

PSYC305-08A Applied Cognition and Neuroscience

Laboratory Project 2. (for Associate Professor John Perrone).

There are many visual illusions that are published in books or online. They are fun and are an interesting way of learning about the visual system and how it fails. However these printed versions are 'harmless', in that there are no real consequences to the fact that you misperceive the size of a circle or the straightness of a line on a page. On the other hand, there are many illusions that occur in the 'real world' that can have a big impact on our lives. If a pilot misperceives the slant of a runway, then it can have dangerous consequences. Similarly, it can be risky if you misperceive the distance to an oncoming car and you pull out at an intersection. In order for you to become familiar with some 'outdoor' illusions and to learn about how they are investigated, you should select one of the following:

(a) The moon illusion

This is a classic size illusion that has been observed and studied for centuries. It is a good example of an illusion that occurs in the outdoor environment and it illustrates how size and distance can be grossly misperceived, even when there is lots of other visual information available (i.e., illusions don't just happen against a blank page or screen). How strong is the moon size illusion? What environmental features need to be present in order for it to occur?

-Observe the moon in as wide a range of conditions as possible (e.g., different elevations, different foregrounds, different times of day/night etc.)

-Develop a method of recording the moon's perceived size.

Note: It is the relative perceived size changes from viewing condition to viewing condition that you want to measure. Therefore once you have decided on a technique, use it for all conditions.

-Record your size judgements along with the scene description.

Report.

Using APA format prepare a report of your study (about 7 – 10 pages). Good, clear (and concise) descriptions will be awarded the highest marks. Evidence of having read some references beyond introductory textbooks will be rewarded, as will interesting observations about conditions that seemed to have had an effect on the perceived size. I will also pay attention to the way you present and summarize your data. I would expect a graph of some form, but you probably won't have sufficient data to perform any statistics except possibly simple summary statistics such as means.

(b). Slope Perception.

Even though there are many visual cues present (such as binocular cues, texture gradients and perspective cues) we often misperceive the actual physical slope of hills and surfaces around us. This effect is related to the problem of runway slant misperception (described in the lecture on Visual Performance) and it can cause problems for pilots that fly close to the ground over sloping terrain (e.g., topdressing pilots and helicopter pilots). It can also influence the decisions we make about the safest route to take while moving over steep terrain (e.g., while mountain climbing, skiing or snowboarding). How strong is the effect? What factors determine our perception of slope?

-Find some sloped streets, hills or pathways somewhere (there are plenty around University/Hillcrest area).

-Stand at the bottom (or as close as you can get) and estimate what the slope of the street/hill is relative to the horizontal (flat ground is 0 degrees, a vertical wall is 90 degrees).

-Avoid using 'extra' information such as the angle or posts or houses on the side of the slope. Record your estimation of the slope in the region directly ahead of you.

-Repeat the observation while standing at the top of the hill (you will need to look down at the hill).

-After you have made your observations, measure as best you can the actual physical slope at the point you were fixating. This is part of the challenge of the study and you will gain marks for developing an accurate and simple means of measuring the actual slope.

Report.

Using APA format write a report (about 7-10 pages) describing your study. Good, clear (and concise) descriptions will be awarded the highest marks. Evidence of having read some references beyond introductory textbooks will be rewarded. I will mainly be looking for original insights into what factors could be having an affect on your slope perception. I will also pay attention to the way you present and summarize your data. I would expect a graph of some form, but you probably won't have sufficient data to perform any statistics except possibly simple summary statistics such as means.

NOTE (for both studies)

You should mainly use yourself as an observer in the study you do, but if you want to test your methodology a little more vigorously you can ask somebody else in the PSYC305 class to also make observations. You cannot use family, friends or flatmates because they are not covered by the Psychology department's ethical approval process required for human participation in experiments.

Reports are due on the Tuesday, the 20th May. Hand into the Faculty Information Centre (FIC) by 4.30pm. The project is worth 15% of the total mark for the paper.