

Demystifying Dyslexia: We Know What Works

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Giving Credit Where Credit is Due

Reid Lyon
Louisa Moats

Presentation Objectives

1. To promote a better understanding of what dyslexia is and what it is not;
2. To underscore the importance of early identification of children who have reading difficulties;
3. To emphasize the need of providing the proper forms of remediation when children first begin to struggle with reading;
4. To provide early warning signs of a reading difficulty;
5. To demonstrate how complex reading really is and why it is so critical that we have highly trained teachers providing reading instruction to our children;
6. To provide an overview of what constitutes scientifically-based reading instruction;

English is Complex

How do you pronounce,

“ghoti?”

“Ghoti” could also be “Fish”

Gh as /f/ in rough

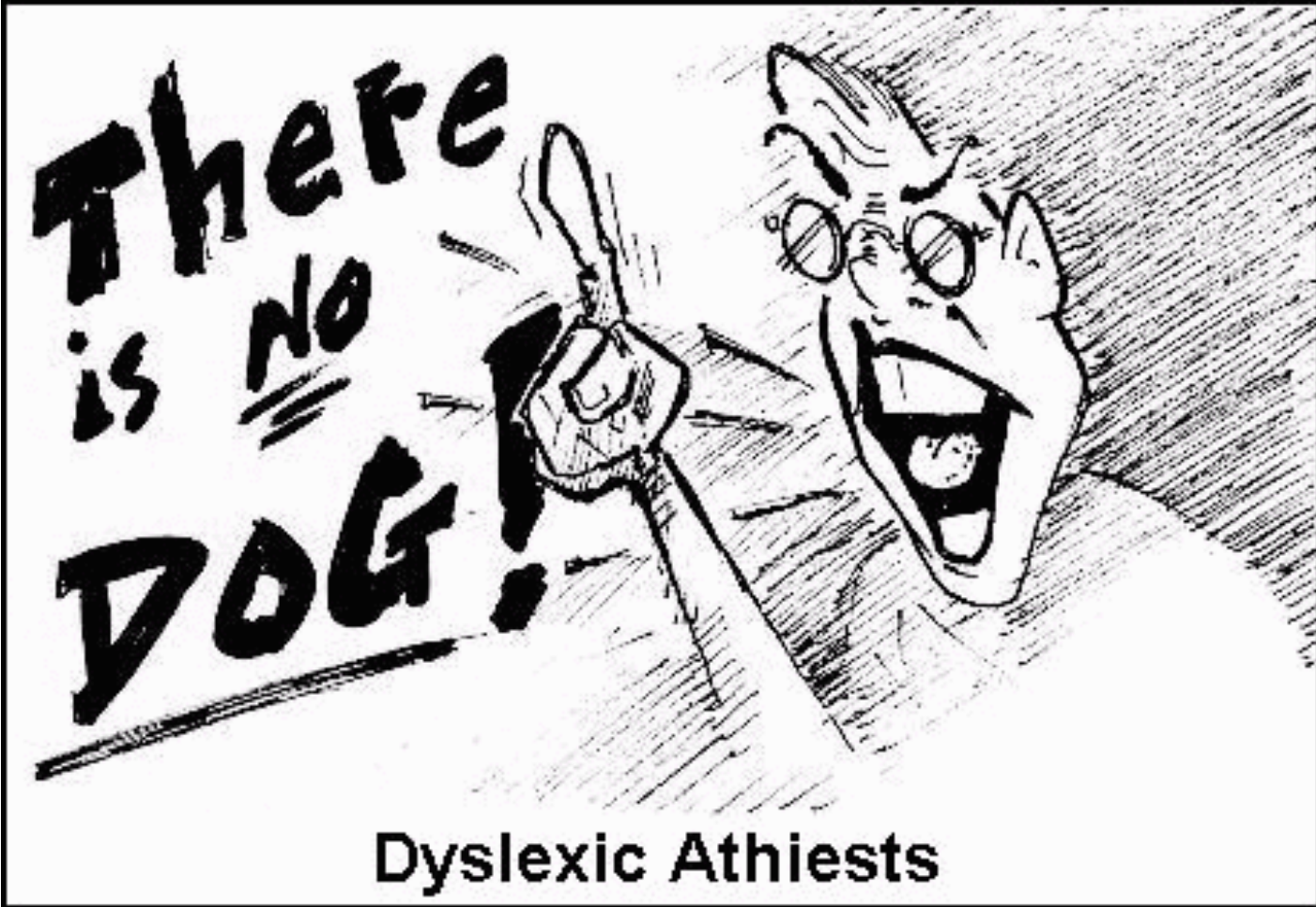
O as /i/ in women

Ti as /sh/ in –tion (relation)

Dyslexia: A Definition

An unexpected weakness in a
sea of strengths.

Severity = Treatment Plan



- Dyslexics can't read because of their low IQ.
- Dyslexic students have behavioral issues
- Dyslexics are lazy and unmotivated. (Vision)

Dyslexia: General Facts

20 to 30%

Dyslexia Diagnosis

- Conducted by an educational psychologist
- Tests in **cognitive processing** (Wechsler Intelligence Scales for Children), **academic skills** (isolated word reading, connected text reading, spelling, writing), and **phonological processing** and **phonemic awareness**.
- Most often for a student to receive services in special education there has to be a **significant discrepancy** between his potential and his actual achievement level.

The Failure of the Discrepancy Model

Too Late

Reading Failure: A National Problem

- Reading failure is a serious national problem that cannot simply be attributed to poverty, immigration, or the learning of English as a second language.
- The psychological, social, and economic consequences of reading failure are huge, not to mention the damage to a person's self-esteem and motivation.

Reading Failure: A National Problem

- Approximately 75% of all people with a learning disability have difficulty reading and spelling.
- It is estimated that 70% of the prison population cannot read at a sixth grade level.
- Most disturbing: some southern states are planning for future prison growth by studying illiteracy rates of middle school students.

Reading Failure: A National Problem

- According to Dr. Reid Lyon, 95% of the kids who don't learn to read are not dyslexic but are instructional casualties. They have not been given good instruction.
- Whether you are dyslexic or not, good reading instruction is good reading instruction.
- ***Our teachers need to be better prepared to teach reading than they are.***

Reading Failure: A National Problem

- An analogous situation to health care:
- A few dollars for primary prevention versus tens of thousands of dollars (or more) for tertiary, critical care.

- 450 Students
- Early ID and Intervention
- Results

Dyslexia: Who is at Risk?

- A family history of delayed speech and language development or literacy problems
- Difficulty rhyming by the age of four
- Errors in letter naming by the end of kindergarten
- Difficulty finding the words needed to express basic thoughts and ideas

Dyslexia: Who is at Risk?

- Difficulty with the comprehension of spoken or written language
- Difficulty remembering colors, sequences (numbers, days of the week, seasons, months, etc.)
- Children with working memory issues
- Difficulty with directionality with regard to space and time (right and left; up and down; early and late; yesterday and tomorrow)

Dyslexia: Who is at Risk?

- Children who have difficulty decoding single words
- Difficulty encoding—spelling—words
- Slow rate of writing

Dyslexia: Who is at Risk?

- Difficulty with organization;
- Difficulty with mathematics—often related to the sequencing of steps or directionality or the language of mathematics

Identification: Next Steps

If you suspect that your child has dyslexia or any learning difficulty, what should you do?

- A psycho-educational evaluation is needed
- Two choices:
 - Private
 - Public School System

Psycho-educational assessment includes:

- Cognitive Potential & Processing;
- Achievement Testing
 - Phonological processing including phonemic awareness
 - Word decoding
 - Fluency
 - Comprehension
 - Spelling
 - Written Expression
 - Speech & Language (if needed)
 - Math

Identification: Final Report

- A final report should provide test scores as well as a narrative explaining these scores and offering specific recommendations for remedial interventions.
- If the report is from the school district, the diagnosis may not include a diagnosis of dyslexia or any specific recommendations for interventions.
- It is critical that identification of a reading problem and proper forms of intervention happen by the start of third grade or there is only a 25% chance that the student will read at grade level in his school career.

Yale's Haskins Laboratory:

- MRI study pinpointing the neural activity of good readers versus dyslexic readers controlling for:
 - IQ
 - SES
 - Other relevant variables

- Haskins Laboratory Findings:
 - The neural pathways of dyslexics light up differently than the pathways of “normal” readers.
 - The neural pathways can be rewired with proper intervention.

- Haskins Laboratory Findings
- Five variables of intervention dependent upon where on the continuum a student falls:
 - The intervention itself
 - Intensity
 - Frequency
 - Duration
 - Knowledge and Expertise of the Teacher

- Good reading instruction is good reading instruction.
- It doesn't matter if the instruction is for a traditional learner or for a dyslexic student.
- The variables of instruction might need to change including the **intensity**, the **frequency**, and the **duration** of that instruction.

Reading Assumptions

- The teaching of reading and spelling must be viewed through a scientific lens.
- Unlike oral language, reading does not come naturally and relies heavily on how we hear and manipulate sounds (phonemic awareness) even before we see printed words.
- Reading is learned and, therefore, must be taught, supported, and sustained.

Reading Assumptions

- English is a difficult language to master in its written form.
- Most adults conceptualize words in their written form rather than in their spoken form.
- We don't pay attention to the speech sounds contained within words.
- For example, we do not interpret the word, "cat," as three distinct sounds. Rather, it is considered as one sound unit conferring meaning.

Sight versus Sound

What word is this child spelling:

“grs”

Sight versus Sound

How many sounds in the word

“OX?”

Reading: What we Know

- The most reliable indicator of difficulties in comprehending what is read is the ability to read **quickly and accurately (reading fluency)**.
- Reading the English language requires understanding the alphabetic writing system—understanding that the alphabetic print must be converted into sounds and meaningful messages.

Reading: What we Know

- For a vast majority of students who have a difficult time reading, the breakdown occurs around having **automaticity** with print skills.

Reading: What we Know

- The longer it takes you to read something, the more memory and more attention it is going to require.
- If too much memory and attention are required, there is not enough mental energy left for comprehension, particularly as the text becomes more complex.

Reading: What we Know

- Nationally, about 40% of students have a difficult time learning to read.
- According to Reid Lyon, approximately 95% of these students are instructional casualties.
- They have not been given proper forms of instruction in reading.
- We refer to them as NBTs, Never Been Taught.

Reading: What we Know

- There is an important distinction between “learning to read” and “reading to learn.”
- In grades K-3, students are learning to read.
- Starting in grade 4, students begin to read to learn.
- If by grade 4 students cannot read, they fall further and further behind in school.

Reading: What we Know

- According to studies sponsored by the National Institutes of Health (NIH):
- If a child is not reading at grade level by the start of **third grade**, there is only a **25% chance** that that student will catch up and read at grade level during his/her entire school career.

Reading: What we Know

- Effective classroom instruction in the early grades by well prepared teachers is the most powerful method for preventing reading and learning problems.
- When teaching children who have a difficult time learning to read, the research indicates that explicit, systematic instruction is most effective.

Reading: What we Know

- Unlike learning oral language, a child cannot learn to read solely through exposure to print. **Reading is not a natural process.** It must be taught explicitly and sequentially, and it must be sustained.
- **Reading is a complex task.** It is one of the most complex, unnatural cognitive interactions between our brains and the environment that surrounds us.
- Most teachers don't understand how complex a task reading really is and most teachers do not have an adequate understanding of the structures of language needed to convey this understanding to students.

Reading: What we Know

- We know that nationally about 40% of students struggle to read and do not have basic reading skills
- We know that when we have highly trained teachers who teach reading correctly, based on scientific evidence, (not on philosophy, not on belief, not on untested assumptions), we reduce that shame of having 40% of students not being able to read to 2 to 5%

Reading: What we Know

We know there is a direct relationship between:

- the **intensity**,
- the **amount of systematization**, and
- the **amount of explicitness** that goes into reading instruction, and
- the **ease** at which a child will learn to read.

Reading: What does a Student Need?

- A student needs phonemic awareness, the ability to sequence and segment the sounds found within words. Phoneme awareness is difficult because the brain typically doesn't hear the sounds within words, but this needs to happen for students to be able to read and spell.
- You can't find good readers who have a poor sense of phonemic awareness, but you can find kids with good phonemic awareness who might not be good readers.
- Phonemic awareness is necessary to be a good reader, but phonemic awareness alone is not enough to be a good reader.

Reading: What does a Student Need?

- Having an explicit understanding between the sound structure of English and the print structure, also known as phonics.
- Most of the students who are at risk of reading failure did not have the interactions that built the fundamental, foundational linguistic building blocks.
- If they then come to kindergarten and first grade and they receive instruction that is philosophically-based instead of science-based, they'll never build the foundational knowledge needed to become a proficient reader.

Reading: What does a Student Need?

- Not being taught reading explicitly is like putting a child in front of a piano and having him listen to Mozart
- ...and then expecting that the child will be able to play Mozart through this exposure.

Reading: What does a Student Need?

- Students also need automaticity with symbol-sound correspondences.
- That is, students need to be fluent readers.
- They need to read accurately at a high rate of speed.

Reading: What does a Student Need?

- Phonemic awareness, phonics, and fluency are not enough. If children don't have a rich enough vocabulary, they won't understand what they are reading.
- Unfortunately, children who can't read will not acquire as deep or as broad a vocabulary as children who do read.
- The Matthews Effect occurs: The rich become richer, while the poor become poorer.
- Vocabulary also needs to be explicitly taught.

“England’s openers labored 34 balls before scoring their first boundary as Strauss cracked two fours through the leg side. Cook made a patient start before motoring past his skipper.”

Reading: What does a Student Need?

- We also have students who have good phonemic awareness, good phonics, fluency, and a good vocabulary, who still don't comprehend well because they are not active with the text.
- They don't interact with the text; they don't summarize; they don't predict; they don't bring their background knowledge and experience to the act of reading.
- Like phonemic awareness, phonics, fluency, and vocabulary, reading comprehension skills must be taught directly, monitored, and reinforced.

The Five Strands of Reading Instruction

1. Phonemic Awareness
 2. Phonics
 3. Fluency (reading rate and accuracy)
 4. Vocabulary
 5. Comprehension
- It is very important that we don't view the strands as being separate and distinct within a reader. Instead we need to think of one "reading rope," consisting of the interweaving of the five strands.

Scientifically-Based Reading Instruction (SBRI)

SBRI should include:

- a) Teaching phonemic awareness at an early age (kindergarten)

- b) Teaching the common sound-spelling relationships in words

- c) Teaching children how to say the sounds in words

Scientifically-Based Reading Instruction (SBRI)

SBRI should include:

- d) Teaching symbol-sound relationships explicitly and sequentially
- e) Use text that is composed of words that use symbol-sound correspondences that children have learned
- f) Use interesting stories to develop vocabulary and language comprehension

Scientifically-Based Reading Instruction (SBRI)

- The most effective classroom method for early reading instruction involves a combination of:
- **Explicit instruction** in word recognition skills and
- **Reading comprehension strategies** with the opportunities to apply and practice these skills in controlled literature.
- Having the opportunity for **guided practice** of skills learned in isolation is critical.

Scientifically-Based Reading Instruction (SBRI)

Should be:

- Direct
- Explicit
- Sequential
- Multi-sensory
- For older students, analytical
- And, ideally, SBRI should be diagnostic/prescriptive

The Importance of Trained Teachers

- According to Louisa Moats, Ed.D, one of the pre-eminent reading researchers in the world, teachers are the most important variable in the reading equation.
- Moats says that “it is imperative that teachers have the knowledge of the structure of language and the alphabetic writing system in order to teach reading well.”
- Unfortunately, Moats research indicates “that teachers who are literate and experienced generally have an insufficient grasp of spoken and written language structure and are unable to teach it explicitly to either beginning readers or those with reading/spelling disabilities.”

Reading: A Survey of Language Knowledge (Moats)

- When is “ck” used in spelling?
- What letters signal that g is pronounced like a /j/?
- List all the ways that you can think of to spell /k/?
- What are the six common syllable types in English?
- When adding a suffix to a word ending in “y,” what is the rule?
- What is the “silent-e” rule for spelling?

Source: Moats, “The Missing Foundation in Teacher Education”)

Reading: A Survey of Language Knowledge (Moats)

- From the survey, we found:
- 27% could identify the number of morphemes in a word
- 10% could consistently identify consonant blends

Source: Moats, “The Missing Foundation in Teacher Education”)

Reading: A Survey of Language Knowledge (Moats)

- From the survey, we found:
- 45% could identify the schwa vowels in written words
- 30% could explain when “ck” is used in spelling
- 30% could explain the “y rule” used in spelling
- 15% knew the six syllable types

Source: Moats, “The Missing Foundation in Teacher Education”)

An Example of the Importance of Understanding Language Structure

Error analysis:

“grip” spells _____?

Why?

An Example of the Importance of Understanding Language Structure

Error analysis:

“chrane” spells _____?

Why?

An Example of the Importance of Understanding Language Structure

Error analysis:

How should a teacher handle the misspelling of

Sine for Sign?

An Example of the Importance of Understanding Language Structure

Error analysis:

Sbider spells _____?

Why?

An Example of the Importance of Understanding Language Structure

Error analysis:

Buddr spells _____ ?

Why?

An Example of the Importance of Understanding Language Structure

Error analysis:

How should a teacher handle the misspelling of

Government for Government?

How can we help the 40% of our children who struggle to read?

1. We end the debate about what constitutes good reading instruction.
2. We are realistic about the time and effort that it will take to train teachers in scientifically-based reading instruction.
3. Departments of Education of each state need to create higher standards of core knowledge necessary to teach reading. (Currently many elementary education programs require only a survey course in reading in order to gain licensure. I believe at least five, three-credit classes are required plus a semester of a teaching practicum with a good reading teacher).

How can we help the 40% of our children who struggle to read?

4. Current teachers need a massive dose of professional development to get up to speed and school administrators need to figure out how to make that happen.
5. School administrators need to become trained so they know what constitutes good reading instruction and they must become leaders in demanding change.
6. Teachers must want to acquire this information.
(As little as 25% are interested in successful implementation of scientifically-based reading instruction).

Dyslexia/Reading Resources

- Sally Shaywitz's, *Overcoming Dyslexia*
- International Dyslexia Association (IDA) 410.296.0232, www.interdys.org
- Louisa Moats, "The Missing Foundation in Teacher Education"
- Louisa Moats, *From Speech to Print*
- National Institutes of Child Health and Human Development (NICHD): www.nichd.nih.gov/default.htm
- National Reading Panel: *Teaching Children to Read*, www.nationalreadingpanel.org
- International Dyslexia Association, Upper Midwest Branch (IDA-UMB): www.ida-umb.org

Dyslexia/Reading Resources

- Orton Gillingham of Minnesota (OG-M): 763.951.2379, www.ortongillingham-mn.org
- Lindamood-Bell of the Twin Cities: 952.835.0700
- Reading Rockets: www.readingrockets.org
- Groves Academy: 952.920.6377, info@grovesacademy.org, www.grovesacademy.org
- What Works Clearing House: ies.ed.gov/ncee/wwc/

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