

Extra Credit Assignment 4

Due Date: Friday, November 14th at 1:00 pm

Instructions:

Below is a description of a research study. Please read it and answer the following.

1. What is (are) the dependent variable(s)?
2. What is (are) the independent variable(s)?
3. Identify any confounding variable(s) that are present. Explain.
4. Propose a revision to the design of the study and explain how it would remove the confound(s) that you identified in answering question 3 above.

An instructor is interested in evaluating the influence of using clickers on student performance in her research methods class. Since she teaches two sections of the course, she sets up one class to use the clickers for quizzes and in-class feedback on questions. The other class is taught the same way with the same text and notes, exams and quizzes but does not use the clicker technology. (*See below for an explanation of clickers.) The class that uses the clickers meets at 8am on Mon, Wed, Fri and the other class meets at 11am on Mon, Wed, and Fri. The instructor finds that the students in the class that used the clickers scored higher on their quizzes and exams.

*Clickers are small push button radio frequency transmitters. Each student is issued one as a part of the class. An instructor can display a question with alternative answers and give students a short period of time to register their response choice by pressing the appropriate button (clicking). Each clicker has a code that is transmitted when a button is pressed that indicates the identity of the student. Thus, the instructor can get and tabulate answers to questions rapidly to assess how students are handling the material.

Rubric:

The question asks you to deconstruct (take apart) the study that is described to understand what is going on. This study is set up as if it is a true experiment, but it has problem(s). The first two questions (DV(s) and IV(s)) can be answered in a few words. They ask about how behavior is being measured (DV) and what the researcher is manipulating (IV).

The third question asks about things that *vary* but would be controlled in a true experiment (confounding variables). Your explanation should deal with how what is being done is different from a true experiment (a true experiment is one with no confounding variables).

The fourth question asks how you would design the study to remove the confound(s). Your design should control or otherwise deal with the confounding variable(s) that you identified in number 3. Explain how your design removes the problem(s) that you have identified.

1) Student performance in the class: exam and quiz scores. The DV is a measure of behavior. This is the only DV.

2) Whether the class used clickers or not. This is under the control of the researcher and is manipulated by the researcher. If you listed the time of the class as an IV, but also listed the use of clickers or not, this was accepted.

3) Time of class, differences in individuals who choose one class or the other. The two groups were not formed by random assignment. They are “naturally occurring”. Students who took the course at 8 am versus students who took the course at 11 am are not likely to be equivalent. Courses at 8 am often have lower enrollment so the students that were in the 8 am course may have been more motivated to take the course.

4) Use random assignment of students to sections of the course. This eliminates all of the confounding variables because of naturally occurring groups. While there may be other things that can be done, nothing else will create equivalent groups and thus totally remove the confound.

However, repeating the study in another semester with the 8 am section of the course not using clickers and the 11 am section using clickers would allow some confounds to be removed.

Give half the students in each class clickers and half not was described as an improvement. If this was adequately described, including using random assignment (who gets clickers), this was acceptable. You can not simply say that both classes should meet at the same time since that does not remove the problem. Note that this approach actually creates new problems (not all students in the class are treated equally) and the students who don't get clickers are still seeing all of what happens when clickers are used.

Scoring was as follows – If all four were done basically correct, it was a 2. Some allowance is made for wording. Also, if you proposed a different way of dealing with the confound than random assignment but justified it and *acknowledged its limitations*, that was acceptable.

Getting one or two of these two items wrong (usually number 4) resulted in a score of 1. Getting more than 2 wrong resulted in a zero.