Lab 5: Designing Experiments

Part A: Between Subjects Experiment

Your task is to begin to design a between-subjects experiment using the “sample” provided (info about the sample is provided in the table at the end of this assignment, and the same data is also provided in an Excel worksheet that you can download from the assignment description). A professor teaching an online psychology course wants to compare the effectiveness of class discussion groups versus assigning students to watch an online video on the same topic as the discussion. He thinks discussions will be more effective and wants to collect data to see if he is correct.

**1.** Based on the information above, what is the hypothesis you are testing?

**2.** Describe your sample including a brief description of their demographic characteristics. Information about each is provided in the Excel worksheet for this lab, and also provided in a table below. To answer this question you should summarize that information. Describe the sample in terms of sex, age, college major, and class standing. Look to your textbook and review a research article or two to see how samples are described. The sample is described in the table below and also in an Excel file that you can download from the assignment description. The Excel file may be useful for summarizing the sample, for example, in Excel you can calculate averages and percentages fairly easily. Or you can use the table if you are not familiar with using Excel. Or you can also cut and paste or export into SPSS for descriptive statistics. Any method is fine. In sum, for this question, you need to describe the participants in terms of sex, class, major, and age. For sex, class, and major, you need to provide the number of participants and proportion of the sample for each possibility (e.g., there were 3 females and 3 males, 50% of the sample were female). For age, you need to compute the mean and standard deviation. You can provide this information in a table, in text, or a combination of both. As you may have noticed in journal articles, sex and age are usually described in the text, information like class and major are often described in tables.

**3.** Use a random procedure…either rolling a die or you can use a random numbers generator, in order to randomly assign your participants to one of two groups: Group D (discussion) or Group V (video). If you choose to assign people to condition by rolling a die, you can roll an actual die or use virtual dice at this link: <http://www.random.org/dice/>

If you choose to assign people to condition using a random number table, use the Random number generator here: <http://stattrek.com/statistics/random-number-generator.aspx>

Briefly describe what you did for the procedure you chose, and record the results in the table below by putting the letter D or V in the boxes under the discussion and video columns.

**4**. Do the D and V groups appear to be similar, or are there differences (such as different proportions in each group by age, by major, by sex or class standing)?

**5**. Your independent variable is ‘learning format’ that is, participants will be randomly assigned to participate in discussions or to watch videos for each course module. If I were doing this experiment, my procedure would be to assign the participants to groups based on whether they are randomly assigned to D or V condition. The discussion groups might have to make four comments in the discussion, while the V group would have to watch the video and make four comments on the content of the video. That way, both groups would have to demonstrate similar amounts of knowledge about the topic. Next, I would select a dependent variable (DV) to evaluate learning

A) What would you use as your dependent variable?

B) Why? (Hints: Keep in mind that this ‘experiment’ is taking place in a class. There is more than one ‘right’ answer, and there are fewer than half a dozen good dependent variables for this experiment.)

**6**. What type of dependent variable did you choose (self-report, physiological, behavioral)?

**7**. What outcome do you expect – specifically, how will the average DV for one group compare to the DV for the other group? This is an educated guess, also known as a hypothesis.

**8**. If this were a real experiment with the same general idea – testing which is more effective for facilitating learning in an online psychology course, a discussion or a video – what is one change you would make to improve the experimental design?

Part B: Factorial Design

Now redesign the study so that it is a factorial design. That is, keep the independent variable the same as in part A, and add a second factor. You do not need to recreate the groups or anything else from Part A. For Part B, come up with another factor to add, your choice, and answer the questions below. Whatever you decide to add as a second factor, it has to make sense and it has to improve the study in some way. After you decide what your second factor will be, answer the following questions.

**1**. What is the second factor you choose to add?

**2**. What type of factor is it (e.g., a second manipulated variable, or a participant variable?)

**3**. How does adding this factor improve your study from part A? (if it does not improve the study, then use a different variable!)

**4**. What main effects do you expect for each variable?

**5**. Do you expect there to be an interaction? Explain why not, or describe the interaction.

Table of Sample characteristics and for answering Part A questions 2 and 3 is below

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ID#** | **sex** | **class** | **Major** | **age** | **dice roll or random number result** |
| 1 | f | junior | Psych | 21 |  |
| 2 | f | junior | Psych | 22 |  |
| 3 | f | sophomore | Psych | 26 |  |
| 4 | m | senior | Psych | 22 |  |
| 5 | f | junior | Psych | 22 |  |
| 6 | f | senior | Psych | 37 |  |
| 7 | m | senior | psych | 28 |  |
| 8 | m | junior | biology | 21 |  |
| 9 | f | sophomore | psych | 21 |  |
| 10 | f | senior | psych | 24 |  |
| 11 | f | senior | psych | 23 |  |
| 12 | f | junior | pre-med | 42 |  |
| 13 | f | sophomore | psych | 20 |  |
| 14 | m | junior | psych | 22 |  |
| 15 | f | junior | psych | 23 |  |
| 16 | m | senior | education | 30 |  |
| 17 | f | senior | business | 22 |  |
| 18 | f | junior | psych | 22 |  |
| 19 | f | junior | psych | 23 |  |
| 20 | f | senior | psych | 22 |  |
| 21 | m | senior | psych | 27 |  |
| 22 | f | junior | psych | 22 |  |
| 23 | f | sophomore | psych | 21 |  |
| 24 | f | junior | psych | 21 |  |
| 25 | m | senior | psych | 26 |  |
| 26 | m | senior | psych | 23 |  |
| 27 | f | junior | psych | 21 |  |
| 28 | f | junior | sociology | 21 |  |
| 29 | m | sophomore | psych | 32 |  |
| 30 | f | senior | psych | 23 |  |
| 31 | f | junior | psych | 22 |  |
| 32 | f | senior | pre-med | 22 |  |
| 33 | f | junior | psych | 22 |  |
| 34 | f | sophomore | psych | 19 |  |
| 35 | f | senior | psych | 21 |  |
| 36 | m | junior | math | 21 |  |
| 37 | f | junior | biology | 22 |  |
| 38 | f | senior | psych | 23 |  |
| 39 | m | senior | psych | 51 |  |
| 40 | f | junior | psych | 21 |  |
| 41 | f | junior | psych | 22 |  |
| 42 | f | senior | psych | 25 |  |
| 43 | m | junior | psych | 24 |  |
| 44 | f | senior | psych | 26 |  |
| 45 | m | senior | psych | 22 |  |
| 46 | f | senior | psych | 22 |  |
| 47 | f | senior | psych | 23 |  |
| 48 | f | junior | pre-med | 34 |  |
| 49 | f | sophomore | psych | 45 |  |
| 50 | m | senior | psych | 25 |  |
| 51 | f | junior | psych | 22 |  |
| 52 | f | junior | psych | 21 |  |
| 53 | m | junior | psych | 23 |  |
| 54 | f | senior | psych | 23 |  |
| 55 | f | senior | psych | 28 |  |
| 56 | f | junior | psych | 24 |  |
| 57 | m | senior | anthropology | 22 |  |
| 58 | m | sophomore | psych | 29 |  |
| 59 | f | junior | psych | 24 |  |
| 60 | f | senior | psych | 25 |  |