INTRODUCTION TO PSYCHOLOGICAL RESEARCH

FINAL ASSIGNMENT

For this final assignment, you will write a paper in APA 6th edition styling. Your paper should have a title page, running head, references section, as well as a body section that is properly formatted. You can consult your APA manual and also look under “Files ▶ Course Documents” on Canvas for more information about formatting. A sample paper is provided for a visual demonstration.

This paper should be no less than 8 pages long excluding the title page, abstract, and references page.

You will need to conduct a t-test on the data to determine if the sample means are significantly different. After the data from Math Tasks Assignment is compiled, the data will be posted on Canvas.

Think of a test with 100 math problems...There are two types of problems: addition and subtraction. Would you finish the test faster if you completed all of the addition problems first and all of the subtraction problems second? Is it more efficient to complete all of the addition problems first? If you switch back and forth between addition and subtraction, will the mental effort of ‘task-switching’ actually slow you down? Or is simple math so easy that there will be no difference?

The class experiment that we conducted intended to measure just that. We used a math task that could be completed in an organized fashion to minimize task switching (Task A), or a disorganized fashion (Task B) that required a task switch for every problem attempted. If there is no difference between switching tasks repeatedly, and completing the same problems in an organized fashion, then there should be no difference in the mean (average) completion times of our Task A and Task B samples.

T tests are used to determine if the difference between sample means is significantly different or not. Using the class’s pooled data, you will conduct a t-test to compare the sample means of Task A and Task B. Then, you will write a paper that describes the experiment and analyzes the data.

OVERVIEW

1. Access the data in the excel file [DATASET.xlsx] → Pages section of Canvas...
2. You will need to find 3 journal articles that have relevance to our study, and cite information from those articles using in-text citations (articles are provided for you Canvas).
   • You need at least 2 relevant in-text citations for each article.
   • The in-text citations should be bold in the color red.
3. You need to be able to analyze the data using a t-test, and analyze patterns by comparing/reporting correlations.
4. Write a paper (APA 6th edition) that is at least 8 pages (10 including title/ref.)
When the data is compiled, you will use the completion times from each condition to complete the t-test worksheet after you print it out [TtestWorksheet6_.pdf]. The worksheet will walk you through a t-test with an alpha of .05 in one tail. This is because the research predicts that the results will occur in one particular direction.

The data file [DATASET.xlsx] has a tab called “T-test Calculation” that saves you the work of performing many computations. Be sure to check out this page before starting your t-test.

In the Results section, please report the results of your t-test in the following way. You can copy and paste the text into your paper, just replace the results of your t-test where the #'s are.

M represents ‘Mean’; SD represents ‘Standard Deviation’. The t-test tutorial [TtestWorksheet6_.pdf] will help you find these values.

REPORTING THE RESULTS OF AN INDEPENDENT-MEASURES T TEST

When tested using a 51-item assessment containing addition, subtraction and multiplication problems, the task-switching group completed problems [faster or slower] (M = ###.#, SD = ##.#) than the group that did not switch tasks repeatedly (M = ###.#, SD = ##.#). The results of an independent-measures t-test indicate that the difference between sample means [was *OR* was not - pick one] significant, t(df) = #.# (rounded to two decimal places), p < .05, one-tailed.
Investigate and discuss patterns that are present in the data by looking at the correlation between our variables. Use the Critical Values of the Correlation Coefficient - Table R [In the back of your book] to find out whether the correlations are significant based on the df (degrees of freedom). Use a two-tailed test with an alpha of .05.

Critical values are based on degrees of freedom. Use the “Correlation Analysis” tab of the data file [DATASET.xlsx] to analyze the correlations.

Check out the following combinations of variables:

- Age and completion time (does being older make people faster or slower?)
- Age and # incorrect
- Gender and completion time (are males faster than females)
- Gender and # incorrect

Determine if the patterns present in our data match patterns present in the literature. For example, you may cite Reaction Time Literature Review by Robert J. Kosinski, and make a connection between factors affecting reaction time and whether those factors may have had an effect in our experiment.

**REPORTING THE RESULTS OF CORRELATIONS (EXAMPLE)**

For Task A, the variables age and completion time were not strongly correlated $r(df) = -.032$, $p < .05$.

Note: Degrees of freedom for correlations is calculated differently. It is the total number of paired scores minus 2. See your textbook for more information...
Abstract

Create an abstract that concisely summarizes this study in 120 words or less.

Introduction (Literature Review)

Provide a brief background of the task-switching literature relevant to this study by providing 12 in-text citations from the literature (2 citations for each article used). These in-text citations may be 1 sentence long and should be written in the color red (you do not necessarily have to read all of the articles in entirety from start to finish! Pull a relevant citation from each article). Emphasis should be placed on what they did, and their results; a connection should be made to our study in a predictive manner if necessary. Some keywords that may help you find relevant articles are:

- Task switching
- Cognitive Efficiency
- Multi-tasking
- Selective Attention
- Divided Attention

- Use the link below to access the journal article databases:
  http://library.montclair.edu/articlesdatabases/index.php?View=Subject&Subject=Psychology%2FSociology

Explain the hypothesis of this study. Explain what is expected to occur in this experiment based on the background literature.

Clearly explain what the independent variable is, and what the dependent variable is. Make sure you include all necessary information for a thorough introduction.

Method

Participants

In the first paragraph, explain the sampling process and how the entire class provided their own subjects for this experiment. What is the average age of all of the participants for each condition? How many males and females participated in each condition? Were these people randomly selected?

In a second paragraph, describe YOUR subjects age and gender for each condition. Describe the testing environments. In what rooms did the tests take place? What times? Describe any other information you see fit.

Materials and Procedure

In one paragraph, describe the materials used for this experiment: pen/pencil, printed addition tasks, etc. Describe Task A and Task B to the reader, explaining the differences between the two, and similarities between the two.

In another paragraph, explain your procedure. Where did you administer Task A and Task B? What time did you administer them? Did everything go smoothly, or did you
have to deviate slightly from the procedure? Did the person interact with you during the test or did they sit quietly and remain focused? Did you stay in the room with the person during the test? Did anything unexpected occur? Did your subjects understand the directions?

In another paragraph, explain 2 experimental controls that we utilized (For example, the same 51 mixed-math problems appear in Task A and Task B; by using the same 51 problems we can eliminate any alternative explanations that differences in the difficulty of the problems are causing a longer completion time).

In yet another paragraph, explain if anything occurred that would threaten the validity of the test? Describe anything that happened that was not ideal and could have had an effect on the results. Why is it important for everyone to follow the same procedure? What would happen if everyone followed their own procedure, how could this affect the results?

Results

In one titled paragraph , discuss and compare the sample means for Task A and Task B. Is there a difference; is one higher than the other? Is the difference between means significant? Discuss the results of the t test, and what the conclusion of this study is. What was the critical t value? What was the obtained t value? Are the results significant?

In a second titled paragraph, explain the results of your correlation analysis describing the information from above. Discuss the relationships between the variables and modify the following phrase to report each one:

The variables Age and # Incorrect were [not/strongly] correlated, r(df) = .##, p<.05.

Discussion

In a final summative paragraph, discuss the implications of these results. Summarize the findings (Task switching had a negative effect on completion time because participants required more time to complete the math problems…etc.). Do you think practice would reduce the effect? Why? Provide a direction for new research, do you think task switching would have an effect on reaction time in any other task?

Explain the background reasoning of why you think there is an effect.

If there was no effect: Discuss reasons why you think there was no effect? What are some things we could change about the experiment to get stronger results? Are there any additional precautions we should take next time? Was the test too easy or too hard? (If there WAS an effect, then omit this section).

Discuss the limitations of the study. Think of alternative explanations, confounding and third variables. Problems of the method/procedure, qualities of the sample, etc.
References

Properly cite all six references; some articles are provided for you online.

¡Good luck!