought: more is better
  - Identifications using a single criterion are prone to measurement error and show poor stability over time.
  - "More than one" data point to rule in/rule out
- 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

Johnson, E. S., Jenkins, J. R., & Petscher, Y. (2010). Improving the accuracy of a direct route screening process. *Assessment for Effective Intervention*, 35, 131-140.  
Johnson, E. S., Jenkins, J. R., Petscher, Y., & Catts, H. W. (2009). How can we improve the accuracy of screening instruments? *Learning Disabilities Research & Practice*, 24, 174-185.

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**DYSLEXIA**

**SYMPTOMS**  
Lack of response to treatment

Pre-reader difficulties

- Alphabet writing
- Phonics/Letter knowledge

Reader difficulties

- Word reading/Decoding
- Reading fluency
- Spelling
- Written expression
- Reading comprehension <
- Listening comprehension

**CAUSES/CORRELATES**

- Phonological processing
- Rapid automatic naming
- Auditory working memory
- Processing speed
- Long-term storage and retrieval
- Associative memory
- Orthographic processing

**RISK FACTORS**

- Family history
- Language impairment/  
Poor receptive vocabulary

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• Poor response to instruction is considered an important symptom!

- But it's not enough
- "Necessary but not sufficient"

• Pre-reader Symptoms

- alphabet writing, letter identification, and/or phonics (letter-sound correspondence).

• Reader Symptoms

- decoding pseudo-words, word reading, reading fluency (oral reading fluency, in particular), spelling, and written expression.
- In addition, reading comprehension is poor relative to listening comprehension

**DYSLEXIA**

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- Spelling
- Written expression
- Reading comprehension <
- Listening comprehension

Snowling, M., Bishop, D. V. M., & Stothard, S. E. (2000). Is preschool language impairment a risk factor for dyslexia in adolescence? *Journal of Child Psychology and Psychiatry*, 41(5), 587-600.  
Spencer, M., Wagner, R. K., Schatschneider, C., Quinn, J. M., Lopez, D., & Petscher, Y. (2014). Incorporating RTI in a hybrid model of reading disability. *Learning Disability Quarterly*, 37(3), 161-171.

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• 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)

**CAUSES/CORRELATES**

- Phonological processing
- Rapid automatic naming
- Auditory working memory
- Processing speed
- Long-term storage and retrieval
- Associative memory
- Orthographic processing

Pennington, B. F. (2006). From single to multiple deficit models of developmental disorders. *Cognition*, 101, 385-413.  
Ramus, F., & Ahissar, M. (2012). Developmental dyslexia: The difficulties of interpreting poor performance, and the importance of normal performance. *Cognitive Neuropsychology*, 29, 104-122.

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**RISK FACTORS**

- Family history
- Language impairment/  
Poor receptive vocabulary

• Hereditary/correlated risk factors + behavioral symptoms = 🙌 Robust Assessment!

• Low scores on a dyslexia screening test

• ↑ risk for dyslexia:

- family history of dyslexia
- a history of language impairment
- and/or weaknesses in receptive vocabulary.

Snowling, M., Bishop, D. V. M., & Stothard, S. E. (2000). Is preschool language impairment a risk factor for dyslexia in adolescence? *Journal of Child Psychology and Psychiatry*, 41(5), 587-600.  
Thompson, P. A., Hulme, C., Nash, H. M., Gooch, D., Haylou-Thomas, E., & Snowling, M. J. (2015). Developmental dyslexia: Predicting individual risk. *Journal of Child Psychology and Psychiatry*, 56(9), 976-987.

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**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.

Reynolds, C. R. (1981). Neuropsychological assessment and the habilitation of learning: Considerations in the search for the aptitude x treatment interaction. *School Psychology Review*, 10(3), 343-349.  
Shaywitz, S. E. (2005). *Overcoming dyslexia*. New York, NY: Alfred Knopf.

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**Screening**

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## 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 (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.

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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
- Potential to identify "higher" number of students
  - Depends on instrument design and prevalence data.
  - Can be limited by "smart" screening
- What question are **you** trying to answer?

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## Practical Considerations



1. TIME and RESOURCES!!!
2. How much time/money and how many people will you require to "catch" what you're looking for?
  1. The larger the "holes" the **less** time/resources
  2. The smaller the "holes" the **more** time/resources

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*There are two ways screeners are developed:*

*Performance-based vs. Rating-based*

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## A Few Examples of Performance-based Screening: KTEA-3 and WIAT-III Dyslexia Index Scores

(in Breaux & Lichtenberger, 2016)

- Ideal for screening (lower numbers)
  - brief administration time (requires performance)
  - clinical sensitivity
  - Rigorous enough to contribute to a more comprehensive diagnostic evaluation.
- KTEA-3 Dyslexia Index and the WIAT-III Dyslexia Index are considered highly reliable and theoretically sound.

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Breaux, K. C., & Lichtenberger, E. O. (2016). Essentials of KTEA-3 and WIAT-III assessment. Hoboken, NJ: Wiley.

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Test or Index score	Subtests/Items	Mean age/range reliability	Dyslexia group mean (SD)	Matched control mean (SD)	d/Fact ratio	Estimated administration time
<b>Grades K-2K and ages 5-2K</b>						
KTEA-3 Brief SW-3 composite	Letter & Word Recognition + Spelling + Math Computation	.98	79.6 (8.4)	102.2 (11.4)	2.77	20 minutes
<b>Grades K-7 and ages 5-7</b>						
WIAT-III Dyslexia Index (Score 1 (Grade K))	10 items	.90	5.5 (3.1)	2.5 (3.0)	0.96	≈ 5 minutes
WIAT-III Dyslexia Index (Score 2 (Grade 1))	11 items	.92	7.7 (3.8)	2.7 (3.3)	1.47	≈ 5 minutes
KTEA-3 Dyslexia Index 1	Phonological Processing + Letter Naming/Fluency + Letter & Word Recognition	.92	79.4 (7.4)	96.1 (12.6)	1.79	20 minutes
WIAT-III Dyslexia Index 1	Early Reading Skills + Spelling	.94	82.8 (10.8)	102.2 (11.6)	1.88	12 minutes
<b>Grades 1-11+ and ages 7-25</b>						
KTEA-3 Dyslexia Index 2	Word Recognition Fluency + Sentence Reading Decoding + Spelling	.91	78.2 (8.7)	99.0 (10.0)	1.76	15 minutes
WIAT-III Dyslexia Index 2	Oral Reading Fluency + Passage Reading Decoding + Spelling	.96	78.0 (8.8)	96.1 (10.7)	1.84	15 minutes

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### A “Better” Screening Method: 2-Stage Screening

1. Use targeted probe data to determine performance
    - Shows us who is having difficulty reading
    - Validates question of “poor reading performance”
  2. Use Shaywitz DyslexiaScreen after 6-8 weeks of school to allow teacher time to get to know student
    - Shows us who is “at-risk” specifically for Dyslexia
    - Gives us better idea for “next steps”
- Use probe tool help with progress monitoring
    - Re-assess progress regularly to determine those who:
      - Need further diagnostic assessment
      - Need more intervention
      - Are making progress toward goals using current level of interventions

*Suzanne to talk about  
aimswebPlus*

Shaywitz  
**DyslexiaScreen™**

### Shaywitz DyslexiaScreen

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 automatic 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.
- Raw score: the number of items that meet criteria for the At Risk for Dyslexia classification
  - The raw score is compared to a normative cut score (varies by item)

### Forms

Shaywitz  
**DyslexiaScreen**

- All materials needed to administer the Shaywitz DyslexiaScreen are available on Q-global®
  - [www.helloQ.com](http://www.helloQ.com) for more information on Q-global
  - Well suited for 2<sup>nd</sup> level of screening or ID process
- The Shaywitz DyslexiaScreen offers three 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.

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Shaywitz  
**DyslexiaScreen**  
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## Reports

- Results include a simple classification:
  - **At Risk for Dyslexia** or **Not At Risk for Dyslexia**
- Two report options:
  1. An **Individual Report**: Includes student's standard demographic information, score classification (risk), and item responses.
    - "At-risk" reports also have additional information on:
      1. Suggested Next Steps
      2. Strategies for Families and/or Caregivers
  2. A **Group Report**: Summarizes classroom data and provides complete lists of student performance by group and screening form.
    - Includes different views of the group's performance to help make instructional or other assessment decisions.

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## How to Interpret 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, it's not a diagnosis**

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