

PSYC311 Research Design and Statistics III

Assignment 2: Data Analysis

This assignment is divided into two parts. Each part requires you to perform, interpret and report a different data analysis. Instructions for each part are presented below.

Your submission will include the following

1. One word (or pdf) document with the answers to Part A and Part B, clearly labelled. Specific requirements for the answers on each part are included below. This document must adhere to APA 6th or 7th formatting. You are welcome to pick which version of formatting you want to use but make sure you use it consistently. This includes table format, captions (both content and format), headings (if you are using any), statistics reporting in text, when applicable, etc.
2. An SPSS output file with the results of the analysis for both Part A and Part B, clearly labelled. **Delete all the attempts that are not relevant.** Your output should include **one** set of analyses for Part A and **one** set of analyses for Part B.
3. A data file for Part B, with all variables and levels clearly labelled. This data file can be submitted in an **SPSS data file**. Please label your values in the variable view.

PART A

In this part of the assignment, you are provided with a brief introduction to a research question relating to the study of body appreciation in a student population. In addition to this, you are provided with a set of de-identified data that includes variables relevant to that research question. Your job is to identify the research question and conduct the data analysis appropriate for that question (note that this might require recoding of one variable). After having obtained all the relevant statistics, you will write a results section presenting the results of your analysis. In addition to this you will write a brief paragraph in which you interpret the results (i.e. in this paragraph you will say what the answers to the research questions are).

You should be able to answer all questions without any further reading (i.e. you don't need to go to the literature of body appreciation, intuitive eating, etc. That is, there is no requirement for you to read any articles on body appreciation, intuitive eating, etc.)

Your answer to this question should include the following components.

1. A paragraph describing the participants included in the study (number, age, gender). Note that we acknowledge this would normally be included in the method section, which we are not asking you to write. However, it is important that you characterize the sample.
2. A paragraph describing the descriptive information that precedes the model. This paragraph will be accompanied by a table including means and SD for each of the variables relevant to the analysis, as well as the correlations for every pair of variables.
3. You must make reference to what statistical analysis you conducted and to the tests of the relevant assumptions. You must state whether the assumptions were met and how you determined this, and your SPSS output must contain evidence of assumption tests. If there are any outliers, you must note how many you identified and how you identified them. Make reference to the extent to which the identified outliers may influence your data (if they don't, you can say that there is no cause for concern). Your SPSS output must include evidence that you looked at outlier information.

4. A table presenting the results of the regression. Not all results need to be included in the table. For example, you may refer to overall model stats (such as R-sq or F) in the body of the text.
5. A paragraph describing what it all means. In particular, here you want to make clear reference to what the answer to the research questions was (e.g. were the variables related in the expected way? Did the addition of the new variable improve prediction? What can the researchers conclude?). Remember that in this section you must not repeat the numerical results values. You don't need to include limitations to the study, as you do not know anything about the methodology.

Note that every time you present information on a table you must first introduce the table in the text (the table should appear after the first in-paragraph mention of that table). Also, you want to draw the attention of the reader to the relevant parts of the table without repeating the contents of the table. For example, you may say "Table X presents the correlation between the variables. As expected the correlation between apples and pears was positive and significant". Here, in the text, you don't report the actual r or p values because you already have reference to them on the table where they appear.

Part A: Introduction

Research on body image has shifted attention from the construct of body dissatisfaction, shame and preoccupation, to the study of positive body-related cognitions and emotions. In particular, recent research has focused on the construct of body-appreciation, defined as “accepting, holding favourable opinions toward, and respecting the body” (Tylka & Wood-Barcalow, 2015; p. 53). It has been shown that body appreciation is predictive of eating disorder symptomatology, self-esteem and proactive coping, even after controlling for body dissatisfaction (Tylka & Wood-Barcalow, 2015). Thus, it seems important to investigate potential correlates of body appreciation. In particular, a researcher is interested in investigating the predictive value of positive weight-related behaviours, such as intuitive eating and motivation to exercise for health-related reasons. She hypothesizes that both intuitive eating and the motivation to exercise for health related reasons will positively predict body appreciation. However, she is interested in exploring the predictive value of these two variables after controlling for body mass index (BMI) and gender. She expects that BMI will be negatively related to body appreciation but has made no prediction for gender.

Thus, this researcher is interested the following:

- 1) What is amount of variance in body appreciation that can be accounted for by intuitive eating and motivation to exercise for health-related reasons, after controlling for body mass index (BMI) and gender?
- 2) Does the addition of these two variables to the model that includes only BMI and gender as predictors result in a significant increase in the proportion of variance accounted for?
- 3) What is the nature of the contribution of each variable in the final model? What is their relative contribution to the model? What proportion of variance in the outcome do each variable uniquely account for?

References

Tylka, T.L., & Wood-Barcalow, N.L. (2015). The Body Appreciation Scale-2: Item refinement and psychometric evaluation. *Body Image*, 12, 53-67.

Part B

In this section of the assignment you will use SPSS to answer a different research question (see next page). In contrast to Part A, in this section of the assignment, only the raw data are provided. You will be required to enter these data into the SPSS Data Editor in a manner that allows you to run the appropriate analyses, including all relevant variable codes to specify the different groups in the design. Similarly to Part A, you will need to decide which statistical analysis is appropriate to answer the research question, run this analysis and report your findings in APA style.

1. Enter the data provided at the end into the SPSS Data Editor. Ensure that you label all variables, and assign value labels to each level of the independent variable(s)
2. Conduct the analysis required to answer the research question
3. The written portion of your answer should include:
 - a. An introductory paragraph in which you make reference to the relevant descriptive statistics and go over the pattern of results. That is, describe with words what the descriptive statistics show (who performed better/worse, etc). Present these descriptive statistics using a Figure (must be a bar graph with SE bars)¹. The Figure must conform to APA formatting standards (including clear labels and captions). It is not acceptable to simply copy and paste an SPSS output Figure.
 - b. A paragraph in which you (a) indicate what analysis you conducted and (b) provide the results of the main analysis. Ensure that you explore any significant interactions with appropriate follow-up tests and that you report those results.
 - c. A paragraph discussing the results of the analysis in relation to the research question. That is, what is the answer to the research question? Remember, as in Part A, you do not need to discuss limitations.

¹ Many short videos explaining how to create a graph in Excel using SPSS output can be found on Youtube

Part B: Background

NOTE: the following is a made up research scenario and set of data

A researcher is interested in investigating different training methods for improving hazard perception for at-risk driver populations. In particular, the researcher is interested in determining whether conducting weekly training using a virtual reality driving simulator leads to the same improvements in hazard perception skills as weekly training using a traditional button-press computer task. In order to control for threats to internal validity the researcher also includes a control group. The researcher is also interested in whether the treatments are of equal efficacy for two groups of at-risk drivers, young adults (<25 years) and older adults (>65 years). The researcher hypothesizes that both forms of training will be more effective than no training at all, but that the new virtual reality training will be better than the traditional button-press computer task. The researcher also hypothesizes that young adults will respond to the virtual reality training more and therefore see greater improvement with the virtual reality training than older adults, but there would be no difference between younger and older adults on improvements to hazard perception using the traditional button-press task.

30 participants, 15 younger adults and 15 older adults, are assigned to the three conditions, so that there are 5 participants in each group. For 8 weeks, participants either perform weekly virtual reality training (VRtraining), or weekly traditional button-press computer training (traditionaltraining) or do not engage in any training (controls). At the conclusion of the training period, participants are tested on their hazard perception skills (higher score equals better hazard perception). The scores are presented in the table below.

	VR Training	Control	Button Press Training
Young Adults	10 9 8 8 7	5 4 3 2 1	4 3 3 2 2
Older adults	6 6 6 5 5	4 4 3 2 2	6 6 5 5 4

Assignment 2 Marking Criteria (each of the two parts will be marked with the same rubric)

	NN	PA	CR	DI	HD
<u>SPSS Steps Write Up (5 Marks):</u> - Correct identification of the steps to use in SPSS for analysis - Data entry (when applicable for Part B)	o Incorrect or unclear steps taken o Data entry is fundamentally incorrect, making it impossible to conduct appropriate analysis	o Appropriate identification of steps for analyses o Major errors or key procedural steps missing o Data entry incomplete (e.g. missing appropriate labels)	o Appropriate identification of steps for analyses o Minor errors or omissions (i.e., no selection of steps required for assumption testing) o Minor errors in data entry	o Accurate identification of steps for analyses o Minor errors or omissions (i.e., no selection of steps required for assumption testing) o Data entry is complete	o Accurate identification of steps for analyses o Clearly explained steps that would enable perfect replication of the output o Data entry is complete and clearly labelled
<u>Presentation of Results (30 Marks):</u> - Clear presentation of descriptive statistics - Clear presentation of assumption/outlier testing - Table/figure with relevant information - Correct presentation of statistics - Structure of results section	o Irrelevant or no table/figure is included o Incorrect or incomplete descriptive results are presented o No reference or incorrect reference to assumption tests or outlier evaluation o No inferential statistics or incorrect inferential results are presented o No structure present	o Many errors or omissions in tables/figures o No reference to descriptive statistics in text o Not all assumption/outlier tests are directly addressed o Major errors or omissions in presentation of inferential statistics o Lack of structure in the presentation of results	o Some errors or omissions in tables/figures o Reference to descriptive statistics in text may be incorrect or incomplete. o Most assumption/outlier tests are directly addressed o Report of inferential statistics minor errors or omissions o Some structure is present but presentation lacks clarity/conciseness	o Tables/figures accurate, but may contain minor formatting errors o Appropriate and accurate reporting of descriptive stats o Includes reference to all assumption/outlier tests o Inferential statistics are correctly reported o Good structure but writing may lack clarity	o Tables/figures are accurate and perfectly formatted. o Clear, accurate and complete reporting of all descriptive and inferential statistics o Includes reference to all assumption tests o Inferential statistics are correctly reported o Structure is logical, clear and concise
<u>Discussion (10 Marks):</u> - Results linked to research question - Interpretation of results - Presentation of conclusion - Structure of discussion section	o Repetition from results section without explanation of findings or major errors in interpretation o Results are not linked to research question(s) o No or inappropriate conclusion	o Incomplete interpretation or results OR minor errors of interpretation. o Only implicit reference to links between results and research question(s) o Conclusions are limited or incomplete	o Appropriate interpretation of findings which may be superficial o Results linked to research question(s) but description of link lacks clarity o Conclusion matches research question, but may lack integration	o Correct and complete interpretation of findings (no errors) o Results explicitly linked to research question(s) o Clear conclusion: integrates findings	o Correct and complete interpretation of findings (no errors) o Results explicitly linked to research question(s) o Clear and concise conclusion: integrates findings

	o No structure present	o Structure of discussion is poor or non-existent	o Structure of discussion is lacking flow or coherence	o Structure of discussion is present but writing may lack a bit clarity and/or conciseness	o Very well written discussion with concise presentation of ideas
<u>Presentation (5 Marks):</u> - Expression, grammar and spelling - APA style of the overall report (note: APA style of tables/figures is marked in results section. Here we are looking at spacing, headings, written style, etc)	o Really poor written expression o Multiple typos and errors in grammar and spelling o No attempt at APA formatting	o Satisfactory written expression, may lack clarity in places o Multiple errors in spelling and grammar o Some major APA errors	o Written expression is good o Few errors in spelling and/or grammar o Some (minor) errors in APA formatting	o Good written expression (may be wordy at times, but always clear) o No (or occasional) errors in grammar or spelling o Some minor deviations from APA formatting, if any	o Clear and concise written expression, eloquent o No errors in grammar or spelling o Formatting meets APA guidelines perfectly