

WHAT SLPS NEED TO KNOW ABOUT DYSLEXIA

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Overview

- Background
- History of the label "dyslexia"
 - Relevance to the field of SLP
- Evolution of the diagnosis
- Comparison of children with dyslexia to other children with reading impairments
- Role of SLP in reading assessment and tx

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- Dyslexia is one kind of language-based problem that can fall anywhere on the spectrum of annoyance to severe limitation. It affects more than reading and is usually experienced for life. It is more common than any other kind of learning disability. And, it responds to expert, informed instruction- the provision of which remains our greatest challenge

(Moats, 2008)

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Common misperceptions of dyslexia

- Most common feature is seeing letters backwards cartoon
- Individuals with dyslexia are gifted
- Dyslexia cannot be diagnosed until a child has been in school at least 3-4 years picture
- Dyslexia is a visual problem, and therefore, colored lenses and/or eye tracking exercises will help

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Definition of dyslexia

(research committee of the IDA, Lyon et al., 2003)

- 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 difficulties

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Definition of dyslexia

(research committee of the IDA, Lyon et al., 2003)

- 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

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Definition of dyslexia

(research committee of the IDA, Lyon et al., 2003)

- Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge

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Definition of dyslexia

(research committee of the IDA, Lyon et al., 2003)

- The hallmark characteristic of dyslexia is a person's inability to read printed words in the presence of normal intelligence and adequate reading instruction (Lyon, Shaywitz & Shaywitz, 2003)

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Dyslexia

- Dyslexia has also been referred to as "word-reading level disability"
(Fletcher, Lyon, Fuchs, & Barnes, 2007)

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HISTORY OF THE ORIGIN OF THE DIAGNOSIS OF DYSLEXIA

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History of the origin of *dyslexia*

- Historical names for dyslexia:
 - Word blindness
 - Visual agnosia for words
 - Specific reading disability
 - Psycholexia
 - Strephosymbolia
 - Primary & secondary reading retardation
 - Auditory dyslexia
(Wolfe & Ashby, 2007)

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- The first clinical research studies of reading disability looked at adults with acquired disabilities due to trauma
 - Loss of reading ability was attributed to damage in specific regions of the brain


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Dr. W. Pringle Morgan

- Dr. W. Pringle Morgan, reported characteristics in a young patient who had never learned to read

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W. Pringle Morgan, M.B.



A CASE OF CONGENITAL WORD BLINDNESS
By W. PRINGLE MORGAN, M.B.
British Notes.

FRANCIS M., an well-grown, well-nourished child, the eldest son of an intelligent parent, the second child of a family of seven. He has always been a bright and intelligent boy, quick to grasp, and in no way inferior to others of his age—his inability to read, his great difficulty with letters and in particular, and his general inability to read. This inability is not congenital, but is due to some congenital defect.

He has been at school at modern times from the age of three and the greatest efforts have been made to teach him to read, but in spite of this laborious and persistent training he can only with difficulty spell out words of one syllable.

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Percy F.

- Dr. Morgan, 1896, wrote about a fourteen year old boy
 - "He has always been a bright and intelligent boy....."
 - "His great difficulty has been- and is now- his inability to read."
 - ".....in spite of this laborious and persistent training, he can only with difficulty spell out words of one syllable....."

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Percy F.

- "He says he is fond of arithmetic, and finds no difficulty with it...."
- "I might add that the boy is bright and of average intelligence in conversation. His eyes are normal....and his eyesight is good."

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Word blindness

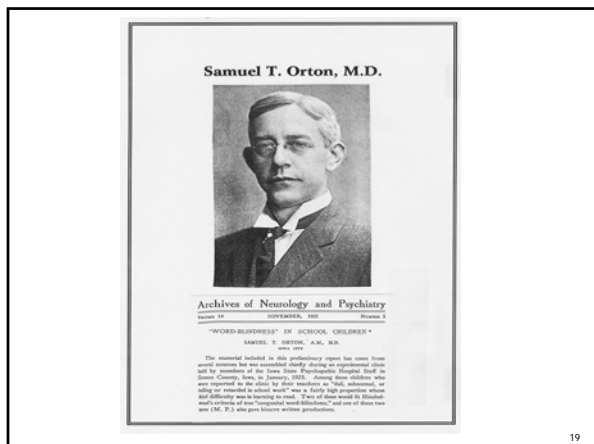
- Dr. Morgan noted "word-blindness" as a developmental disorder found in children that are otherwise healthy

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Samuel Orton

- In the 1920s, Orton hypothesized that this word reading deficit was the result of left cerebral hemisphere dysfunction
 - Insufficient cerebral dominance caused disorder
 - children reversed letters such as b/d and words such as was/saw
- Orton labeled the condition strephosymbolia, or *twisted symbols* in Greek

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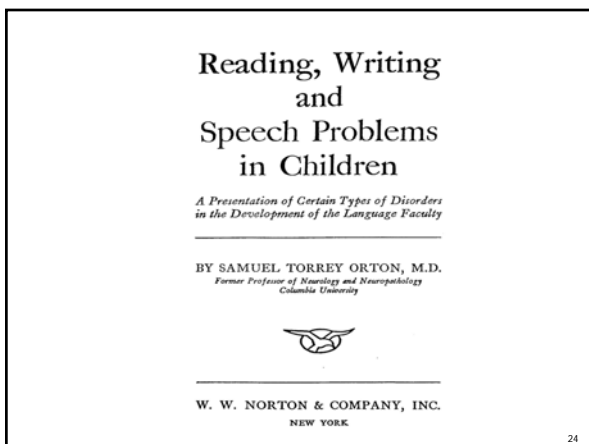


- ### Samuel Orton
- "Word Blindness in School Children" (1925)
 - Examined 1000+ children in Iowa
 - Orton thought prevalence rate was much higher than what was currently reported (1:1000)
 - "somewhat over 10% of the total school population" (Orton, 1939, p. 59) had reading disabilities
 - Dyslexia on a graded continuum with no clear diagnostic between individuals
 - Severity could vary but all individuals had the same underlying word reading deficiency

- ### Samuel Orton
- Orton one of the first to state the problem was a developmental cerebral dysfunction, rather than a specific brain lesion

- ### Interesting note...
- Orton also observed that children taught with the "*older phonics methods*" had higher rates of reading achievement than those taught in "*whole word*" methods
 - This led to the Orton-Gillingham method of teaching systematic letter-sound rules

- ### Dyslexia precursor?
- Orton was also one of the first to consider dyslexia as "part of a larger set of developmental language disorders" (Catts & Kamhi, 1999)
 - Noted many with reading problems also had history of language problems



Language - dyslexia connection

- This work led to the general consensus that "reading problems generally reflect limitations in language, rather than limitations in general cognitive abilities or visual perception." (Catts & Kamhi, 1999)

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Dyslexia = phonological processing deficit

- It is now widely acknowledged that different aspects of phonological processing are the principal cognitive impairments that are associated with dyslexia

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Phonological processing deficit

- Most commonly associated with dyslexia is difficulty with phonological awareness tasks
- Deficits in phonological memory (i.e., nonword repetition task) also noted

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Phonological processing deficit

- This phonological processing deficit seen across a variety of languages
 - French (Sprenger-Charolles et al., 2000)
 - Greek (Porpodas, 1999)
 - German (Wimmer et al., 1999)
- Manifestation is also different across languages
 - English: word reading
 - Dutch: word reading fluency
 - German: spelling

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Oral language deficits

- Phonological processing problems associated with dyslexia can impact other language skills
 - Oral language difficulties [cartoon](#)
- Many studies show that subtle oral language deficits are present in children at risk for dyslexia before formal schooling (i.e., Lyytinen et al., 2001; Scarborough, 1990, 1991)

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EVOLUTION OF THE DIAGNOSIS

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How is dyslexia typically diagnosed?

- Both inclusionary and exclusionary criteria
- Includes those who have
 - Poor word reading performance
- Excludes those who have
 - IQ commensurate with their word reading skills
- Who gives the diagnosis?
 - Psychologist but depends...

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IQ discrepancy

- IQ – word reading discrepancy is used to diagnose dyslexia
 - Shaywitz (2003) described the word reading deficits in children with dyslexia as “an island of weakness in a sea of strengths”

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Criticisms of the IQ-performance discrepancy criteria (Stanovich, 1989; Siegel, 1989)

- 1: IQ (and word reading) typically not tested until 2nd-3rd year of formal schooling
 - Reasoning: Word reading cannot be reliably measured until all children have a chance to learn the skill through formal instruction
 - Reasoning: IQ score is not reliable till later ages
- Delays early identification

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IQ – word reading link

- 2: IQ and word reading are linked
 - Reading is a way to gain knowledge
 - Less knowledge – lower IQ scores
 - IQ tests have subtests that require phonological processing knowledge – a known deficit associated with word reading problems
 - Phonological processing deficit – lower IQ scores
- In both cases IQ scores underestimate the intelligence of children with dyslexia

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IQ – word reading link

- Example case
 - 1: Child didn't meet IQ discrepancy in 2nd grade
 - Word reading = 80 standard score
 - Full scale IQ = 92
- Could the child's IQ be lower because of lack of knowledge gained through reading experience?
- Without help, the word reading scores will likely lower and the child will show discrepancy next year.
 - Crucial services delayed by a year!

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RTI (the end of IQ discrepancy?)

- Currently, Response to Intervention (RTI) has been introduced as an alternative way to diagnose reading problems
(see Hangar, Klingner, & Vaughn, 2007)

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Response to intervention

- Measurement of early pre-reading skills
- Monitor progress in learning skills
- Those who don't learn at the same rate as others will receive services
- No IQ scores used in RTI

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Dyslexia diagnosis

- RTI may eliminate the educational use of the term dyslexia
- Pros and Cons
 - See detailed discussion in the IDA Perspectives publication, 2008, Volume 34, Issue 1 *Demystifying the "D" word: Why and how the term dyslexia should be used.*

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Pros for dyslexia label

- Can be understood by professionals across disciplines
- Funds earmarked for children with dyslexia
- Highlights need to understand word reading deficits only
 - Phonological processing deficit
- Lead to appropriate instruction and/or intervention
 - Services in college

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Cons for dyslexia label

- May promote IQ discrepancy method for diagnosis
- Traditional definition excludes group of children who don't meet IQ discrepancy
 - Those without IQ discrepancy
 - Similar phonological processing deficits (Catts et al., 2005)
 - Benefit from the same treatment techniques (Kay-Raining Bird, Cleave, & McConnell, 2000)

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Re-conceptualizing *dyslexia*

- On a continuum, like diabetes (Catts, 2008)
 - Severe to mild phonological processing deficits lead to severe to mild word reading deficits
 - Regardless of IQ or language abilities??
- Benefits
 - Early diagnosis using phonological processing tasks
 - All children with word reading deficits receive the help they need

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Assessment Framework

Simple View of Reading

When a child is referred for having difficulty 'reading,' what is the underlying cause?

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The Simple View of Reading

(Catts, Hogan, & Fey, 2003; Catts, Hogan, & Adlof, 2005; Gough & Tunmer, 1986; Hoover & Gough, 1990)

Reading

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The Simple View of Reading

Reading

↙

Word
Recognition

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The Simple View of Reading

Reading

↙ ↘

Word Listening
Recognition Comprehension

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Poor Reader Subgroups

(Catts, Hogan, & Adlof, 2005; Catts, Hogan, & Fey, 2003)

		Word Recognition	
		Poor	Good
Listening Comprehension	Good		
	Poor		

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		Word Recognition	
		Poor	Good
Listening Comprehension	Good	Dyslexia	
	Poor		

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		Word Recognition	
		Poor	Good
Listening Comprehension	Good	Dyslexia	
	Poor		Poor Comprehenders

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		Word Recognition	
		Poor	Good
Listening Comprehension	Good	Dyslexia	
	Poor	Mixed RD (LLD)	Poor Comprehenders

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		Word Recognition	
		Poor	Good
Listening Comprehension	Good	Dyslexia	Non-Specified
	Poor	Mixed RD (LLD)	Poor Comprehenders


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		Word Recognition	
		Poor	Good
Listening Comprehension	Good	Dyslexia	Non-Specified
	Poor	Dyslexia + <u>language deficits</u>	Poor Comprehenders

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- ### Assessment Conclusions
- Need to assess both word reading and listening comprehension to determine the underlying reason for poor 'reading'
 - Alternative view : Narrow View of Reading (Kamhi, 2007)
 - 'Reading' is defined by word recognition
 - Therefore, dyslexia would become "the only true reading disability"
 - Kamhi argues that word recognition is a skill that can be easily taught, whereas reading comprehension is a "complex of higher-level mental processes"
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EARLY IDENTIFICATION OF DYSLEXIA



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- ### Early signs of risk for Dyslexia
- Family history of reading or language impairment
 - Difficulty learning the letter names and sounds
 - Reversal errors vs. substitution errors
 - "aminal" for animal rather than "wabbit" for rabbit
 - Consistent use of unusual or nondevelopmental errors
 - Multisyllabic words especially difficult (Catts, 1986; 1989; Dodd & Gillon, 2001; Magusson & Nacler, 1990; Larrivee & Catts, 1999; Leitao & Fletcher, 2004)
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Not early signs of dyslexia

- Reversing letters when writing
 - This is typical till ~2nd grade
- Common errors on long words
 - Aminal (animal), pasketi (spagetti)

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New frontiers in early identification of dyslexia

- Speech discrimination at 3-5 days old
 - Guttorm et al., 2005
- Babbling complexity in infants
 - Lambrecht-Smith et al., 2008

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DYSLEXIA DIAGNOSIS: NOW WHAT?

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Word reading treatment

- Systematic
- Explicit
 - Focus on phonological awareness
 - Supported by research
 - Range of tests to measure PA
 - PA activities are fun
 - PA activities are appropriate for all children
 - Focus on letter-sound correspondences and word study of patterns

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Word reading treatment

- Orton-Gillingham
- Alphabetic Phonics
- Process Phonics
- Wilson Language Training
- LIPS (Lindamood)

Clark & Uhry, 1995

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THE ROLE OF THE SLP IN READING ASSESSMENT AND INTERVENTION

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The role of the SLP

- In 2000, ASHA asserted the role of the SLP in the diagnosis and treatment of those with reading disabilities including dyslexia
 - *Roles and Responsibilities of Speech-Language Pathologists With Respect to Reading and Writing in Children and Adolescents* [Position Statement]. Available from www.asha.org/policy.
- Since that time, SLPs have become valuable members of literacy teams that assess and treat persons with dyslexia.

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The role of the SLP

- We have extensive knowledge of phonological processing
 - Theory
 - Assessment
 - Treatment
- Most likely **you** will know more about this than anybody else on a literacy team

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The role of the SLP

- SLPs have traditionally played a part in reading disabilities of individuals in a rehabilitation setting (i.e., TBI, aphasia, etc.)
- Why would we not contribute in the assessment and treatment of children with reading disabilities that are acquired naturally?
 - Language in school is written language
 - To affect change in child, must focus on written language outcomes

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The role of the SLP

- SLP is valuable member of literacy team
 - Have in-depth knowledge of phonological skills
 - Have knowledge of language
 - Some with word reading problems have language problems and they need word reading intervention too!

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The role of the SLP

- Some service delivery models
 - Member of a literacy team
 - Assessment
 - Early screenings
 - Treatment
 - Phonological underpinnings to reading
 - Model for teacher in classroom
 - Give PA tx for a year and then consult
 - Delivery of word reading instruction

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Conclusions

- *Dyslexia* is a reading disability that describes those who have a word reading deficit
 - Some may have concurrent language impairment
 - ~50% of those with SLI will have dyslexia (Catts et al., 2005)
- Dyslexia is a lifelong disability
 - Slower reader
 - Spelling problems
 - Difficulty remember phonologically-based information
 - Names
 - New longer words
 - Learning a second language

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Conclusions

- The diagnosis of dyslexia is only useful if the person with the diagnosis receives the services he/she needs
- SLPs can make a big difference in the lives of those who have dyslexia

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THANK YOU! QUESTIONS/COMMENTS?

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