Designing a Psychology Experiment

Designing an experiment and carrying out the plan are what scientists do. Developing the ability to design an experiment is critical to understanding of the scientific process and in promoting critical thinking skills. This skill can be developed if students are allowed to work like scientists. In order to be successful in designing an experiment, understanding it is necessary. After developing basic understanding of the scientific methods, the next process is designing steps in performing investigation.

Answer the following questions about the psychology experiment you are designing. This experiment will not be conducted until sometime in the spring **if** it meets ethical standards for experimentation and time is available.

STEP 1: DUE *TODAY*
Cover Page and Introduction:

1. What is your topic of interest?
2. Why is your topic important or interesting?
3. What do you want to find out?
4. What is your initial hypothesis? Why do you think this is true?

STEP 2: DUE _____
Variables:
Using your notes from this semester course (if you also took Psychological Human Growth and Development you can use those notes too) identify how the following variables could impact your study.

a. Sensation
b. Perception
c. Sleep
d. Intelligence
e. Learning
f. Memory

For each of the variables, ask yourself these two questions and answer them in two or more paragraphs using details and terms from your notes.

1. In what ways could _____ impact your study?
2. How will you account for _____ in your study so it does not sway results?

Here's an example from a former student:
"Operant and classical conditioning are very relevant to the subject of eyewitness testimonies. Classical conditioning especially is defined as associating one stimulus with another. In the case of Albert the child he began to associate a white and fur with the scary rabbit which made him scared of the two things. An example relevant to eyewitness testimonies would be as follows: if I associate a hooded African American with being a robber when I say see a hooded man leave a store my testimony would most likely say the robber was African American even if I couldn't tell because of the hood. Again, like observational learning classical conditioning creates certain perceptions and generalizations. Often, classical conditioning is unique to certain events in the lives of certain people. My fear of African Americans may have spawned from when my house

was robbed by an African American wearing a hood. These stimuli again are very unique to certain people, and would be very difficult to account for so again this may be a variable that is accounted for through survey or some other method, but most likely it will be acknowledge that it is present, but a conclusive connection may never be reached."

STEP 3: DUE _____
Literature Review:
Search in Ebscohost and other resources provided to see if psychologists have done a study on this topic before. Use the Psychology Document Analysis sheet to break down their research. You must have a minimum of 3 sources.

Format your Literature review like:

Varying Studies on…

Introduction

- What is your topic of interest?
- Why is this topic important to study?
- Why are you personally interested in it?
- The last sentence should begin, "This paper will review the various studies on…"

Literature Review

- Type up a one-paragraph summary of each study you found.
- At the end of each paragraph explain how the methods or information from this study will help you create an experiment.
- Include an in-text citation. Which in APA looks like: (First Cited Researcher's Last Name et al, Year, p.Page Range). For example, (Eckert et al, 2016, p.1).
- NOTE! "Et al" means "and others." Do not write this if your study was done by only one person.

Conclusions and Future Study

- Which of these studies seems to be the most ground-breaking?
- Which study seems to be the most credible? Which seems to be the most supported by data and research?
- Are any of these studies outliers in your research? What makes that source different?
- Which of these studies is the most easily repeated for your study?
- Do any of the studies include the questionnaires or materials needed to replicate the study?
- What questions do you still have?
- Have any populations not been assessed?

STEP 4: DUE _____
Experiment:
You will now design an experiment to address a research question. You must include:

a. Methods section
b. Ethics section

c. A questionnaire to address variables identified above
d. Some sort of correlation to calculate

Method:
Design a procedure and list the materials needed to complete the experiment. What procedure should be followed to test your hypothesis? (Define and describe how you will measure your independent and dependent variables.)

1. Study Type:
    a. EXPERIMENT:
        1. What is the CONTROL _____ ; and what is the EXPERIMENTAL _____
        2. What is the Independent Variable (variable manipulated by investigator)? and What is the Dependent variable (variable being measured)?
    b. CORRELATION:
        1. What is Data MEASURE 1 _____ and Data MEASURE 2 _____
2. How will you select your subjects? Include a description of target subjects (e.g. adults from 17-60; women over 70; etc.)
3. How will you reduce experimenter bias?
4. Operationalized hypothesis (hypothesis stated in a way that can be measured)
5. Procedure (Brief description of how experiment will be conducted)

Ethics:
Create a permission slip for any and all participants that makes them aware of the types of questions or activities they will be involved in. If doing an experiment, you may not want them to know these details before-hand. In which case, create a permission slip with language that grants permission for you to use data from their participation.

- Are you working with minors?
- Does your study put their psycho/emotional health at risk?
- Could they walk away feeling judged?
- Do they need to disclose any personal information?

COPY and PASTE your questions here. Reformat as needed.

Questionnaire:
Identify the most important variables; perhaps sleep, gender, or family environment. *Create* a questionnaire in Google Forms for participants in your study to complete that can eliminate or record alternative variables your study was unable to control.

- What numerical information can you collect to calculate a correlation?
- If possible, reuse surveys that have already been used by professionals. Do research as necessary.
- What demographic-like questions did you identify in your essays this year?
- Avoid bias in your questions. We don't want them to know "what you want them to say." We also don't want them to lie… unintentionally.

COPY and PASTE your questions into your portfolio.

Results:

Conduct your experiment using resources available to you and examine the results. Type up the data into an appropriate table or graph and explain the findings in paragraph form.

- In class, Ms. Eckert will show you how to calculate the correlations in your study and you can add this to your results.

Conclusion:

- What happened? How did this answer your research question? What can you conclude? What can't you conclude?
- Was your study successful? Why or why not?
- What is one modification for future research about your topic?
- Describe how you would deal with ethical or validity and reliability concerns pertaining to your experiment in the future?

** These questions are to help aid you in completing a formal report for you experiment. The report of your research should be able to be replicated.

STEP 5: DUE _____
Reflection:

1. What has this experience taught you about psychological studies and experiments?
2. What have you learned about your topic? What are your big take-aways?