Messages from your Psyc 270 TAs:

POSTER SESSION:
• Poster session on Nov 29 (5-8PM) will occur in the Djavad Mowafaghian Centre for Brain Health (CBH) lobby and Rudy North Lecture Hall (first floor of building)
• **NOTE:** POSTER FORMAT HAS CHANGED. Everyone please make poster on TRI-FOLD poster boards as they will need to rest on tables (can be purchased at Staples).

CENTRE FOR COMPARATIVE MEDICINE (CCM):
• Dr. Shelly McErlane has agreed to host three rat handling sessions and tours of CCM during the following times:
  • Monday, November 26: 1 – 2PM
  • Wednesday, November 28: 2 – 3PM
  • Monday, December 3: 2 – 3PM

Only 10 students/session on a *first-come-first-serve* basis. Please email Nicole at nicolejenni@psych.ubc.ca to request a slot.
Cognition 2

• Human language is a complex form of communication

• Chimpanzees use language but:
  – Seldom use symbols in new combinations
  – Use of symbols is primarily used to request and not describe

**FIGURE 14.9 An attempt to teach chimpanzees language**

One of the Premack's chimps, Elizabeth, reacts to colored plastic chips that read “Not Elizabeth banana insert—Elizabeth apple wash.” (Photo courtesy of Ann Premack)
Nonhuman Precursors of Language

- Bonobos (pygmy chimpanzees)
- Show better comprehension and use of language:
  - Use symbols/names to describe objects
  - Request items not seen
  - Use symbols to describe past events
  - Make original, creative requests
FIGURE 14.10 Language tests for Kanzi, a bonobo (*Pan paniscus*)
He listens to questions through earphones and points to answers on a board. The experimenter with him does not hear the questions. *(From Georgia State University’s Language Research Center, operated with the Yerkes Primate Center of Emory)* Photo courtesy of Duane Rumbaugh
Song dialects in white-crowned sparrows

Sonograms

San Francisco Bay

Marin

Berkeley

Sunset Beach

Miles

0 20

10
Development

• Sensitive period exists for the learning of language
  – No early language exposure can lead to permanent impairment
• Learning of a second language differs as a function of age:
  – Children excel at learning pronunciation and grammar
  – Adults are better at memorizing vocabulary
Development

• People who learn a second language after age 12 rarely gain fluency equal to a native speaker.
• People who learn a second language from a young age (before 6) vs. people who learn a second language after 6
  – Differences in brain activity during speech.
• Second language depends on the same brain areas as the first language.
Development

• Deaf children unable to learn spoken language and not given the opportunity to learn sign language while young reveals:
  – Little development of skill at any language later
Neural Mechanisms

• Certain brain areas are necessary for language
• But same areas are also necessary for other tasks (memory and music perception)
Brain Damage and Language

• People with brain damage:
  – Broca’s area is a part of the frontal lobe of the left cerebral cortex near the motor cortex
  – Aphasia refers to a condition in which there is severe language impairment
FIGURE 14.14 Two areas important for language
(© Cengage Learning 2013)
Brain Damage and Language

• **Broca’s aphasia / nonfluent aphasia** refers to serious impairment in language production
  – Omission of most pronouns, prepositions, conjunctions, auxiliary verbs, tense, and number endings during speech production
  – Difficulty understanding the same kinds of words they omit (prepositions, conjunctions)
Brain Damage and Language

• Broca’s aphasia is usually accompanied by comprehension deficits when:
  – The sentence meaning depends on prepositions, word endings, or unusual word order

• Broca’s area seems critical for the understanding some aspects of grammar
Brain Damage and Language

- Wernicke’s area is an area of the brain located near the auditory part of the cerebral cortex.
- Wernicke’s / Fluent aphasia is characterized by impaired language comprehension and ability to remember the names of objects.
- Sometimes called “fluent aphasia” because the person can still speak smoothly.
Brain Damage and Language

• Typical characteristics of Wernicke’s aphasia include:
  – Articulate/fluent speech except with pauses to find the right word
  – Difficulty finding the right word: anomia refers to the difficulty recalling the name of objects
  – Poor language comprehension: difficulty understanding spoken and written speech (especially nouns and verbs)
<table>
<thead>
<tr>
<th>Type</th>
<th>Pronunciation</th>
<th>Content of Speech</th>
<th>Comprehension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broca’s aphasia</td>
<td>Poor</td>
<td>Mostly nouns and verbs; omits prepositions and other grammatical connectives</td>
<td>Impaired if the meaning depends on complex grammar</td>
</tr>
<tr>
<td>Wernicke’s aphasia</td>
<td>Unimpaired</td>
<td>Grammatical but often nonsensical; has trouble finding the right word, especially names of objects</td>
<td>Seriously impaired</td>
</tr>
</tbody>
</table>

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https://isle.hanover.edu/isle2/Ch12Speech/Ch12BrocaWernicke.html