Student ID#: _____ANSWER KEY_____

Psychology 5054: The Psychology of Language
Spring, 2004
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. Koriat, Greenberg & Kreiner (2002) found that reading prosody (the use of intonation, stress and timing) _____. They interpret this as evidence that syntactic analysis precedes semantic analysis during sentence comprehension.
(a) *is* influenced by the grammatical structure of a sentence
(b) *is not* influenced by the meaning of a sentence
(c) both of the above

2. *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

3. Kuperberg, et al. (2003) used event-related potentials (ERPs) to replicate the finding that the brain responds to grammatical anomalies ("My parents couldn't sleep because the baby would cries.") _____ it responds to semantic/pragmatic anomalies ("My parents couldn't sleep because the baby would phone.").
(a) before
(b) after
(c) at the same time as

4. *If* Mak, Vonk & Schriefers (2002) had found that subject relative clauses are read faster that object relative clauses even when the object is inanimate, *then* the claim that _____ can influence the analysis of syntactic structure would have been *disconfirmed*.
(a) meaning
(b) agreement with the verb
(c) word order

5. Mason, Just, Keller & Carpenter (2003) used functional magnetic resonance imaging (fMRI) to show that _____ sentences evoke higher levels of brain activation than _____ sentences.
(a) ambiguous/unambiguous
(b) active/passive
(c) non-reversible/reversible

6. According to Osterhout, Allen, McLaughlin & Inoue (2002), the finding that syntactic and semantic anomalies elicit distinctly different neural responses (the N400 versus the P600) holds for _____ but not for _____.
(a) English/Dutch
(b) isolated sentences/sentences presented in a discourse context
(c) neither of the above

7. Snedeker & Trueswell (2003) monitored listener's eye movements as they attempted to follow a speaker's instruction in order to study the effects of prosodic cues (i.e., variation in pitch, stress and timing) on the interpretation of ambiguous sentences. They found that prosody affects a listener's interpretation _____. According to the authors, this supports an interactive model of parsing in which prosodic cues affect the incorporation of a word into the syntactic structure of the sentence.
(a) even before the ambiguous phrase begins
(b) only while the ambiguous phrase is being processed
(c) only after the ambiguity has been resolved

8. Braze, Shankweiler, Ni & Palumbo (2002) were able to create a double dissociation between syntactic processing and pragmatic processing by demonstrating that syntactic anomalies ("The cats won't usually eating the food we put on the porch.") and pragmatic anomalies ("The cats won't usually bake the food we put on the porch.") produce different perturbations in the normal pattern of _____ during reading.
(a) cerebral blood flow
(b) eye movements
(c) event-related brain potentials

9. According to McKoon & Ratcliff (2003) the classic garden path sentence "The horse raced past the barn fell." is _____.
(a) easy to understand in an appropriate context
(b) ungrammatical
(c) neither of the above

10. The Meaning Through Syntax (MTS) view of sentence comprehension proposed by McKoon & Ratcliff (2003) asserts that the meaning of a syntactic construction _____ the meanings of the words that are expressed in it.
(a) sometimes goes beyond
(b) is completely determined by
(c) must be computed prior to

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

Grading Criteria:

- ***1 pt. for correctly identifying the concept***
- ***1 pt. for using a procedural definition***

11. First Pass (Reading) Time (Clifton, et al., 2003).

The summed duration of all fixations within a region of a sentence (as measured by eye-tracking equipment) from first entering it to first leaving it.

12. Prosodic Naturalness (Koriat, Greenberg & Kreiner, 2002)

The average score assigned by a group of judges asked to rate the "naturalness" of a sentence read aloud on a scale of 1 (low naturalness) to 10 (high naturalness), where a 1 would represent something like a computer generated message delivered in a flat monotone and a 10 would be a reading such as that delivered by a professional actor which conveys a clear sense of punctuation consistent with the content of the sentence.

13. Syntactically Anomalous Sentence (Osterhout, et al., 2002)

A Syntactically anomalous sentence can be created by changing one word of a well-formed sentence to produce either an agreement error in which the agent and verb do not agree in number ("The dogs chases the cats.") or verb tense error in which the tense of the verb conflicts with the rest of the sentence ("The Coast Guard ship Itasca was waits just off Howland.") error.

14. First Pass Regression (Traxler, Morris & Seely, 2002)

A first pass regression from an area of interest within a test sentence occurs when a reader's gaze returns to an earlier part of the sentence following a first pass fixation within the area of interest.

15. Plausibility (Traxler, Morris & Seely, 2002)

To access the plausibility of a sentence, one could ask a group of participants to rate it on a scale from 1 (highly likely, as in "The policeman arrested the thief.") to 5 (highly unlikely, as in "The thief arrested the policeman.") and then calculate the average rating.

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

16. One theory discussed by Traxler, Morris & Seely (2002) suggests that sentences with object-relative clauses ("The lawyer that the banker irritated filed a hefty lawsuit.") are more difficult to process than sentences with subject-relative clauses ("The lawyer that irritated the banker filed a hefty lawsuit.) because they place a greater load on working memory. Design an experiment to test this hypothesis. 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 the hypothesis is true? What pattern of results would you expect if the hypothesis is false? [Hint: You may wish to use a methodology similar to that employed by Savin and Perchonock (1965) in their test of the Derivatioinal Theory of Complexity.]

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 the answer***

Example Answer:

I would present participants with a list of unrelated sentences. Each sentence would be preceded by a list of eight randomly selected digits. Participants would be required to repeat back each sentence verbatim, then repeat back as many of the eight digits as they could remember. All of the sentences would be either object-relative sentences ("The lawyer that the banker irritated filed a hefty lawsuit.") or subject-relative sentences ("The lawyer that irritated the banker filed a hefty lawsuit.") taken from Traxler, et al. (2002). The dependent variable would be the number of randomly selected digits recalled correctly (0 - 8). The independent variable would be the two sentence types (object- relative versus subject-relative). If the hypothesis is true, I would expect more digits to be recalled in the subject-relative condition. If the hypothesis is false, I would expect to find no difference between the object-relative and subject-relative conditions.

17. What are plausibility effects and why are they important? Give an example of plausibility effects from the psychological literature on sentence comprehension.

Grading Criteria:

- ***1 pt. for correctly describing plausibility effects***
- ***1 pt. for correctly identifying why they are important***
- ***2 pts. for example***
- ***1 pt. for overall coherence of the answer***

Example Answer:

In one experiment, Traxler, Morris & Seely (2002) showed that sentences with object-relative clauses are more difficult to process than sentences with subject-relative clauses. As an example, sentence 1 takes longer to read than sentence 2:

1. ***The lawyer that the banker irritated filed a hefty lawsuit.***
2. ***The lawyer that the banker irritated filed a hefty lawsuit.***

In a second experiment, they showed that this difference is reduced when only one of the two critical noun phrases is a plausible (or likely) agent of the verb in the relative clause. Thus, the difference between sentences 3 and 4, is much less than the difference between sentences 1 and 2:

3. ***The thief that the policeman arrested was known to carry a knife.***
4. ***The policeman that arrested the thief was known to carry a knife.***

The difference appears to be that while lawyers and bankers are equally likely to irritate one another, policemen are far more likely to arrest thieves than thieves are to arrest policemen. This is a nice example of a plausibility effect, in which our knowledge of how objects normally interact in the world makes it easier to process otherwise difficult sentences describing those interactions. Plausibility effects are important because they appear to demonstrate that sentence comprehension is not entirely a bottom-up process. This interpretation is controversial, however, and because of that a lot of sentence comprehension research focuses on plausibility effects.