

## Lecture2

### **The biological basis for language**

Some characteristics of the linguistic system. p6

**Language** is a formal system for pairing signals with meanings. Meaning —  
Language—Signal

Rules govern the creation of sentences (**Grammar**) -

The words of a language are its **lexicon** -

Knowledge of Grammar and lexicon is **tacit** or implicit (**tacit vs. explicit knowledge**)

### **Prescriptive Grammar. p7**

Grammar (Linguists vs. teachers)

**Prescriptive grammar** = standard way of speaking.

**Descriptive grammar**= language system that underlies ordinary use.

Young English speakers might say:

' Me and Mary went to the movies -Mary and me went to the movies' ... Prescriptive or descriptive

It is I vs. it's me //// This is she vs. this is her

### **The universality of human language**

Number of languages in the world??

HUMAN LANGUAGE = one language

Similarities of human languages and universality

### **\* Implications for the acquisition of language. p10**

Most children grow up in multilingual environments

How is bilingualism possible (human languages are similar??

Not walking, speaking, or riding a bicycle. Impairment or learning issue??

\* How language pairs sound and meaning

In language, three kinds of rule systems make up a grammar; **phonological rules, morphological rules and, syntactic rules.** (The man saw the boy with the binoculars). p.11-12

### **Linguistic competence and linguistic performance. p15**

**Linguistic competence:** refers to knowledge of language (grammar and lexicon) that is in a person's mind.

- **Linguistic performance:** the use of linguistic knowledge in actual processing of sentences (production & comprehension)) )

### **\* The biological basis of language. p.701**

-Language is species-specific

No other animals can have language

Can animals be taught human language? Chimpanzee Washoe was taught 100 words from the American sign language (chimps don't have vocal tracks like humans) – Syntax?

## **2-language is universal in humans. p73**

- a- Humans are born with brains (organize and process language)
- b- Human languages have universal properties (i.e. languages are similar - phonology-lexicon-syntax)

## **3-Language need not be taught, nor can it be suppressed. p75**

- a- Language acquisition in the early years is a naturally unfolding process (like walking). p.76 – Goed!!
- Acquisition cannot be suppressed. (Deaf vs. hearing children)

## **Children everywhere acquire language on a similar developmental schedule. p.77**

- Milestones of acquisition (like walking)
- Babies coo in the first half of their first year and babble in the second half. - First word at the first half of the second year
  - one-word stage — holophrastic stage — early sentences
- Complex sentences - At age 5, basic structures are in place.  
( no matter what language s/he learns, children make similar errors - goed-sheeps -masjidat )

## **Wild children and the critical period. p.78-79**

- The optimal period for language acquisition is before the early teen years- After the critical period, if the child didn't acquire any language, he/she can't acquire human language fully.
- ( Genie, 13 (Genie full stomach

# **Lecture3**

## **anatomical and physiological correlates for language. p.81**

Is language stored in the brain ? Evidence?

-Paul Broca presented the first case of aphasia

Aphasia is a language impairment linked to a brain lesion

The patient was called 'tan-tan' because he was not fluent

10 years later, Carl Wernicke reported a patient who speaks fluently but his speech was incomprehensible.

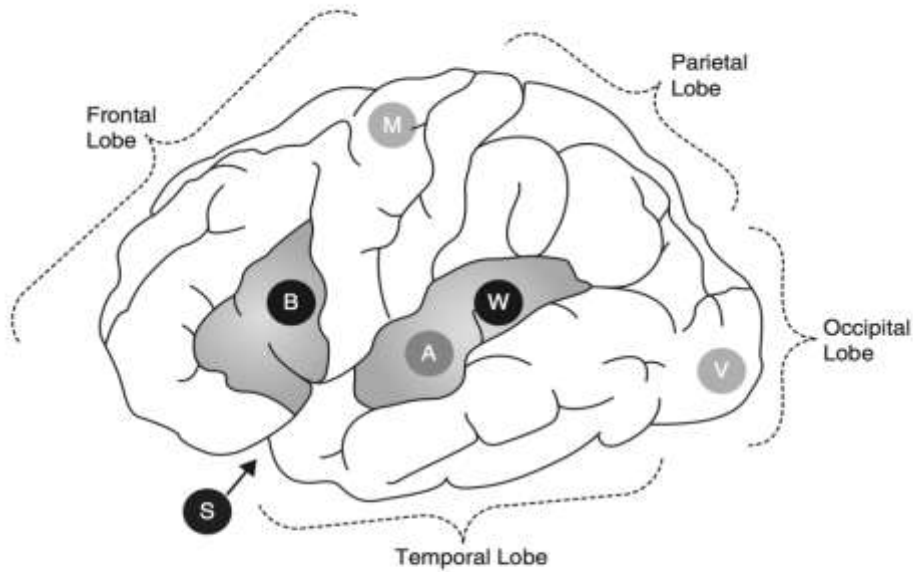
Both had brain injuries (left hemisphere lesions)

## **Neurolinguistics**

Is the study of the representation of language in the brain. p.81

Broca's aphasia vs. Wernicke's aphasia

## **Localization**



**Figure 3.1** Diagram of the left hemisphere of the human cerebral cortex (side view). The diagram indicates the location of the primary language areas (Broca's and Wernicke's areas, 'B' and 'W', and the Sylvian fissure 'S'), as well as the approximate areas recruited for motor (M), auditory (A), and visual (V) processing.

Broca's aphasia = agrammatic (only words - no syntax / non-fluent )  
 Wernicke's aphasia = incoherent and meaningless.

Competence or performance?

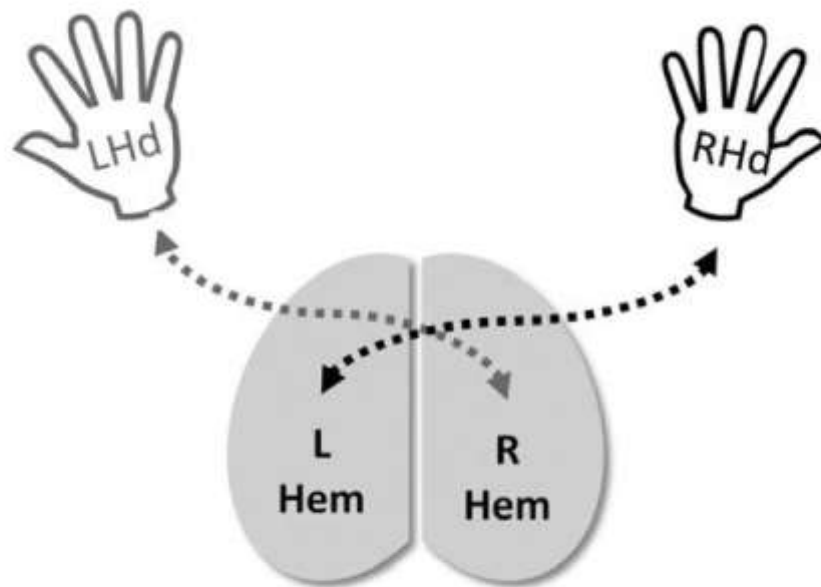
### Language lateralization

To say that language is lateralized means that the language function is located in one of the two hemispheres of the cerebral cortex. p.84

For most people, language is lateralized in the left hemisphere. Lateralization is linked to handedness.

Control of the body is contra-lateral: the right side of the body is controlled by the left motor and sensory areas, while the left side of the body is controlled

by the right motor and sensory areas.



**Figure 3.2** Schematic diagram of contralateral control. The shaded lobes represent the two hemispheres of the human brain, looked at from above. The dashed gray lines represent the direct paths from the right hemisphere to the left hand; the dotted black lines, paths from the left hemisphere to the right hand.

### Lateralization and bilingualism

Some brain lesions affect both languages, some affect one language more than the other, while some affect one language but not the other. 86

Split brain patients

Epilepsy patients. = cutting the corpus callosum

Naming an object can be difficult. (on screen or in hand) 87

Vedio 