Chapter 2

Classification of Language Abnormalities Based on Etiology and Diagnostic Labels
Cognition <-- Language

- Develop together
  - Early gestures are communication (symbols)
    even if not associated with words
- Etiological must be considered
Genetic and Chromosomal Syndromes

1. Down Syndrome (trisomy 21)
2. Fragile X Syndrome
Down Syndrome

- one in 800 births
- symptoms include
  - mental retardation,
  - congenital organ defects,
  - respiratory infections,
  - leukemia

1. Down Syndrome (trisomy 21)
   Extra 21 chromosome
   1 in 600-800 live births (Nyhan, 1983)
   Mild to severe mental deficits
   Developmental delay in motor, speech and language
     Begin to use words between 24 months and 8 years
     Hypotonic (low muscle tone) and hyporeflexive
   Frequently associated conductive hearing loss
     Over 75% with majority exhibiting mild to moderate loss (15-40dB range)
2. Fragile X Syndrome

A genetic condition caused by spontaneous breaks in the long arm of the X chromosome.

1 out of 2,000 males and 1 out of 1,000 females.

Mild to severe language disorders (due to mental functioning)

Few gestures

More jargon, echolalia and perseveration

Communication typical of children with autism
Sequence of Development

Child ➔ Experience ➔ Communication ➔ Development
Motor and Sensory Deficits

1. Static Encephalopathy (cerebral palsy)
   1. Low birth weight - 35%-40%
   2. Metabolic Errors - 5%
   3. Infections - 5%-10%
   4. Congenital brain abnormality - 5%-10%
   5. Intrapartum asphyxia - 9%
   6. Intrauterian ischemic event - 5%-10%
   7. Genetic and/or chromosomal - 2%-5%
   8. Other (maternal factors, etc.) - 22.5%

Cerebral palsy is a group of disabling conditions characterized by nerve and muscle dysfunction. Cerebral Palsy is not a disease; rather it is caused by damage to the part of the brain that controls and coordinates muscular action. Symptoms vary widely depending upon the severity and location of brain damage, and may include the inability to control body movements, speech and language difficulties, feeding problems, learning disabilities, mental retardation, and seizures. Cerebral palsy is not hereditary, contagious, progressive, or a primary cause of death.
Motor and Sensory Deficits

2. Hearing Impairment

- language impairment determined by:
  - Stable or progressive loss (see next slide)
    - Otitis media (with or without effusion)
  - Unilateral or bilateral loss
  - Type of loss
    - Conductive or sensorineural
    - Peripheral or central
  - Amount of intervention (therapy and amplification)
  - Family attitude

How to read an audiogram slide show
Otitis Media

http://www.diseases-explained.com/OtitisMedia

The Eustachian Tube may become blocked by inflammation. This may lead to a build-up of fluid in the Middle Ear which is unable to drain away.
The Measurement of Hearing

Pure-Tone Audiometry
signal when pure tone heard
audiogram (Figure 2-1, p. 30

Hz, dB
air conduction
right, red, O, left, blue, X

bone conduction
bypass outer and middle ear and measure sensitivity of inner ear
right, red, <, and left, blue, >
normal thresholds at 15 dB HL or less for both air and bone
# Hearing Impairment Impact

Table 2-2, 2-3, 2-4 (p.31)

- no agreement on level or degree of handicap but text suggests the following impact on language:

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 to 30 dB</td>
<td>mild</td>
</tr>
<tr>
<td>30 to 50 dB</td>
<td>moderate</td>
</tr>
<tr>
<td>50 to 70 dB</td>
<td>severe</td>
</tr>
<tr>
<td>&gt;70 dB</td>
<td>profound</td>
</tr>
</tbody>
</table>

- 15 to 30 dB mild: may miss voiceless Cs, morphology
- 30 to 50 dB moderate: trouble with Cs, trouble understanding spoken language,
- misses endings and unstressed words, form severely impacted
- 50 to 70 dB severe: not hear most speech sounds, conversational speech delayed, content, form and use disrupted
- >70 dB profound: cannot hear spoken language, form, content and use significantly disrupted
Implications of Hearing Loss

1. type and degree of loss
   1. conductive
      - may be reversible through medical or surgical means
      - responds well to amplification
      - ability to discriminate sounds usually not affected (with enough amplification)
   2. sensorineural
      - usually have irreversible hearing problems
      - amplification may make sounds louder but no clearer
      - technology has improved quality of amplification with adequate professional guidance and rehabilitation

2. age of onset
   1. prelingual vs. postlingual
   2. speech is imitative
   3. early detection increases potential
   4. push to screen at hospital after birth
   5. 1 in 1000 will have a profound hearing impairment at birth
   6. currently (1998) there is a push in Washington for infant screening
Language Associated with Prematurity and/or High Risk Infancy

1. “Failure to Thrive” Babies
   Malnutrition affects brain development
2. Prematurity
   Classification
   - AGA - appropriate for gestational age
   - SGA - small for gestational age
     - Below 2500 grams
     - at risk for developmental disabilities
   - VLBW - very low birth weight
     - 15 - 35 % have delayed speech and language at 24 months
Prenatal Exposure to Alcohol and Other Drugs

- Fetal Alcohol Syndrome and Fetal Alcohol Effects
  - Symptoms (syndrome=must have all 3, effect=1 or 2)
    1. Growth retardation (including smaller heads)
    2. Facial anomalies
    3. CNS impairments
  - Syndrome characteristics
    - smaller heads
    - deformed facial features
    - abnormal joints and limbs
    - poor coordination
    - problems with learning
    - short memories

Symptoms (syndrome=must have all 3, effect=1 or 2)
1. Growth retardation (including smaller heads)
2. Facial anomalies
3. CNS impairments (mild to moderate range, average around 70 IQ, subtle learning prob., ADHD, tremors, impulsivity, restlessness and temper tantrams)

• worst drug for pervasive, lifelong effects
• 1 in every 750 live births (approx. 5000 annually)
• 10 times as frequent in Native & Alaskan Americans
• One of the leading causes (and most preventable causes of mental handicaps in US)
• 1/3- 2/3 of children in special ed. settings affected
• $est. $1.4 million cost to treat over a lifetime
Cocaine or Polydrug Exposed Infants

- Not enough study, but environmental factors such as living conditions, and other drug and alcohol use must be considered
- Poorly organized nervous systems
  - basic functions such as body temperature
  - Low tolerance for visual and auditory stimulation, including eye gaze during feeding
Cytomegalovirus Infection

- Viral disease resulting in brain damage
- Contracted pre- and postnatally
- Most common viral disease in fetuses & newborns (approx. 3,000 infants annually)
- Those surviving have high rate of
  - Mental handicaps
  - Sensory deficits
  - Motor disabilities
  - Seizure disorders

Cytomegalovirus (CMV) [si-to-MEG-uh-lo-vi-rus] is a virus that infects most people worldwide. CMV spreads from person to person by direct contact. Although CMV infection is usually harmless, it can cause severe disease in persons with weakened immune systems. There is no treatment for CMV infection. Prevention centers on good personal hygiene, especially frequent handwashing.
Specific Language Impairment

- cannot be attributed to deficits in cognitive, motor, sensory, or socioemotional factors
- delayed in learning to talk but not in other areas
- usually not identified until age 2 (less than 50 words and not combining)
- semantic, grammatical (morphemes), and syntactic deficits
- may not combine words until vocabulary reaches 200 words
Specific Language Impairment

- discourse (ability to connect sentences) difficulties
- normal on nonverbal measures
- thought to be related to neurological dysfunction or delayed maturation
- seems to be a genetic component
Mental Handicaps

- diagnosed according to three major factors
  - overall intellectual functioning (IQ - 100 +/- 15) (> 2 SD below)
  - personal independence
  - social responsibility

- Classification based on Wechsler Scale
  - mild - 55-69
  - moderate - 40-54
  - severe - 25-39
  - profound - <24
Mental Handicaps

etiology

– biological factors (usual cause)

– environmental factors

biological factors (usual cause)

- genetic and chromosomal (Down and Fragile X)
- maternal infections (rubella and cytomegalic virus)
- toxins and chemical agents (fetal alcohol syndrome and lead poisoning)
- complications during pregnancy or delivery (prematurity, anoxia, maternal nutritional problems)

environmental factors

- neglect
- deprivation
- poor housing, medical care, and nutrition
Autistic Spectrum Disorders

- Problems in:
  - Socialization
  - Theory of mind
  - Pragmatics
  - Representational play

- Two groups of ASDs
  - Pervasive Developmental Disorders
  - Other Autistic Spectrum Disorders
Pervasive Developmental Disorders

- Defined in DSM-IV

- “Pervasive” means the problem cuts across multiple types of communication
Autistic Disorder (DSM-IV)

1. total of six (or more) items from (1), (2), and (3), with at least two from (1), and one each from (2) and (3):

2. Delays or abnormal functioning in at least one of the following areas, with onset prior to age 3 years: (1) social interaction, (2) language as used in social communication, or (3) symbolic or imaginative play.

3. The disturbance is not better accounted for by Rett’s Disorder or Childhood Disintegrative Disorder.

Must include all three of the categories in #2
Pervasive Developmental Disorders

1. Autistic Disorder
2. Asperger’s Syndrome
3. PDD-NOS
4. Rett’s Disorder
5. Childhood Disintegrative Disorder

Autistic Disorder  Severely disordered verbal and non-verbal language; unusual behaviors.

Asperger’s Syndrome  Relatively good verbal language, with “milder” non-verbal language problems; restricted range of interests and relatedness.

PDD-NOS  Non-verbal language problems not meeting strict criteria for other PDD disorders.

Rett’s Disorder*  Rare neurodegenerative disorder of girls.

Childhood Disintegrative Disorder*  Neurologists are scratching their head on this one, and assume psychiatrists mean neurodegenerative disorders.

*In common practice, the diseases of Rett’s Disorder, and Childhood Disintegrative Disorder are considered medical disorders and are not usually considered part of the “Autistic Spectrum Disorders.”
Autistic Disorder

1. impairment in social interaction
   – nonverbal behaviors
   – uninterested in sharing attention and interests of others
   – failure to develop peer relationships

1. impairment in social interaction
   nonverbal behaviors
     eye gaze
     facial expression
     body posture
     gestures
Autistic Disorder

2. impairment in verbal and nonverbal behavior
   – delay or lack of speech development
   – conversational impairments
   – lack of pretend play
Autistic Disorder

3. insistence on sameness
   – repetitive movements
   – ritualistic behaviors
   – abnormal preoccupations
   – resistance to change
Asperger’s Syndrome

- DSM-IV criteria similar to Autistic Disorder but does not include “communication” problem areas
- “autistic people who talk well” (Martin L. Kutscher, MD)
PDD-NOS

- Atypical autism
- Do not meet the criteria for Autistic Disorder because of late age of onset, atypical symptomatology, or subthreshold symptomatology, or all of these.
- Do not meet criteria for a specific Pervasive Developmental Disorder, Schizophrenia, Schizotypal Personality Disorder, or Avoidant Personality Disorder.
Rett’s Disorder

1. deceleration of head growth between ages 5 and 48 months
2. loss of purposeful hand skills between ages 5 and 30 months with the development of stereotyped hand movements
3. loss of social engagement (although often social interaction develops later)
4. appearance of poorly coordinated gait or trunk movements
5. severely impaired expressive and receptive language development with severe psychomotor retardation

1. apparently normal prenatal and perinatal development
2. apparently normal psychomotor development through the first 5 months after birth
3. normal head circumference at birth
Childhood Disintegrative Disorder

- Normal first two years
- Loss of skills before age 10 in at least two areas
- Abnormalities in functioning in:
  - Social interaction
  - Communication
  - Behaviors

(A) Apparently normal development for at least the first 2 years after birth as manifested by the presence of age-appropriate verbal and nonverbal communication, social relationships, play, and adaptive behavior.

(B) Clinically significant loss of previously acquired skills (before age 10 years) in at least two of the following areas:

1. expressive or receptive language
2. social skills or adaptive behavior
3. bowel or bladder control
4. play
5. motor skills

(C) Abnormalities of functioning in at least two of the following areas:

1. qualitative impairment in social interaction (e.g., impairment in nonverbal behaviors, failure to develop peer relationships, lack of social or emotional reciprocity)
2. qualitative impairments in communication (e.g., delay or lack of spoken language, inability to initiate or sustain a conversation, stereotyped and repetitive use of language, lack of varied make-believe play)
3. restricted, repetitive, and stereotyped patterns of behavior, interests, and activities, including motor stereotypies and mannerisms

(D) The disturbance is not better accounted for by another specific Pervasive Developmental Disorder or by Schizophrenia.
Autistic Spectrum Disorder

- neurogenic etiology (unclear)

   likely impairment of limbic system, thalamus, basal ganglia, and cerebellum.
Traumatic Brain Injury

- etiology
- diffuse cerebral damage that leads to swelling, and increased intracranial pressure
- general symptoms of brain injury

etiology

motor vehicle accidents
falls
physical abuse
diffuse cerebral damage that leads to swelling, and increased intracranial pressure
general symptoms of brain injury

lack of inhibition
lack of initiative
distractibility
perseveration
low frustration levels
Children with Traumatic Brain Injury

- Unlike adult due to cerebral plasticity

2 years seems to be age of beginning specialization. Injury after this time more likely to result in language difficulty.
Acquired Language Disorders

- Etiology
- Inconsistent language impairment due to location of injury
- After-effects influence degree of damage

Etiology
- Meningitis
- Convulsive disorders
- Head trauma

Inconsistent language impairment due to location of injury

After-effects influence degree of damage
- Edema
- Hypoxia
- Hemorrhage
- Seizure