Lab 01

PSC-103B

YOUR NAME HERE

2025-01-08

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. Please **include the code you used to generate your answer for each question (when relevant) as well as the final answer and/or relevant output**.

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 **2:00pm on Thursday, January 16th (before lab)**.

1. Enter the dataset into R, so that you have a dataframe object with the variables `VideoGames`, `Aggression`, and `Cognition`. (1 pt)

Video Game (hours)	Aggression Score	Visuospatial Cognition
4	58	79
3	52	20
7	63	82
6	54	81
3	59	79
6	55	79
6	61	81
7	58	83
6	60	80
5	67	83

```
df <- data.frame("VideoGames" = c(4, 3, 7, 6, 3, 6, 6, 7, 6, 5),
"Aggression" = c(58, 52, 63, 54, 59, 55, 61, 58, 60, 67),
"Cognition" = c(79, 20, 82, 81, 79, 79, 81, 83, 80, 83))
df
```

```
##    VideoGames Aggression Cognition
## 1           4         58        79
## 2           3         52        20
## 3           7         63        82
## 4           6         54        81
## 5           3         59        79
```

```
## 6           6         55         79
## 7           6         61         81
## 8           7         58         83
## 9           6         60         80
## 10          5         67         83
```

2. Find the mean and standard deviation of each variable. (2 pts)

```
lapply(df, mean)
```

```
## $VideoGames
## [1] 5.3
##
## $Aggression
## [1] 58.7
##
## $Cognition
## [1] 74.7
```

```
lapply(df, sd)
```

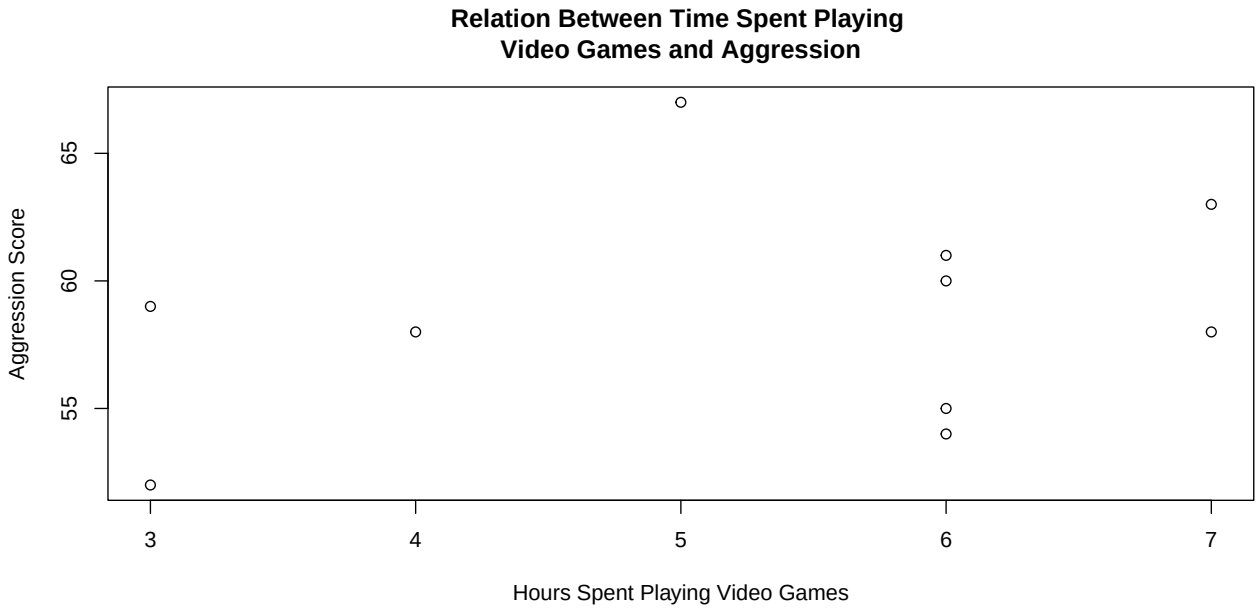
```
## $VideoGames
## [1] 1.494434
##
## $Aggression
## [1] 4.423423
##
## $Cognition
## [1] 19.28183
```

3. What do you think is the most appropriate measure of central tendency for the variable "Cognition"? Why? (1 pt)

4. How are variance and standard deviation related? Why might we prefer to use the standard deviation? (1 pt)

5. Plot `VideoGames` and `Aggression` as a scatterplot where the hours of each participant spending on `VideoGames` display on x-axis and their `Aggression` scores displays on y-axis. Make sure your axes are appropriately labeled and include a title (put whatever you think make sense). (1 pt)

```
plot(x = df$VideoGames, y = df$Aggression,
     xlab = "Hours Spent Playing Video Games",
     ylab = "Aggression Score",
     main = "Relation Between Time Spent Playing \nVideo Games and Aggression")
```



6. Calculate the covariance between `VideoGames` and `Aggression`. What does this tell you about the direction of the relation? Can this tell you anything about the strength of the relation? (2 pt)

```
cov(df$VideoGames, df$Aggression)
```

```
## [1] 1.766667
```

7. Calculate the correlation between VideoGames and Aggression. What does this correlation tell you about their relation (i.e., direction and strength)? (2 pt)

```
cor(df$VideoGames, df$Aggression)
```

```
## [1] 0.267251
```