What do School Counselors Need to Know About Dyslexia?

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Characteristics of Dyslexia

- Specific Learning Difference that is neurobiological in origin
- Difficulties with accurate and/or fluent word recognition
- Poor spelling and decoding abilities
- Result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities
- Dyslexia can occur even with effective classroom instruction
- Secondary consequences may include problems in comprehension
- Reduced reading experience that can impede the growth of vocabulary and background knowledge.

Demographic Characteristics of Children with Dyslexia

- Affects at least 20% of our Nation’s Children
- 50% do not Graduate from High School
- At Risk for Parental Abuse
- More Likely to:
  - Have Poor Self-Esteem
  - Anxiety and Depression
  - Suicidal Ideation
  - Substance Abuse
  - Be involved in the Juvenile Court System
  - Be involved in the Criminal Court System as Adults
  - May need Public Assistance

Social as well as Academic Difficulty!

Successful Individuals with Dyslexia

- Dr. Helen Taussig (founded the field of pediatric cardiology)
- Steven Spielberg
- Bella Thorne (actress, singer, model & dancer)
- Henry Winkler
- Jennifer Aniston
- Dav Pilkey (author of Captain Underpants)
- Cher
- Jack Horner (most famous paleontologist)

Common Myths

- Dyslexia affects boys more than girls
- Dyslexia is a visual difficulty
- Letter reversing
- Individuals who are intelligent do not have dyslexia
- Dyslexia will be outgrown
- If individuals with dyslexia would try harder, they would not have dyslexia
- Einstein had dyslexia

Speech Development

- Listening to speech results in similar activation in both adults who are very familiar with their language and two-month-olds who are not.

Dehaene-Lambertz, Dehaene & Hertz-Pannier, Science 2002
Dehaene-Lambertz et al., PNAS 2006, Neuron 2015

Speech Development

- Development of phonological processing
- Speech development is natural
- Acoustic Signal is continuous/words are categorical
- Reading development is not

“I like to read.”
Reading Development
- The process of learning to read.
- Begins with speech development
- Phonological processing
- Letter-Sound
- Decoding
- Synthesizing
- Spelling
- Comprehension

Etiology of Reading Difficulties: Phonological Processing Deficits
- Neurological in origin
- Neurodiversity!
- Genetics plays a role

Hypothetical Reading Achievement

Mathew Effects (Stanovich)

Attention Deficit Hyperactivity Disorder
Why Assess for ADHD?

• Why assess ADHD for children who might have reading difficulties?
• Thirty percent (30%) to 50% of children who have reading disabilities/dyslexia also have ADHD.
• Nearly all children who have ADHD will have difficulties learning to read.

Definition of ADHD

• Refers to Attention Deficit Hyperactivity Disorder
• ADHD is a neurobiologically-based diagnosis applied to children and adults who consistently display certain characteristic behaviors over a period of time.
• The most common core features include:
  o Distractibility: poor sustained attention to tasks
  o Impulsivity: impaired impulse control and delay of gratification
  o Hyperactivity: excessive activity and physical restlessness

Genetic Components of Dyslexia

DCDC2

• DCDC2 plays an important role in the development of dyslexia (DYX2).
• DCDC2 contains SNPs and a deletion potentially connected to dyslexia.
Neurological Correlates of Dyslexia

Although the brain is lateralized for certain functions, information is shared between hemispheres. Each is likely responsible for different bits of processing. Specific locations responsible for aspects of reading are interconnected with many other brain areas.
**Early Identification**

Why is early identification important?

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**Reading Acquisition**

- Linking graphemes with phonemes is difficult and takes a tremendous amount of effort
- This must be explicitly taught
- Teachers must initially focus on the “yellow” route
- As reading become automated, the reader moves from graphemes to meaning
- The “green” route develops from practice and effort

Stanislas Dehaene, 2017

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**Visual Word Form Area (VWFA)**

- Development of reading skills in the VWFA

Stanislas Dehaene, 2017

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**Remediation Effects (Initial Reading)**

<table>
<thead>
<tr>
<th>Individuals without Dyslexia</th>
<th>Individuals with Dyslexia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre</td>
<td>Post</td>
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</tbody>
</table>

Why is Learning to Read so Difficult?

Writing Systems

Alphabetic Principle
- Understanding that letters represent speech sounds
- Understanding that there is a predictable relationship between these letters and sounds/phonemes
- This knowledge is critical to reading acquisition

Transparent Writing Systems
- There is a one-to-one relationship between the letters and the sounds that they represent
- Each letter represents ONLY one sound
- Each sound is represented by ONLY one letter
- Examples: Spanish, German, Scandinavian Languages, etc.
- Children learning to read transparent writing systems:
  - Begin later than children learning to read English
  - Are finished sooner

Opaque Writing Systems
- There may not be a consistent one-to-one relationship between the letters and the sounds that they represent
- There are approximately 44 phonemes in English
- Only 26 letters
- Some letters, therefore, represent several sounds

The Problem Revisited

Opaque Writing Systems
- One sound might be represented by several different letters (spellings):
- For example:
  - /ē/ sound:
    - “e” (meter), “ee” (street), “oa (heat)”
    - “e” (athlete), “y” (silly), “ie (believe)”
    - “ei (receive), “ey (money), “i (piano)”
  - /g/: “c,” “k,” “ck,” “ch” and “qu
  - /g/: “g” and “j”

The Problem Revisited

Opaque Writing Systems
- Some phonemes are represented by two letters (digraphs):
- For example:
  - "sh" Voiced "th" Voiceless "th"
  - "ow" "au" "aw"
  - "ol" "oy" "ch"
  - "ng" "zh" "oo"
  - "hw"
The Problem Revisited
• Opaque Writing Systems
• R-Controlled vowel digraphs:
  • For example:
    | ar (ear) | ar (care) | or (author) |
    | er (her) | ir (ir)   | ur (turn)  |

Writing Systems
• Opaque Writing Systems
• Once all of the letter-sound correspondences have been acquired:
  • Then there is the issue of alternative spellings
  • French, German, Latin, Greek, and Danish contributed to English
  • The English writing system retained the spelling systems of these languages
• As a result, there can be several spellings for homophonic words:
  • e.g., “two,” “too” and “to,” “threw and through,” etc.

Questions?

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