

## Discussion Questions for video “The Mind: Language”

This film touches on many issues which we cover in Linguistics 1. The order of the questions below relates to the order they come up in the film. In parentheses is the week whose topic relates to the question raised by the video. The boxed numbers are those most relevant to Week 7 on “Language in the Brain”.

1. (Week 8) What was the purpose of experiments such as those with Vicki, Washoe, and Koko?

Vicki and Koko experiments (and, of course, Washoe) were designed to see whether apes could use a communication system different from their “natural” one and significantly like human language.

2. (Week 8) How did Premack's experiments differ in focus from the ones mentioned in question #1? In what two ways does Premack believe his experiments have shown chimpanzees to be cognitively different from humans?

- Premack is interested in exploring the cognitive capacities of apes in their own right and the nature of language only more indirectly by comparing ape and human capacities.
- Premack believes that (1) there is no evidence that apes formulate “rules of grammar” and (2) there is no evidence that apes “think” in terms of the symbols they have been taught—for chimpanzees, the symbols involve a direct physical relation to their referents.

3. (Week 9) Why does Lieberman believe that the reconstructed vocal organs have implications for how the brain has to be reconstructed? Why does he believe that Neanderthal could not have had speech as we know it? What evidence does he give for the selective advantage of speech?

- Lieberman would argue that the “design” of an organism's brain is directly related to its functions, including the motor skills it is required to drive.
- According to Lieberman's reconstruction, Neanderthal could not pronounce the vowels *a*, *u*, or *i*, and all vowels would have been heavily nasalized; these features would, at the very least, require a phonological organization different in kind from any modern human language.
- Speech must have been selectively advantageous because the vocal organs that we have developed are *inefficient* in a number of ways not true of other species.

4. (Week 7) What is “lateralization”? What is the significance of the left hemisphere of the brain for experiments such as those of Neville, Raichle, and Damasio?

- “Lateralization” is the specialization of the two halves of the brain for different cognitive functions.
- Neville: the right hemisphere is specialized for vision and spatial cognition, yet it is the left hemisphere that is stimulated by signing and sign perception; Raichle: when motor aspects of language are subtracted from PET scans of areas stimulated during language use, the main areas of activity are in the left hemisphere; Damasio: aphasics with left hemisphere lesions show perturbed syntax.

5] (Week 7) Why does the study of the sign language of the deaf have special significance for understanding language in the brain? What have experiments shown about how sign language is processed in the brain? What kinds of evidence show that the linguistic development of a deaf child is like that of hearing children? (What implications does sign language research have for Lieberman's theories, which focus on the vocal apparatus?)

- By comparing signing and speech, we can abstract away the fundamental aspects of language not directly tied to mode of delivery/reception.
- Sign language, like spoken language, is processed in the left hemisphere (see previous question, comment on Neville in question 4).
- Children babble in sign and make the same kinds of errors as children acquiring spoken language, e.g. confusion of 1st and 2nd person pronouns, despite apparent iconicity in sign language (the signer actually points to the referent).
- Implication for Lieberman's theories: Lieberman ties linguistic evolution very directly to development of specialized speech organs and the ability to process speech sounds very rapidly; the fact that sign language uses none of these capacities, yet embodies many aspects fundamental to spoken language, indicates that the evolution of cognitive capacities for human language was at least to some extent independent of the evolution of the “language organs”.

6. (Week 6) What kinds of experimental evidence with babies show that we are endowed with linguistic abilities from birth, even though children typically do not begin to speak until they are a year old or more?

Experiments show that babies have perceptual abilities (e.g. discrimination of vowels, even with speakers varied) like those of adults at an early pre-speech phase.

7. (Weeks 1, 7) What is the difference between a “pidgin” and a “creole”? Why does the formation of Surinam creole suggest that we are “hardwired” for language from birth? Why are there so many different languages, i.e. why don't we all speak creoles?

- A “pidgin” is not a real “language” in that it has very “loose” phonology and syntax, a vocabulary limited to immediate work or other social requirements, and is not the native mode of speech for anyone; a “creole” is a full-fledged language in every sense.
- Surinam creole is apparently unique in that it was “created” by children from a “pidgin” used by adults who had no common language (this contrasts with most cases of creole formation, where the “basilect”—the actual “base” language, such as English or Portuguese—is spoken to a significant extent in the milieu).
- We don't all speak creoles because under normal circumstances, a significant part of the community will share a common “real” language, which the next generation will acquire.

8] (Week 7) Describe how it is experimentally possible to show where specific linguistic abilities are stored in the brain.

See description of Raichle experiments in the video outline: a PET scan can show areas of the brain which are active; during a speech act, by subtracting stimulated areas known to be associated with motor activity, stress, etc., the remaining stimulated areas must be those stimulated by purely linguistic factors.

9] (Week 7) How would the language deficits of aphasics show how the brain stores grammar? What in the film tells us that Damasio's stroke patient had left hemisphere damage (other than him saying so)?

- By studying the specific deficits and intact abilities of aphasics, it is possible, because of knowledge of where brain damage is localized, to associate the deficits with those locations.
- Damasio's stroke victim reported numbness/loss of motor skills on the *right* side of the body; motor functions are controlled by the hemisphere opposite to the side controlled, hence damage must have been in the left hemisphere.

10. (Week 1) What is the “Whorf Hypothesis”? What evidence did Whorf think Hopi gave for this hypothesis? What is Malotki's view (and the view of virtually all linguists today) on this hypothesis? If Whorf was wrong, what would explain the Eskimos having many words for snow [if, in fact, they did] or nomadic Arabs having many words for camels?

- The “Whorf Hypothesis” claims that the way a person views reality is shaped by the language s/he speaks; Whorf claimed that Hopi had no words for time and no grammatical category of tense and that Hopis, as a consequence, did not perceive “time” as a definable phenomenon.
- Malotki in the film, along with virtually every other linguist working today, does not accept the strong version of the Whorf hypothesis. Evidence overwhelmingly demonstrates that linguistic structure and perception of the world are independent, with perception of the world a function of culture, not language. Indeed, some concepts, such as the fact that time passes or the perception of color, would be human universals, not even controlled by culture.
- The Eskimos have lots of words for snow just because snow is important to them and it is useful to have simple ways to characterize it. One should add, however, that the basic claim that Eskimos have many words for snow is doubtful—see Pinker, page 54.