

## Homework Exercise 2 (Part 2):

Due 11:59pm, Friday, January 31st.

Submit PDF file to blackboard which should contain this document with completed answers

Please name your file last\_first\_hw1 (last name first, all lowercases) e.g. trump\_don\_hw2.pdf

First, for the following hypotheses, first determine if you can use the experimental method or not, and explain your choice. Then, identify the Independent and Dependent Variables (IV and DV). Next, operationalize each variable – how would you operationalize it if you were going to run a study? Finally, tell me what statistical test you will use and why!

### 1. Hypothesis: Females (gender assigned at birth) are more talkative than males

Can you use the experimental method or not? No because you cannot change biological sex.

If yes, why? If not, why not (is it not practical, ethical, or neither?)

It is not practical (or possible) to change biological sex. Also, if possible, then it is not ethical to reassign biological sex to humans.

What are your IV and DVs:

I.V. Name Biological sex.

D.V. Name How much the person talks.

Whether experimental or correlational, what are your operational definitions for those variables:

1. Categorical IV- Biological sex: Male and Female
2. Continuous DV - Amount of words spoken at a given amount of time, resulting in a measure of words/seconds.

What statistical test do you conduct and why?

I would conduct a t-test or ANOVA because I have a Categorical IV and a Continuous DV.

### 2. Hypothesis: People learn more when they study in a quiet versus noisy place

Can you use the experimental method or not? Yes

If yes, why? If not, why not (is it not practical, ethical, or neither?)

It is possible to do an experimental method because we can control the environment of where the humans study and it will not damage the subject. Thus, it is both practical and ethical.

What are your IV and DVs:

I.V. Name Noisy or quite environment where subjects study.

D.V. Name Amount of knowledge a person acquires during the study session.

Whether experimental or correlational, what are your operational definitions for those variables:

1. Categorical IV - I would have a noise and quite place to study (quiet vs noisy place)
2. Continuous DV - I would have a continuous spectrum of grades from a quiz taken by the subjects after the study session.

What statistical test do you conduct and why?

I would conduct a t-test or ANOVA because I have a Categorical IV and a Continuous DV.

\_\_\_\_\_

3. Hypothesis: Exercising moderately for 30 minutes in a given day helps you sleep better that night

Can you use the experimental method or not? Yes

If yes, why? If not, why not (is it not practical, ethical, or neither?)

It is possible to do an experimental method because we can control if the subject exercises or not. It will not harm the subjects and it is easy to perform. Thus, it is practical and ethical.

What are your IV and DVs:

I.V. Name Making the subject exercise moderately for 30 minutes or not.

D.V. Name Measuring the subject's quality sleep.

Whether experimental or correlational, what are your operational definitions for those variables:

1. Categorical IV - Make half of my subjects exercise and the other half will not exercise.
2. Categorical DV - Make all the subjects fill in a form to indicate their quality of sleep in three categories: good, bad, regular.

What statistical test do you conduct and why?

I would conduct chi square test or loglinear analysis because I have a  
Categorical IV and Categorical DV.

4. Hypothesis: People who believe they will die soon are in a more negative mood

Can you use the experimental method or not? No

If yes, why? If not, why not (is it not practical, ethical, or neither?)

It is not ethical to induce people into a negative mood just to make a scientific experiment.

Also, it is not ethical to test the amount of deaths on your pool of subjects.

What are your IV and DVs:

I.V. Name Whether a subject believes it will die or not

D.V. Name The mood of a subject.

Whether experimental or correlational, what are your operational definitions for those variables:

1. Categorical IV - Ask whether a subject believes it will die or not.
2. Categorical DV - Make all the subjects fill in a form to indicate their mood in two categories: negative or positive.

What statistical test do you conduct and why?

I would conduct a chi square test or loglinear analysis because I have a  
Categorical IV and Categorical DV.

5. Hypothesis: Sex before marriage improves the marriage

Can you use the experimental method or not? No

If yes, why? If not, why not (is it not practical, ethical, or neither?)

It is unethical to promote sexual intercourse in our society for scientific research  
because our society perceives sexual intercourse as something personal and intimate.

What are your IV and DVs:

I.V. Name Whether a subject has had sex before marriage or not.

D.V. Name Satisfaction in marriage.

Whether experimental or correlational, what are your operational definitions for those variables:

1. Categorical IV - Ask if a subject has had sex before marriage.
2. Continuous DV - Make all the subjects fill in a form to indicate their levels of satisfaction

in their marriage with a numerical score from 1 to 10.

What statistical test do you conduct and why?

I would conduct a t-test or Anova because I have a Categorical IV and a Continuous DV.

6. Of the experiments that you outlined above, which is the easiest to ensure internal validity for and why? Explain what it meant by internal validity and why it's the easiest to ensure in that experiment compared to the others.

The third experiment is the easiest to ensure internal validity because it is scientifically known exercising reduces anxiety, improves the mood, and releases dopamine in your brain. As a result, there is not a psychological factor that will keep you awake during the night. Thus, the only factor that will not allow resting properly is the physical energy of the subject, which is decreases throughout the exercise. Consequently, the only variable to take into account is the subjects' physical energy because the emotional factors become negligible. The internal validity of the experiment does not get affected.

Internal validity is measure used to determine how accurate is the experiment taking into account multiple factors, such as pain, negativity, mood, and anxiety.

The third experiment is the easiest to ensure internal validity because for the first experiment, the current mood of the subject will affect how much they talk in the experiment. On the second experiment, a subject might feel more comfortable studying in a noisy place or in a quiet place, which is personal preference. On the fourth experiment, the subject's mood might be affected by various reasons, such as hunger, lack of sleep, economic situation, romantic life, and family relationships. On the fifth experiment, dissatisfaction in a marriage might be influenced by lack of communication, infidelities, economic situation, psychological or physical violence, and family's cultural differences. Thus, these aforementioned factors are potential threats to internal validity.