

HUL381/ELL457: Mind, Machines and Language

Minor Test I, Form:

A

Maximum points: 30

Section 1. Fill in the blanks (1pt per question)

Please fill in the blanks with the most appropriate technical term/description.

1. The form of aphasia in which phonemes are substituted, resulting in nonsense words is termed _____
2. The time between early childhood and puberty during which a child can acquire a native language easily, swiftly, and without external intervention is called _____
3. A monkey (with normal brain lateralization) is trained to respond with both its hands to a certain visual stimulus, such as a flashing light. After the training is complete, the brain is surgically split. The stimulus is then shown only to the left visual field. The monkey's response to the stimulus (i.e. light) is _____

Section 2. Short Answer Questions

4. (5pts) A monkey (with normal brain lateralization) is trained to respond with both its hands to a certain visual stimulus, such as a flashing light. After the training is complete, the brain is surgically split. The stimulus is then shown only to the left visual field. Explain the reason for the monkey's response using appropriate technical terms.
5. (10pts) Write a short note on the relationship between grammar and Broca's Aphasia.
6. (7pts) What is the Mind-Body problem? Describe Functionalism and how it seeks to address this problem. What are the limitations of Functionalism, in your view?
7. (5pts) Let us suppose that Chomsky is wrong, and human language did in fact evolve as an adaptation to the environment. What specific advantages might language have conferred, which drove its evolution? Describe any two hypotheses.

Answer Key for Exam A

Section 1. Fill in the blanks (1pt per question)

Please fill in the blanks with the most appropriate technical term/description.

1. The form of aphasia in which phonemes are substituted, resulting in nonsense words is termed Wernicke's aphasia.
2. The time between early childhood and puberty during which a child can acquire a native language easily, swiftly, and without external intervention is called the critical period.
3. A monkey (with normal brain lateralization) is trained to respond with both its hands to a certain visual stimulus, such as a flashing light. After the training is complete, the brain is surgically split. The stimulus is then shown only to the left visual field. The monkey's response to the stimulus (i.e. light) is moving its left hand.

Section 2. Short Answer Questions

4. (5pts) A monkey (with normal brain lateralization) is trained to respond with both its hands to a certain visual stimulus, such as a flashing light. After the training is complete, the brain is surgically split. The stimulus is then shown only to the left visual field. Explain the reason for the monkey's response using appropriate technical terms.

Monkey's response: The monkey will perform only with the left hand. When the brain is surgically split, certain information from the left side of the body is received only by the right side of the brain, and vice versa. To illustrate, suppose that a monkey is trained to respond with both its hands to a certain visual stimulus, such as a flashing light. After the training is complete, the brain is surgically split. The stimulus is then shown only to the left visual field (the right hemisphere). Because the right hemisphere controls the left side of the body, the monkey will perform only with the left hand.

5. (10pts) Write a short note on the relationship between grammar and Broca's Aphasia.

Language production points (5pts)

- (a) Injury/lesion to Broca's Area (frontal lobe; left hemisphere)
- (b) Extreme production difficulty (agrammatic aphasia)
- (c) Comprehension difficulty to some degree
- (d) Problem forming sentences with grammar rules
- (e) Laboured speech lacking function words
- (f) Omit past tense suffixes like -ed

Language comprehension points (5pts)

Broca's aphasiacs experience language comprehension difficulties. Specifically they experience difficulties with syntactic structure as in the first two examples below. However, they do comprehend utterances where world knowledge can come into play as in the final example below.

- (a) *Which girl did the boy kiss?*
- (b) *The cat was chased by the dog.*
- (c) *Which book did the boy read?*

They have problems discerning the subject and object of the sentences in cases and get confused by competing possibilities mentioned below:

- (a) *Which boy did the girl kiss?*
- (b) *The dog was chased by the cat.*
- (c) **Which boy did the book read?*

Here, they correctly rule out the final example which is semantically anomalous (application of real world or common sense knowledge).

6. (7pts) What is the Mind-Body problem? Describe Functionalism and how it seeks to address this problem. What are the limitations of Functionalism, in your view?

Mind-Body problem (2pts)

- Nature of mind: physical or metaphysical?
- Relation of mental/psychological properties to physical properties.
- Causal relationship between mind and brain?

Functionalism (3pts)

- Distinction between *physical kinds* and *functional kinds*.
- Idea of mind as a functional kind.
- Mental states not the same as physical states, but the functioning or operation of those states.
- Multiple realisability of mental phenomena.

Limitations (2pts)

- Lack of evidence for multiple realisability.
- Qualia problem.
- Subjectivity of conscious experience.

7. (5pts) Let us suppose that Chomsky is wrong, and human language did in fact evolve as an adaptation to the environment. What specific advantages might language have conferred, which drove its evolution? Describe any two hypotheses.

Information exchange hypothesis, social grooming hypothesis, social contract hypothesis, Scheherazade (sexual selection) hypothesis (2.5pts for each of two descriptions).