Student ID#: _____

Psychology 5054: The Psychology of Language
Spring, 2004
Final Exam

Part 1: Multiple Choice. Circle the letter corresponding to the correct answer. Only one answer is correct for each question. (1 point each)

1. Seidenberg & McClelland's (1989) model of word recognition and naming makes extensive use of _____.
(a) symbolic processing
(b) local representations
(c) distributed representations

2. *If* Rumelhart and McClelland (1982) had found that letters are just as difficult to recognize in unpronounceable non-words that share letter combinations with real words (e.g., "SLNT") as they are in unpronounceable non-words that don't share letter combinations with real words (e.g., "XLQJ"), *then* _____ would have been falsified.
(a) the whole word model of reading
(b) the Interactive Activation Model
(c) PANDEMONIUM

3. *If* Clifton, et al. (2003) had found that reduced relative clause sentences with inanimate subjects ("The evidence examined by the lawyer turned out to be unreliable.") are easier to read than those with animate subjects ("The defendant examined by the lawyer turned out to be unreliable.") *then* the claim that _____ would have been supported.
(a) sentence comprehension is strictly bottom-up
(b) grammatical analysis precedes semantic interpretation
(c) sentence comprehension is an interactive process

4. Kanzi is a Bonobo Chimpanzee who has been studied extensively by Sue Savage-Rumbaugh. He is able to _____.
(a) understand and use more than 200 symbols in a special "language" called Yerkish
(b) respond appropriately to spoken English utterances such as "Give the dog a shot."
(c) both of the above

5. The initial "construction" phase of processing in Kintsch's (1988) Construction-Integration model of discourse understanding is _____.
(a) strictly top-down
(b) interactive
(c) strictly bottom-up

6. McClelland and Rumelhart's (1981) Interactive Activation Model, unlike PANDEMONIUM, includes _____.
(a) sequential processing within each level of representation
(b) local representations of letters and features
(c) inhibitory connections between inconsistent alternatives

7. Which of the following symptoms is normally associated with damage to the right cerebral cortex?
(a) inability to understand reversible sentences
(b) diminished speech prosody
(c) paralysis to both limbs on the right side of the body

8. In Latent Semantic Analysis (LSA) the meaning of a word, sentence or text is represented by _____.
(a) its location in a high dimensional semantic space
(b) a set of semantic primitives
(c) its relations (e.g., “isa,” “can” and “has”) to other concepts

9. The Wernicke-Lichteim-Geschwind Model of Aphasias is formulated at the level of analysis that Marr referred to as the _____.
(a) computational theory
(b) representation and algorithm
(c) hardware implementation

10. Because McCloskey & Glucksberg (1979) found that the presence of negative sentences with high feature overlap (e.g., "A dolphin is a fish.") does not attenuate the _____ effect, Smith, Shoben, & Rips' (1974) feature based model of semantic memory was disconfirmed.
(a) category size
(b) semantic distance
(c) word superiority

Part 2: Definitions. In just 1 or 2 sentences, give an operational definition for each of the following concepts. Your definition may come from an experiment you are familiar with or you may make up your own definition (as long as it accurately defines the concept and is operational). (2 points each)

11. Reversible versus Nonreversible Sentences

To determine if sentences are reversible or nonreversible I would present them to a group of participants and ask them to judge whether they still make sense when the agent and object are reversed (e.g., "The boy ate the bagel." --> "The bagel ate the boy."). Those for which a majority responded "yes" could then be classified as reversible while those for which a majority responded "no" could be classified as nonreversible.

12. Irregular (or Exception) Words

To find out if a particular word (e.g. "broad") is irregular, I would use a dictionary to find all the other words with the same ending and number of syllables (e.g., "toad," "road," and "load") as well as the correct pronunciation of each word. If the ending of the word is pronounced differently than in more than 50% or more of its neighbors, I would classify it as an irregular word.

13. The Dominant Meaning of an Ambiguous Word

To determine the dominant meaning of an ambiguous word such as "bug" I would ask 50 people to use it in a sentence, then I would count the number of sentences that (in my judgement) made use of each meaning listed in the latest edition of Webster's Dictonary (e.g., "insect" and "listening device"). If one meaning was used in at least 30 of the sentences (60% of the total) I would take that to be the dominant meaning, otherwise there would be no dominant meaning for the word.

14. Conceptual Span

Participants are presented with a list of nine nouns, three from each of three different semantic categories, followed by the name of one of the categories (e.g., lamp, pear, tiger, apple, grape, elephant, horse, fax, phone, FRUIT?). They are required to recall all the nouns from that category (e.g., pear, apple, grape) and their conceptual span is the average number of nouns that they recall correctly.

15. Word Frequency

I would begin by collecting a very large sample of naturally occurring language such as all the magazines published in the U. S. during 1998. To determine the frequency of a given word, I would then calculate the number of times it occurs (per million words) in my sample.

Part 3: Short Essay. Answer each of the following questions using no more than half of a page for each. (5 points each)

16. Describe the semantic distance effect and explain how it falsifies Collins & Quillian's (1969) model of semantic memory. Be sure to include examples.

Grading Criteria:

- ***2 pts. for describing the effect***
- ***2 pts. explaining how it falsifies the model***
- ***1 pt. for coherence of answer***

Example Answer:

People can verify that more typical members belong to a category more quickly than they can verify that less typical members belong to the same category. For example, people respond TRUE more quickly to the sentence "A robin is a bird" than to "A penguin is a bird". This is called the semantic distance effect. Collins & Quillian (1969) claim that the time required to verify sentences like these is determined by the number of levels seperating the first and second terms (e.g., "robin" and "bird") in their hierarchical network model. Because "robin" and "penguin" are both one level away from "bird" they should, according to this model, take the same amount of time to verify. The fact that they don't falsifies the model.

17. What is a double dissociation and why is it important? Give an example of a double dissociation from the psychology of language.

Grading Criteria:

- ***2 pts. for describing what a double dissociation is***
- ***1 pt. for describing why it is important***
- ***1 pt. for a correct example***
- ***1 pt. for overall coherence of the answer***

Example Answer:

A double dissociation involves two patients (A and B) and two tasks (I and II). It occurs when patient A performs normally on task I but shows an impairment on task II, while patient B performs normally on task II and shows an impairment on task I. This is important because it allows us to infer that tasks I and II involve independent cognitive functions. Moreover, if patients A and B exhibit damage in different parts of the brain the double dissociation offers evidence as to where those cognitive functions are localized. Phonological dyslexia and surface dyslexia represent a classical double dissociation. Patients with surface dyslexia are unable to read irregular words (such as "pint") but have no problem with pronounceable non-words (such as "lave"). Patients with phonological dyslexia show exactly the opposite pattern. This has led some researchers to conclude that phonological dyslexia involves the loss of the indirect route between print and lexical access while surface dyslexia involves the loss of the direct route.

18. The English prepositions "in" and "on" are both translated into Spanish as "en". If the Sapir-Whorf hypothesis is correct, native speakers of English should, therefore, be more aware of and sensitive to the distinction captured by "in" and "on" than are native speakers of Spanish. Design an experiment to test this hypothesis. Be sure to describe the independent and dependent variables in your experiment. What pattern of results would you expect if the hypothesis is true? What pattern of results would you expect if it is false?

Grading Criteria:

- ***1 pt. for identification of I.V.***
- ***1 pt. for identification of D.V.***
- ***1 pt. for correct prediction if hypothesis is true***
- ***1 pt. for correct prediction if hypothesis is false***
- ***1 pt. for coherence of answer***

Example Answer:

I would use an ABX discrimination task to test this hypothesis. The independent variable would be the native language of the participants (either English or Spanish). On each of several trials, they would be shown two pictures that differed along two dimensions, and one of those dimensions would involve the "in - on" distinctions. As an example, one picture might show a frog on a box and the other a turtle in a box. Participants would then be shown a third picture that differed from each of the first two pictures along one of the dimensions (e.g., a frog in a box) and asked which of the first two pictures it was most like. The dependent variable would be the probability of matching on the basis of the spatial relation (in) rather than the other dimension (the frog). If the hypothesis is true, English speakers should match on the spatial relation more often than the Spanish speakers. If the hypothesis is false, the two language groups should not differ from one another.

19. Trabasso and van den Broek (1985) found that statements with many causal connections to other statements in a story are remembered better than otherwise similar statements with fewer causal connections. They interpret this result as evidence that readers naturally construct causal models of stories as they read. Propose an alternative explanation for this finding and design an experiment to determine which explanation is correct. Be sure to describe your independent and dependent variables, using operational definitions and/or examples where they are appropriate. What pattern of results would you expect if Trabasso and van den Broek are correct? What pattern of results would you expect if your alternative explanation is correct?

Grading Criteria:

- ***2 pts. for a viable alternative***
- ***½ pt. for describing D.V***
- ***½ pt. for describing I.V***
- ***½ pt. for correct prediction if original hypothesis is correct***
- ***½ pt. for correct prediction if alternative hypothesis is correct***
- ***1 pt. for overall coherence of answer***

Example Answer:

One potential alternative explanation is that the number of causal connections is confounded with the story grammar categories identified by researchers such as Mandler and Johnson (1977) who found that narrative events categorized as "settings" or "beginnings" are recalled better than "outcomes" or "attempts", which in turn are recalled better than "endings" or "reactions". If this is the case, then statements with many causal connections may be recalled better simply because they belong to more memorable story grammar categories. To find out, I would design a set of stories in which the endings (which are usually recalled poorly) have more causal connections than the beginnings (which are usually recalled well). I would then ask a group of participants to read and recall the stories. The dependent variable would be the probability of recalling the statements classified as endings or beginnings. The independent variable would be the category of the statement (ending or beginning). If Trabasso and van den Broek are correct, the endings will be recalled better than the beginnings. If the alternative hypothesis is correct, the beginnings will be recalled better than the endings.