# PSYC2102 - Psychology: History, Science and Application 2

## ASSESSMENT 3: Data Analysis Assignment

You have been provided with the data for this assignment as an SPSS file. The data file has been provided with generic variable names (X1, X2, etc.), which you should change. You will need to provide more detailed VARIABLE LABELS and VALUE LABELS in the data file.

The hypothetical research to be considered concerns a researcher’s attempt to learn more about age differences and differences among children who have been diagnosed with attention deficit hyperactivity disorder (ADHD), autism spectrum disorder (ASD), and children with neither of these conditions (a control group). The actual grouping data for the children are located in column X10 of your dataset, with children with ADHD being coded 1, children with ASD being coded 2, and control group children coded 3. The sample consists of 100 children aged between 10 – 12.

The researcher collects test scores from various measurement tools, and these are entered in variables X1 to X8 (X9 indicates the child’s age: 0 = younger (< 10 years), 1 = older (> 10 years)). X1 describes the results of a simple reaction time test for each child. X2 are the results of a EEG brain scan of each child’s brainwave patterns. X3 is each child’s results on the Weschler Child Memory Scale. X4 contains parental ratings of levels of difficult behaviour exhibited by each child. X5 are the results of modified Stanford-Binet IQ testing of each child. X6 contains each child’s results for a simple learning test. X7 contains each child’s results on a test of verbal ability. X8 are the results of an experimental adaptive behaviour scale developed by the researcher.

Your first task is to provide appropriate variable labels for all the variables and value labels for X9 (age) and X10 (group).

After this, answer the following questions. You must provide the relevant SPSS output along with any write-up that is requested. Any figures or tables must be in APA style. You are not required to interpret any of the results in “common sense” terms. The exercise is solely related to the data analysis, and the variables and their scores are somewhat arbitrary, so don’t worry if the results don’t make “real world” sense. This is not real data, so don’t worry if the results seem odd.

There are two parts to this report. The most important part consists of the write up of the analyses, including graphs and tables (if required) in correct APA style; in other words, in the style that you would use if you were presenting this material in a research report. The second part consists of the raw SPSS output of the analysis that you have carried out. Both sections need to be combined into a single Word file for submission to the online class space. Remember that SPSS provides a lot of output. Not all of this output needs to be submitted with your assignment. You should copy and paste only that output that directly relates to the question that you are answering.

**Please note that you are only required to answer FIVE questions overall. First, answer either question 1 or question 2. Then answer questions 3, 4, 5, and 6.**

1. Examine variables X1 – X8 for any violations of the normality assumption. Pick a variable that you feel violates the assumption. Run at least three transformations on that variable, and then make a decision as to which transformed version leads to the best improvement. If none of the transformed versions lead to any improvement, then continue to use the original variable. Write up the procedure you followed for that one variable (ignore the others that you tested) in the form that you would write it up were if it were part of a research report. For all of the remaining questions, use the transformed variable (assuming that you decide that the transformed variable is an improvement on the original; otherwise, stick with the original).

2. Test the homogeneity of variance assumption on variables X1 to X8, with variable X10 as the grouping variable/factor. Pick one variable that you feel violates the assumption and run the appropriate power transformation on that variable. Write up the procedure you followed *for that one variable* (ignore the others that you tested) in the form that you would write it up if it were part of a research report. For all of the remaining questions, use the transformed variable (assuming that you decide that the transformed variable is an improvement on the original; otherwise, stick with the original)

3. Carry out a contingency table analysis using 2 to answer the question of whether there is a significant relationship between age and group. In other words, are older and younger participants equally represented across the three groups? Show a bar chart of this relationship and present the descriptive statistics in a properly formatted APA table. Make sure that after running the 2 analysis you use standardised residuals to help interpret the result.

4. Are there age differences for (1) the scores on the experimental adaptive behaviour scale (X8), and (2) the modified Stanford-Binet IQ test (X5)? Write up the results in APA style, including properly formatted APA-style graphs of the means and an APA style table of the descriptive results (you can provide the results for both variables in the one table or in separate tables). Two separate analyses and two graphs are required for this question, and at least one table.

5. Show a correlation matrix of the eight dependent variables, with significance levels. Present the matrix as a properly formatted APA-style table, then pick two significant correlations from the matrix and write up these results in APA style.

6. Is there a significant difference between scores on the simple learning test (X6) and scores on the test of verbal ability (X7), which have been standardised and therefore are measured along the same scale; they are directly comparable. Pick an appropriate significance test to answer this question, and write the results up in APA style, along with a properly formatted APA bar chart and a table of the descriptive results.

**Due Date**

The assignment is to be submitted at the end of Week 10 (that is, Sunday, 18 April by 11.55 pm). Upload your completed report as a single Word document ONLY to the online class space.

**Loading**

The report is worth 35% of your grade for this unit.

**Marking Guide**

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| --- | --- | --- | --- | --- | --- | --- |
| **Criteria** | **ULOs** | **Fail** | **Pass** | **Credit** | **Distinction** | **High Distinction** |
| **Data analysis** | | | | | | |
| Demonstrates knowledge of data analysis techniques | d | Lacks adequate knowledge of data analysis techniques | Adequate knowledge of data analysis techniques with some areas requiring improvement | Adequate knowledge of data analysis techniques with few areas requiring improvement | Very good knowledge of data analysis techniques | Excellent knowledge of data analysis techniques |
| Demonstrates skills in interpreting and reporting on statistics. | d | Lacks adequate skills | Adequate skills with some areas requiring development | Adequate skills with few areas requiring development | Very good skills | Excellent skills |
| **Referencing and Writing Style** | | | | | | |
| Academic writing style and APA Publication Manual (7th Edition) formatting | e | Overall lack of clarity and poor expression. Extensive use of lay writing style. A failure to adhere to APA Publication Manual (7th Edition). | A reasonable attempt at formal academic writing but more edits needed. An attempt at APA Publication Manual (7th Edition) formatting with a number of errors. | A good academic writing style with only minor errors. General adherence to APA Publication Manual (7th Edition) formatting with only minor errors. | A very good academic writing style. General adherence to APA Publication Manual (7th Edition) formatting with only one or two minor errors. | Exemplary academic writing style throughout. Complete adherence to APA Publication Manual (7th Edition) formatting throughout. |