Interdisciplinary Assessment and Instruction in Reading

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No presenter has a financial or non-financial interest in the content presented.

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Dyslexia Screening and Early Literacy Intervention Pilot.

- Why this pilot?
  - Early identification and direct, multisensory structured language instruction is critical to prevent or mitigate word reading difficulties and dyslexia.
  - At least 15 and 20 percent of students experience academic failure due to reading problems.
  - Statistics indicate approximately 80% of children in special education experiencing reading difficulties.
  - The majority of students who struggle with reading, experience difficulties at the *word reading level*.
  - Neuroscience has clearly delineated how the brain organizes for reading and what type of instruction aids that organization.

The Goal of the Pilot

- To increase the number of children reading proficiently or better by the end of third grade…because third grade proficiency predicts to life success.
- Better outcomes are associated with earlier intervention, primarily because children fall far behind their peers when they are not able to access print. (Torgensen, et. al, 2001).
- Many children are at risk for dyslexia because of neurobiological and environmental factors, and even those with genetic risk may not manifest the disorder depending on their home environments and *quality of instruction* (Fletcher, 2011).

Why is K-3

Reading Instruction important?

- Third grade reading proficiency predicts to eighth grade proficiency.
- Eighth grade reading proficiency predicts to success in gateway high school courses such as Algebra.
- High school success predicts to high school graduation.

Lesnick, et. Al., 2010

The National Reading Panel

What Skills are Necessary to become a Proficient Reader?

The National Reading Panel (Kilpatrick, 2015; NICHD, 2000) - after a review of numerous studies that reduced the number of struggling readers- concluded the following: If children in kindergarten are provided with (a) direct and explicit phonological awareness training, (b) letter- sound instruction and (c) if they are taught the connection between those two, the number of struggling readers in first, second and third grade will be substantially reduced.

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Some improvement but not enough…

- NAEP scores for 4th grade improved significantly from 1992 to 2011 but changed little from 2011 to 2015.
- Only **36** percent 4th grade students scored proficient or above on NAEP in 2015. (35 percent of public school students).
- Low income students and students identified with disabilities did show some improvement from 2013 to 2015 but not enough to close the gap.

How Does Pennsylvania Compare?

- PA is above average on NAEP for 4th grade but only slightly. (41% of public school kiddos as compared to 35 % of public school kiddos nationally).
- In that same year, the first year that PSSA was based on the PA Core, 58.6% of 4th grade students in Pennsylvania scored Proficient or Advanced.

PISA Results

2009

Shanghai-China
Korea
Finland
Hong Kong
Singapore
Canada
New Zealand
Japan
Australia
United States

2012

Shanghai-China
Hong Kong
Singapore
Japan
Korea
Finland
Canada
Taiwan
Ireland
Poland
Estonia
Liechtenstein
Australia
New Zealand
Netherlands
Belgium
Macro-China
Switzerland
Germany
United States

Building the Foundation

"…it is difficult to overstate the importance of getting children off to an early successful start in reading. We must ensure that students' decoding and word recognition abilities are progressing solidly. Those who read well are likely to read more, thus setting an upward spiral into motion (Cunningham & Stanovich,1998)."

Preventing Reading Failure

Foorman, et. al.

Table I.1. Recommendations and corresponding levels of evidence

	Levels of Evidence		
Recommendation	**Strong Evidence**	**Moderate Evidence**	**Minimal Evidence**
1. Teach students academic language skills, including the use of inferential and narrative language, and vocabulary knowledge.			♦
2. Develop awareness of the segments of sounds in speech and how they link to letters.	♦		
3. Teach students to decode words, analyze word parts, and write and recognize words.	♦		
4. Ensure that each student reads connected text every day to support reading accuracy, fluency, and comprehension.		♦	

Mastery of Foundational Skills

- Research indicates that mastery of word level reading skill is an accessible goal for most students.
- "Much evidence has now accumulated to indicate that reading itself is a moderately powerful determinant of vocabulary growth, verbal intelligence, and general comprehension ability" (p.239).
- "Print exposure appears to compensate for modest levels of general cognitive abilities .... low ability need not necessarily hamper the development of vocabulary and verbal knowledge as long as the individual is exposed to a lot of print" (p.162).

Early Instruction and Intervention Matter

- Shapiro and Solity (2008) provided that instruction to low socioeconomic kindergarten students (SES) and compared their findings to a school matched for SES who were receiving "as usual " kindergarten reading instruction.
- At the end of first grade, the number of struggling readers was 75% lower in the experimental condition compared to the comparison school.

WE NEED TO PROVIDE TARGETED INTERVENTION FOR THE CHILDREN WHO ARE STILL STRUGGLING

Dyslexia and Reading

- Much of what we understand about reading and the reading brain, has come directly from the study of dyslexia.
- Dyslexia is the most studied and best understood of all reading and learning disabilities.

IDA and NICHD Definition

- 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 classroom abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension....

British Dyslexia Association

- Dyslexia is a specific learning disability which mainly affects the development of literacy and language related skills. It is likely to be present at birth and to be lifelong in its effects. It is characterized by difficulties with phonological processing, rapid naming, working memory, processing speed and the automatic development of skills that may not match up to an individuals other cognitive abilities.

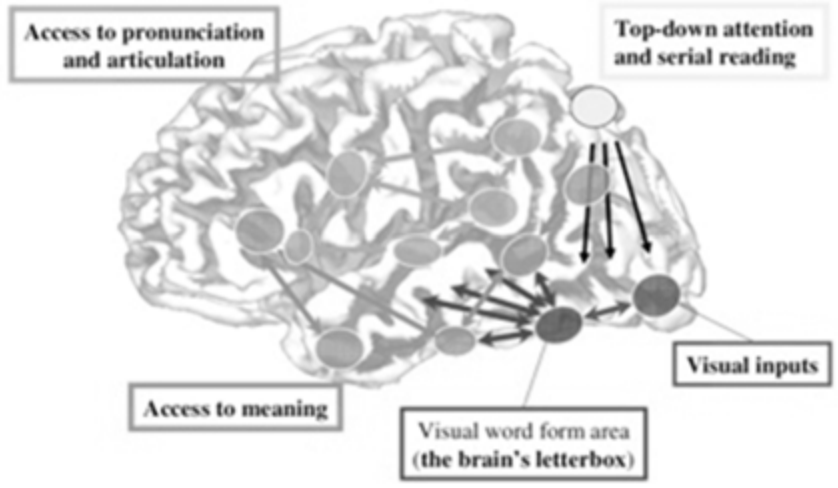
Understanding Dyslexia and Reading

- From the time the term dyslexia was coined in the 1800's, through the 1950's, thought to be a visual processing problem.
- Sally Shaywitz published in Scientific America in 1994 about a 'new theory' related to core phonological processing deficits.
- Convergence of neuroimaging data around the notions that dyslexics process reading differently from normal readers and early intervention can begin to 'normalize' the 'reading circuit' in many cases. This seems to be most true for younger children and with phonological skills.
- More recently, Berninger, Wolf and others demonstrated the significance of rapid automatic naming and orthographic coding.
- Laurie Cutting has recently started to unravel the neurobiology of reading comprehension disorders. Their findings suggest such disorder are related to weaknesses in accessing lexical-semantic representations.

Spoken language is instinctive—built into our genes and hardwired into our brains. Learning to read requires us to take advantage of what nature has provided: a biological module for language.

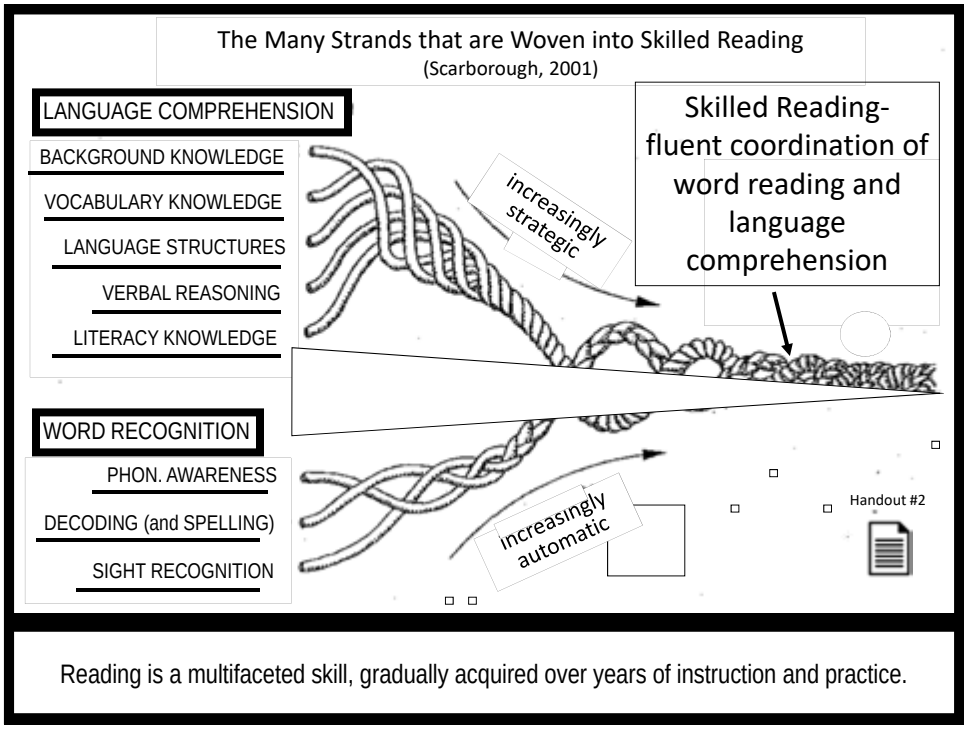
~*Sally Shaywitz*

The Reading Brain



*Learning to read literally **rewrites** the organization of the brain. Since we are not born to read, in contrast to speaking, instruction of some sort is necessary to engage these regions of the brain (Liberman, 1997).*

Reading and Writing are complex processes that involve the codification of receptive and expressive language skills.



Reading is a multifaceted skill, gradually acquired over years of instruction and practice.

Reading components
The five "big ideas" of the reading process
(Grizzle & Simms, 2009)

- Phonemic Awareness: the ability to detect, manipulate, and process acoustical information in words. Phonological Awareness- noticing and manipulating the sound structure of spoken language (Kilpatrick, 2015).
- Alphabetic Principle: associating sounds with letters, and blending graphemes into words. Combines phonology and orhography; Phonics, Decoding
- Reading Fluency: the ability to automatically read words within text using minimal effort and with full comprehension (orthographic processing)
- Vocabulary: a working knowledge of word meanings also mapped to oral vocabulary
- Reading Comp: the ability to derive meaning from text.

More Reading Components

- Orthography refers to the patterns and principles by which spoken language is represented in writing.
- "Orthographic mapping is the process that readers use to store written words for instant and effortless retrieval. It is the means by which readers turn unfamiliar written words into familiar and instantly recognizable sight words" (Kilpatrick, 2015)
- Morphology (semantic lexical knowledge)- morphological awareness refers to the ability to recognize the meaning of parts of words such as roots, prefixes, suffixes, and grammatical endings.

(Kilpatrick, 2015)

Orthography, Phonology, Semantics

- Orthography CAT
- Phonology KAT
- Semantics 
- (Flanagan, 2013)

Screening All Students

- Screening cutoff scores should be based on local norms.
- However, when national norms indicate that large numbers of students locally are below Benchmark, the core must be adjusted.
- Screening data must be analyzed at the school, grade and classroom level.
- Screening data should be disaggregated to look at performance of historically underserved groups.
- Ask the questions, "Is our core curriculum adequately addressing all critical areas for early literacy development? Is the core curriculum meeting the needs of ALL of our students?"

Screening Cautions

- Reading is a complex construct that requires the synthesis of many skills, abilities. experiences and many types of knowledge.
- It is important to use a variety of measures to determine who is at risk for poor reading outcomes.
- Screening is step one in the process and does not provide a comprehensive diagnostic assessment of a student's specific problems.

Diagnostic Assessment

- The trick is to prevent problems before they occur. Cognitive ability tests can help us prioritize scarce resources so that children most likely to fall behind are better able to keep up and succeed.

  - Joel Schneider (2016).

Becoming a Reader…

- **Phonological awareness** the awareness of sounds in *spoken* language. (a language skill, necessary for learning the sound-symbol associations)
- **Age-appropriate speech and language development:** necessary for Phonological Awareness and for reading comprehension.
- **Auditory processing:** essential for processing and learning language, words, and concepts presented orally, and for following instructions.
- **Oral comprehension:** essential foundation for reading comprehension.

More of The Cognitive Skills Necessary for Reading….

- **Orthographic processing**: visual processing is essential for processing letters, letter digraphs, and words, for reading charts and graphs, for understanding spatial concepts.
- **Processing speed/rapid naming:** necessary for fluency in decoding, in word recognition, and in meaning/semantic retrieval.
- **Retrieval fluency:** necessary for retrieval of word meaning, of past uses of word, of contextual information to aid comprehension.
- **Executive functioning:** necessary to cue, coordinate and integrate the skills, abilities and knowledge bases used when reading.

Other Necessary Skills

- **Verbal memory (short-term and long-term):** necessary for learning to automaticity the phonemic sounds associated with letters and letter blends, for blending sounds, for remembering what you have read so you can comprehend, for developing lexical and background knowledge.
- **Visual memory (short-term and long-term**): necessary for learning to automaticity the visual symbols (letters, letter dighraphs) and for fluent word recognition.
- **Working Memory, both verbal and visual:** necessary for decoding multisyllabic words, for sentence and passage comprehension, and for oral retelling.

Complexities of Reading

Hugh Catts, PBIDA, 2015

- Reading ability/disability is a more fluid concept than typically thought
- Given different combinations of text and activity, the best reader can be expected to perform quite poorly and the poorest reader quite well
- Reading ability is not solely "beneath the skin and between the ears" (Mehan, 1993)
- Because of the interactive nature of the process, we are unable to reduce RC performance down to a single score
- **It's not a single thing**

What We Know

- Kindergarten is not too early to identify and intervene with students who are not acquiring skills typical of same age peers.
  - Why wait?
  - ***K-2 is the best "window" for intervention (viz., brain plasticity)***
  - Identification/diagnosis of SLD/Dyslexia is not appropriate in K, but explicit instruction is
- All students who struggle with reading will benefit from evidence-based interventions that are appropriately matched to their instructional needs and that are delivered with fidelity, *but the extent to which they benefit will vary greatly*
- Cognitive ability mediates response to intervention, but response to intervention also mediates cognitive ability.
- Identifying students who have reading difficulties and teaching them how to read *does not guarantee* that they will learn at the same rate and achieve at the same level as most students of the same age/grade level. *Many students who know how to read struggle with learning*

If Johnny Can't Read, Teach Johnny How to Read: Is it that Simple?

There are times when it is appropriate to just teach someone who is falling behind … to read. There are also times when a child has been traumatized, has ADHD, ASD, and/or LD and someone must figure out how best to treat the basic etiology of the problem because those children will need help in reading most likely too. I trust that school psychologists on the job in the real world, face to face with children, do their best to use all information to help in singular and unpredictable situations.

(Fletcher-Janzen, June 16, 2016, NASP listserv)

Brett Miller, Ph.D.

Director of the Reading, Writing and Related Learning Disabilities Program at NIH

- In a personal communication on June 9, 2017
  - Agrees that severe discrepancy has been debunked as an identification method for SLD.
  - Believes RTI/MTSS continues to to be a viable prevention framework but has limitations for identification.
  - Notes that psychometric data for PSW methods is inconsistent (due to that it is an evolving construct.
  - False positives and false negatives are problematic.
  - Intervention becomes increasingly ineffective as children move out of primary years.
  - 'Risk' and screening need to be considered more broadly.
  - Intervention needs to be earlier and greater in intensity and longer in duration.