

## Chapter Ten: Language and Brain

### 1. NEUROLINGUISTICS AND PSYCHOLINGUISTICS

**Neurolinguistics** → the study of language processing and representation of language in the *brain*

**Psycholinguistics** → the study of the connections between language and *mind*

### 2. LOCALIZATION OF THE BRAIN

different human cognitive abilities and behaviors are localized in specific parts of the brain

#### 2.1. Aphasia

impairment of language function due to localized cerebral damage

##### Broca's Aphasia

- **Agrammatic speech:** patients typically omit function words
- Patients have word-finding pauses and disturbed word order
- Patients have difficulty understanding complex sentences

##### Wernicke's Aphasia

- **Anomia:** difficulty in finding the correct word and lexical morphemes
- **Paragrammatism:** speech is fluent, with normal intonation, yet it is incomprehensible
- **Paraphasia:** mispronunciation of words, or the production of inappropriate words
  - **Phonemic jargon:** substituting phonemic segments, e.g. *table* → *sable*
  - **Neologistic jargon:** production of content words that have been fabricated, e.g. *splix*
  - **Semantic verbal paraphasia:** replacing the desired word with a related one, e.g. *paper* → *pencil*
  - **Jargon aphasia:** substituting words unrelated semantically, e.g. *chair* → *engine*

##### Conduction Aphasia

- disrupted rhythm because of pauses and hesitations
- the task of repeating a word or phrase is difficult for them

#### 2.2. Event-Related Potentials (ERPs)

#### 2.3. Specific Language Impairment (SLI)

#### 2.4. Language Savants

### 3. LATERALIZATION OF THE BRAIN

# development of control over different functions that are localized primarily on one side of the brain or the other:

Left hemisphere → **analytic** and **temporal activities**, e.g., mathematics, jigsaw-type puzzles, music in musicians, alphabet reading

Right hemisphere → **intuitive** and **holistic activities**, e.g., recognizing faces, guessing games, music in non-musicians, logographic reading

# lateralization coincides with **critical period**

# brain has **contralateral** function

### 3.1. Dichotic listening

### 3.2. Childhood Brain Lesions

### 3.3. Split Brains

## 4. TONGUE TIPS AND SLIPS

**Tip of the tongue** → we feel that some word is just eluding us, that we know the word, but it just won't come to the surface

**Slip of the tongue:**

- **Metathesis** → exchange in the normal sequence of elements in a sentence, e.g.  
dear old queen → queer old dean  
you have missed my history class → you have hissed my mystery class
- **Perseveration:** e.g., black box → black blox
- **Anticipation:** e.g., reading list → leading list
- **Shift** → one speech segment disappears from its appropriate location and appears somewhere else, e.g., she decides to hit it → she decide to hits it
- **Deletion:** e.g., his immortal soul → his immoral soul
- **Addition:** e.g., spic and span → spic and splan
- **Substitution:** e.g., Where is my tennis racquet? → Where is my tennis bat?

## 5. EXTRA POINTS TO REMEMBER

# **Agraphia** and **alexia**

# Right-hemisphere injury, are *intonation* and *non-literal language*