PSC 103B

Homework 2

Winter 2024

**Instructions**

Please use R/RStudio to complete the following questions. You will submit your filled-out version of this document **as a PDF** on Canvas. Make sure your PDF looks as expected before submitting. Unless otherwise specified, please **always** **include the code you used to generate your answer for each question, or the steps you used to calculate the answer (when relevant), as well as the final answer and/or relevant output.** It’s a good idea to organize your R code in the R script and save it, so if you need to modify or recalculate one of the questions, that’s easy to do (see the R script provided for tips on how to organize your code). If you copy and paste code or output into this document (screenshots are also acceptable), please format the code using a fixed-width font (e.g., Courier) so it’s easier to read.

You may consult with your classmates while working on the assignment, but **you must do all the work yourself – everything you turn in must be your own code and words**. Academic dishonesty will not be tolerated.

Please submit **a pdf version of this document** with your answers on Canvas by **1:59pm on Tuesday, January 23.**

# Data

For this homework assignment, we will be using a subset of data from the Nerdy Personality Attributes Scale (NPAS). This is a real scale, and if you’re interested, you can take the quiz yourself: <https://openpsychometrics.org/tests/NPAS/>

The original dataset had over 25,000 responses from all over the world. In order to make things a bit simpler, I chose 200 responses randomly from each continent (in order to prevent the responses from being too skewed towards one continent, such as the Americas).

There are a bunch of variables in this dataset, but the ones we’ll be interested in for this assignment are:

* nerdy\_scale: Participant’s average “nerdiness” score from the NPAS (1-5 scale)
* TIPI1: How extraverted or enthusiastic the participant rates themselves (1-7 scale)
* TIPI3: How dependable or self-disciplined the participant rates themselves (1-7 scale)
* nerdy\_selfreport: Do you see yourself as someone who is nerdy? (1-7 scale)

# Question 1

Please read the NPAS dataset (*NPAS.csv)* into R using read.csv(). Create a dataset that only contains the variables listed above (recall: how do you subset columns from a dataframe?) (.5 pt). Show the first 6 rows (.5 pt) and last 6 rows (.5 pt) of the new dataset. Show your code.

# Question 2

Show the correlations among *all* the variables in the new dataset (1pt). Show your code.

# Question 3

Test whether the correlation between the participants’ nerdiness scores on the NPAS (nerdy\_scale) their level of extraversion is significant (1 pt). Report this correlation using APA format (.5 pt). Show your code.

# Question 4

Create a scatterplot to reveal the relationship between participants’ level of self-discipline and their nerdiness score on the NPAS (make sure to display their level of self-discipline on the x-axis and nerdiness score on the y-axis, and include appropriate axis labels and a title) (1 pt). Use a few words to describe the general trend revealed from the plot (1 pt). Show your code.

Note: This plot might look a little weird (e.g., a bunch of straight lines), and that is because the level of self-discipline is an ordinal variable, so it cannot take on all possible values between 1 and 7, only the integers.

# Question 5

Build up a linear model to test if level of self-discipline can significantly predict the participants’ nerdiness score on the NPAS (*nerdy\_scale*) (1 pt). Show your code and the summary output.

**Question 6**

Interpret the intercept (.5 pt) and slope (.5 pt) of your model

**Question 7**

Report and interpret the (unadjusted) R2 value of your model (1 pt)

**Question 8**

Report the results of this linear regression in APA format (.5 pt).

# Question 9

Assuming a person gives themselves a self-discipline rating of 4, what is their expected nerdiness score on the NPAS based on the linear model from Q5? (.5 pt).