Introduction to Cognitive Psychology: PSY 200

Greg Francis, PhD
Department of Psychological Sciences
Psychological Sciences Building, Room 3186
(765) 494-6934
email: gfrancis@purdue.edu
http://www.psych.purdue.edu/~gfrancis/Classes/PSY200/indexS25.html

Study Guide for Exam 2
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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 9: Visual perception

1. Understand that we do not always see the word as it really is. Understand the role of illusions in drawing this conclusion. How can we measure perceptual experience with the psychometric function?

2. Be able to explain why the inability of on-center, off-surround neurons to respond to homogeneous fields of light means our percepts of brightness are based on edges.

3. Be able to explain how the center-surround cells behave in the brightness contrast illusion. You need to be able to explain the behavior of cells in at least two different positions and for two different stimuli

4. Be able to explain how the center-surround cells behave in the Hermann grid illusion. Be able to relate the cells' behavior to the perceptual experience of the illusion.

5. Understand the role of filling-in in illusions like the water color effect, the Craik-O'Brien-Cornsweet effect, and the disappearing pink circle.

6. Be able to describe the color-competition (gated dipole) circuit that produces color afterimages.

7. Be able to predict what color of afterimage you would see after looking at certain colors (e.g., red, blue, green, black).

8. Be able to describe the orientation-competition gated dipole circuit that produces oriented afterimages.

Lecture 10: Visual dynamics

1. Understand what the critical flicker frequency is. Be able to explain how it relates to the characteristics of some electronic devices (lights, computer screens).

2. Understand what is meant by persistence. Be able to describe an experiment (Bowen, Pola, & Matin, 1973) that would measure persistence. Be able to summarize the findings of the experiment, especially as the duration and intensity of the stimulus increases.

3. Be able to explain how excitatory feedback in a neural network could be responsible for persistence. Be able to explain how after-responses could shorten this persistence and how this relationship might explain the findings of the persistence experiment involving the duration and intensity of the stimulus.

4. Be able to explain what is meant by *masking* and how masking effects are related to persistence and performance for detecting very brief stimuli.

5. Be able to describe metacontrast masking and typical results of an experiment.

6. Be able to describe the properties and behavior of a Reichardt motion detector. Be able to explain why a given Reichardt detector is sensitive only to motion of the proper direction and speed.

7. Know what apparent motion is and how it differs from real motion. Be able to describe Korte's laws of apparent motion.

8. Be able to describe the circuit responsible for producing a motion aftereffect. Be able to describe a motion aftereffect.

Lecture 11: Attention

1. Understand how attention is related to information processing and processing resources. Be able to explain how not processing information is the same as ignoring it, in some contexts.

2. Be able to explain the CogLab Simon effect: stimuli, task, findings, and interpretation.

3. Understand how some stimulus properties automatically draw attention. Be able to describe the Simon effect (CogLab) results in these terms.

4. Know the basic properties of the field of human factors.

5. Be able to describe one of the demos in class (magic trick, flashing images) and explain how it tells us something about attention.

6. Be able to describe a situation where attention *does* change perceptual experience, and understand what that is interesting/surprising.

Lecture 12: Attention

1. Be able to describe the CogLab attentional blink experiment, the expected data, and the conclusions.

2. Understand how the attentional blink is related to information processing and processing resources.

3. Be able to describe the CogLab visual search experiment, the expected data, and the conclusions. Be able to discuss what pattern of results indicates the use of attention. What varies as the number of distracters is increased?

4. Be able to explain the results of a visual search experiment in terms of feature maps.

5. Be able to explain why search for a target absent with conjunctive stimuli has a slope twice as sleep as for target present.

6. Understand the idea of automaticity.

7. Understand the Stroop task and the basic explanation.

Lecture 13: Sensory memory

1. Understand the methods of the whole-report and partial-report experiments. Understand the key differences between the partial-report and whole-report experiments. Understand why the partial-report method indicates that more items are stored by some sensory memory than the whole-report method indicates.

2. Be able to explain the iconic memory experiment that can be used for both adults and infants.

3. Be able to explain how masking effects influence iconic and echoic memory.

4. Know what is involved in an immediate serial recall experiment.

5. Know the different properties of iconic and echoic memory.

6. Be able to explain the hypothesized role of iconic and echoic memory on the serial position curves produced under immediate serial recall (modality effect).

7. Be able to describe the suffix effect and explain how the properties of echoic memory account for the suffix effect. Be able to explain how phone operators avoid the problems of the suffix effect.

Lecture 14: Two-store model

1. Be able to describe Ebbinghaus' experiment and results.

2. Understand how Ebbinghaus' results suggest the existence of a long-term memory (LTM) system. Know the properties of the LTM system.

3. Be able to describe the Peterson & Peterson (also called the Brown-Peterson experiment) memory experiment. Know the general findings of the study. Know how it suggests a short-term memory (STM) system with certain properties.

4. Know the procedure and results of Miller's memory span study. Know how it suggests a short-term memory (STM) system with certain properties.

5. Be able to explain why the properties of STM make it challenging to win a pizza.

6. Be able to describe the modal model of memory.

7. Be able to explain how the STM and LTM system might offer an account of the u-shaped serial position curve that is seen in some memory experiments.

Lecture 15: Working memory

1. Be able to describe the three types of hypothetical searches of STM considered by Sternberg. Be able to describe the predicted pattern of experimental results for the different search types.

2. Be able to describe Sternberg's experiment on the search of memory. Be able to describe the details of the experiment (e.g., as on CogLab). Be able to describe the results found by Sternberg and what the results mean.

3. Be able to explain why it might make sense for search of memory to be serial exhaustive instead of serial self-terminating.

4. Be able to describe the procedure and general findings of the study by Brooks. Understand how the existence of separate visuo-spatial sketchpad and phonological loop systems is consistent with the results.

5. Understand the similarities and differences between STM and working memory.

Lecture 16: Working memory

1. Know the two subsystems of the phonological loop: articulatory control process and phonological store. Know the characteristics of each.

2. Understand how loop capacity is related to both the time needed for items to decay from the phonological store and the rate at which the articulatory control process can rehearse items.

3. What aspect of the phonological loop seems to vary with development?

4. Know the word-length effect. Understand the explanation provided by working memory. Understand why the rate of rehearsal is very important for this explanation.

5. Understand how the properties of working memory explain some aspects of digit span for different languages. Understand how these properties may affect measured IQ scores.

6. Know what the subject must do in a study of articulatory suppression. Understand why the articulatory suppression reduces memory performance. (What happens to the articulatory control process?)

7. Know the basic effect of phonological similarity on memory performance. Know how the working memory theory accounts for the data. Understand what subsystem of the phonological loop is hypothesized to be involved in the effect (you have to understand articulatory suppression effects).

8. Know the basic results of the irrelevant speech effect. Understand how the phonological loop accounts for those results. Why does the model say that even foreign languages can cause an irrelevant speech effect?