**Homework Assignment #4**

This homework assignment involves you using the software programs SPSS or JASP to compute a related samples *t* test (Part A), and an ANOVA (Part B) You will use the **Survey** data set found on Canvas.

# Part A – Related Samples *t* Test

Part A uses the file “grade\_data.csv” on Canvas. This data set contains the grades of two major tests in Dr. Danielle Navarro’s class, one early in the semester and one late in the semester. Dr. Navarro runs a very hard class, one that students find very challenging; but she argues that by setting hard assessments, students are encouraged to work harder. Her theory is that the first test is a bit of a “wake up call” for students: when they realize how hard her class really is, they’ll work harder for the second test and get a better mark. Is she right? Load up the data and find out.

There are three variables in this data set: an **id** variable that identifies each student in the class, the **grade\_test1** variable that records the student grade for the first test, and the **grade\_test2** variable that has the grades for the second test. Perform a related samples *t* test to see if there was a significant difference in the samples’ test scores at time 1 and time 2 using a conventional alpha level of 0.05

1. If you’re using SPSS, paste the “Paired Samples Statistics” table from the output here (if you’re using SPSS). If you’re using JASP, paste the “**Descriptives”** table, which is the equivalent table for that program; you can find this table under **additional statistics.**
2. Based on the above table, what was:
   1. The mean for test 1:
   2. The mean test 2:
3. Paste the “Paired Samples Test” Table output here.
4. Based on the Paired Samples Test Table, what was:
   1. Mean difference score (SPSS includes this under “Mean”):
   2. t:
   3. df:
   4. p (SPSS labels p as Sig. 2-tailed):
5. Write up the brief summary of the related samples *t* test according to APA format.

**Part B – Analysis of Variance**

Part B of this homework uses a file called “Survey”, which is a real data set with actual data in it. A description of the data set is as follows:

“This is a real data file, condensed from a study that was conducted by a Graduate Diploma in Educational Psychology students. The study was designed to explore the factors that impact on respondents' psychological adjustment and wellbeing. The survey contained a variety of validated scales measuring constructs that the extensive literature on stress and coping suggest influence people's experience of stress. The scales measured self-esteem, optimism, perceptions of control, perceived stress, positive and negative affect, and life satisfaction. A scale was also included that measured people's tendency to present themselves in a favorable or socially desirable manner. The survey was distributed to members of the general public in Melbourne, Australia and surrounding districts.”

***Note that there are two versions of this file!***

* IF YOU ARE USING SPSS FOR THIS ASSIGNMENT: Use the file that ends in “.sav” (in the SPSS files folder). This is a proprietary IBM file format that *only works with SPSS.*
* IF YOU ARE USING JASP: Use the Survey file that ends in “.csv” (in the JASP files folder). This format—which is an acronym for *Comma Separated Values*—is a common and universal file format used in many types of applications. JASP needs .csv files. It cannot open .sav files.

The variable **age\_group** categorizes participants into one of three age groups (1 = 18-29-year-olds, 2 = 30-44 year olds, 3 = 45+ years old).

1. Perform an analysis of variance where **age\_group** is your independent variable and Optimism (**Moptim)** is your dependent variable. Make sure to click Descriptives under Options (SPSS), or the check boxes for Descriptive Stats and Estimates of Effect Size (JASP). Paste the “Descriptives” table below.
2. What age group had the lowest optimism? What age group had the highest optimism?
3. Paste the “Anova” table below.
4. What was the *F*-ratio for the analysis? Was this value statistically significant? If it was, also report the results of the Tukey post-hoc test.
5. Write up an APA summary of this analysis of variance.