

LANGUAGE

What is language?

- spoken, written, or gestured “signals” and the way we combine them together to communicate meaning (semantic value)

Units of language

Phonemes

- in a spoken language, the smallest basic distinctive sound unit
- follow phonological rules
- eg: “chug” has 3 phonemes
 - ch
 - u
 - g

Morphemes

- the smallest unit that carries meaning
- free morphemes
 - can be independent word
 - town
 - horse
 - class
 - capital
 - garbage
- bound morphemes
 - part of a word (prefix or suffix)
 - un
 - ness
 - re

Grammar

- a system of language rules enabling us to communicate and understand others

Semantics

- rules by which we derive meaning in a language
- adding “ed” at the end of a word means past tense

Syntax

- the rules for combining words into grammatically sensible sentences
- in English, adjectives come before nouns, but not in Spanish

Do animals have language?

- they communicate; not necessarily language
- ie: honeybee waggle dance, prairie dog alarm calls

Could animals acquire language?

- Alex the African Grey Parrot
 - 150 spoken english words
 - could count
 - new words (combine)
 - apple=banberry
 - could transfer meaning of object

- Koko the signing gorilla
 - 1000 words in ASL
 - understand 200 spoken english words
- Nim Chimpsky
 - could sign 125 words (some say 25)
 - but no syntax; could just result from imitation and conditioning

Human language

- generativity
 - the property of language that accounts for the capacity to use a limited number of words to produce an infinite variety of expression
- displacement
 - the property of language that accounts for the capacity to communicate about matters that are not here and now

Is language innate?

1. emerges before necessary
2. not a conscious decision
3. not triggered by external events (but environment must be sufficiently rich to develop adequately)
4. direct teaching and practice have little effect
5. regular sequence of “milestones” correlated with age
6. likely to be a critical period

Skinner (behaviourist)

- Skinner thought that we can explain language development through social learning theory

Problem with behaviourist explanation

- remember Nim Chimpsky
- humans learn rapidly before any grammar rules

Noam Chomsky (nativist)

- Language Acquisition Device
- acquire language too quickly
- have “learning box” enabling us to learn any human language
- words learned, but how to put together is already there

Deaf children

- Nicaragua
- group of children developed their own hand sign language
- still being developed, provides a clue into how languages become refined and grammar is intrinsic

Wernicke-Lichthiem-Geschwind model

Broca's aphasia

- lesions in Broca's area (left frontal cortex)
- non-fluent, laboured, and hesitant speech
- most also lost the ability to name persons or subjects (anomia)
- can utter automatic speech (hello)
- comprehension relatively intact

- if extensive, not much recovery over time
- ex: "Dog walk uh house."

Wernicke's aphasia

- lesions in posterior of the left superior temporal gyrus extending to adjacent parietal cortex
- fluent speech
- but contains many paraphasias
 - girl=curl
 - bread=cake
- syntactical but empty sentences
- cannot repeat words or sentences
- unable to understand what they read or hear
- usually no partial paralysis
- ex: "A dog is a house, but walking is strange on fridays."

Dyslexia

- impairment of a person's fluency or comprehension accuracy in being able to read
- frontal but NOT temporal parietal (Wernicke's)

Multilingual children

- does it impair cognitive development?
- early studies suggested yes, but studies were flawed
- increased analytical ability and capacity to learn more languages
- trade offs
 - smaller vocabularies
 - longer processing time
- record is 32 languages

Brain and multilingualism

- differences between those learning second language early versus late
- fMRI reveals L1 and L2 is same Broca's area of early learners
- L1 and L2 in different sites of Broca's area of late learners

Spoken and sign languages

- neural mechanisms are similar
- fMRI studies show similar activations for both hearing and deaf

Language development

- about 80000-250000 words (human)

Does language influence our thinking?

- Whorf's linguistic relativity
 - the idea that language determines the way we think (not vice versa)
 - the Hopi tribe has no past tense in their language so Whorf says they rarely think of the past
 - Dani (aboriginal people of Papua New Guinea) have only 2 words for colours
 - Mola: red, yellow and orange
 - Mili: green, blue and grey
- **the can distinguish among colours however

Thinking without language

- we can think in words
- but we more often think in mental pictures