

Psych56L/ Ling51

Winter 2013

Review Questions: Biological Bases of Language

(1) Terms/concepts to know: pidgin, creole, home sign, Nicaraguan Sign Language, Language Bioprogram Hypothesis, critical period, sensitive period, “less is more” hypothesis, split brain patients, lesion studies, contralateral brain connection, ipsilateral brain connection, dichotic listening, right-ear advantage, ERP, PET, fMRI, MEG, optical topography, near-infrared spectroscopy, Broca’s aphasia, Wernicke’s aphasia, equipotentiality hypothesis, invariance hypothesis, reference, syntax, intentionality, vervet monkey alarm call, honeybee waggle dance, bird song

(2) What is one way we know that language isn’t simply a “cultural” habit passed on from person to person? (Hint: Think about cases where there’s no person to learn it from.)

(3) Is the Language Bioprogram hypothesis more in line with a nativist or an empiricist viewpoint? What about a generativist vs. a constructionist viewpoint? How do you know?

(4) On the fictitious island of the Guins, suppose that several immigrants from different language and cultural backgrounds have come to live and work together. Suppose that you noticed that there was now a common language comprised of lots of other language parts, and this common language was spoken by all of the adult immigrants. Meanwhile, a different (though related) language was spoken by the children of the immigrants. Which language (that of the adults or that of the children) would be termed a pidgin and which would be termed a creole? Why? Whose language (that of the adults or that of the children) would you expect to be more grammatically complex?

(5) Why are creoles informative about what prior knowledge children may have about language acquisition while pidgins generally are not?

(6) What are some ways researchers measured the structural complexity of the language of signers learning Nicaraguan Sign Language?

(7) Does creolization necessarily indicate that there is domain-specific knowledge about language? Why or why not?

(8) When Genie was tested with a dichotic listening task, it was found that language was a right-hemisphere activity for her. How does this compare with native speakers’ neural activity? How did Genie’s language ability compare to native speakers’?

(9) What are deaf-of-hearing children? Why are they a better case study for language’s critical period than Isabelle and Genie?

(10) How do we know that language ability isn’t just about how long you’ve known a language? What evidence do we have from deaf signers? What about from second-language learners?

(11) How does testing second language speakers help us decide whether there is a critical or sensitive period for language development?

(12) What kind of performance trajectory do we expect from language learners if there is a critical period for language? What about if there is a sensitive period?

(13) What is the “less is more” hypothesis, in relation to language-learning? Why might it be counterintuitive, given children’s cognitive abilities and adults’ cognitive abilities?

(14) What are some pros and cons of the human speech apparatus?

(15) What can lesion studies tell us about how language functions are implemented in the brain?

(16) In which ear would you expect a normal subject with no brain damage to report hearing a language stimulus in a dichotic listening experiment? Why?

(17) Can ERP studies give us detailed information about the timing of neural events? Why or why not? What about detailed information on the exact location of neural activity?

(18) Would MEG be easy to use for a young child? Why or why not?

(19) Which of the following sentences would a Broca’s aphasic likely have trouble comprehending? Why?

(a) The penguin ate the fish in one gulp.

(b) The fish ate the penguin in one gulp.

(20) Consider split-brain patients and what they can tell us about where language is processed in the brain.

(a) What is the defining feature of a split brain patient? (Hint: What part of the brain has been altered?)

(b) Suppose a split brain patient sees a cat in her right visual field.

(i) Will she be able to say “cat” out loud to identify what she saw?

(ii) Will she likely be able to pick up a stuffed cat from a set of objects on her righthand side?

(c) Suppose a split patient sees a cat in her left visual field.

(i) Will she be able to say “cat” out loud to identify what she saw?

(ii) Will she likely be able to pick up a stuffed cat from a set of objects on her lefthand side?

(d) Given the results from (b) and (c), what would we conclude about where language is located in the brain of most adult speakers? Why?

(21) Which side of the brain seems to control non-linguistic visual-spatial information processing? How do you know?

- (22) Give two examples of aspects of language that the right hemisphere seems to control.
- (23) Where is a non-native language usually located in the brain for speakers who aren't as proficient with syntax? Does this fit with the general notion of what the right and left hemispheres are specialized for? Why or why not?
- (24) Which hypothesis, equipotentiality or invariance, is supported by studies of children's development of language ability?
- (25) Do vervet monkey calls show evidence of syntax? What about intentionality?
- (26) Does human language have more or fewer "signs" than animal communication systems?
- (27) Does a honeybee's waggle dance have the intentionality feature? Why or why not?
- (28) How would you argue that dolphin communication differs from human language?
- (29) How can birdsong be compared to human language, with respect to how it develops?
- (30) In what way is birdsong similar to human language with respect to syntax (the combinatorial system)? In what way is it different?
- (31) How does the number of symbols Alex the parrot learned compare with the number of symbols an average adult human knows?
- (32) What is one reason that chimpanzees were more able to learn a signed human language than a spoken human language?
- (33) Nim Chimsky was able to create combinations of signs. Were these likely the result of a productive combinatorial system or were they likely just memorized chunks?
- (34) What was the difference in Matata's and Kanzi's language training? Who succeeded better at learning language? Why was this the case, and how does this relate to the critical period of language acquisition?
- (35) What are two ideas why other primates like Kanzi may be unable to learn human languages as well as human children learn them?
- (36) Which human Faculty of Language, broad or narrow, is supposed to represent a qualitative difference between human and animal communication? Which is supposed to represent a quantitative difference? (Note: qualitative = not just about needing more brain power, but actually needing more specialized brain parts; quantitative = just need more brain power, but basic functional brain parts are the same)