

Psychology 202 – Section 005

General Guidelines for All Weekly Tutorial Assignments

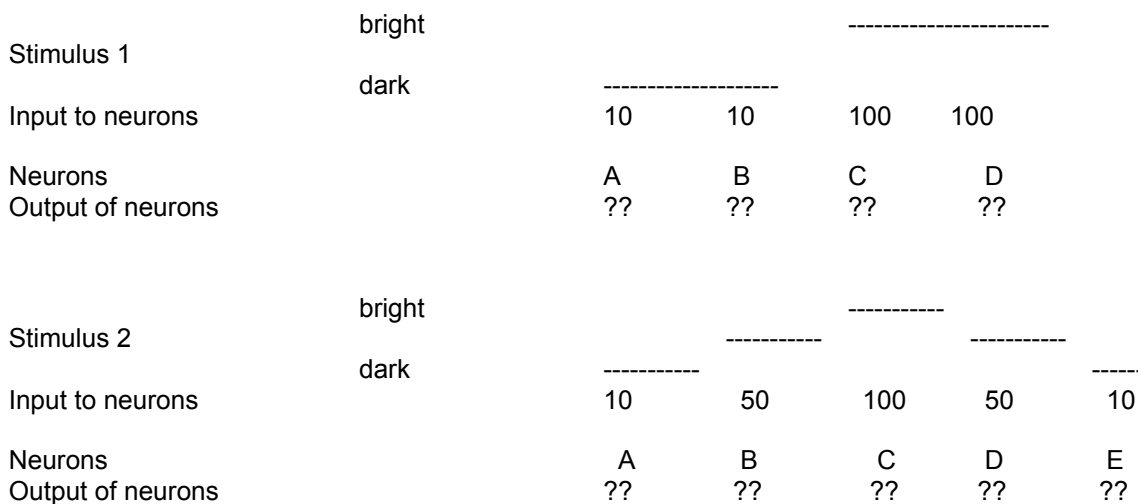
1. Place a cover page on each assignment, indicating YOUR NAME, STUDENT NUMBER and TITLE OF ASSIGNMENT. Your assignment will be handed in each week to your tutorial TA.
 2. Each assignment has a major heading called the "question of the week" (QOTW). This thought-provoking question should be answered on the last page of the assignment, after you have answered the more detailed questions. This does not need to be more than a paragraph. The answer should provide the big picture. The best approach is to give a short, clear, and direct answer, written in your own voice, describing how you currently understand the problem and the answer.
 3. Use standard letter-size paper for your assignments. STAPLE together multiple pages. Dog ears do not last! DO NOT hand in duotangs or various kinds of plastic covers, as these will not be returned to you.
 4. Come to tutorials prepared to discuss your assignment with the rest of the group.
 5. Your assignments will NOT be returned to you, since they will become a part of your permanent record in the course. Make a photocopy of your assignment before handing it in, if you wish to keep your own record of the assignment.
 6. The TA will periodically post grades for these assignments. They are worth 1/3 of the total grade in this class, so they need to be taken seriously.
 7. These assignments are designed for you to HAVE FUN with the material at the same time that you are learning it. Don't hesitate to be creative and to go beyond the assignments. We will try to reward this in our grading. However, it will be very important for you to COMMUNICATE CLEARLY IN YOUR WRITING.
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Assignment 1. QOTW: How do scientists measure perception?

1A Find and report on two different web sites that tell you something about how vision scientists measure visual perception in humans. Your final report should be no more than 1 page of single-spaced text. In each half page, list the URL (www site) and then, in your own words, tell the reader what the highlights of this website are.

Assignment 2. QOTW: What are the units of the mind? How do they work?

2A Imagine that you are an engineer exploring the possible benefits of mutual inhibition among a set of light sensitive units. One stimulus you might begin with in your exploration is light consisting of two different levels (Stimulus 1). Call the two levels "dark" and "bright", for simplicity. This is really nothing more than an "edge" of light. Now imagine that the dark light is said to be worth 10 units and the bright light is worth 100 units. The diagram below may help you in your thinking. Pretend that the diagram extends beyond A and D at the same input levels shown. A second stimulus you can work with is Stimulus 2 below.



Scenario 1. The neurons in this system merely record the level of light that they are exposed to. They each work independently of the others.

1. What will be the output of neurons for Scenario 1? (For neurons A-D in Stimulus 1 and neurons A-E in Stimulus 2)

Scenario 2. The neurons in this system inhibit their nearest neighbours at a level proportional to their input level of activation. Lets say the level of inhibition is 10%. Then neuron B inhibits neurons A and C each by 1 unit, since its input level is 10 units (10% of 10 is 1). Neuron C, on the other hand, inhibits neurons B and D by 10 units (10% of 100 is 10).

1. What will be the output of neurons in Scenario 2? (For neurons A-D in Stimulus 1 and neurons A-E in Stimulus 2)

2. What effect will this pattern (Scenario 2) have on the registration of the edge of light?

3. Which scenario is more like the cone receptors of the human retina? Which is more like the rod receptors?

Assignment 3. QOTW: *How is time important to perception?*

3A Begin with three (3) pictures of **line drawings** of easily identifiable common objects (animals, plants, artifacts or people). Each object should occupy about 1/4 to 1/3 of a page. Take these from children's coloring books, magazines, photocopy them from books, or make your own line drawings of objects (if you can). Put them on separate pages. Make up a viewing screen, consisting of an opaque piece of paper (nothing should be visible through the paper) with a small round hole (1/2 inch or 1-2 cm). Record your observations of people trying to identify the objects under the following conditions:

- a. Very rapid back-and-forth movement of the viewing screen over the pictures versus very slow movement.
- b. Movement of the viewing screen under experimenter control versus under observer control.
- c. Systematic movements of the viewing screen around the outside contour of the picture versus random movements all over the picture at the same speed.

Questions to be answered:

1. Why does very rapid movement of the viewing screen make object identification quite easy, even though only a 1-2 cm portion is ever visible at the same time?
2. How does the person in control of the movement influence the ease of perception? Why?
3. Which is easier: systematic or random movements? Why?

3B Alternate Assignment:

Remember the simple moving cartoons you used to draw as a child? Take two small pieces of paper and place one on top of one another. Staple or tape them together at the top. Draw the same picture in the same place on each page, with the exception of a single difference that corresponds to the moving part. This part should be in a different location on each page. The top piece of paper is now rolled around a pencil and then the pencil is moved back and forth to reveal the top page and the bottom page in alternating fashion.

Make up these kinds of animated cartoons to illustrate the following phenomenon:

- a. simple apparent motion in the picture between two identical shapes (e.g., circles)
- b. the correspondence problem is solved automatically by the brain when the top page contains one shape and the bottom page contains two shapes in different places
- c. plastic or "morphing" transformations can occur between two different shapes

Questions to be answered:

1. How does the speed of the movie influence the findings for a, b, c?
 2. How are these principles of apparent motion important in viewing real movies?
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Assignment 4. QOTW: *What determines the color of an object?*

4A Construct a picture consisting of many differently-colored rectangles that touch and overlap one another. In the middle of this place a white square patch of paper. Pieces of solid colored construction paper can be cut and pasted quite easily to create this kind of "Mondrian" display. In addition to this color rectangle display, two more pieces of apparatus are required. One is a see-through piece of colored cellophane or transparent colored plastic that can be placed over the display (sunglasses will do). The other is a black piece of paper (called the mask) with a cutout corresponding to the position and shape of the white square in the center of the display. This is the "target" color. Ask subjects to name the color of the target patch under three conditions (and in this order):

- a. when the display is covered both with the colored transparency and with the black mask, so that only the target square is visible through the transparency and the hole in the black mask
- b. when the display is covered with the colored transparency, but the black mask has been removed
- c. when the target square is viewed without the transparency in front of it, but still through the black mask, and
- d. when the target square is viewed without the transparency and without the mask.

Questions to be answered:

1. What does the color of the target square look like in each of the conditions a-d? What color names would you use?
2. How does color constancy influence the color that is seen?

Assignment 5. QOTW: *Is visual art an illusion? What kind?*

5A Find a magazine picture with rich cues to pictorial depth. This is your background scene. From another picture, cut out an object that could fit conceptually into the background scene. Have subjects indicate the perceived size of the object by drawing a blob on a separate piece of paper that is approximately the identical size of the object. Do this under two different conditions:

- a. when you have placed the object in an extreme "distant" part in the background scene.
- b. when you have placed the object in a "near" foreground location.

Questions:

1. Do subject draw larger circles in condition a or b?
2. How does size constancy influence the apparent size of the object?

5B Alternate Assignment

Draw vertical versions of the two Mueller-Lyer displays (wings-out and wings-in) side-by-side on the same page. Displace the wings-in version a little downward on the page so that the two test lines are not perfectly aligned. This is stimulus A. Now copy (trace) this picture exactly, but embellish this second picture with other lines that are consistent

with a larger scene containing perspective. This is stimulus B. Indicate the test lines in both pictures with a bold line, so that there is no mistake which lines subjects will be asked to reproduce. Have subjects indicate the perceived lengths of each of the lines by drawing their own corresponding lines on four separate pieces of paper.

Questions:

1. What are average lengths of the lines drawn by subjects in the four conditions (i.e., A-wings out, A-wings in, B-wings out, B-wings in)?
 2. Are the results for A (wings-in versus wings-out) consistent with the standard Mueller-Lyer illusion?
 3. How does a context of pictorial perspective in B influence the apparent lengths of the lines?
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Assignment 6. QOTW: *What is the basis of self-deception in human thinking?*

6A Prepare WRITTEN answers to the following questions from Rama 6-7. Come prepared to discuss these answers in the tutorial.

1. Why is the condition of neglect, following a stroke, more likely to occur if the stroke is on the right side of the brain?
 2. Give an example of an experiment that has been performed to demonstrate that visual information from the neglected side of the visual field is nonetheless being processed by the brain.
 3. Describe the phenomenon of mirror agnosia.
 4. What is anosognosia?
 5. How do Rama and Freud differ in their interpretation of denial in some stroke patients?
 6. Why does Rama think that caloric stimulation eliminates denial temporarily?
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Assignment 7. QOTW: *Why does perception need attention?*

7A Show that you can apply your understanding of visual attention to the design of effective advertising displays. Design two of your own displays (perhaps something like the "Great Waldo Search") to illustrate the difference between parallel (or pop-out) search and serial (or effortful) search. Use background scenes from magazines or of your own design. Use a target object (other than Waldo) that you find interesting. The critical design features are:

- a. the target object must be identical in the two displays
- b. the number and location of background objects must be identical in the two displays; color and shape may vary
- c. the target must "pop out" at a naive observer in display one, and
- d. the target must require "serial scanning" by a naive observer in display two.

Questions:

1. What aspects of a visual display makes for difficult visual search?
2. What does this tell us about the brain?

Assignment 8. QOTW: *How many kinds of memory are there?*

8A Construct three lists of 20 English words, preferably all common nouns (e.g., desk, beaver, letter, apple, etc). For each list, make sure that there are 5 words in each of four different common categories such as furniture, animals, fruits, stationary supplies, etc. The order of the words should then be scrambled into a haphazard list of apparently unrelated words. (The easiest way to do this is write them down on small pieces of paper and remove them from a bag one at a time.) Administer these lists, one at a time, to a cooperative participant that is naive to the purpose of the test. Begin each list by saying, "This is a test of free recall. I will read you a list of 20 words at a rate of approximately 1 per second. Listen to these words, doing your best to remember them as well as you can. When I have completed reading the list, I will give you the opportunity to write down as many of the words as you can remember. The order in which you write down the remembered words is not important."

List 1: the standard control condition, with instructions as given above.

List 2: at the end of this list ask the participant to immediately begin subtracting the number 3 from 100. As them to write down the number 100, subtract 3 to write down 97, subtract 3 to write down 94, and so on. After 30 seconds of this nonsense, permit them to perform free recall for the words in the memory list.

List 3: After one attempt at free recall, as in List 1, tell them about the 4 categories used to generate words in the list. Tell them what the categories are, but not any of the actual items, and then see if they can remember any more of the words.

Record the results for each list in the form of a graph, with the "number correct" on the Y-axis and 5 serial positions (words 1-4, 5-8, 9-12, 13-16, 17-20) in the list on the X-axis.

Questions:

1. How does recall accuracy vary with list position for List 1?
2. What does this pattern for List 1 tell you about how short-term memory is structured?
3. What does the arithmetic interference test do to list accuracy in List 2?
4. What does this mean?
5. How many more words were recalled in List 3 when prompted category recall was compared with the first free recall?
6. What do the results for List 3 tell you about memory storage versus memory retrieval?

Assignment 9. *What is unique about natural language?*

11A What are the rules for the onset of a syllable in English? Construct a Table in which each of 25 rows corresponds to a phoneme (sound unit) in the English language. List the consonantal phonemes in the following order (start with # for none, then p, t, k, b, d, g, m, n,

ng, f, th, s, sh, ch, v, z, zh, j, l, r, y, w, hw, h). Each of 25 columns also corresponds to a phoneme in English (start with V for any vowel, then p, t, k, b, d, g, m, n, ng, f, th, s, sh, ch, v, z, zh, j, l, r, y, w, hw, h).

IMPORTANT REMINDER: these letters refer to SOUNDS, not to letters of the alphabet. For example, "b" refers to the first sound made in "ba", not to the letter b. Useful websites:

- English Consonants:
<http://www.umanitoba.ca/faculties/arts/linguistics/russell/138/sec1/cons.htm>
- English Vowels:
<http://www.umanitoba.ca/faculties/arts/linguistics/russell/138/sec1/vowels.htm>
- English Phonemes (with sample pronunciations)
- <http://www.geocities.com/Athens/Delphi/8940/main.htm>

Now fill in the table with an X to indicate: Which of the phonemes in the rows may be followed by which of the phonemes in the columns, in order to begin an English syllable? Place an X in each box in the Table that corresponds to a legal syllable onset in standard English.

Questions:

1. Which are privileged phonemes? By "privileged" we mean that these phonemes are permitted to be spoken together, in a cluster.
 2. Why are only some combinations of phonemes allowed?
 3. How is the STRUCTURE of spoken language visible in this chart?
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Assignment 10. QOTW: *What are some relatively easy questions about consciousness?*

10A Do women and men experience the same world differently? An experiment on the experience of space and navigation.

Definitions:

- a **landmark-based** instruction refers to an episodic memory for an object at a critical location along a route, the object is defined by its local context.

- a **route-based** instruction refers to overall relations between the start and end points of a route, cues to distance and direction are defined globally, with reference to a bird's eye view

Provide two different sets of instructions for a new person on campus, so that they can find their way successfully from our classroom in Angus (Buchanan) to my office in the Kenny Building. This person will have no other resources other than their own eyesight and your instructions. In the A set of instructions, primarily provide information regarding relevant landmarks; that is, be sure to minimize the route-based instructions. In the B set of instructions, primarily provide information regarding the route; minimize the landmark-based instructions. Let several people read these instructions and ask them to tell you which is easier to follow. Record the gender of the subject along with their answer. Indicate your own gender identity on the assignment as another source of relevant information.

Questions:

1. Is there a relationship between preferences for one of your two instructions and

subject gender?

2. How does your own gender interact with these findings?

3. What do these findings mean about the way men and women experience the same physical world?
