DYSLEXIA

What is it exactly?

Dyslexia is the most common, most highly researched, and best understood form of learning disabilities.

- Dyslexia occurs primarily at the level of the single word and involves the ability to decode printed words.

Definition

- Dyslexia is a specific learning disability that is neurological in origin.

- It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities.
Definition
• 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.

3 Types of Dyslexia
(Problematic, Mild, Moderate and Severe)

• Visual or Dyseidetic dyslexia:
  • involves visual memory. Individuals coping with this type have difficulty remembering how to read or spell phonetically irregular words sight words.

Types

• Auditory or Dysphonetic dyslexia:
  • involves phonics - the sound of the language. These individuals have difficulty with words that are spelled the way they sound.
Types

- Mixed dyslexia or dysphonidesia:
  - involves both types of dyslexia. They have difficulty reading and spelling using phonics and sight-word-recall.

What predicts reading success or failure?

- We must:
  - Process the visual system by activating highly interconnected neural systems
  - Turn it into speech (back of brain)
  - Understand the speech
  - Do this rapidly
  - Relate the information to what we know
  - Comprehension happens with speed
  - Less activation in the front of the brain

How Does the Brain Read?

- Information enters the language system at the neural level (visual system)
- This language system is pre-wired
- Broca's area (frontal lobe) becomes the first step in mapping the neural circuitry for reading (articulation/word analysis)
Two Major Types of Poor Readers

- Poor readers
  - Combination of poor reading instruction and a disadvantages language environment at home. Posterior reading system is wired but not activated appropriately (Shaywitz)
  - Classic dyslexic
    - Born with a mis-wiring in their posterior reading systems. (Shaywitz)

Specific Developmental Dyslexia

- Developmental Disorder of suspected congenital or hereditary origin

- The disorder will not disappear with maturity

...that is neurological in origin.

- Converging evidence using functional brain imaging in adult dyslexic readers show a failure of left hemisphere posterior brain systems to function properly during reading.
Watching the Brain Work

- Two Neural Pathways for Reading
  - One- for beginning reading, for slowly sounding out words
  - Second- one for the skilled reader (speedier)

Three Brain Pathways for Reading

- Upper pathway (parietal-temporal region)
  - Slow, analytical, linking of letter to sounds to form words/Beginning reading

- Lower Pathway (occipito-temporal region)
  - Hub for words (how it looks, how it sound, what it means)
  - Whole word pattern, memory is jolted immediately

- Broca’s Area (left frontal)
  - Roots of reading
  - Slowly analyzes words/beginner reader

The Reading Brain
What Prevents The Brain To Read?

- Short-circuit happens where the brain was hard-wired for language (Developmental Dyslexia).

- Neurons that carry the phonological messages necessary for language do not connect to form the resonating networks that make skilled reading possible (genetic miswiring).

- A phonological impairment is created during fetal life that interferes with the spoken & written language.

Dyslexic Reader

- Shows a fault in the system.

- Under-activation of the neural pathways in the back of the brain (occipital lobe).

- Trouble analyzing words and transforming letters into sounds.

- Over-activation of the Broca's region even in adolescence.

- Has trouble with patterns/needs "scripted" programs to produce automatically.

Why is Reading Not Happening?

- Reading is not being distributed within the neural systems.

- Disruption in left posterior systems prevents rapid, automatic word recognition.

- Development of right side and frontal systems allows for slow reading.

- Relies on a "manual" or "scripted" program rather than on an automatic system for reading.

- The neural pathways responsible for making sound-symbol happen are not being deeply imprinted within the brain.
The Reading/Spelling Characteristics are the Result of Difficulty With:

- The development of phonological awareness, including segmenting, blending, and manipulating sounds in words;
- Learning the names of letters and their associated sounds;
- Phonological memory (holding information about sounds and words in memory); and/or
- Rapid naming of numbers or letters of the alphabet.

(colors and familiar objects for non-readers)

Language Ladder

**Discourse**—language that goes beyond the sentence level (i.e., passages and paragraphs)

**Syntax**—methodology of joining words to form meaningful sentences, incorporating the rules of grammar

**Semantics**—knowledge of specific words and their meanings

**Phonology**—refers to the sounds and sound sequences that we process and/or produce (area of deficit in dyslexia)

Reading

- Decoding (word identification)
- Fluency
- Comprehension Meaning
Dyslexia

...that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction.

Other Cognitive Abilities

- Reasoning
- Concept formation
- Comprehension
- Critical Thinking
- Vocabulary
- Problem Solving
- General Knowledge

Unexpected in relation to other cognitive abilities - Examples

- Ability to learn orally in class. Science, Social Studies, etc.
- Able to learn and express meanings of words (vocabulary)
- Average or above reading comprehension
- Understanding of math word problems
Common Signs of Dyslexia:

- The following signs may be associated with dyslexia if they are unexpected for the individual's age, educational level, or cognitive abilities:

Pre-School

- May talk later than most children
- May have difficulty with rhyming
- May have difficulty pronouncing words, i.e., “busgetti” for “spaghetti”, “mawn lower” for “lawn mower”
- Poor auditory memory for nursery rhymes and chants
- May be slow to add new vocabulary words
- May be unable to recall the right word
- May have trouble learning numbers, days of the week, colors, shapes

Kindergarten through Third Grade:

- Fails to understand that words come apart ex: Segmentation
- Has difficulty learning the letter names and their corresponding sounds;
- Has difficulty decoding single words (reading single words in isolation); lack of a strategy;
- Has difficulty spelling phonetically;
- Reads dysfluently (choppy and labored);
- Relies on context to recognize a word
Fourth Grade Through High School:
- Has a history of reading and spelling difficulties
- Avoids reading aloud
- Reads most materials slowly; oral reading is labored
- Avoids reading for pleasure
- May have an inadequate vocabulary
- Has difficulty spelling; may resort to using less complicated words in writing that are easier to spell

Common Myths
- Individuals with dyslexia see letters and words backwards.
- Colored lenses or overlays can correct the reading difficulty.
- More boys than girls have dyslexia.
- Dyslexia cannot be identified until the third grade.

Myths
- If a person is able to read, he cannot be dyslexic.
- Students with dyslexia can learn to read just like anybody else; they just progress at a slower rate.
- Students with dyslexia struggle with phonics; therefore, phonics should be avoided with these students.
Myths
• Dyslexia is a medical or clinical problem, so only medical doctors or psychologists can diagnose dyslexia
• Dyslexia is a general, catch-all term for any student having difficulty with reading
• Students outgrow dyslexia

Testing for Dyslexia
• Cognitive tests (WISC4)
• Auditory Processing tests
• Visual Processing tests
• Educational tests (WIAT; WJB4)
• Written language tests (TOWL4)

Components of an Orton Based Approach
• Personalized (Starts where the students needs to start)
• Multisensory (VAKT)
• Diagnostic and Prescriptive (instructor monitors all responses)
• Direct Instruction (Student learns the What, Why and How)
• Systematic Phonics (stresses the “alphabetic principle from the Stages of Reading”)
• Applied Linguistics (Syllabication and grammatical structure)
• Linguistic Competence (Stresses language patterns)
Components:

- Systematic and Structured (Sequential presentation)
- Sequential, Incremental, and Cumulative (move from simple to more complex material)
- Continuous Feedback and Positive Reinforcement (Mastery)
- Cognitive (Understanding the what and how of the learning process)
- Emotionally Sound (Success)

Programs for teaching reading to a Dyslexic
Any Orton Gillingham based programs:

- Recipe for Reading
- Wilson
- Fundations
- Lindamood Bell
- Etc.

Questions????????