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

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)

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

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

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
Definition of dyslexia
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1. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge.

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).

Dyslexia

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

HISTORY OF THE ORIGIN OF THE DIAGNOSIS OF DYSLEXIA

- 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.

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)
Dr. W. Pringle Morgan

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

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.....”

Word blindness

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

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.
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

Orton was 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

Reading, Writing and Speech Problems in Children

A Presentation of Certain Types of Disorders in the Development of the Language Faculty

By Samuel Torrey Orton, M.D.
Former Professor of Reading and Interlocking

W. W. NORTON & COMPANY, INC.
NEW YORK
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)

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.

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

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

Oral language deficits

- Phonological processing problems associated with dyslexia can impact other language skills
  - Oral language difficulties
- 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)
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...

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”

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

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

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!

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)
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

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.

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

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

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

Assessment Framework

Simple View of Reading

When a child is referred for having difficulty ‘reading,’ what is the underlying cause?
The Simple View of Reading

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

Reading

Word Recognition

Listening Comprehension

Poor Reader Subgroups

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

Word Recognition

Good

Poor

Listening Comprehension

Good

Dyslexia

Poor Comprehenders
**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”

**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
  - "animal" for animal rather than “wabbit” for rabbit
- Consistent use of unusual or nondevelopmental errors
- Multisyllabic words especially difficult
**Not early signs of dyslexia**

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

**New frontiers in early identification of dyslexia**

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

**DYSLEXIA DIAGNOSIS: NOW WHAT?**

**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

**THE ROLE OF THE SLP IN READING ASSESSMENT AND INTERVENTION**

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

Clark & Uhry, 1995
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:
- Since that time, SLPs have become valuable members of literacy teams that assess and treat persons with dyslexia.

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

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

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

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
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.

References


References


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