EVALUATION AND IDENTIFICATION OF DYSLEXIA AND OTHER READING AND WRITING DISORDERS

PBIDA Conference
October 19, 2019
READING CRISIS

• NAEP 2017 data show that 63% of 4th graders and 64% of 8th graders are reading below proficiency level on national assessment.

• PISA data appear to show that American children are losing ground to those from other countries.
<table>
<thead>
<tr>
<th>Year</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>Shanghai-China, Korea, Finland, Hong Kong, Singapore, Japan, Korea, Finland, Canada, New Zealand, Japan, Australia, United States</td>
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<tr>
<td>2012</td>
<td>Shanghai-China, Estonia, Liechtenstein, Australia, New Zealand, Netherlands, Belgium, Macro-China, Switzerland, Germany, United States</td>
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<td>2015</td>
<td>Singapore, Hong Kong, Canada, Finland, Ireland, Estonia, South Korea, Japan, Norway, Macao, Germany, New Zealand, Poland, Slovenia, Netherlands, Australia, Denmark, Sweden, Belgium, France, United Kingdom, Portugal, Taiwan, United States</td>
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## MYTHS ABOUT DYSLEXIA

<table>
<thead>
<tr>
<th>Myth</th>
<th>Description</th>
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<tr>
<td>Dyslexia is caused by vision problems.</td>
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<td>Dyslexia</td>
<td>A child has dyslexia if he or she reverses letters in reading and writing.</td>
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<td>Students with dyslexia have low intelligence.</td>
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<td>Students with dyslexia are lazy.</td>
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<tr>
<td>Students can't overcome dyslexia and won't learn as much as their peers</td>
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<tr>
<td>Dyslexia is a medical, not an education diagnosis</td>
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<tr>
<td>Dyslexia simply means reading disorder</td>
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DECODING DYSLEXIA

• Formed in the fall of 2011 by several parents that met on a train after returning from a National Center for Learning Disabilities (NCLD) luncheon in New York City.

• Today there are Decoding Dyslexia groups in all fifty states and four Canadian Providences.

• Decoding Dyslexia groups advocate for change locally in their respective States and in Washington DC.
Current SLD rates range from 3.2 to 8.5% in all 50 states.

Analysis of SLD prevalence rates did not vary between states with and without dyslexia laws in place.

Moreover, there was no change in the identification of SLD once states had implemented these laws.

In Arkansas and Texas, where there are reporting requirements, rates of dyslexia were less than 5%.

Given the persistent levels indicating lack of reading proficiency, our review of data suggests that overall students with dyslexia are being underidentified.
THE FIRST STEP...
Federal Law - IDEIA

(30) Specific learning disability.—

(A) In general.--The term `specific learning disability' means a disorder in 1 or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations.

(B) Disorders included.--Such term includes such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia.
Federal Regulations - Definition

“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.” [34 CFR Section 300.8(c)(10)(i)]
October 23, 2015

Dear Colleague:

Ensuring a high-quality education for children with specific learning disabilities is a critical responsibility for all of us. I write today to focus particularly on the unique educational needs of children with dyslexia, dyscalculia, and dysgraphia, which are conditions that could qualify a
OSERS encourages SEAs and LEAs to consider situations where it would be appropriate to use the terms dyslexia, dyscalculia, or dysgraphia to describe and address the child's unique, identified needs through evaluation, eligibility, and IEP documents.

OSERS encourages SEAs to remind their LEAs of the importance of addressing the unique educational needs of children with specific learning disabilities resulting from dyslexia, dyscalculia, and dysgraphia during IEP Team meetings and other meetings with parents under IDEA.

OSERS further encourages States to review their policies, procedures, and practices to ensure that they do not prohibit the use of the terms dyslexia, dyscalculia, and dysgraphia in evaluations, eligibility, and IEP documents.
Good Afternoon,

On Friday, the Office of Special Education and Rehabilitation Services (OSERS), published a Dear Colleague letter that was sent to the state departments of education as well as other interested groups. Attached is a copy of that letter for your information and review.

The purpose of the letter is to clarify that there is nothing in the Individuals with Disabilities Education Act (IDEA) that would prohibit the use of the terms dyslexia, dyscalculia, and dysgraphia in IDEA evaluation, eligibility determinations, or Individualized Education Program (IEP) documents.

Please feel free to contact me if I can provide further information or if you would like additional clarification.

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PRIVILEGED AND CONFIDENTIAL COMMUNICATION

This message is intended only for the use of the individual or entity to which it is addressed and may contain information that is confidential. If the reader of this message is
DYSLEXIA: THE MOST RESEARCHED LEARNING DISABILITY

- A disorder in one or more of the basic processes psychological involved in understanding or in using language, spoken or written. IDEA

- These disorders are intrinsic to the individual, presumed to be due to central nervous system dysfunction, and may occur across the life span. NJCLD, 2016

- Learning disabilities are due to genetic and/or neurobiological factors that alter brain functioning in a manner which affects one or more processes related to learning. LDA, 2018
DYSLEXIA DEFINED

“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.”

~International Dyslexia Association 2003
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.
Dyslexia is an alternate term that is used to refer to a pattern of learning difficulties characterized by problems with accurate or fluent word recognition, poor decoding and poor spelling abilities. If dyslexia is used to specify this particular pattern of difficulties, it is important also to specify any additional difficulties with reading comprehension or math reasoning.
CHILDREN AND ADULTS WITH DYSLEXIA HAVE SHOWN BRAIN DIFFERENCES

• Both the left temporo-parietal and left occipito-temporal (visual word form area) parts of the reading network exhibit reduced responses to print in people with dyslexia (Hoeft, Meyler et al., 2007; Temple et al., 2001).

• Response to print in left frontal cortex is often atypical in dyslexia, and sometimes greater in people with dyslexia (Shaywitz et al., 1998).

• The increased activation in left frontal cortex may reflect the greater effort that individuals with dyslexia must exert to read words (Hoeft et al., 2006).

• People with dyslexia often exhibit reduced gray-matter volume or thickness in the same regions of the reading network that exhibit altered functional responses (Hoeft et al., 2006; Kronbichler et al., 2008) and reduced structural connectivity in the three white-matter tracts that integrate the components of the reading network (Hoeft et al., 2011; Langer et al., 2015; Myers et al., 2014; Vandermosten et al., 2012).
  
  • Ozernov-Palchick, O & Gabrieli, J,
Evolution gave us a speaking/hearing brain
Dyslexia research has been the basis of understanding the role of neurobiology in reading.

Culture and technology have allowed for development of a reading and writing brain.
FOUNDA TIONAL SKILLS ARE KEY

Table 1.1. Recommendations and corresponding levels of evidence

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Strong Evidence</th>
<th>Moderate Evidence</th>
<th>Minimal Evidence</th>
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<tr>
<td>1. Teach students academic language skills, including the use of inferential and narrative language, and vocabulary knowledge.</td>
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<td>2. Develop awareness of the segments of sounds in speech and how they link to letters.</td>
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<td>3. Teach students to decode words, analyze word parts, and write and recognize words.</td>
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<tr>
<td>4. Ensure that each student reads connected text every day to support reading accuracy, fluency, and comprehension.</td>
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Foorman, et. al. (2016)
EXPLICIT, SYSTEMATIC INSTRUCTION
The findings of specific brain differences in children before learning to read strengthen the rationale for early identification of risk for later development of dyslexia.

Neuroimaging has revealed brain differences in prereading children at risk for reading difficulty well before formal reading instruction begins in kindergarten, and these differences are similar to those observed in older children and adults who have received years of reading instruction (Ozernov-Palchik & Gaab, 2016).

Growing evidence indicates that neurobiological differences exist before instruction that may be predictive of response to instruction. …preintervention neurobiological profiles may provide insight into receptiveness to instruction. (Barquero, L. & Cutting, L., 2016)
EARLY SCREENING SHOULD...

- Be implemented no later than kindergarten
- Include all the key domains:
  - phonological awareness
  - letter knowledge (letter-sound knowledge for kindergarten and older)
  - rapid automatized naming,
  - vocabulary,
  - listening comprehension
  - family history
  - Gaab, 2017
• The cheapest and fastest screening is to ask parents whether there is a family history of reading disabilities.

• Dyslexia is strongly heritable, occurring in up to 50% of individuals who have a first-degree relative with dyslexia (Pennington, 1991).

• The risk and severity of dyslexia is higher when both parents are affected (Wolff & Melngalailis, 1994).
  • Gaab, 2017
• According to NICHD, it takes four times as long to remediate a student with poor reading skills in fourth grade as in later kindergarten or early first grade (Fletcher & Lyon, 2001).

• Tier 2 instruction may be little more than another dose of reading failure before their eventual placement in Tier 3 (Compton, et al., 2012).

• Recent research has indicated that dyslexia risk profiles identified in pre-kindergarten (PA risk, RAN risk and double-deficit risk) remained stable across two years (Ozernov-Palchik, et al., 2017).
WHAT IF WE DON’T INTERVENE EARLY?
WE CAN INTERVENE AT ANY AGE

• Martha Houghen, Evidence-Based Reading Instruction for Adolescents, Grades 6-12

• Most adolescents struggling with reading have word level deficits, and comprehension deficits.

• Intervention must include both word reading and comprehension.
SCARBOROUGH’S READING ROPE

THE MANY STRANDS THAT ARE WOVEN INTO SKILLED READING

LANGUAGE COMPREHENSION

BACKGROUND KNOWLEDGE
(basic, domain, etc.)

VOCABULARY
(broad, precision, links, etc.)

LANGUAGE STRUCTURES
(syntax, semantics, etc.)

VERBAL REASONING
(inference, metaphor, etc.)

LITERACY KNOWLEDGE
(print concepts, genres, etc.)

SKILLED READING:
Fluent execution and coordination of word recognition and text comprehension.

WORD RECOGNITION

PHONOLOGICAL AWARENESS
(syllables, phonemes, etc.)

DECODING (alphabetic principle
spelling-sound correspondences)

SIGHT RECOGNITION
(of familiar words)
• Most struggling adolescent readers continue to exhibit word reading deficits.

• Intervention for word reading deficits works but more intensity and time is needed.

• Direct instruction to building both word reading and comprehension skills (not to mention writing and spelling).
Phonological skills include phonemic skills
Rapid Automatized Naming
Processing Speed
Orthographic Coding
Working Memory
Cognitive Functioning
Phonological Awareness
Rapid Naming Tests
Verbal Memory Tests
Reading Fluency Measures
Visual Spatial Skills
Executive Functioning
Research indicates that a high percentage of individuals with dyslexia also have ADHD.

- Academic and other outcomes are worse when both disorders are present.

- A significant percentage of students with dyslexia also have math disabilities.

- Comorbidity rates between literacy and arithmetic deficits were four times higher than expected by chance, whereas comorbidity rates between literacy and magnitude processing deficits did not exceed chance rate. (Moll, K. et. al. 2019)
DYSLEXIA IS A LEARNING DISABILITY BUT NOT ALL LEARNING DISABILITIES ARE DYSLEXIA.
DYSGRAPHIA

- Impaired legible and automatic alphabet letter writing (handwriting) which may interfere with learning to spell and compose,
- and legible and accurate numeral writing, which may interfere with written math.

- Berninger, V. & Wolf
Selective language impairment (SLI), language learning disability (LLD), or oral and written language learning disability (OWL LD) (all synonyms) exist in children who are overall within normal range for five domains of development including language, but are impaired in multi-word (syntactic and morphological) processing or production. (Berninger)

Specific Reading Comprehension Disorder, specific weaknesses in accessing lexical-semantic representations during word recognition which hinders comprehension. (Cutting, Nelson, Plante)
DYSCALCULIA OR MATH DISABILITY

• Difficulty in learning or comprehending arithmetic, such as difficulty in understanding numbers, learning how to manipulate numbers, performing mathematical calculations and learning facts in mathematics.
THINGS WE MUST ASSESS

- Phonological Skills
- Rapid Naming
- Orthographic Processing
- Working Memory
- Visual Processing
- Long-term Storage & Retrieval
- Verbal Abilities
- Acquired Knowledge

- Phonological skills
- Decoding Skills
- Word Reading
- Fluency
- Vocabulary
- Comprehension
- Listening Comp

- Writing
- Spelling
- Listening
- Math Problem Solving
- Math Calculation
- Math Fluency
COMPREHENSION CAUTIONS AND CONSIDERATIONS

Comprehension Assessments Vary
- Task Demands
- Constructs Assessed

Relationship Between Reading Comprehension and Language Skills
- Listening comprehension should be assessed but these assessments also vary

Relationship Between Decoding and Comprehension
- Varying considerations for assessing comprehension in poor and strong decoders (Farrall)
SOME USEFUL ASSESSMENTS

- Feifer Assessment of Reading
- The Test of Integrated Language and Literacy Skills
- The Comprehensive Test of Phonological Processing
- Test of Orthographic Competence
- WJ IV
- KTEA 3
• Research consistently indicates that direct, explicit, systematic Structured Literacy™ instruction is key.
• The earlier the intervention the greater the impact.
• Students can benefit at any time but closing the gap becomes increasingly difficult, especially after 3rd or 4th grade.
• Key to success…
  • Intensity
  • Duration
  • Diagnostic & prescriptive skill of teacher
STRUCTURED LITERACY™

- The provision of systematic, explicit instruction that integrates listening, speaking, reading, and writing and emphasizes the structure of language across the speech sound system (phonology), the writing system (orthography), the structure of sentences (syntax), the meaningful parts of words (morphology), the relationships among words (semantics), and the organization of spoken and written discourse.
• Instructional tasks are modeled, when appropriate.
• Explicit instruction is provided.
• Meaningful interactions with language occur during the lesson.
• Multiple opportunities are provided to practice instructional tasks.
• Corrective feedback is provided after initial student responses.
• Student effort is encouraged.
• Lesson engagement during teacher-led instruction is monitored.
• Lesson engagement during independent work is monitored.
• Students successfully complete activities at a high criterion level of performance.
DOES DYSLEXIA = IEP?

• Early intervention can mitigate the impact.
• Dyslexia is a ‘spectrum’ disorder.
• Students can be served in regular education; can need special education (IEP) or need only accommodations (504 Plan).
• However…
  • Given the persistent national data indicating lack of reading proficiency, review of data by Phillips & Odegard suggests that overall students with dyslexia are being under identified.
PA ACT 69
DYSLEXIA SCREENING & EARLY LITERACY INTERVENTION PILOT

Legislation – passed in June 2014 to fund pilot program using evidence-based early screening and reading instruction

Advisory Group of educators and parents established

8 school districts with 21 elementary schools participating in pilot

Parent Liaisons identified in each district

Lead Teachers: Each district has one or more lead teachers
GOALS OF THE PILOT

To identify students at risk for reading difficulties and intervene early (Kindergarten).

To provide an “intensive evidence-based” instructional program in conjunction with a core reading program earlier to improve overall reading skills for at risk students, and

To reduce special education costs to school districts by providing intensive evidence based instruction.
Findings suggest that the combination of enhanced core instruction and supplemental MSL intervention improve some student outcomes in school settings.

Both Pilot cohorts (21 schools) outperformed the Comparison sample on some spring 2017 (Year 2) measures (nonsense word fluency for both cohorts and letter naming fluency for Cohort 2).

Results are particularly encouraging given the Comparison sample's participation in another literacy initiative, which may result in an underestimation of Pilot program effects compared with typical schools.


• Foorman, B. et. al. (2016) *Foundational skills to support reading for understanding in kindergarten through third grade.* What Works Clearinghouse

MORE REFERENCES

SOME RESOURCES

- [https://dyslexiaida.org/](https://dyslexiaida.org/)
- [https://ldaamerica.org/](https://ldaamerica.org/)
- [https://www.dyscalculia.org/](https://www.dyscalculia.org/)
- [https://njcld.org/](https://njcld.org/)
- [https://improvingliteracy.org](https://improvingliteracy.org)
- [https://eric.ed.gov/?id=ED582923](https://eric.ed.gov/?id=ED582923) (Pilot Final Report)
- Monica McHale-Small, Ph.D.
- Contact: monica.mchale.small@gmail.com