

**Psychology 5054: The Psychology of Language**  
**Spring, 2006**  
**Midterm Exam #2**

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

1. Propositions \_\_\_\_\_.
  - (a) are the smallest units of meaning to which we can assign a truth value
  - (b) consist of one predicate and one or more arguments
  - (c) *both of the above*
  
2. \_\_\_\_\_ model of semantic memory uses distributed representations of concepts.
  - (a) Collins & Quillian's (1969)
  - (b) Collins & Loftus' (1975)
  - (c) *Farah & McClelland's (1991)*
  
3. *If* McCloskey and Glucksberg (1979) had found that the presence of highly related negative sentences (e.g., "A bat is a bird.") *does* attenuate the \_\_\_\_\_ effect, then Smith, Shoben, and Rips (1974) model of semantic memory would have been confirmed.
  - (a) category size
  - (b) word superiority
  - (c) *semantic distance (or typicality)*
  
4. In the sentence, "The heavy spring snow blinded the frustrated drivers." The proposition (FRUSTRATED DRIVERS) *does* share an argument with the proposition \_\_\_\_\_.
  - (a) *(BLINDED SNOW DRIVERS)*
  - (b) (HEAVY SNOW)
  - (c) (SPRING SNOW)
  
5. \_\_\_\_\_ is the assignment of the words in a sentence to their appropriate linguistic categories, also known as parts of speech or constituents.
  - (a) Comprehension
  - (b) Disambiguation
  - (c) *Parsing*

6. Reading complex sentences with center-embedded clauses is most difficult for participants with \_\_\_\_\_ working memory spans.
- (a) *low*
  - (b) medium
  - (c) high
7. MacWhinney, Bates, and Kliegl's (1984) \_\_\_\_\_ strategy suggests that the agent of the pseudo-sentence, "The boys eats the bagel." is "bagel".
- (a) word order
  - (b) animacy
  - (c) *verb agreement*
8. Seidenberg and McClelland (1989) were able to simulate the effects of developmental dyslexia by reducing the number of \_\_\_\_\_ units in their parallel distributed model of word recognition and naming.
- (a) orthographic
  - (b) *hidden*
  - (c) phonological
9. In Farah and McClelland's (1991) parallel distributed model of semantic memory knowledge is subdivided into \_\_\_\_\_ and \_\_\_\_\_ components.
- (a) living/nonliving
  - (b) *visual/functional*
  - (c) syntactic/semantic
10. Minimal attachment and late closure are \_\_\_\_\_.
- (a) phrase markers
  - (b) *parsing strategies*
  - (c) garden path sentences

**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. The Difficulty of Understanding a Sentence

*To measure the difficulty of understanding a sentence, I would show it to a group of participants on a computer screen and ask them to indicate whether it is true or false by pressing a YES or NO button as quickly as possible. I would then calculate the reading rate (msec per word) for the sentence by dividing the average reading times (i.e., the time that elapses between the presentation of the sentence and a correct button press) by the number of words in the sentence.*

12. The Difficulty of Understanding a Sentence (must be different than #11)

*As an alternative way of measuring the difficulty of understanding a sentence I would ask a group of participants to: (a) listen to five random digits, (b) listen to the sentence, (c) repeat the sentence, then (d) repeat the digits. I would then use the average number of digits correctly recalled to measure the difficulty of understanding the sentence.*

13. Sentence Verification Time

*As in a typical sentence verification experiment, I would show participants some sentences on a computer screen and ask them to indicate whether each is true or false by pressing a YES or NO button as quickly as possible. Sentence verification time could then be defined as the time (in msec) that elapses between the presentation of a sentence, and a correct button press.*

14. The Psychological Distance Between Consecutive Words in a Sentence

*I would ask a group of participants to listen to 10 unrelated sentences then try to recall them. I would calculate the conditional probability of recalling each word (except the first) given that the previous word had been recalled, and use this probability to measure the psychological distance between consecutive pairs of words.*

15. 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.*

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

16. Savin & Perchonock (1965) took advantage of the tradeoff between storage capacity and processing complexity in short-term memory in their experimental test of the derivational theory of complexity. How would you change their experiment to test the hypothesis that syntactic processing is facilitated by semantic constraint? Be sure to describe the independent and dependent variables in your modified experiment, using operational definitions and/or examples where they are appropriate. What pattern of results would you expect if the hypothesis is true? What pattern of results would you expect if the hypothesis 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 overall coherence of the answer**

**Example Answer:**

*I would present participants with a list of unrelated sentences. Each sentence would be followed by a list of eight randomly selected words unrelated to the sentence. Participants would be required to repeat back each sentence verbatim, then repeat back as many of the eight words as they could remember. All of the sentences would be passive sentences taken from Slobin (1966) except for some filler sentences that would not be scored. The dependent variable would be the number of randomly selected words recalled correctly (0 - 8). The independent variable would be the reversibility of the sentences (as in Slobin, 1966). Half of the passive sentences would be reversible, meaning that the subject and object could potentially reverse roles (as in, "The girl was chased by the boy."). The other half would be irreversible, meaning that the subject and object could not change roles (as in, "The bagel was eaten by the boy."). If the hypothesis is true, I would expect more words to be recalled when the sentence is irreversible. If the hypothesis is false, I would expect to find no difference between the reversible and irreversible sentences.*

17. What do Waltz and Pollack (1985) mean by a “cognitive double take”? How does their model simulate the cognitive double take that occurs when we read the sentence, “The astronomer married a star”?

**Grading Criteria:**

- **2 pt. for correctly describing the “cognitive double take”**
- **1 pt. for explaining the initial misinterpretation**
- **1 pt. for explaining the reinterpretation**
- **1 pt. for overall coherence of the answer**

***Example Answer:***

*When people read a semantic garden path sentence like, “The astronomer married a star” the meaning of the final word appears to shift. “Star” is initially interpreted as a celestial body then reinterpreted as a movie star. Waltz and Pollack refer to this reinterpretation as a “semantic double take”. Their massively parallel parser is able to simulate this phenomenon. When the word “astronomer” is activated, that activation spreads to related concepts including the celestial body meaning of “star”. This, in turn, inhibits the competing movie star meaning. As a result, when the word “star” is initially activated, the incorrect meaning is more highly activated than the correct meaning. As activation and inhibition continue to spread, however, additional constraints within the sentence (e.g., movie stars can get married but celestial bodies cannot) override the initial misinterpretation and only the movie star meaning remains active.*