

# **PSYC\*6380: Minor Assignment 1 (Correlation and Regression)**

***Due: Monday, January 24, 2022 @ 11:59pm***

## **Part 1:**

### **Background:**

After hearing about the unexpected surge of pirate-themed behaviours during our class today, a psychologist became interested in assessing the extent to which having pirate-like tendencies predicted poor adjustment in social settings. The psychologist collected self-report data from 500 individuals on their level of pirate self-identification; and matched these data with the same participants' responses to a scale of social awkwardness, as well as a scale of more general socially-dramatic tendencies (i.e., the tendency to be socially "extra").

While designing this study, the psychologist became concerned that, if they asked participants to report their level of pirate self-identification on the *same* survey that they used to report their other social tendencies, then participants might guess the true nature of the study and engage in socially-desirable responding. To counteract this, the psychologist administered the pirate self-identification survey separately from the surveys of social awkwardness and social 'extraness'. As a result, the data for this study are split across two different .csv files. Both data files include participants' unique ID numbers, which you can use to match participants' responses.

Your task is to load and merge the two data files; prepare the combined data for analysis; and then look (separately) at: 1) the relation between pirate self-identification and social awkwardness; and, 2) the relation between pirate self-identification and social 'extraness'.

**Filename(s):** "*correlationAssignmentData1.csv*" & "*correlationAssignmentData2.csv*"

**Structure:** Comma-separated values

### **Variables:**

Participant ID Number (*ID*): 1-500

Propensity to Identify as a Pirate (*Pirate*): 1-9 Likert-type scale

Social Awkwardness (*Awkward*): 1-9 Likert-type scale

Social 'Extraness' (*Extra*): 1-9 Likert-type scale

**Missing Data Code(s):** N/A (no values are missing in this file)

### Your Task:

Use the techniques we covered in today's class (and draw on material from our first class on using *R* to load and clean data) to run two bivariate correlation and regression analyses: One on the relation between pirate self-identification and awkwardness; and another on the relation between pirate self-identification and 'extraness'.

Once you've done this, please answer the following questions about the results. Unless otherwise indicated, you do not need to provide full-sentence answers; just the numbers or image (see q4) the questions request are fine:

1. What is the relation between pirate self-identification and social awkwardness? To answer this question, please include: 1) The covariance between the two (unstandardized) variables; 2) the associated Pearson correlation coefficient (i.e.,  $r$ ); and, 3) the 95% confidence intervals around the Pearson correlation coefficient. **(1 mark)**. Based on your interpretation of the  $r$  confidence intervals, how would you best characterize the relation between pirate self-identification and social awkwardness? **(0.5 marks)**.
2. What is the relation between pirate self-identification and social 'extraness'? To answer this question, please include: 1) The covariance between the two (unstandardized) variables; 2) the associated Pearson correlation coefficient (i.e.,  $r$ ); and, 3) the 95% confidence intervals around the Pearson correlation coefficient. **(1 mark)**. Based on your interpretation of the  $r$  confidence intervals, how would you best characterize the relation between pirate self-identification and social 'extraness'? **(0.5 marks)**.
3. Run a linear regression analysis that uses participants' pirate self-identification scores to predict their social 'extraness' scores, and then report the results. To answer this question, please include: 1) the multiple squared correlation coefficient (i.e.,  $R^2$ ); 2) the standardized slope coefficient (i.e.,  $\beta$ ); and, 3) the 95% confidence intervals around the multiple squared correlation coefficient. **(1 mark)**. Based on your interpretation of the  $R^2$  confidence intervals, how would you best characterize the predictive relation between pirate self-identification and social 'extraness'? **(0.5 marks)**.  
  
*Hint.* You may need to create a regression table to get some of the values for q3.
4. To help illustrate the results for q3, please create an APA-style scatterplot that includes pirate self-identification on the x-axis, and social 'extraness' on the y-axis. Export this scatterplot as either an image or a .pdf file using the techniques we covered in class; and include this plot with your submission. **(0.5 marks)**.

## Part 2:

### Background:

To help the psychologist better understand how correlations and regressions work (and better interpret the results of your analysis), please answer the following conceptual questions in a short answer (i.e., 1-2 sentences) format:

1. Imagine that a participant received a score of  $z = 1.00$  on the pirate self-identification scale. What does this score represent, conceptually? Please be as precise as possible when answering this question. **(1 mark)**.
2. Look back at the regression table that you created in Part 1 (q3). If a participant had a pirate self-identification score of  $z = 2.00$ , what would their predicted 'extraness' score be? Please be specific when discussing the units that these measurements are in; and what this participant's predicted 'extraness' score represents conceptually. **(1 mark)**.
3. In our lecture this week, Scott showed us that the covariance between two variables (i.e., openness and number of jobs) was different from the correlation between those variables. But then, when he standardized both variables and re-ran the analysis, the covariance and correlation between the same two variables suddenly became equal. Why do you think that this happened? **(1 mark)**.

Please provide your full *R* script with your submission and leave comments in your script (i.e., using “#”) explaining what each command you wrote does. **(1 mark for including a full script; 1 mark for including appropriate commenting)**.

**Good Luck!**