Introduction to Cognitive Psychology: PSY 200

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Study Guide for Exam 4
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The exam will include 30 multiple choice questions worth 2 points each and 4 short answer questions worth 10 points each. Total points on the exam is 100. This exam makes up 15% of your class grade. The exam is given in class.

Make sure you understand the following topics. The exact nature of the question is what I think up for the exam, but if you understand all of the following topics well, then you should be able to answer a variety of questions on the topics. If a researcher's name is given here, you should be certain that you know the name and the associated experiment or theory.

Lecture 25: Language instinct

1. Be able to describe (in general terms) the influence of culture on language. Be able to give some examples of how the Norman invasion of Britain continues to influence modern spoken English. Understand that this influence is different from the issue of how people have the ability to work with language at all.

2. Understand what it means (and does not mean) to say that language is an instinct.

3. Understand why the way children learn language suggests that they are not simply mimicking other speakers.

4. Know what a pidgin is. Know what a creole is. Know their properties relative to languages. Understand how the development of a creole from a pidgin suggests that language is *re-invented* by children.

5. Understand the relation between dialects and languages.

6. Be able to explain word dropping in AAVE and it's relationship to contractions in SAE.

7. Understand why there is really no "correct" English speech.

Lecture 26: Phrase trees

1. Know the two key aspects of language: symbols and grammar.

2. Understand what a grammar is.

3. Understand why there are an infinite number of possible sentences and essentially no limit to the length of sentences. Understand why this is important.

4. Understand what we mean when we say we can *recognize* a grammatically correct nonsense sentence.

5. Understand what it means to say that knowledge of grammar is distinct from meaning and understanding. How can we be sure that they are distinct?

6. Be able to explain what a *long-term dependency* is. How do long-term dependencies cause problems for statistical learning of language?

7. Know what *re-write rules* are. Understand how a phrase tree corresponds to re-write rules.

8. Understand how a phrase tree produces grammatically correct sentences (even nonsense sentences).

9. Recognize the advantage of learning phrases versus learning multiple uses of a word.

10. Understand, in general, how phrase trees deal with long-term dependencies.

11. Understand, in general, what is involved in language universals. Be able to describe the two examples of language universals that were discussed in lecture.

Lecture 27: Words

1. Recognize that while many words must be memorized, there are many rules for the creation of words.

2. In what sense are words arbitrary symbols for concepts?

3. Be able to describe the CogLab word superiority experiment, and explain the significance of the typical results.

4. Understand how the behavior of pre-schoolers with the *wug-test* demonstrates the existence of a rule for pluralizing nouns.

5. Know that *morphology* is the study of words. Know what *morphemes* are.

6. Be able to contrast English morphology of verbs with other languages. How does English discuss things that are treated by verb forms in other languages?

7. Know what suffixes and prefixes are, and how they relate to words in the lexicon.

8. Be able to describe some of the rules for word creation: e.g., compound nouns and pluralizing nouns. Be able to discuss the importance of a root for some suffixes.

9. Know what types of information must exist in the *lexicon*.

10. Understand how the exceptions to morphology rules usually derive from other languages. Be able to explain why only common words can be exceptions to the rules.

11. Understand, in general, how the *head* of a word indicates what the word is about. Know that in English it is the right-most morpheme.

12. Understand why `walkman` is a headless noun. Understand why this makes creating the plural form complicated.

Lecture 28: Parsing

1. Know the basic characteristics of the Eliza example. Understand why we concluded that it does not really understand language.

2. Know how interpreting language corresponds, in part, to *parsing*. How does the phrase tree structure convey some information?

3. Understand how two different thoughts can give rise to the same sentence. Understand why this indicates that we do not think only by "speaking to ourselves." What is mentalese?

4. Understand, in general, how a parser would go through a simple sentence to build up a phrase tree.

5. Know the two basic problems of parsing: word order, multiple meanings.

6. Understand how difficulty in parsing corresponds to difficulty in understanding sentences with complex word order.

7. Understand the problems of word ambiguity for a parser.

8. Be able to generally describe the experiment that demonstrates the parser initially preserves the ambiguity of words (it depends on the lexical decision task).

9. Be able to describe the effect of ambiguity for the *Time flies like an arrow.* sentence.

10. Be able to describe the properties and significance of the *Buffalo buffalo...* sentence.

11. Understand why the problems with parsing indicate that words and grammar are not enough to always ensure communication.

12. Understand, in general, how schemas help us understand language. Understand why it is difficult to provide computers with schemas.

Lecture 29: Speech

1. Recognize that human speech is much more blurred than we usually perceive. Understand how the properties of the ear require this blurring.

2. Know what a phoneme is.

3. Understand how we "hear" more than 20 phonemes per second. How is speech packed by the speaker and unpacked by the listener?

4. Understand, in general, how the shape of the vocal tract controls the sounds of speech.

5. Know why you can "hear" someone smile.

6. Know that every consonant can be described through three variables: voicing, manner of articulation, and place of articulation. Know what each variable refers to.

7. Know that all languages define consonants in the same way, but not all languages use the same consonants.

8. Be able to describe the rule that makes us say razzle-dazzle instead of dazzle-razzle.

9. Know what coarticulation is. Understand why it forces spelling to deviate from pronunciation.

10. How is coarticulation related to computer speech and to computers being able to understand human speech?

11. Be able to briefly explain how Korean hangul is a sensible written form of language.

Lecture 30: Language development

1. Know what kinds of linguistic skills infants possess. Understand, in general, how to measure these skills.

2. Understand the importance of babbling for infants.

3. Know the stages a child goes through as it starts to learn language.

4. Understand the methods and conclusions of the CogLab Age of Acquisition experiment.

5. Understand how many of the mistakes made by children correspond to the most confusing parts of language. Be able to give at least one example. How do you know these are the most confusing parts?

6. Be able to explain the similarities and differences between children and adult overgeneralizations.

7. Know the problem with trying to learn a second language when you are older.

Lecture 31: Language and Brain

1. Know the basic characteristics of patients with Broca's aphasia, Wernicke's aphasia, and anomia. Know the corresponding neurophysiological problem for each of these conditions (which part of the brain is damaged).

2. Understand the characteristics and problems with the research that claimed to teach chimps language.

3. Understand why the limitations of chimp language do not argue against the evolution of language in humans.

Lecture 32: Consciousness

1. Understand the basic issues of Cartesian dualism and materialism. Know what the mind-body problem refers to.

2. Understand the implications of distributed processing in the brain for theories of consciousness. In particular be able to explain how distributed processing makes the concept of a place or moment of consciousness meaningless.

3. Be able to describe the Turing test for consciousness/intelligence. Be able to discuss its adequacy at determining whether a machine (or a person) is intelligent.

4. Understand the Chinese room problem. Be able to describe my objection to the problem.

5. Basically understand the issues around qualia.