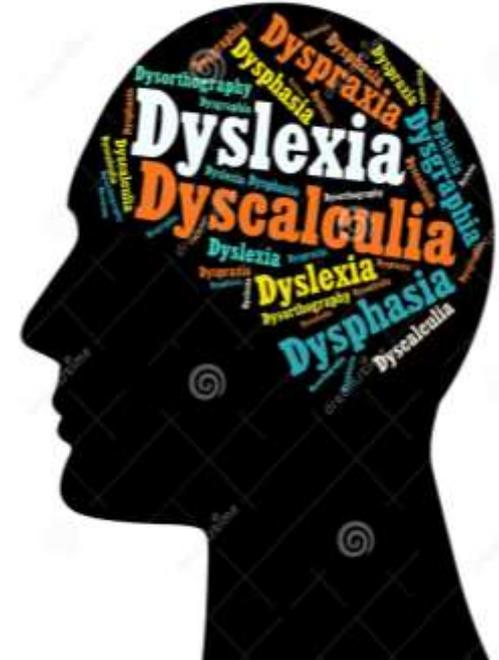


SPECIFIC LEARNING DISORDER

Done by:
Wasan Habashneh
Nadia Rawashdeh



DEFINITION

SLD is a form of **Neurodevelopmental Disorder** that inhibits the ability to learn or apply specific academic abilities (e.g., reading, writing, or arithmetic), which are the foundations for all other academic learning.

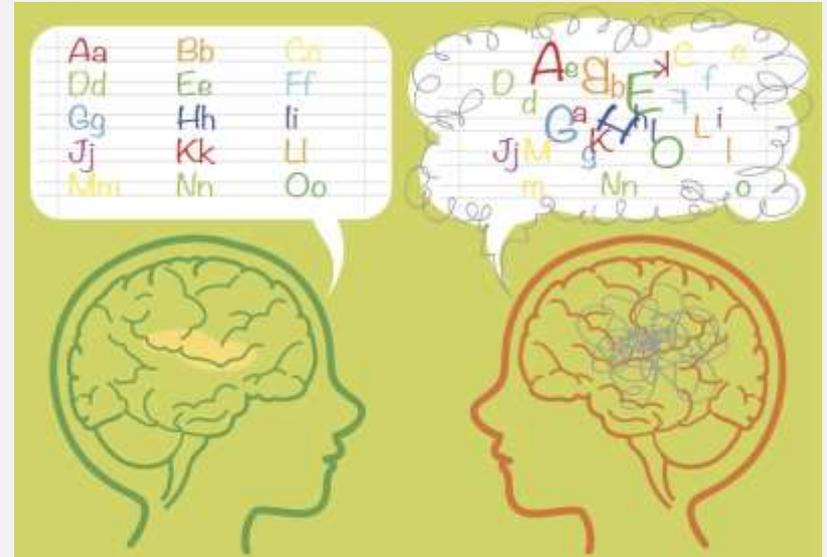
Difficulties in learning are usually “unexpected,” because the rest of the child’s development appears to be normal.

The difficulty in learning is not due to intellectual deficit, emotional disturbance, or cultural difference. They have normal intelligence and sensory abilities.



Though early indicators of learning impairments (such as trouble learning letters or counting items) may occur in preschool, they can only be diagnosed reliably after formal education begins.

The way the SLD manifests clearly implies that it typically persists into adulthood.



What's the Difference Between 'Specific' Learning Disorder vs. Learning Disorder vs. Learning Disability?

The term Specific Learning Disorder is a medical diagnosis, but is commonly referred to as a “learning disorder.”

Learning disability is a term used by both the educational and legal systems in Western countries.

A learning disability is not exactly the same as an individual with specific learning disorder. However, most individuals with a diagnosis of specific learning disorder will also meet criteria for a learning disability.

EPIDEMIOLOGY

Learning disorders are among the most frequently diagnosed developmental disorders in childhood.

- Prevalence estimates for LD in the general population range between 5 and 9 percent.
- Prevalence in school age children: 5–15%
- Males > females affected
- Dyslexia is the most common learning disability, with 20 percent of children in special education for a learning disability estimated to have dyslexia.
- Approximately one-third people with learning disabilities also have attention-deficit hyperactivity disorder (ADHD).

ETIOLOGY

The causes for learning disorders are not certain.

Factors that might influence the development of learning disorders include:

- **Genetics:** ↑ risk in first-degree relatives of affected individuals.
- **Prenatal and neonatal risks:** Malnutrition, poor prenatal healthcare, exposure to alcohol or drugs before being born (teratogenic factors), premature birth, and very low birthweight have been linked with learning disorders.
- **Environmental exposure:** Exposure to high levels of toxins, such as lead, has been linked to an increased risk of learning disorders.

Learning disabilities are NOT caused by economic disadvantage or by cultural differences.

- Commonly co-occurs with other neurodevelopmental disorders, such as **ADHD, communication disorders, developmental coordination disorder, autistic spectrum disorder**
- Also comorbid with other **mental disorders, including anxiety, depressive, and bipolar disorders**



COMORBIDITIES

DSM-5 DIAGNOSTIC CRITERIA

Diagnosis of SLD according to DSM-V is made based on a **clinical review of an individual's history, teacher reports and academic records, and responses to interventions.**

To categorize the child in LD group, difficulties must be persistent, scores must be well below the range, and the problems could not be better explained by other disorders.



DSM-5 DIAGNOSTIC CRITERIA

Criterion A

Difficulties learning and using academic skills, as indicated by the presence of at least one of the following symptoms that have persisted for at least 6 months, despite the provision of interventions that target those difficulties:

- I. Inaccurate or slow and effortful word reading (e.g. - reads single words aloud incorrectly or slowly and hesitantly, frequently guesses words, has difficulty sounding out words).
- I. Difficulty understanding the meaning of what is read (e.g. - may read text accurately but not understand the sequence, relationships, inferences, or deeper meanings of what is read).
- I. Difficulties with spelling (e.g. - may add, omit, or substitute vowels or consonants).

DSM-5 DIAGNOSTIC CRITERIA

4. Difficulties with written expression (e.g. - makes multiple grammatical or punctuation errors within sentences; employs poor paragraph organization; written expression of ideas lacks clarity).
5. Difficulties mastering number sense, number facts, or calculation (e.g. - has poor understanding of numbers, their magnitude, and relationships; counts on fingers to add single-digit numbers instead of recalling the math fact as peers do).
6. Difficulties with mathematical reasoning (e.g. - has severe difficulty applying mathematical concepts, facts, or procedures to solve quantitative problems).

DSM-5 DIAGNOSTIC CRITERIA

Criterion B

The affected academic skills are substantially and quantifiably below those expected for the individual's chronological age, and **cause significant interference** with academic or occupational performance or with activities of daily living.

DSM-5 DIAGNOSTIC CRITERIA

Criterion C

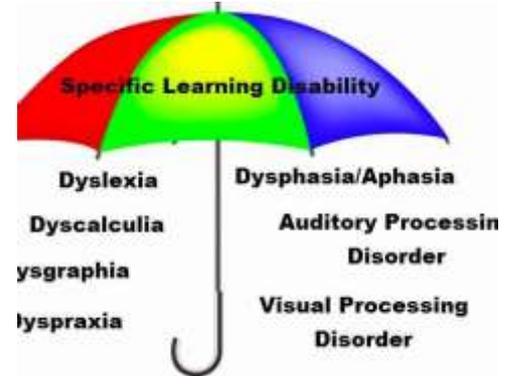
The learning difficulties begin during school-age years but may not become fully manifest until the demands for those affected academic skills exceed the individual's limited capacities (e.g. - as in timed tests, reading or writing lengthy complex reports for a tight deadline, excessively heavy academic loads).

DSM-5 DIAGNOSTIC CRITERIA

Criterion D

The learning difficulties are not better accounted for by intellectual disabilities, sensory (visual or auditory) disorders, other mental or neurological disorders, psychosocial adversity, lack of proficiency in the language of academic instruction, or inadequate educational instruction.

Types of Specific Learning Disorders



Specific Learning Disability

Dyslexia
Dyscalculia
Dysgraphia
Dyspraxia

Dysphasia/Aphasia
Auditory Processing Disorder
Visual Processing Disorder

I) Dyslexia (Reading disability syndrome)

Dyslexia Stimulation

Definition

Many people with dyslexia experience difficulty reading. Some read at a lower level than their peers of the same age, and some can't read at all. It can help to provide instructions or aids to support text. Some people with dyslexia have high levels of cognitive functioning at a normal level, but their visual encoding of text is flawed, so they have a hard time spelling or reading words. There is a bit of a disconnect between their intellectual level and their reading abilities.

Word level	Word level	Sentence level
Normal reader	Reading	It is easy to read this sentence
Reader with dyslexia	Reabing	If is easy to reab fhis sentence

- Reading impairment is characterized by
 - ✓ difficulty in recognizing words,
 - ✓ Slow and inaccurate reading,
 - ✓ poor comprehension
 - ✓ difficulties with spelling
- They may often gravitate to other mediums of expression such as pictures, video, or audio
- It is often comorbid with other disorders in children, particularly, **ADHD**
- It is present in up to 75% of children and adolescents with this particular disorder and tends to run in families

Problems patients with dyslexia have:

Learning letters and sounds

Decoding

Vocabulary (can't find the right word to put in a context)

Spelling and writing

changing the sequence of letters as they appear (e.g., p to q)

making sequential errors when arranging letters (e.g., was -> saw; scared -> sacred);

omitting a letter or syllable in reading (e.g., reading 'selection' as 'section')

reading a letter in its inverted form (e.g., reading 'u' and 'n')



BRAIN SYSTEMS

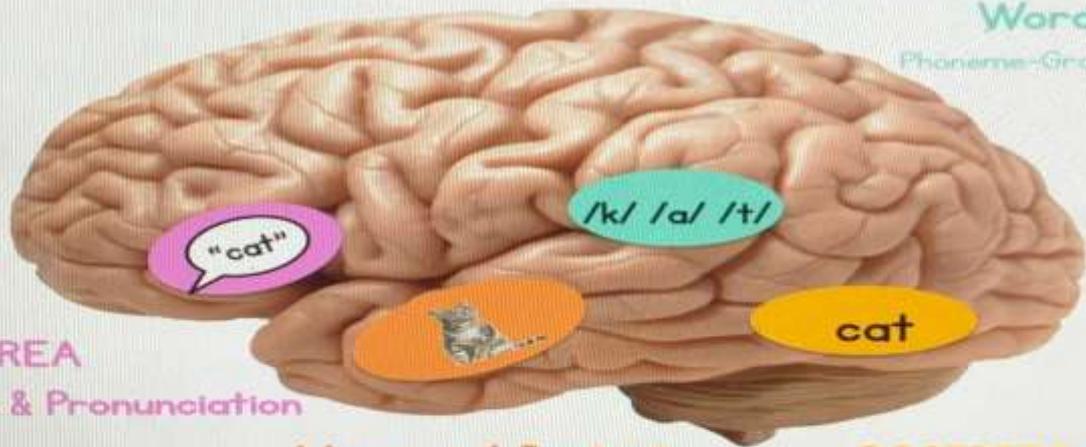


Most Active While Reading

PARIETO-TEMPORAL

Word Analysis

Phoneme-Grapheme Association



BROCA'S AREA

Articulation & Pronunciation

Meaning / Context

Language Comprehension

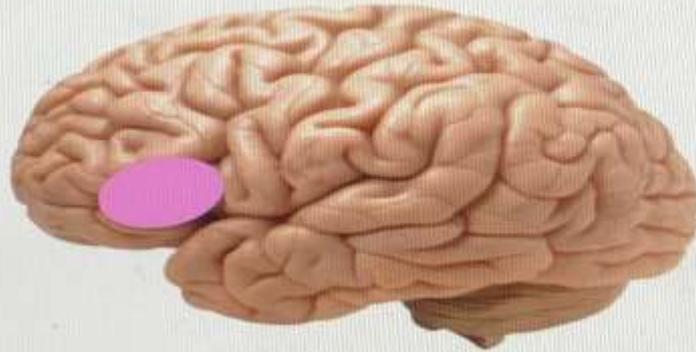
OCCIPITO-TEMPORAL

Visual Word Form

DYSLEXIA

Structural Differences in the Brain

With individuals with dyslexia...



- There is a **disruption** in the systems in the **back**.
- To **compensate**, they activate systems in the **FRONT** of the brain on the **left** AND **right** side.

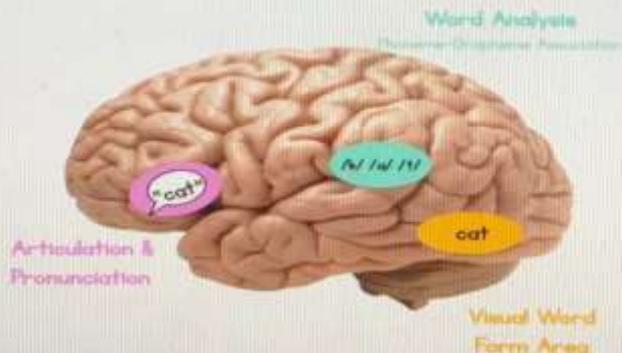
DYSLEXIA



Structural Differences in the Brain

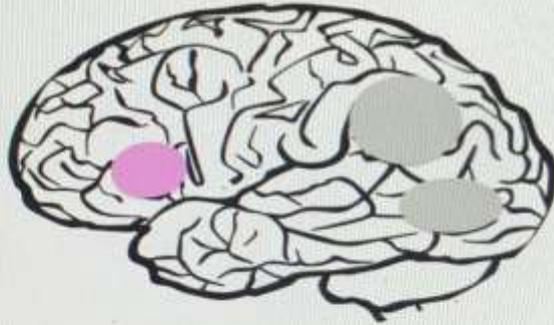
Different parts of the brain are used while reading.

- Neuro-typical readers use all three areas shown together to read.
 - Readers with dyslexia rely more on the *front* of the brain.
- Neuro-typical readers use the *left* side while reading.
 - Readers with dyslexia rely more on the *right* side of the brain.



DYSLEXIC READERS

Use an alternate reading pathway



Without this "word form" area being activated, reading remains slow and manual, not AUTOMATIC.

Brain imaging show...

Dyslexic readers are using the right side as well as the front of the brain. This works, but not as efficiently. It leads to accurate, but SLOW reading.

DYSGRAPHIA EXAMPLE BY A DYSLEXIC STUDENT - Grade 4

We an Mole got home, she went
to room to sink. she got out her pens/
and paper and sat at her desk.

× THE fox jumps over the fence
× The fox ~~jump~~ over the high mountain top

The fox jumped over the fence.
The eagle flew over the high mountain top.

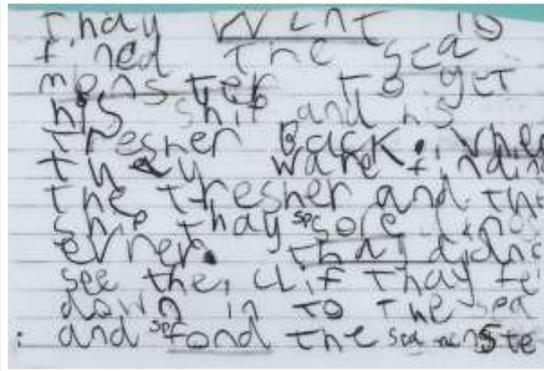
2) Dysgraphia (spelling disorder/spelling dyslexia)

- Deficits in written expression are characterized by writing skills that are significantly below the expected level for a child's age and education. Such deficits impair the child's academic performance and writing in everyday life.
- Spelling errors are among the most common difficulties for a child with a writing disorder. Examples of common spelling errors are: fone for phone, or beleeve for believe.
- All dyslexics have dysgraphia but not the opposite



Signs of dysgraphia:

- Slow and labor handwriting
- Handwriting that's hard to read (eventhough other fine motor skills aren't affected)
- Difficulty putting thoughts into writing (writing lacks clarity and cohesion)
- Written text that's poorly organized or hard to understand
- Irregular letter sizes and shapes
- Trouble with spelling, grammar and punctuation
- Misuse of UpPer and LowER caSe letters



According to the DSM-5, the diagnosis of specific learning disorder with impairment in mathematics consists of:-

- deficits in counting and calculations and solving math problems
- has difficulty remembering mathematics facts
- may count on fingers instead.

These deficits lead to skills that are substantially below what is expected for the child's chronological age and cause significant interference in academic success.

4)Dyspraxia

- **Developmental co-ordination disorder (DCD), also known as dyspraxia, is a condition affecting physical co-ordination. It causes a child to perform less well than expected in daily activities for their age, and appear to move clumsily.**
- It can affect your co-ordination skills – such as tasks requiring balance, playing sports or learning to drive a car. **Dyspraxia can also affect your fine motor skills, such as writing or using small objects.**
- **Children with verbal dyspraxia have problems with coordinating their muscle to produce speech sounds and words.** They have difficulties in producing clear, fluent speech or saying certain words or sentences. Children with verbal dyspraxia might speak slowly

Visual processing disorders

- The inability to differentiate between foreground and background as well as similar looking numbers, letters, shapes, objects and symbols.

VISUAL PROCESSING

challenges can look like #movementmatters



A child who is easily distracted struggles with visual attention.

spell

A child who struggles with spelling may have trouble with visual memory.



A child who struggles to recognize shapes has trouble with visual discrimination.



A child who struggles with letter reversals may have trouble with spatial vision.



A child who struggles to find something in a messy space may struggle with figure ground.

Auditory processing disorder

- Trouble distinguishing similar sounds or confusing the sequence of spoken or heard sounds.

Nonverbal learning disabilities

- The inability to recall the names or words for common objects.

Auditory Processing Disorder

- Often asks for info to be repeated
- Sensitive to loud noise
- Follows directions with difficulty
- Challenged by reading, writing & spelling
- Forgetful & unorganised



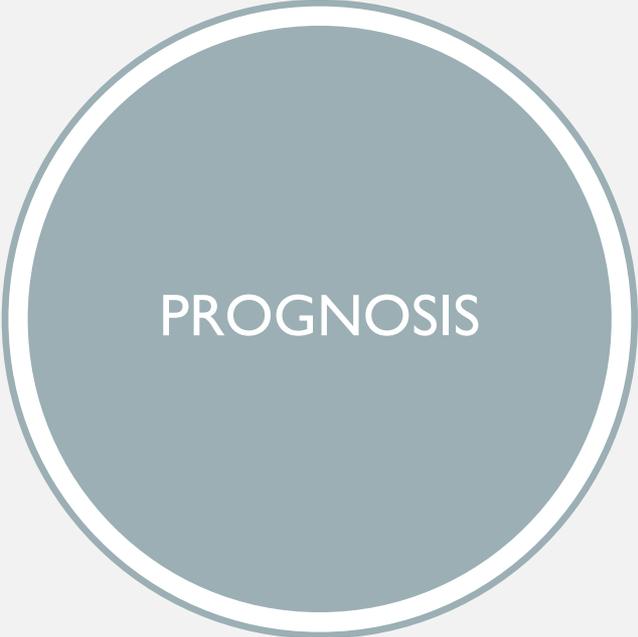
SER4KIDS.com
Learning Made Easy



Learning disorder can vary in severity:

- **Mild:** Some difficulties with learning in one or two academic areas, but may be able to compensate
- **Moderate:** Significant difficulties with learning, requiring some specialized teaching and some accommodations or supportive services
- **Severe:** Severe difficulties with learning, affecting several academic areas and requiring ongoing intensive specialized teaching





PROGNOSIS

The **prognosis** of SLD is mixed as it really depends on a number of factors, like the **age of diagnosis** and **comorbidity of conditions**

- **Generally, the earlier the diagnosis for SLD, the better the prognosis.** Early diagnosis allows for early intervention. It's been found that there is a brief window of opportunity for successful intervention, which is before the age of 8. Many who receive early intervention are actually able to do well academically and go on to pursue higher education.
- The presence of comorbidity means that people can experience different symptoms and with varying degrees of severity.

- Requires intense educational interventions and behavioral techniques
- Educational interventions include special classrooms, remedials, or Systematic individualized education tailored to child's specific needs (1 to 1 tutoring)
- Remediation of basic processing problems and cognitive skills (Dyslexia will also undergo a 2-year remediation program)

Example:

Direct instruction:

- Teaches children specific skills in preparation for larger tasks in a gradual manner.
- *Ex: for Dyscalculia: demonstrating problem-solving approach in a step-by-step manner*

