

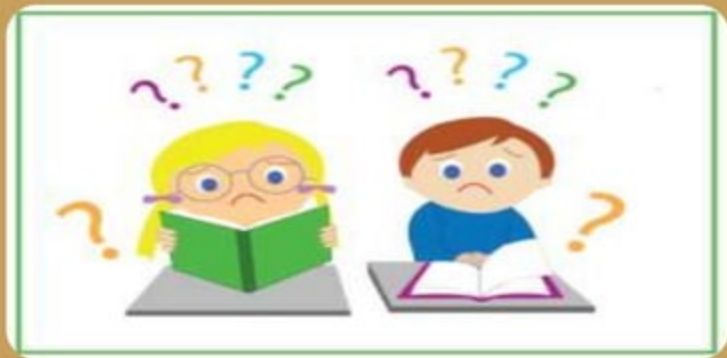
Introduction :

1. Learning Disorders include a wide variety of learning problems in children
2. They are not a problem with intelligence or motivation .
3. Kids with learning disability are **not lazy or dumb** .



Cont.

4. Simply put , they see , hear and understand things differently and this can lead to trouble with learning new information and skill and putting them to use .



Definition :

-It is characterized by academic under achievement in reading, written expression or mathematics in comparison with the over all intellectual ability of child .



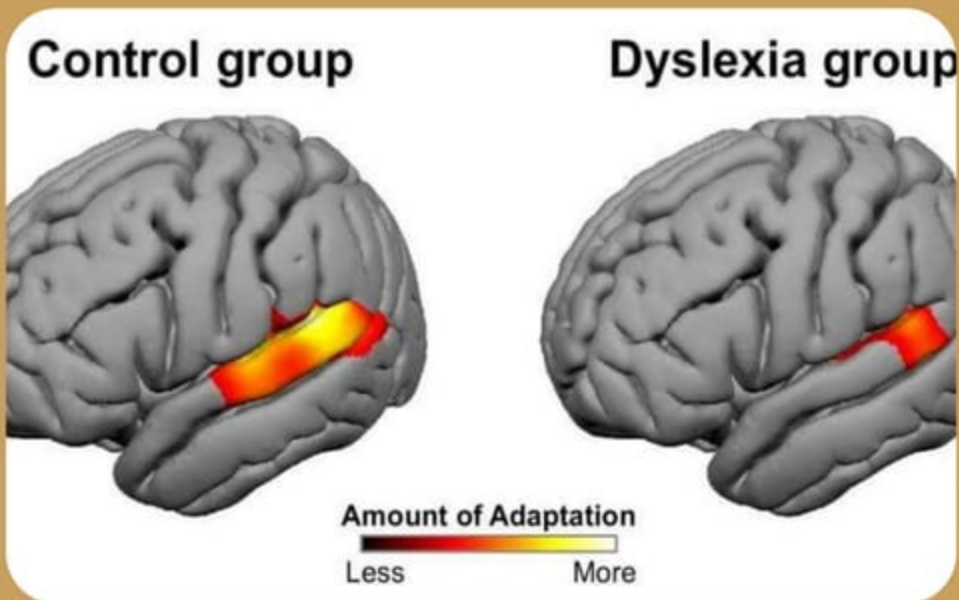
ETIOLOGY :

- ❖ 1] Children born to parent with learning disorder confirms a heightened risk of literacy impairment .
- ❖ Till date the strongest evidence for linkage with dyslexia is a site on short arm of **chromosome -6** .



Cont.

2] These children typically show less activity in **left hemisphere, temporo-parietal cortex** when reading .



Cont.

- ❖ 3] Drug or alcohol consumption during pregnancy, physical trauma ,IUGR ,LBW etc .
- ❖ 4] Stressful incident after birth such as high fever ,head injury, poor nutrition.
- ❖ 5] Environmental factors like increase exposure to toxins such as lead .
- ❖ 6] Comorbidity – up to 25% of children with these disorder will also have ADHD .

Common types :

1] DYSLEXIA : Difficulty in reading , writing and spelling .

2] DYSCALCULIA : Problem while doing maths problem , understanding time, using money .

3] DYSGRAPHIA : Difficulty with writing and organising ideas .



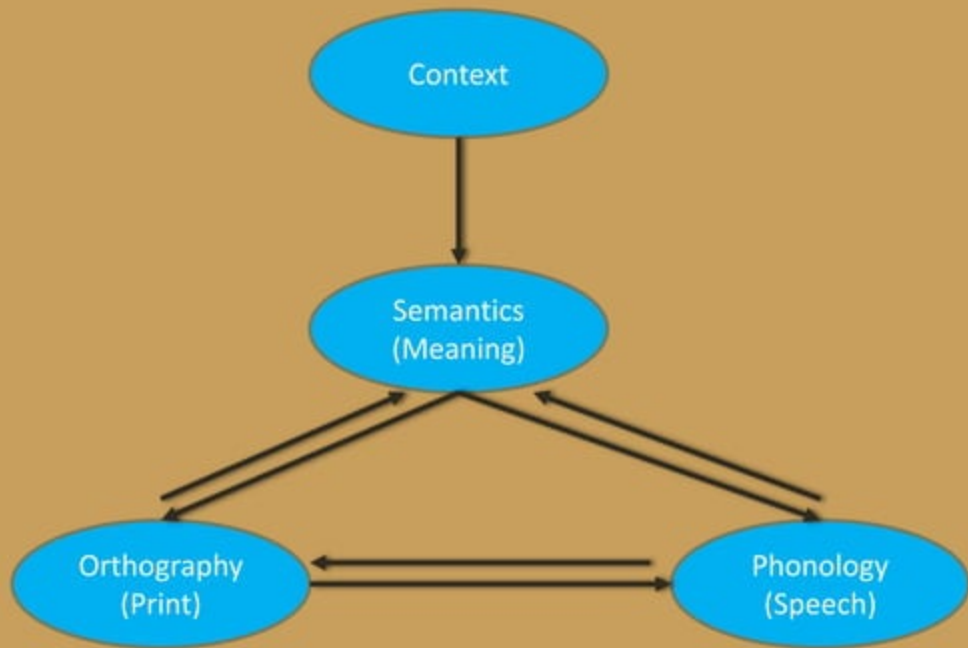
4] DYSPRAXIA : Difficulty with fine motor skills like hand - eye coordination ,balance .

5] DYSPHASIA : Difficulty with language and poor reading comprehension .

6] AUDITORY PROCESSING DISORDER : Difficulty in hearing differences between sounds.

7] VISUAL PROCESSING DISORDER : Difficulty in interpreting visual information .

Normal literacy development – A framework



1. According to **triangle model** reading involves interaction of **phonological pathway** i.e. mapping from letters to sounds and **semantic pathway** i.e. mapping from letters to meaning then sound

2. It is thought that beginning readers place most reliance on **phonological pathway** and then gradually start to use semantic pathway to gain fluency .



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Dyslexia :

-It is most common problem that specifically affect child's ability to decode text .

-According to **PHONOLOGICAL DEFICIT HYPOTHESIS**, children with this disorder have difficulty in establishing phonological reading pathway.



-It also explains children with this disorder typically have difficulties with wide range of cognitive task that engage phonological processes such as verbal short term and long term learning , colours etc .

-Spelling difficulties also seen in them as a consequence of difficulty in mastering the mapping between orthography and sounds within phonological pathway.

-Spelling error made by them include both phonetic spelling error where sound pattern of word represented accurately e.g. **biscuit** –**biskit** and phonatically unacceptable spelling error e.g. **umbrella**- **unbri** .



Reading comprehension impairment:

-In contrast to children with dyslexia, these children decode well but have problem while understanding what they read .

-Their difficulty often not seen in classroom because they can read aloud competently but they have problem both within semantic pathway and in grammatical processes .

Dyscalculia :

- *Formerly known as Mathematics disorder (DSM-IV TR) .
- *Problems with numbers .
- *Inability to acquire arithmetic skills .
- *Severe difficulty in learning math concepts .



Types :

- *Developmental dyscalculia : impairment in brain functioning .
- *Acalculia : lost sense of meaning of numbers , being able to understand numbers but not the operations .
- *Pseudo-dyscalculia : finding maths difficult based on emotional blockage or confidence problem .
- *Verbal : Difficulty using maths orally .

- *Graphical : difficulty in writing mathematics symbol.
- *Lexical : difficulty reading mathematics symbol .
- *Operational : difficulty in performing specified math operation .
- *Ideognostic : Difficulty understanding mathematical relationships .

Dysgraphia :

- The word Dysgraphia is from greek origin .
- * Dys-impaired.
- *Graphia-letter form.
- Meaning impaired in letter writing skills.



Characteristics:

- *Writing skills that are significantly below normal for an individual's age ,intellect & education.
- *Illegible writing.
- *Difficulty sizing letters.
- *Keeping letters on a line.
- *Mixture of upper & lower case letters.
- *Mixture of printed & cursive letters.

Dyspraxia:

- It is defined as motor difficulties caused by perceptual problem specially visual-motor & kinesthetic- motor difficulties.



Gross motor problem :

- *Difficulty in walking , running , climbing ,
*jumping as well as hand-eye coordination problem.
- *Most of them have poor balance & fall over frequently in mid step.
- *One thing that almost all dyspraxics face to struggle with spatial awareness.
- Fine motor problems:** They find difficulty in day to day activities such as using knife & fork , fastening buttons , tying shoelace , brushing teeth , hairstyling , shaving , locking & unlocking doors .

Central Auditory Processing Disorder :

- *What is Auditory Processing ?
- It describes what happens when your brain recognizes & interprets the sounds around you .
- * And its disorder adversely affect the processing or interpretation of the information .

Characteristics :

- *Children with CAPD have difficulty in hearing both vowel sounds or the consonant sounds .
- ***Example:** 1) Blue mistaken for Ball .
- 2) Ball mistaken for bell .
- *Rate of processing is slower .
- * Information stored in short-term memory but not in long-term memory .

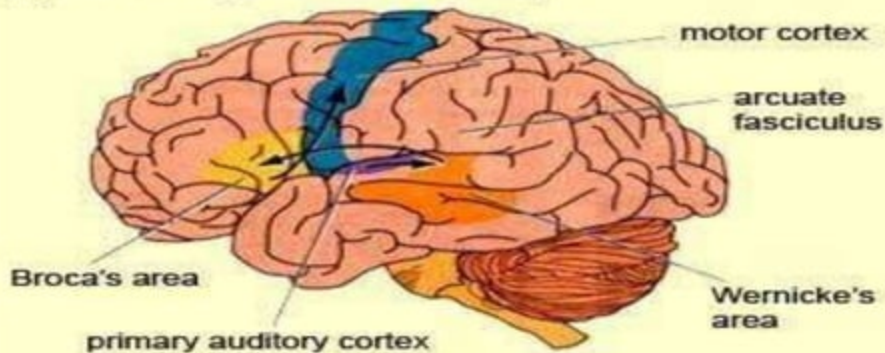
Aphasia :

- It is defined as impairment in use of language due to damage to certain parts of the brain .

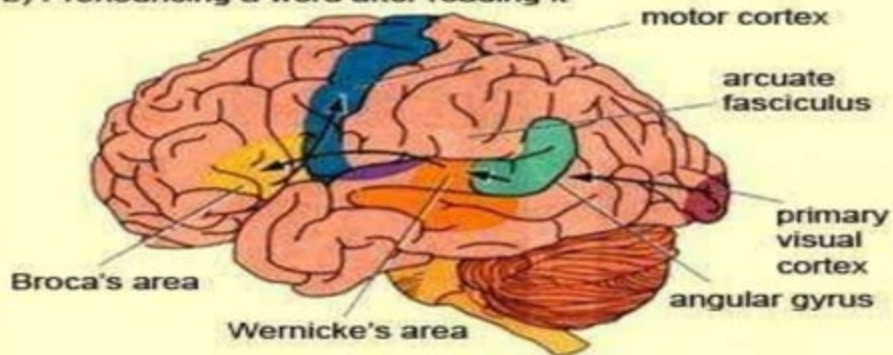
- **TYPES :**

- 1) Wernicke's aphasia
- 2) Broca's aphasia
- 3) Conduction aphasia
- 4) Anomic aphasia
- 5) Transcortical sensory aphasia
- 6) Transcortical motor aphasia
- 7) Global aphasia

(a) Pronouncing a word after hearing it

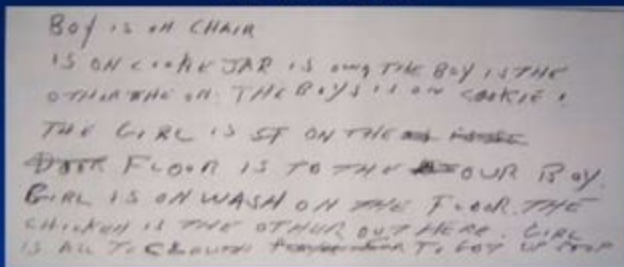


b) Pronouncing a word after reading it



- **WERNICKE'S APHASIA :** It is produced due to damage in wernicke's area of the brain .
- They have difficulty in understanding others speech & produce meaningless speech .
- They do not realize their speech meaningless.

A patient with Wernicke's aphasia wrote this

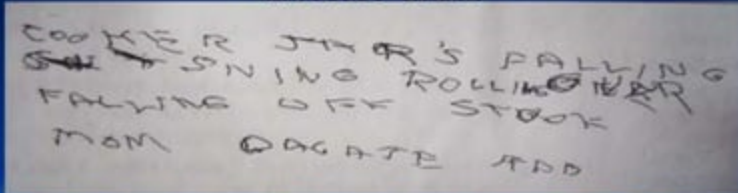


Boy is on chair
 is on chair jar is on the boy is the
 other the on the boy is on chair
 the girl is sit on the floor
 floor floor is to the boy
 girl is on wash on the floor the
 chicken is the other out here. girl
 is all to chicken

Notice here that there are many, less forced, words, but they don't make much sense. Also because they're not struggling to find their words, the handwriting is better.

- **BROCA'S APHASIA :** They have difficulties in initiating well articulated conversational speech.

A patient with Broca's aphasia wrote this



Notice the use of very few words, but the words do make some sense

- **CONDUCTION APHASIA :** They have difficulty in repeating something someone has just said.
- **ANOMIC APHASIA :** It is characterised by difficulty in finding names & difficulty in substituting indefinite nouns & pronouns with substantive words .

- **TRANSCORTICAL MOTOR APHASIA :** They donot speak unless they are strongly encouraged to do so & when they do speak it is labored and non-fluent due to damage to premotor cortex anterior & superior to Broca's area .
- **GLOBAL APHASIA :** This type of aphasia is characterized by a severe depression of all language functioning due to damage around & to Broca's & Wernicke's area .

SIGN & SYMPTOMS :

- In preschool age :

1. Problem in pronouncing words .
2. Trouble finding the words .
3. Difficulty rhyming .
4. Trouble in learning alphabet , numbers, colours , shapes ,days of the week .



5. Problem in following direction or learning routines .

6. Difficulty controlling crayons , pencil, scissors .

7. Trouble with buttons , zippers , learning to tie shoelace.

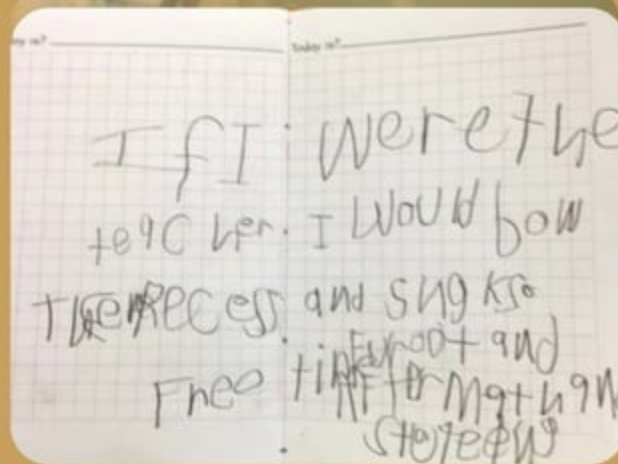


In age group 5-9 years –

- ❖ 1. Problem in learning the connection between letters and sounds .
- ❖ 2. Unable to blend sounds to make words .
- ❖ 3. Confuses with basic words and basic maths concept.
- ❖ 4. Slow to learn new skills and consistently miss spell words .
- ❖ 5. Problem in telling time and remembering sequences .

Age group 10-13 years :

1. Problem with maths skill and reading comprehension .
2. Poor handwriting .
3. Poor organizing skills like messy bedroom ,desk .
4. Problem with open ended test questions and classroom discussion .



DSM-IV Diagnostic Criteria :

- *Reading achievement, as measured by individually administered standardized test for reading accuracy or comprehension, is substantially below that expected given person's chronological age, measured intelligence & age-appropriate education .
- *Disturbance in criterion a significantly interferes with academic achievement or activities of daily living that require reading skills .
- *If sensory deficit is present, reading difficulties are in excess of those usually associated with it .

DIAGNOSIS :

It involves testing , history taking and observation by a trained specialist like :

- * Clinical Psychologist
- * School Psychologist
- * Educational and Developmental Psychologist
- * Child Psychiatrist
- * Neuropsychologist
- * Speech & language therapist .

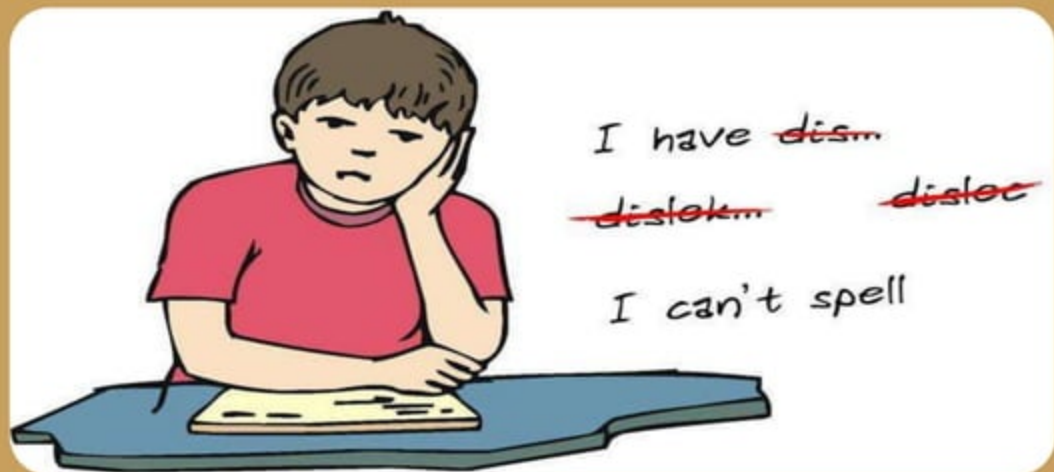
ASSESSMENT :

-Children with learning difficulties will rarely be referred to child psychiatrist unless such difficulties have contributed to emotional or behavioral difficulties .

-If a referred child reports a failure to learn or read has **dyspraxic** tendencies or is seriously underachieving , the most appropriate strategy is to refer this to an agency to school system for assessment .

-A comprehensive assessment should include assessment of general cognitive ability i.e. IQ , single word reading and **spelling** , expressive writing & number skill .

-The **Wechsler scale** provide such tool for assessment .



INTERVENTION:

MAIN ELEMENT OF READING INTERVENTION :

- 1) Training in letter knowledge .
- 2) Teaching concept of print .
- 3) Training to manipulate phonemes in words.
- 4) Applying letter & sound knowledge to word reading & writing i.e. PHONICS .
- 5) Reading text & writing activities .

-Recently, the approach has been adopted for delivery by main stream teachers to whole classes & by teaching assistant to small group .

-However it is important to emphasize that children with these disability can respond very slowly even to the most effective way of teaching approaches .



Maths intervention

- Unfortunately , so far to our knowledge there are no studies that have investigated the effectiveness of intervention for the children who have developed mathematical difficulties .



INTERVENTION FOR DEVELOPMENTAL CORDINATION DISORDER :

- There are two approaches for such children -
 - 1) Process oriented
 - 2) Task oriented

Process oriented begins with an analysis of the underlying components of the task to be achieved & aim to train these processes e.g. sensory integration method and kinesthetic approaches .

Task oriented approaches are more functional and aim to teach skills that are deficient e.g. eating, dressing, ball catching etc.

-Most practitioners aim to harness the support of **parent and teacher** for implementing this program .

-Parents are advised to learn and read about there child's type of learning disorders . It is easier to evaluate learning techniques if they understand how these affect their child .

-**Educate yourself** about the most effective treatment option available and even if the school does not have resources to treat your child optimally , you can peruse this option at home or with therapists or tutor.

Conclusion :

- Helping your child with learning disorder can develop their passion and strength will probably help them with area of difficulty as well .



“

If I can't learn
the way you teach,
will you teach me
the way I can learn?

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