

Best Practices in Dyslexia Assessment

Nancy Mather, PhD

Professor Emerita, University of Arizona

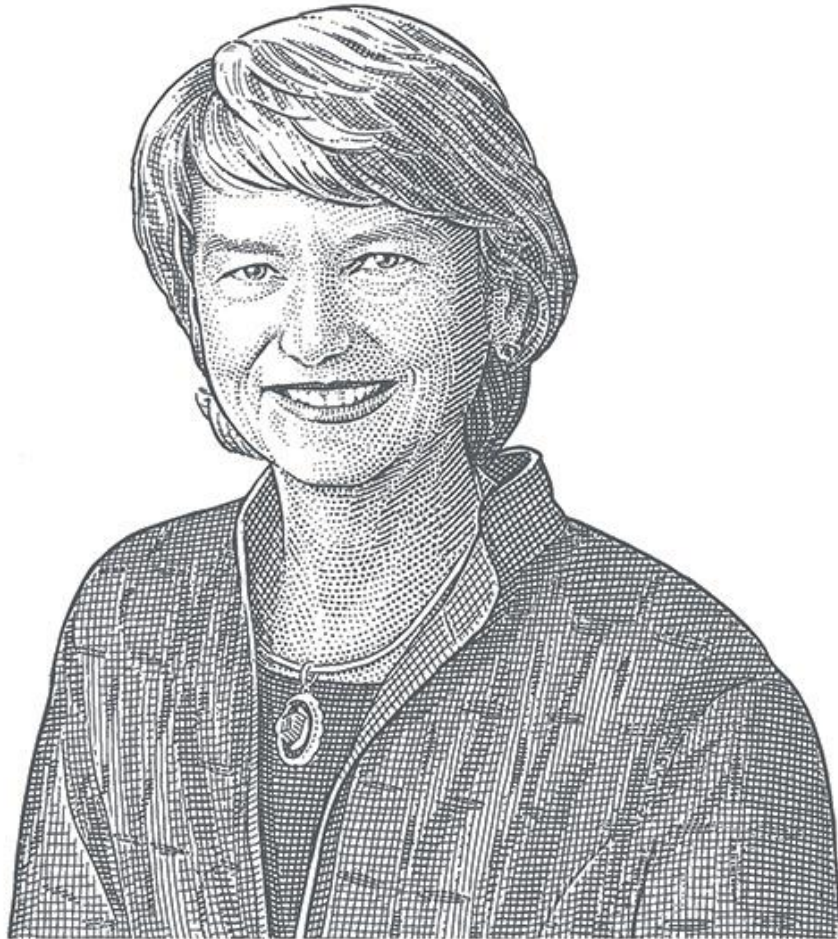
WPS Dyslexia Webinars

November 2, 2022



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Dr. Nancy Mather is Professor Emerita at the University of Arizona. Dr. Mather's career has focused on assessment and intervention for individuals with dyslexia and learning disabilities, and she has published numerous articles and books and conducts workshops on both assessment and instruction for students with dyslexia. Dr. Mather is also the co-author of several widely used standardized tests.

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What is
dyslexia?
What should
we be
assessing?

What Is Dyslexia?

- It is a specific problem in the development of word reading, reading rate, and spelling.
- It affects the development of automaticity with sound–symbol connections.
- It has both a neurobiological and genetic basis.
- It is often accompanied by specific weaknesses in linguistic risk factors that predict poor reading and spelling.

Hereditary Factors

Strong converging evidence indicates that:

- Dyslexia has a genetic basis, but there is not one specific gene for reading.
- Family history is a key risk indicator.
- If one parent is affected, there is a 40%–60% chance the child will have dyslexia.

Always Ask: Has Anyone in the Family Had Trouble Learning to Read?

Family history is one of the strongest risk factors for developing dyslexia (Ozernov-Palchik & Gaab, 2016).



Source: Ozernov-Palchik, O., & Gaab, N. (2016). Tackling the “dyslexia paradox”: Reading brain and behavior for early markers of developmental dyslexia. *WIREs Cogn Sci.*, 7(2), 156–176. <https://doi.org/10.1002/wcs.1383>

Always Ask: Has Anyone in the Family Had Trouble Learning to Read? *(cont.)*



Having a parent who has dyslexia increases the likelihood that a child will have dyslexia, and if both parents have dyslexia, the probability increases even more (Snowling & Melby-Lervåg, 2016).

Source: Snowling, M. J., & Melby-Lervåg, M. (2016). Oral language deficits in familial dyslexia: A meta-analysis and review. *Psychological Bulletin*, 142(5), 498–545.

<https://doi.org/10.1037/bul0000037>

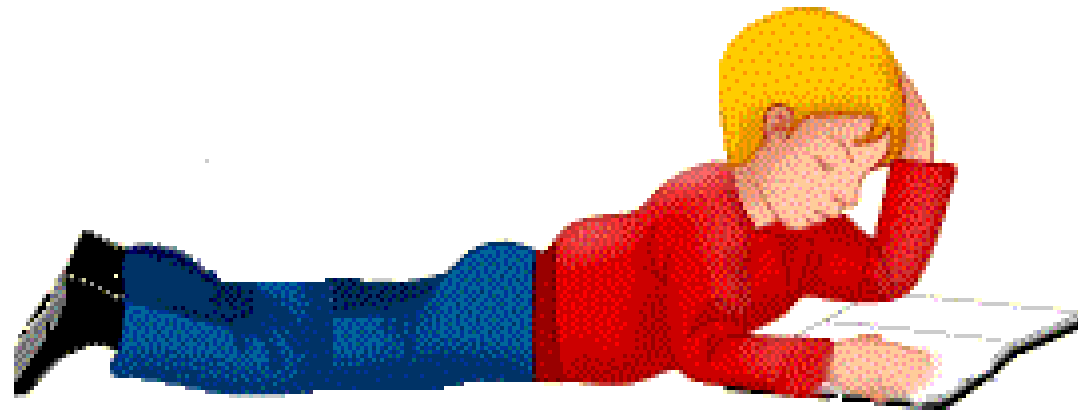
Always Ask: Has Anyone in the Family Had Trouble Learning to Read? *(cont.)*

“The findings of our review are novel and surprisingly consistent across languages: there is a heightened risk of dyslexia in families in which a first-degree relative is affected, such that children at high risk are four times more likely to succumb to reading problems than peers from families with no such risk.”

Source: Snowling, M. J., & Melby-Lervåg, M. (2016). Oral language deficits in familial dyslexia: A meta-analysis and review. *Psychological Bulletin*, 142(5), 498–545.

<https://doi.org/10.1037/bul0000037>

“To be effective, remedial instruction in reading must be preceded by careful diagnosis.”



Source: Stanger, M. A., & Donohue, E. K. (1937). *Prediction and prevention of reading difficulties*. Oxford University Press.

Reading and Spelling Assessment

- Pseudoword (nonsense word) reading and spelling (both untimed and timed)
- Phonological awareness
- Reading accuracy
- Reading fluency and rate
- Spelling (both regular and irregular words)
- Compare to math and oral language abilities

What Is Automaticity?

“*Automaticity* refers to the ability to perform tasks without actively thinking through them” (p. 15).

Source: Denckla, M. B., & Mahone, E. M. (2018). *Executive function: Binding together the definitions of attention-deficit/hyperactivity disorder and learning disabilities*. In L. Meltzer (Ed.), *Executive function in education: From theory to practice* (2nd ed.) (pp. 5–24). Guilford.

Concept of Automaticity

- Accuracy and speed of reading
- Quick recognition without using decoding strategies
- Not the same as fluency
- Fluency also includes prosody (expression), which can only occur with automaticity

Josh: Grade 7, Spring

Cold reading of “The Best Friends Club”

“Lizzie and Harold were best friends. Harold taught Lizzie how to do cat’s cradle. Lizzie taught Harold how to play running bases. Lizzie shared her trick-or-treat candy with Harold, and Harold let Lizzie ride his big red bike.”



Source: Winthrop, Elizabeth. (1993). “The Best Friends Club: A Lizzie and Harold Story.” Reading 2nd Grade Level 7. *Make a splash*. Macmillan/McGraw-Hill School Pub. Co.

Results

- Time: 1 minute
- Rate
 - Words read per minute = 24
 - Number of errors = 13

Source: Hasbrouck, J., & Tindal, G. (2017). *An update to compiled ORF norms*. (Technical Report No. 1702). Behavioral Research & Teaching, University of Oregon.

Results *(cont.)*

- 11/13 Words Read Correctly (WRC) = less than 50% accuracy
 - (Record the total number of words read [24]. Subtract the number of errors [13]. The top number is WRC, and the bottom number is the number of errors.)
- A typical second grade student would be expected to read at about 100 words correct per minute, when reading unpracticed second grade text (Hasbrouck & Tindal, 2017).

Source: Hasbrouck, J., & Tindal, G. (2017). *An update to compiled ORF norms*. (Technical Report No. 1702). Behavioral Research & Teaching, University of Oregon.

COMPILED ORF NORMS

Hasbrouck & Tindal (2017)

From Hasbrouck, J. & Tindal, G. (2017). *An update to compiled ORF norms* (Technical Report No. 1702). Eugene, OR. Behavioral Research and Teaching, University of Oregon.

Grade	Percentile	Fall WCPM*	Winter WCPM*	Spring WCPM*
1	90		97	116
	75		59	91
	50		29	60
	25		16	34
	10		9	18
2	90	111	131	148
	75	84	109	124
	50	50	84	100
	25	36	59	72
	10	23	35	43
3	90	134	161	166
	75	104	137	139
	50	83	97	112
	25	59	79	91
	10	40	62	63

Grade	Percentile	Fall WCPM*	Winter WCPM*	Spring WCPM*
4	90	153	168	184
	75	125	143	160
	50	94	120	133
	25	75	95	105
	10	60	71	83
5	90	179	183	195
	75	153	160	169
	50	121	133	146
	25	87	109	119
	10	64	84	102
6	90	185	195	204
	75	159	166	173
	50	132	145	146
	25	112	116	122
	10	89	91	91

*WCPM = Words Correct Per Minute

New Norms

- brtprojects.org/publications/technical-reports/

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BRT Technical Reports

Here we present technical reports of the process or results of our research.

2021
The Alignment Between easyCBM Mathematics and Literacy Assessments and State and National Standards (Technical Report No. 2101). Eugene, OR: Behavioral Research and Teaching, University of Oregon. In this technical report, we present the results of a 2020-2021 study of the alignment between the easyCBM mathematics and literacy assessments and the content standards adopted in the fifty U.S. states. The study used a three-wave process. First, a team of researchers gathered the status of state standard information for mathematics and English language arts (ELA) standards across grades K-8 for all 50 U.S. states. Three main groups were identified: CCSS Adopted (20 – ELA & Math), CCSS Revised (24 – ELA, 28 – Math) and State Unique (6 – ELA, 2 Math). Next, the team analyzed the alignment between the standards and the easyCBM literacy measures. Finally, the team analyzed the alignment between the standards and the easyCBM mathematics measures. This technical report describes the process used in the alignment study and provides the results of the analysis. Sáez, L., Whitney, M., Swanson, D. & Alonzo, J. [TechRpt_2101](#)

2020
Development of the Prekindergarten Learning Receptiveness Assessment (LRA) Greenhouse: Process and Preliminary Findings. (Technical Report No. 2001). Eugene, OR: Behavioral Research and Teaching, University of Oregon. In this technical report we document the development and piloting of the Learning Receptiveness Assessment (LRA) Greenhouse for Prekindergarten. This technological tool was designed to prevent reading disabilities by supporting effective assessment-guided instructional decision-making by preschool teachers. The LRA Greenhouse comprises a tablet-based formative assessment and app-enabled research-based intentional teaching activity plans, monitoring checklist, and reports; it also includes a support website containing printable curriculum materials, online training modules, and teacher resources. Sáez, L. & Irvin, P. S. [TechRpt2001](#)

2019
Initial Norms for the easyCBM Spanish Language Vocabulary Assessments. (Technical Report No. 1901). Eugene, OR: Behavioral Research and Teaching, University of Oregon. This technical brief describes the easyCBM Spanish language Vocabulary assessments added to the easyCBM system in the fall of 2018 and provides the initial norms for the fall and winter assessments. These norms should be interpreted with caution, as the sample was smaller than ideal, particularly for the Winter norms. Alonzo, J. [TechRpt_1901](#)

ReadWorks Article-A-Day™: Using a Maze Assessment to Test the Impact of Building Background Knowledge on Reading Comprehension. (Technical Report No. 1902). Eugene, OR: Behavioral Research and Teaching, University of Oregon. This study was premised on the importance of vocabulary in comprehending text. Critical findings from both the National Reading Plan (NRP) and the National Reading Technical Assistance Center (NRTAC) frame this study, both in the intervention that was implemented and in the manner in which outcomes were measured. Using expository passages developed by ReadWorks, teachers implemented an Article-A-Day with students reading brief expository passages. In this particular study, the passages focused on endangered plants and their survival, though the full domain of passages available in ReadWorks is extensive and addresses many other topics. The primary question was whether this strategy was more effective in supporting reading comprehension than when students did not consistently read passages on a daily basis. Nobles, S., Anderson, D., Raman, M., Laird, K. & Tindal, G. [TechRpt_1902](#)

2018
Classification Accuracy of the easyCBM Kindergarten – Grade 2 Reading Measures. (Technical Report No. 1801). Eugene, OR: Behavioral Research and Teaching, University of Oregon. In this technical report, we present results of classification accuracy analyses to identify out scores to optimize sensitivity and specificity for the easyCBM literacy assessments in Kindergarten through Grade 2. Alonzo, J. & Anderson, D. [TechRpt_1801](#)

Project ICEBERG Exploration: Using Implementation Science to Guide Preschool Reading Disabilities Prevention. Technical Report No. 1802). Eugene, OR: Behavioral Research and Teaching, University of Oregon. In this technical report, implementation strategies from the first two years of Project ICEBERG exploration are described. Over this period of time, a new preschool assessment, curricular activity, and teacher training tool called the Learning Receptiveness Assessment-Greenhouse application, was iteratively developed, refined, and piloted to better support preschool children's literacy, behavioral, and working memory processing skills and facilitate improved learning as they approach the transition to kindergarten and beyond. Irvin, P. S., Sáez, L., Pilger, M., Alonzo, J., Squires, J., Twombly, L., & Tindal, G. [TechRpt_1802](#)

In-Brief: Reliability of the Slope of the easyCBM Reading Measures. (Technical Report No. 1803). Eugene, OR: Behavioral Research and Teaching, University of Oregon.

Source: Hasbrouck, J., & Tindal, G. (2017). *An update to compiled ORF norms*. (Technical Report No. 1702). Behavioral Research & Teaching, University of Oregon.

How Fast Is Average (50th Percentile) Oral Reading?

Grade	2006 WPM	2017 WPM
End of first	53	60
End of second	89	100
End of third	107	112
End of fourth	123	133
End of fifth	139	146
End of sixth	150	146
End of seventh	150	
End of eighth	151	

Source: Hasbrouck, J., & Tindal, G. (2017). *An update to compiled ORF norms*. (Technical Report No. 1702). Behavioral Research & Teaching, University of Oregon.

Text Reading Fluency

Is FASTER Better?

- 50th–75th percentile range on oral reading fluency (ORF) norms on unpracticed, grade-level text (Hasbrouck & Tindal, 1992; 2006; 2017)



Science

Slides on Text Reading Fluency developed by Dr. Jan Hasbrouck.

Text Reading Fluency (*cont.*)

1. LIMITED EVIDENCE from research or theory or practice that suggests a benefit to reading significantly ABOVE the 50th–75th percentile range. Can be detrimental.
2. SIGNIFICANT EVIDENCE that it is crucial to help students read with fluency solidly at or very near the 50th percentile to support comprehension and motivation.
 - Research suggests the 75th percentile is sufficient for optimizing comprehension; the 50th percentile is necessary for comprehension.

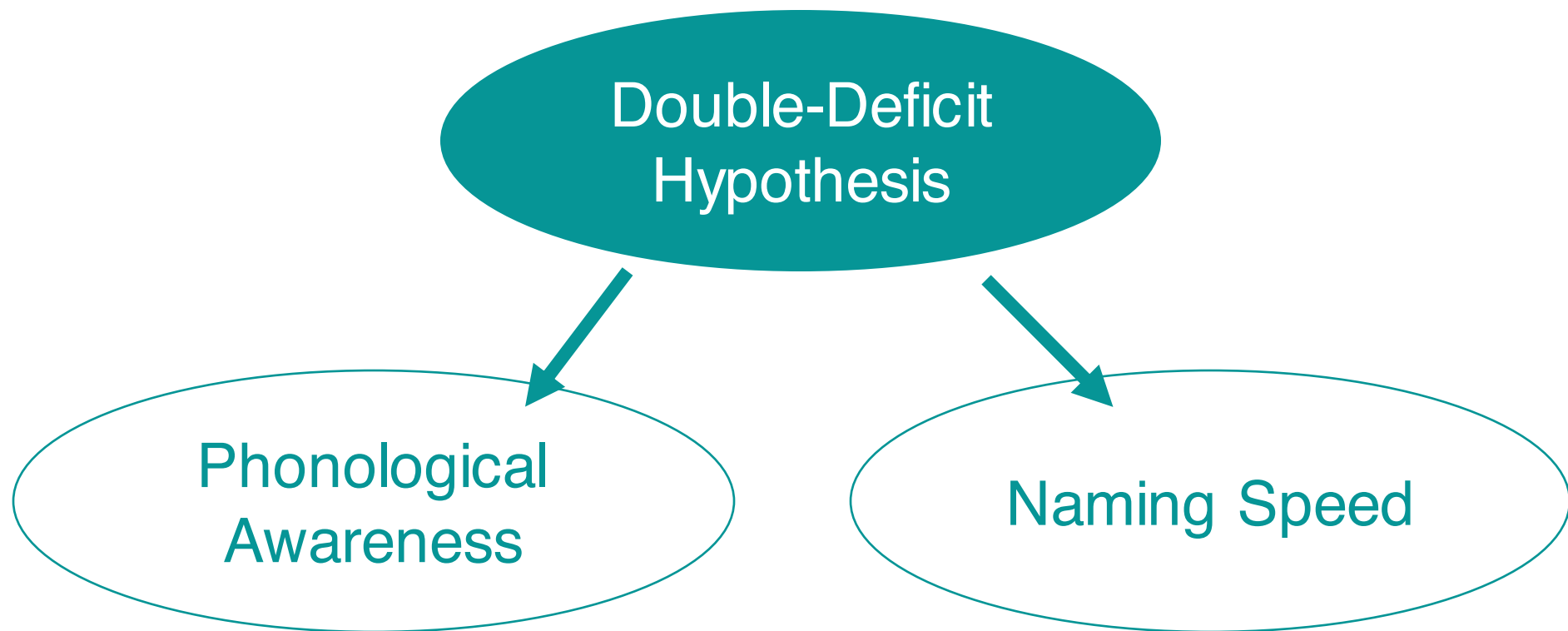
Linguistic Risk Factors

- Related linguistic factors can affect the development of reading and spelling.
- They predict difficulties with reading and spelling development.
- Some are more trainable than others (e.g., phonological awareness vs. working memory).

Linguistic Risk Factors *(cont.)*

- Phonological Awareness
- Orthographic Processing
- Rapid Automated Naming (RAN)
- Processing Speed
- Working Memory
- Visual-Verbal Paired Associate Learning (PAL)

Linguistic Risk Factors (*cont.*)



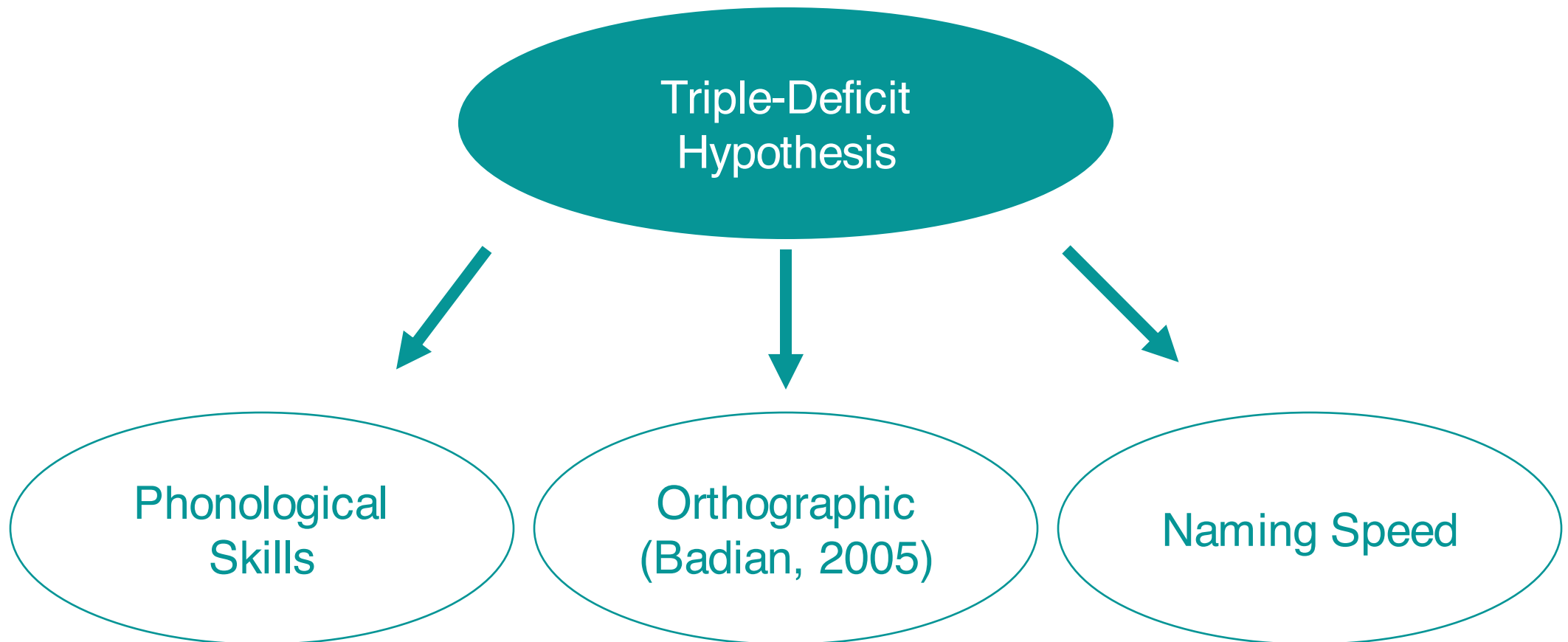
Source: Bowers, P. G., & Wolf, M. (1993). Theoretical links among naming speed, precise timing mechanisms and orthographic skill in dyslexia. *Reading and Writing: An Interdisciplinary Journal*, 5, 69–85.

Linguistic Risk Factors (*cont.*)

“The term, double deficit, emerged as a concrete metaphor to convey at once the critical blow that the combination of both deficits represents. Just as naming-speed skills predicted word identification, and phonological skills predicted word attack, deficits in both variables would impede both aspects of reading, leaving no compensatory route easily available” (p. 13).

Source: Wolf, M. (1999). What time may tell: Towards a new conceptualization of developmental dyslexia. *Annals of Dyslexia*, 49, 3–27.

Linguistic Risk Factors (*cont.*)



Source: Badian, N. A. (2005). Does a visual–orthographic deficit contribute to reading disability? *Annals of Dyslexia*, 55, 28–52.

Poor Phonological Processing

May have:

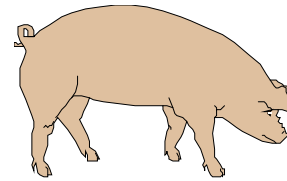
1. Early articulation errors
2. Confusion of similar sounds (e.g., /b/ and /p/; /f/ and /v/)
3. History of ear infections
4. Trouble learning letter sounds
5. Poor nonword repetition, reading, and spelling

Many students with dyslexia have poor phonological awareness and difficulty connecting sounds to print, which results in slow word perception, a delay in developing instant word reading, and poor spelling.

How Many Phonemes Do You Hear in...?

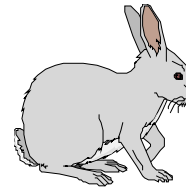
pig

—



rabbit

—



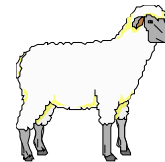
rooster

—



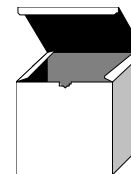
sheep

—



box

—



Sequence of Skill Development

1. Discriminating rhymes
2. Producing rhymes
3. Isolating initial and final sounds
4. Blending sounds
5. Segmenting sounds
6. Manipulating sounds (e.g., deleting, substituting, transposing)

Rhyming

- Recognition: Do these two words rhyme?
- Oddity: Which word doesn't rhyme?
- Completion: Finish what I say with a word that rhymes. "Look over there. I see a..."
- Production: Tell me a word that rhymes with...?

Examples of Phonological Awareness Tasks

- Rhyming: Tell me a word that rhymes with *dog*.
- Blending: What word is this? /sh/ /oe/
- Phoneme Counting: How many sounds do you hear in the word *ship*?
- Phoneme Segmentation: Tell me each sound you hear in the word *bus*.
- Phoneme Deletion: What is left if the /t/ sound is taken from *cart*?

Early Reading and Spelling

The two most important phonological abilities for early reading and spelling:

- **Sound blending:** provides the basis for learning phonics.
- **Segmentation:** provides the basis for sequencing sounds when spelling.



Blending

Compound words, syllables, phonemes:

- If I put these words together, what would the word be? (use pictures if needed) *rain...coat*
- If I put these syllables together, what would the word be? car-pen-ter
- If I put these sounds together, what would the word be? /s/ /t/ /o/ /p/

Informally Assessing Sound Blending

If the student has difficulty with blending:

- Start with words with continuous sounds that can be prolonged (e.g., /s/, /f/, /m/).
- Present words with two, three, and then four sounds (e.g., /m/ /e/, /sh/ /oe/, /f/ /a/ /t/, /s/ /a/ /n/ /d/).
- Gradually increase the interval between sounds from a 1/4-second to a 1-second break.
- Determine exactly what the student can do.

Segmentation

Compound words, syllables, phonemes:

- Tell me the two words in *baseball*.
- Tell me the syllables in the word *pencil*.
- Tell me the sounds you hear in the word *bus*.

Phoneme Manipulation Tasks

- Deletion: Say *cart* without /t/.
- Addition: Say *at* with /c/ at the front.
- Substitution:
 - Initial: Change the /s/ in *sun* to /f/.
 - Final: Change the /t/ in *cat* to /b/.
 - Medial: Change the /i/ in *hit* to /a/.
- Reversal: Say the sounds in *enough* backward.

Phoneme Manipulation Tasks (*cont.*)

Requires working memory
and more detailed analyses
of words.



Source: Kilpatrick, D. A. (2015). *Essentials of assessing, preventing, and overcoming reading difficulties*. John Wiley & Sons.

Assessment Guidelines

Consider the level of development and the difficulty level of the task:

- Rhyme identification vs. production
- Initial sound, final sound, and then medial vowel sound
- Compound words, syllables, phonemes
- Blending and segmentation vs. phoneme manipulation tasks

Phonology and Orthography

- Phonology: the sounds of a language
- Orthography: the marks of a writing system, including the spelling patterns
- Dyslexia can be caused by problems in phonology or orthography or both

Spelling

- Sequencing the sounds in order requires phonological processing, particularly phonemic segmentation.
- Recalling the visual elements of words requires orthographic processing. This is critical for the retrieval of predictable letter sequences that cannot be sounded out (e.g., *-ight*, *-tion*), as well as the irregular parts of words (e.g., the *ai* in *said*).

How Problems in Phonology and Orthography Affect Spelling

Phonology

Does not put phonemes in order

Adds or omits phonemes

Confuses similar-sounding speech sounds (e.g., /b/ and /p/—voiced and unvoiced consonant pairs)

Confuses vowel sounds

Orthography

Puts all phonemes in the correct sequence but uses incorrect graphemes

Reverses letters (e.g., *b* and *d*) and transposes words (e.g., *saw* and *was*)

Spells common high-frequency words as they sound, not as they look

Regularizes the irregular element of words (e.g., “*thay*” for *they*, and “*sed*” for *said*)

Represents phonemes with incorrect graphemes

Poor Orthographic Processing and Reading

- Has trouble remembering sight words
- Continues to sound out words after many exposures
- Confuses low-image words (e.g., *of* and *for*)
- Confuses similar-looking letters and words (e.g., *on* and *no*)
- Has slow word perception and reading rate

Poor Orthographic Processing and Spelling

- Has difficulty learning how to form letters
- Reverses letter and numbers
- Has trouble copying
- Spells words the way they sound, not the way they look
- Spells the same word inconsistently
- Violates rules of English spelling
- Has poor spelling into adulthood

Definitions Related to Orthography

- **Orthography:** the writing system of a language (includes spelling, punctuation, capitalization)
- **Orthographic Processing:** the brain's ability to recall letter orientation, spelling patterns, and words with both accuracy and speed

Source: Mather, N., & Jaffe, L. (2021). Orthographic knowledge is essential for reading and spelling. *Reading League Journal*, 2(3), 15–25.

Definitions Related to Orthography *(cont.)*

- **Orthographic Knowledge:** acquired information stored in memory regarding how spoken language is represented in written language
- **Orthographic Image:** recall of individual letters, word parts, and words

Source: Mather, N., & Jaffe, L. (2021). Orthographic knowledge is essential for reading and spelling. *Reading League Journal*, 2(3), 15–25.



ORTHOGRAPHY, n. The science of spelling by the eye instead of the ear.

(Ambrose Bierce)

How Do You Know the Correct Spelling?

rain	rane
sope	soap

Phonological processing can occur, but it is not sufficient for identifying the correct spelling of the word.

Orthographic processing is also a linguistic risk factor. Findings from a recent meta-analysis indicated that individuals with dyslexia have a deficit in orthographic knowledge that is as large as that of phonological awareness and rapid automatized naming (RAN).

Source: Georgiou, G. K., Martinez, D., Vieira, A. P. A., & Guo, K. (2021). Is orthographic knowledge a strength or a weakness in individuals with dyslexia? Evidence from a meta-analysis. *Annals of Dyslexia*, 71, 5–27. <https://doi.org/10.1007/s11881-021-00220-6>

What Is Rapid Automated Naming (RAN)?

Measures response time or rapid retrieval for a visual stimulus (objects, colors, letters, or numbers or a combination)

6 8 9 6 4 9 3 6 9 4

8 1 3 9 6 8 4 3 1 9

What Do Rapid Naming Tests Appear to Measure?

1. Ability to sustain attention to process and name the symbols
2. Ability to name and discriminate among the symbols
3. Ability to retrieve verbal labels rapidly
4. Ability to articulate words rapidly

RAN Research Findings

- a) RAN letters and then numbers are the strongest predictors of both reading and spelling.
- b) RAN is distinct from phonological awareness.
- c) The contribution of RAN is larger for younger readers and readers with more severe reading disabilities.
- d) Pause time is significantly correlated with reading accuracy and fluency, whereas articulation time is not.

RAN Research Findings

(cont.)



- e) RAN predicts irregular word reading better than nonword reading.
- f) RAN is more highly related to speeded measures of reading than accuracy measures.

CTOPP-2 Results

Date of Birth 2015 11 30 Examiner's Name France
 Age* 6 10 Examiner's Title Director

*When accessing the normative tables, use years and months. Do not round up.

Section 2. Subtest Performance

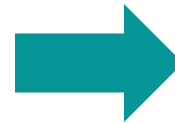
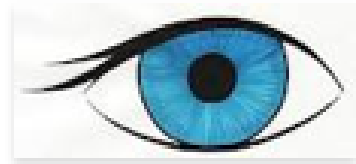
Subtest	Raw Score	Age Equiv.	Grade Equiv.	%ile Rank	Scaled Score
Core					
1. Elision (EL) Avg	<u>15</u>	<u>6.6</u>	<u>1.4</u>	<u>37%</u>	<u>9</u>
W 2. Blending Words (BW)	<u>14</u>	<u>5.6</u>	<u>K.4</u>	<u>16%</u>	<u>7</u>
S 3. Sound Matching (SM)	<u>23</u>	<u>7.0</u>	<u>2.0</u>	<u>75%</u>	<u>12</u>
4. Memory for Digits (MD) } Avg	<u>15</u>	<u>6.6</u>	<u>1.4</u>	<u>50%</u>	<u>10</u>
5. Nonword Repetition (NR)	<u>15</u>	<u>7.0</u>	<u>2.0</u>	<u>50%</u>	<u>10</u>
6. Rapid Digit Naming (RD)	<u>43:26</u>	<u>5.3</u>	<u>K.2</u>	<u>16%</u>	<u>7</u>
W 7. Rapid Letter Naming (RL)	<u>86</u>	<u><4.0</u>	<u><K.0</u>	<u>2%</u>	<u>4</u>
8. Rapid Color Naming (RC)	<u>56:24</u>	<u>4.9</u>	<u><K.0</u>	<u>16%</u>	<u>7</u>
9. Rapid Object Naming (RO)	<u>81</u>	<u><4.0</u>	<u><K.0</u>	<u>2%</u>	<u>2</u>
Supplemental					
S 10. Blending Nonwords (BN)	<u>16</u>	<u>1.3</u>	<u>2.2</u>	<u>63</u>	<u>11</u>

Section 3. Composite Performance

Subtest Scaled Score Sum of %ile

Dr. Martha Denckla (*cont.*)

The Visual-Verbal Highway



Slow word perception

See it... Say it

Processing Speed

- Involves the serial scanning of print
- Can be related to poor attention, slow RAN, poor orthography, inefficient visual tracking
- Appears to be related to the development of automaticity with basic skills

Working Memory

- Ability to hold information in memory and rearrange it
- Related to attention and executive functioning
- Affects many aspects of academic performance



Visual-Verbal Paired Associate Learning (PAL)

“...recent research suggests that visual-verbal PAL may be a unique cross-modal associative learning mechanism that is specific to the creation of mappings between visual (orthographic) and phonological stimuli...” (p. 46).

Source: Warmington, M., & Hulme, C. (2012). Phoneme awareness, visual-verbal paired associate learning, and rapid automatized naming as predictors of individual differences in reading ability. *Scientific Studies of Reading, 16*, 45–62.

Visual-Verbal Paired Associate Learning (PAL) *(cont.)*

“...the learning of mappings between orthography and phonology is critical for learning to read and likely operates at numerous levels, including the process of learning letter–sound correspondences and the learning of mappings at the level of single letters, letter groups, and whole words when acquiring a word recognition system” (p. 47).

Source: Warmington, M., & Hulme, C. (2012). Phoneme awareness, visual-verbal paired associate learning, and rapid automatized naming as predictors of individual differences in reading ability. *Scientific Studies of Reading*, 16, 45–62.

Orthographic Mapping

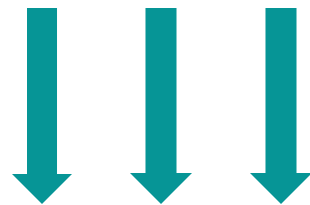
“...the process readers use to store written words for immediate, effortless retrieval. It is the means by which readers turn unfamiliar written words into familiar, instantaneously accessible sight words” (p. 81).

Source: Kilpatrick, D. A. (2015). *Essentials of assessing, preventing, and overcoming reading difficulties*. John Wiley & Sons.

Orthographic Mapping (*cont.*)

Starting point: forming the connections between the phonemes and the graphemes

Phonemes: /m/ /a/ /n/

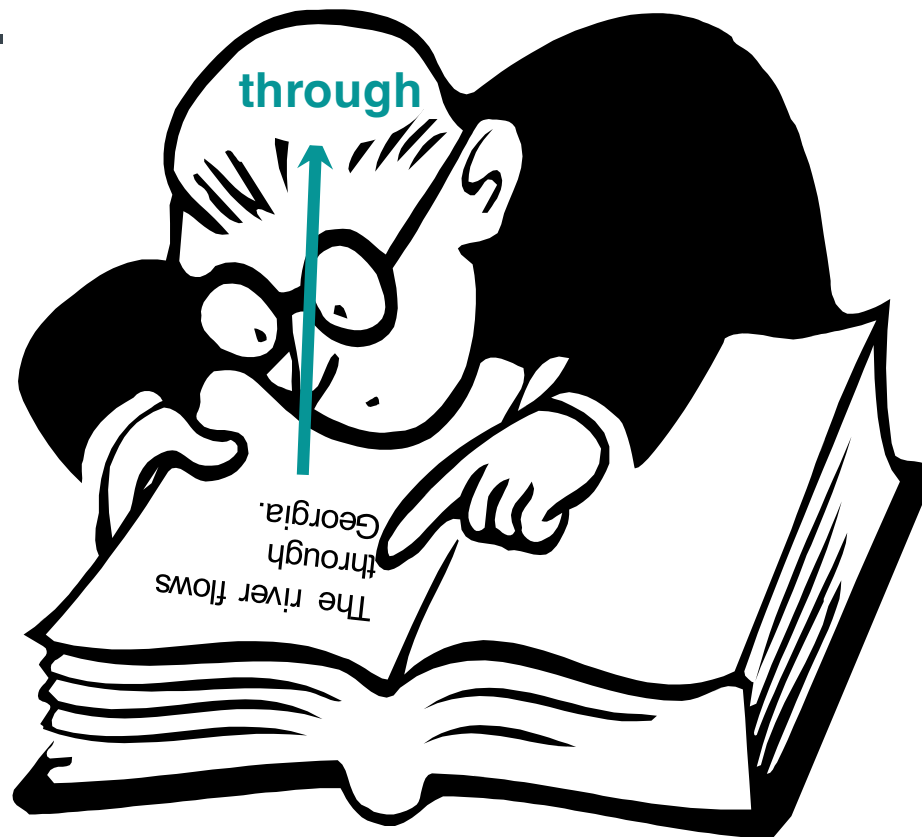


Graphemes: m a n

Sight Words

Typically developing readers need to see a word only 1 to 4 times to retain it.

The sight of the word triggers recognition, sound, and meaning.



“The history of dyslexia research, the heterogeneity of our dyslexic children, and the very complexity of the reading process argue against any single-factor, two-factor, or even three-factor explanation” (p. 5).

Source: Wolf, M. (1999). What time may tell: Towards a new conceptualization of developmental dyslexia. *Annals of Dyslexia*, 49, 3–27.

Dyslexia Identification: Two Basic Concepts

- Unexpected reading difficulty
- Expected reading difficulty



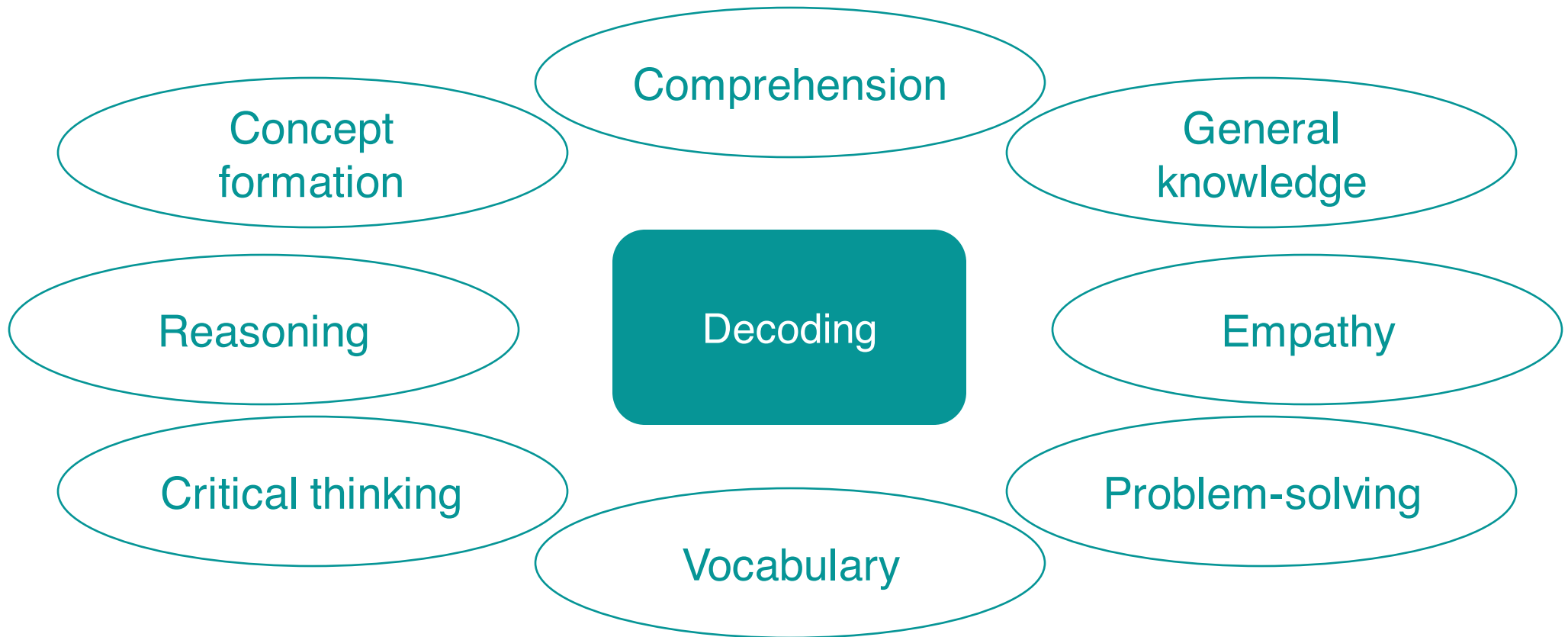
Unexpected Reading Difficulty

Discrepancy Model: Reading performance is below what would be predicted based upon one's other cognitive/linguistic and/or other academic abilities (e.g., intelligence, oral language, math).

“Dyslexic children and adults struggle to read fluently, spell words correctly and learn a second language, among other challenges. But these difficulties have no connection to their overall intelligence. In fact, dyslexia **is an *unexpected* difficulty in reading in an individual who has the intelligence to be a much better reader.** While people with dyslexia are slow readers, they often, paradoxically, are very fast and creative thinkers with strong reasoning abilities.”

Source: Shaywitz, S., & Shaywitz, J. (2020). *Overcoming dyslexia* (2nd ed.). Alfred A. Knopf.

Sea of Strengths Model of Dyslexia



Source: Shaywitz, S., & Shaywitz, J. (2020). *Overcoming dyslexia* (2nd ed.), p. 56. Alfred A. Knopf.

Have You Ever Heard Someone Say...

You have to have average or above intelligence to have dyslexia.



Considerations

- Dyslexia is a neurobiological difference that can affect anyone of any level of intelligence.
- The associated linguistic processing risk factors (e.g., phonological awareness, RAN, working memory) often lower the obtained IQ score.
- Limited reading affects the development of vocabulary and the acquisition of knowledge, so intelligence test scores can decline over the years.

Verbal Ability As an Estimate of Reading Potential

“Children should be able to comprehend, or construct, the meaning of what is being read at a level consistent with their general verbal ability” (p. 55).

Source: Torgesen, J. K. (2000). Individual differences in response to early interventions in reading: The lingering problem of treatment resisters. *Learning Disabilities Research & Practice, 15*, 55–64.

Reading Index

See if reading achievement is in harmony with other achievements. The other measures are administered in order to determine the child's expectation in reading and to measure the discrepancy.

1. Chronological age
2. Mental age (based on the Stanford–Binet)
3. Arithmetic computation

Source: Monroe, M. (1932). *Children who cannot read*. University of Chicago Press.

“It seems that we are measuring a discrepancy between reading and other accomplishments which may occur in either direction at any intellectual level” (p. 17).

“The reading defects may occur at any intellectual level from very superior to very inferior, as measured by intelligence tests” (p. 6).

Source: Monroe, M. (1932). *Children who cannot read*. University of Chicago Press.

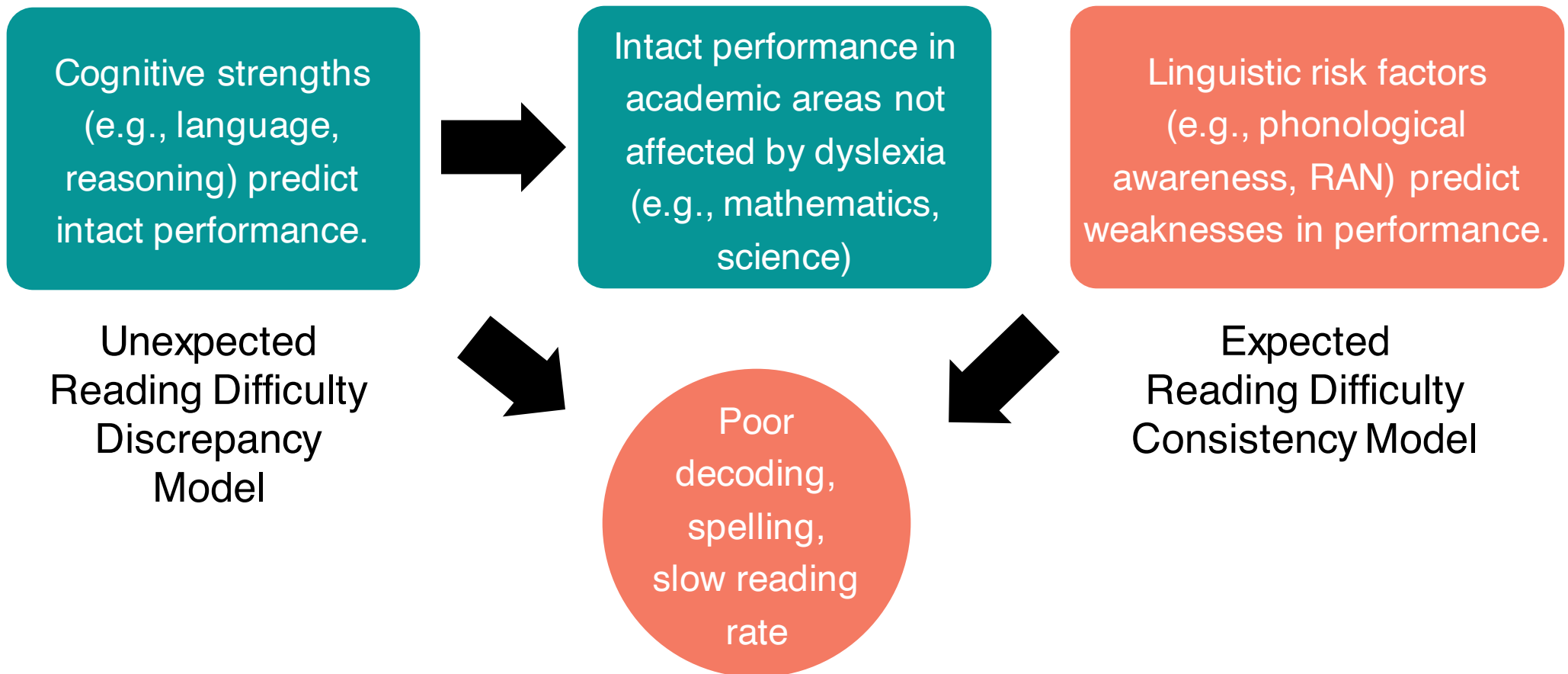
Expected Reading Difficulty

Consistency Model: Reading performance is in line with the linguistic risk factors — the weakness(es) predict(s) the poor academic performance (e.g., poor phonological awareness predicts poor phonics skills; slow RAN predicts slow reading rate).

“We are coming to recognize that deficiencies in certain cognitive processes are indicators of LD that predict and, therefore, result in expected underachievement” (p. 239).

Source: Learning disabilities: Implications for policy regarding research and practice: A report by the National Joint Committee on Learning Disabilities March 2011. *Learning Disability Quarterly*, 34, 237–241.

Unexpected and Expected Reading Difficulty



Dyslexia Profile

- Provides a way to organize data regarding consideration of whether a student has dyslexia
- May be used with any tests
- Helps focus the evaluation on the reading, spelling, and linguistic risk factors most relevant to dyslexia
- Highlights both strengths and weaknesses

Source: Proctor, C. M., Mather, N., Stephens-Pisecco, T. L., & Jaffe, L. E. (2017). Assessment of dyslexia. *Communiqué*, 46(3), 120–123.

DYSLEXIA PROFILE

Name _____

Date of Birth _____

ID _____

School _____

Grade _____

Date _____

The [name of state] Education Code [§ statute number] [or country] defines dyslexia in the following way:

International Dyslexia Association Definition (2002)

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 the growth of vocabulary and background knowledge.

Section I: Summary

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

Check the areas of concern.

Primary Reading and Spelling Difficulties		Secondary Reading and Writing Difficulties	
<input type="checkbox"/> Letter-sound associations <input type="checkbox"/> Letter names <input type="checkbox"/> Letter sounds <input type="checkbox"/> Basic reading skills <input type="checkbox"/> Sight word identification <input type="checkbox"/> Phonics (nonword/word decoding) <input type="checkbox"/> Reading fluency and rate <input type="checkbox"/> Spelling <input type="checkbox"/> in isolation <input type="checkbox"/> in context		<input type="checkbox"/> Reading comprehension <input type="checkbox"/> Written expression	
B. Linguistic Risk Factors Check the areas that are possible contributing factors.			
<input type="checkbox"/> Phonological awareness ¹ <input type="checkbox"/> Blending <input type="checkbox"/> Segmentation <input type="checkbox"/> Manipulation	<input type="checkbox"/> Orthographic awareness ²	<input type="checkbox"/> Verbal memory	<input type="checkbox"/> Verbal processing speed
C. Ability to Learn When Reading is Not Required Check the areas that are significantly higher than the individual's present level of reading and spelling skills.			
Cognitive Abilities <input type="checkbox"/> General intelligence <input type="checkbox"/> Reasoning	Oral Language <input type="checkbox"/> Oral expression <input type="checkbox"/> Listening comprehension <input type="checkbox"/> Vocabulary ³	Mathematics <input type="checkbox"/> Calculation <input type="checkbox"/> Problem solving	Knowledge <input type="checkbox"/> General knowledge ³ <input type="checkbox"/> Academic knowledge ³

D. At-Risk Indicators

Check the areas below that are additional at-risk factors.

Family history Early speech-language issues

Dyslexia Assessment

- a) Primary areas (word reading, rate, and spelling); secondary areas (reading comprehension and written expression)
- b) Linguistic risk factors
- c) Ability to learn when reading is not required
- d) At-risk indicators: family history, early speech and language difficulties

When Identifying Dyslexia, Consider:

- Weaknesses in phonics, sight word identification, reading fluency and rate, spelling
- Weaknesses in one or more linguistic processing risk factors
- Strengths in other areas, such as oral language, reasoning, mathematics, and/or knowledge
- The concepts of unexpected and expected reading difficulty

Diagnosis and Instruction

“Diagnosis must take second place to instruction, and must be made a tool of instruction, not an end in itself.”

Source: Cruickshank, W. M. (1977). Least-restrictive placement: Administrative wishful thinking. *Journal of Learning Disabilities, 10*, 193–194.

Comprehensive Evaluations

Ensure that students who struggle with reading get a comprehensive evaluation that explains:

- The reasons why the student is struggling with reading
- Where the student is developmentally
- What type of instruction is needed (e.g., phonological awareness, phonics, structural analysis, fluency, spelling)



***The primary purpose
for testing should be
to find out more about
the problem, not to
just get a score.***

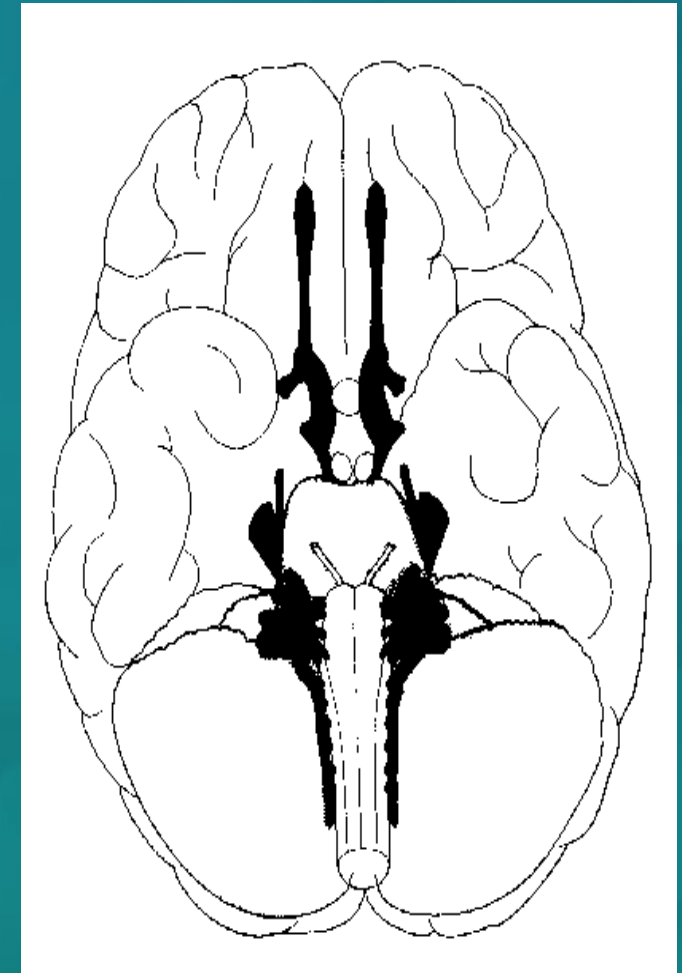
Dr. R. W. Woodcock

And to find more about the factors that will facilitate performance...

We shouldn't ask:
How smart you are...

but instead:
How are you smart?

—H. Gardner



Source: Gardner, H. (1993). *Frames of mind: The theory of multiple intelligences* (10th anniversary). Basic Books.

The Value of Tests

“If these tests will give us a basis from which we can start to understand a child’s difficulties, they will have justified the time spent on them. Anything which helps educators or parents to understand any phase of development or lack of development is of immeasurable value” (p. 189).

Source: Stanger, M. A., & Donohue, E. K. (1937). *Prediction and prevention of reading difficulties*. Oxford University Press.

Dyslexia Is Complex; Assessing for It Doesn't Have to Be.

Join the [mailing list](#) to stay up-to-date on all things TOD,
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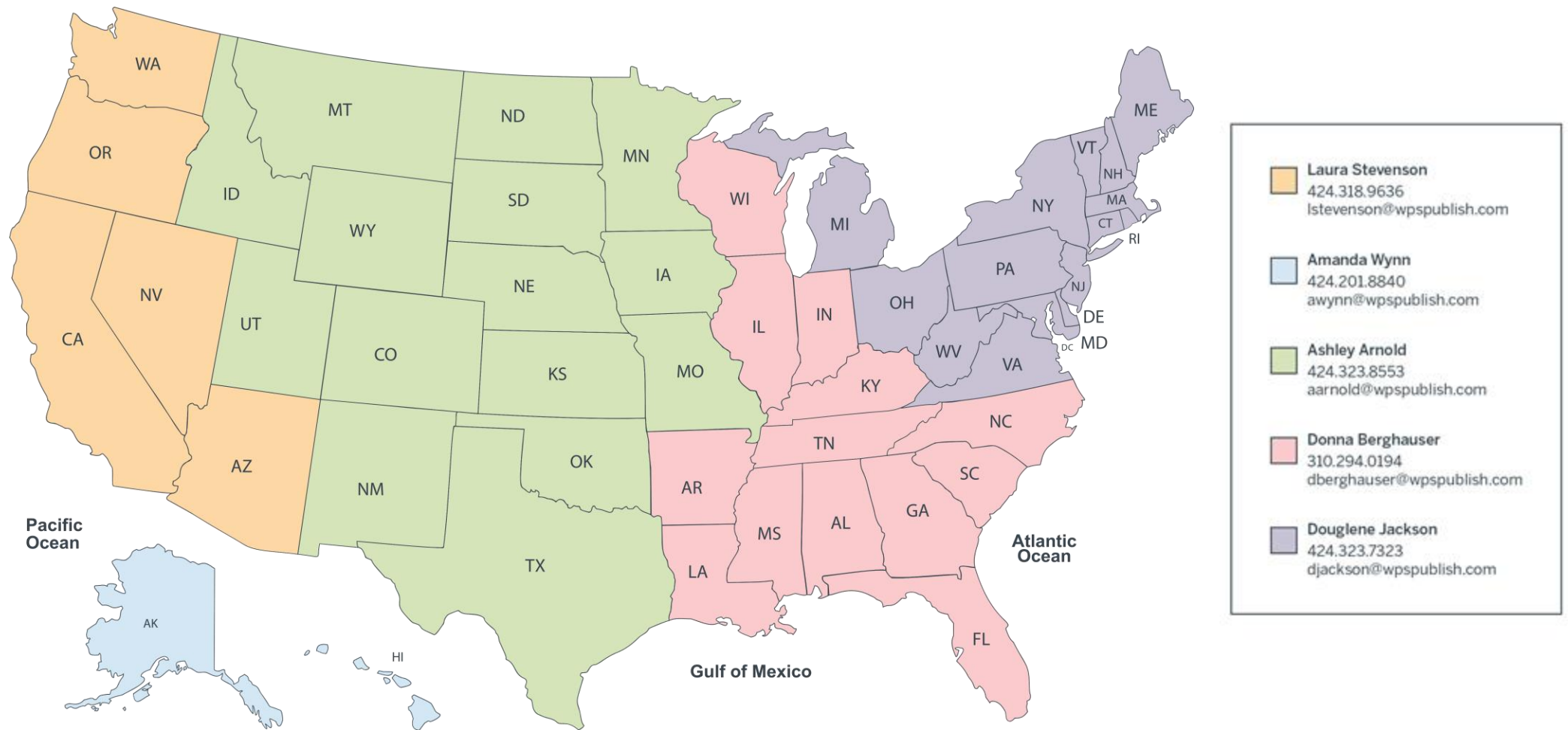
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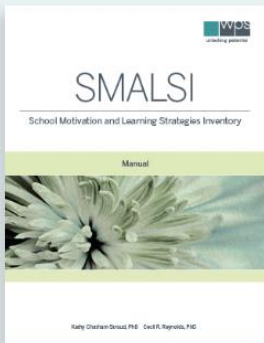
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