Learning Disabilities

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- secondary to subtle CNS dysfunction (may represent lower tail of normal distribution curve of ability in specific areas and not distinct disorders).

Learning disabilities - significant difficulties in acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities - interfere with child's ability to perform ***certain specific intellectual functions**** → discrepancy between potential and actual levels of academic performance as predicted by person's intellectual abilities. *vs. mental retardation – *cognition* disorder

(1) Dyslexia - problems with *reading*. *see below >>*

(2) Phonologic dyslexia - problems with *sound analysis* and memory.

(3) Surface dyslexia - problems with *visual recognition* of forms and structures *of words*.

(4) Dysgraphia - problems with *written expression*:

a. dysorthographia - consequence of dyslexia.

b. poor handwriting - due to minor motor or visuomotor disability.

(5) Dyscalculia - problems with *mathematics* and difficulties with problem-solving.

(6) Ageometria - problems due to disturbances in *mathematical reasoning*.

(7) Anarithmia - disturbances in *basic concept formation* and inability to acquire *computational skills*.

(8) Dysnomia - difficulty *recalling words* and information from memory on demand.

- most learning disabilities are complex (***deficits in more than one system***).
- may be congenital or acquired (genetic influences are often implicated).
- 1-10% school-age population has learning disabilities.
- boys : girls = 5 : 1
- severe disabilities tend to manifest at early age (mild ÷ moderate learning disabilities are usually not recognized until school age).

DIAGNOSIS

- ***mismatch*** between child's performance on standardized measures of skill in question and his intellectual capacity as measured by IQ testing.

Discrepancy between *academic potential* and *academic performance*

- **psychoeducational testing*** (IQ tests, specific academic tests) – to determine child's preferred manner of information processing (e.g. holistically or analytically, visually or aurally).
  - ***psychoeducational profile*** is basis on which individualized educational program is constructed.

  *performed by public schools, which are mandated to test child under Individuals with Disabilities Education Act [Public Law 101-476 (IDEA, 1990)].
- **neuropsychologic assessment** (for children with known CNS injury) - to map those areas of brain that correspond to specific functional strengths and weaknesses.
- **speech and language evaluations** – to establish integrity of comprehension and language use, phonologic processing, and verbal memory.
- **medical evaluation** - to look for underlying disorders.
  - *hearing* and *vision* should be screened.
  - "soft signs" [e.g. synkinesis (mirror movements); dysdiadochokinesia (difficulty with rapid, alternating movements); choreiform movements of fingers] have been reported more frequently in learning-disabled children.

DIFFERENTIAL DIAGNOSIS

1. ADHD (learning disabilities and ADHD often occur together!!!)
2. Pervasive developmental disorders (s. autistic spectrum disorders).
3. Mental retardation
4. Depression
5. School phobias
6. Other anxiety disorders
7. Interaction problem with teacher
8. Childhood psychosis

TREATMENT

- educational intervention is mainstay of treatment:
  a) *extra tutoring* focused on problematic academic skill (e.g. phonics tutoring for children with dyslexia) - some children require specialized instruction in only one area while continuing to attend regular classes.
  b) self-contained, *special education classrooms* for those with learning disorders.

N.B. by US law, affected children should participate as much as possible in **inclusive classes** with peers who do not have learning disabilities (so called "mainstreaming")

- psychological counseling is indicated for children with learning disabilities who suffer from diminished self-esteem
- drugs minimally affect academic achievement, intelligence, and general learning ability, although stimulants may enhance attention and concentration.
- many popular unorthodox remedies (e.g. eliminating food additives, using antioxidants or megadoses of vitamins, patterning by sensory stimulation and passive movement, sensory integrative therapy through postural exercises, auditory nerve training, optometric training to remedy visual-perceptual and sensorimotor coordination processes) are unproven.

DYSLEXIA

- general term for primary reading disorder.

Reading is decoding written (visually coded) language

- 15% school children have reading problems (½ may have persistent reading disabilities).
- boys > girls.
- dyslexia tends to run in families (genetics plays major but not exclusive etiologic role).
- visual perceptual problems play minor pathophysiologic role in dyslexia.

SYMPTOMS AND SIGNS

- may manifest as delayed language production; speech articulation difficulties; and difficulties remembering names of letters, numbers, and colors.

- may affect both production and understanding of written language; weaknesses in verbal language are often present.
- may have difficulty determining root words or word stems and determining which letters in words follow others (may reverse order of sounds in words).
- short-term auditory memory and auditory sequencing difficulties are common.
- may forget or confuse names of letters and words that have similar structures (e.g. *d* becomes *b*, *m* becomes *w*, *h* becomes *n*, *was* becomes *saw*, *on* becomes *no*) - such reversals are normal in children < 8 yrs.

DIAGNOSIS

- best diagnostic indicator is child's inability to respond to traditional or typical reading approaches during 1st grade.
- demonstration of phonologic processing problems is essential for diagnosis.

TREATMENT

- direct and indirect instruction in word recognition and component skills.
- many children benefit from using *computer* to help isolate words within text samples or for word processing of written work.
- many children develop functional reading skills* (other children never reach adequate literacy).

*but do not read for pleasure when become adults

DEVELOPMENTAL LANGUAGE DISORDER (DYSPHASIA)

- affected development of oral language (vs. dyslexia – written language)

> There is considerable variation in manner and age at which normal children acquire various aspects of language.

- boys > girls.
- most children with DLD learn to speak before school age.
- unilateral focal lesions acquired in early life do not preclude acquisition of language! – bilateral dysfunction in circuits is critical to DLD.

Subtypes of DLD

- despite some similarities, models based on acquired aphasias of adults do not fully apply to disorders of language acquisition.
- expressive dysphasia (like *Broca aphasia*) affects phonology (production of sounds of speech) and syntax (grammar of language), whereas semantics (meaning of language) and pragmatics (communicative use of language) are spared.
- receptive dysphasias preclude or severely jeopardize processing of phonology and syntax and, as consequence, semantics and acquisition of expressive language; they are therefore always mixed - receptive and expressive (vs. *Wernicke's aphasia* - automatized speech continues unabated, albeit of abnormal content).
  - word deafness - most severe variant of receptive DLD - children are nonverbal because profound impairment of comprehension precludes all language skills, with possible exception of nonverbal pragmatics (gestures); especially frequent in *Landau-Kleffner syndrome*.
- third type largely spares development of receptive and expressive phonology and syntax but impairs semantic processing; these children have difficulty understanding complex sentences, retrieving vocabulary, and formulating coherent discourse.

BIBLIOGRAPHY for ch. "Psychiatry" → follow this LINK >>