Project 2: Design and Run an Experiment

Objective: Test an Extension of Project 1 or Methods for Improving Quality of Life on Campus

Part 1 (Proposal) Due: Tuesday, November 3rd, at the beginning of class
Final Report Due: Tuesday, December 1st, at the beginning of class
Presentation in class: Tuesday and Thursday, December 8th & 10th

You will design and conduct an experiment to examine the impact of one construct on another construct. The content of the experiment can either be:

(1) Related to the constructs used by your group for Project 1 (Risk Tolerance and/or the theoretically related construct). In this case, the constructs (and operational definitions) do not need to be identical to those you used for Project 1; in fact, adjustments should be made based on your survey results.

or

(2) A new project (unrelated to the previous project) that investigates whether one or more factors can improve the quality of life for students on campus. You may choose any specific definition for quality of life such as academic stress, social connection, school pride, or community atmosphere.

The project will require theorizing about a construct that causally impacts another construct. Each construct should be well defined. The operational definition for each construct should be well developed. You need to produce a good hypothesis that can be tested using a 2 condition design, where one condition is the control condition (either between or within participants).

You can do a lab study (e.g., bringing subjects to a room that serves as your lab); this is our most preferred option. Alternatively, you can do a field study, though this is more challenging because you have markedly less control. You can also use an online survey to manipulate your construct, but your survey must *manipulate* the factor, not just measure it. Regardless of your choice between lab, field, or online, each experiment should have an experimental protocol. An experimental protocol is similar to a script for a play/movie; it will include directions for the experimenter and text (such as instructions or question prompts). If you communicate to someone in a room, you need to write down exactly what the experimenter will say and do with enough detail that each participant has the exact same experience and so that someone else could replicate your experiment.

As in the previous project, you will first want to come up with a theory that discusses how one construct influences the other construct. Pick operational definitions (and variables) that can represent each of your constructs in a way that can be easily measured and generate a hypothesis about how one variable will influence the other in a way that stems from your theory. Then, you will develop an experiment, in which participants are randomly assigned to different conditions, to test this hypothesis.

At any point in the process, we are happy to answer your questions and give feedback on your progress. Feel free to email us, come to the T.A.'s office hours, or catch us before or after class. Please be aware, however, that you will get the most helpful guidance from us if you get a quick start, so we can give you feedback on your initial efforts.

Groups

This is a group assignment with your groups assigned for Project 1. We will expect somewhat more work and better work from larger groups. This is reflected in the number of subjects from whom you will be expected to collect data:

Group size	# participants
4	36
5	40
6	44

This would mean that if you are doing the project with 3 other people and running a two-group, between-subjects experiment, you should have at least 36 participants, with 18 participants in each condition. Make sure your design is easy enough to run so that this is feasible.

The Experiment

This assignment requires creativity and time; start brainstorming immediately.

First, decide what question you want to address and how you want to address it. You could run a traditional experiment in which you recruit subjects in person (e.g., at the library or UC) to a "lab" space or an experiment using Qualtrics (e.g., in which you manipulate the delivery of a message or provide differential stimuli). The other constraint is that you may not harm your participants. **If there is any possibility that you will do anything that could be the slightest bit controversial, please check with us.**

After you decide on a general question that you plan to address, decide what the independent variable is and how you are going experimentally manipulate it (you cannot use individual difference variables such as gender, age, major, etc.). Remember to include a manipulation check so you know that you manipulated what you intended to manipulate. You also need to choose a measure or measures of your dependent variable.

You can use any subject population you like (but not minors, prisoners, or people with disabilities), and you should randomly assign subjects within that population to different experimental conditions. The simplest design would be to have two experimental conditions and to test your results with t-tests. However, depending on the nature of your theory, you may want to include more than two levels of your independent variable or have a 2x2 factorial design (if you use a design with more conditions, you need to up the sample size in accordance with the number of conditions you add. For example, if you originally need 36 participants for a 2-condition design, you will need 72 participants for a 2x2, or 4-condition, design). You can include both pretest and pos-test measures or only post-test measures. You can run the experiment in any setting you like. When coming up with your theory and experimental design, *think carefully about the potential for demand characteristics, carryover effects, and sample-size considerations* (i.e., which design will give you the most statistical power given your constraints).

In writing the report, please follow the specifications for report writing from the book and your class notes. Your report should be concise, double spaced, and should follow this format:

- abstract

- introduction
- methods
- results
- discussion/conclusions

Please follow the notes on writing a report and Chapter 20 in the book.

It is absolutely acceptable if your study doesn't 'work' – i.e., you fail to find the effect you are looking for. You will be graded based on the quality of your experiment, your analysis, and write-up.

You will be asked to present your findings in front of the class.

Grading of project:

This project will count for 20% of your grade and will be graded out of 100 points.
Proposal: /5
Final report: /85
Self-report: /10

Experiment Proposal

On Tuesday, Nov. 3rd, each group should bring to class a one-page outline that describes the group's proposed study. This should take the following format (each of the questions below can be answered concisely in a sentence or two):

I. Hypothesis
- What question are you trying to answer by doing this experiment?
- What answer do you expect? Why do you expect that result?

II. Independent and Dependent Variables
- What is your independent variable and how will you manipulate it?
- What is your dependent variable and how will you measure it?
- Will you include a manipulation check of your independent variable? If so, how will you do it?

III. Study Design
- What is the design of your study (e.g., 2-group between-subjects or 2x2 between-subjects factorial)?
- What is your sampling plan (i.e., how will you recruit participants and who will they be)?
- Very briefly describe the experimental procedure (how you will carry out the experiment with each participant).

The day that you bring this proposal to class will be devoted to helping you with your experiment. You will meet in your groups to discuss the experiment as we go around the room and meet with each group to give you feedback. You may come to this session with more than one experiment idea that you'd like to discuss with us, but you need only prepare an Experiment Proposal (outlined above) for one of these ideas.

***Note:* Be sure to read Chapter 20 on Writing Reports – this explains exactly what we want to see and gives examples.**

ERM Project 2: Report Grading Rubric (Total = 85)

	Points
Theory: meets the four main criteria of a productive theory.	10
Abstract: clear summary of paper.	5
Introduction: interesting opening, motivation for the study, clear description of theory, brief literature review (couple of references; include references section at the end), lead-in to the study and hypothesis.	10
Method: clear description of sampling method, sample demographics (summarized in Table 1), measures, and procedure. Include sub-sections for Participants, Measures, and Procedure (i.e., how you ran the experiment).	10
Results: well-organized, concise presentation of all relevant results. If you used a multi-item scale, include the Cronbach's alpha and correlation matrix, including total minus item column. If you included a manipulation check, mention the results of that before the results of your main hypotheses. You should not include extraneous results that do not address the hypothesis. Interpretation of results should be saved for Discussion section.	10
Discussion: summary of main results, interpretation of results with respect to hypothesis and theory, limitations, future directions for research to address limitation of this study, broader implications/big picture.	10
Tables/Figures: highlight the most important results in a way that makes it easy for the reader to interpret the data quickly (include at least one table and one figure). Should not be copied directly from statistical computer program's output. Put these at the end of your report, after the reference section. Usually there is no need for more than a few tables and figures –be judicious about the data you display and make sure that every table and figure is easy to interpret.	5
Manipulation and Measures: appears to have good measures of the dependent variable, taking the ordering, wording, and formatting of questions into account. Appears to have an effective, creative manipulation of the independent variable, minimizing demand effects. Overall design is appropriate to address the theory/hypotheses.	10
Appendix:	
Experimental Protocol: A detailed script of the experiment, including the timing of each element, instructions, and question prompts.	5
Codebook: Detailed description of each variable in your data set. This should include all questions and their response type.	5
Creativity/Overall quality	5

Self-report of individual contributions: Provides at least two bullet points that demonstrate a substantial contribution to the group project. A substantial contribution involves writing a section of the final report, designing and implementing the survey, analyzing the data, and writing the final presentation.

10 points