PSC 103B - Lab 1 Assignment

Answer Key

Question 1

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

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

```
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))
```

Question 2

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

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

```
$VideoGames
[1] 5.3

$Aggression
[1] 58.7

$Cognition
[1] 74.7
```

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

```
$VideoGames
[1] 1.494434

$Aggression
[1] 4.423423

$Cognition
[1] 19.28183
```

Question 3

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

`Median, due to presence of an outlier value (20)`

Question 4

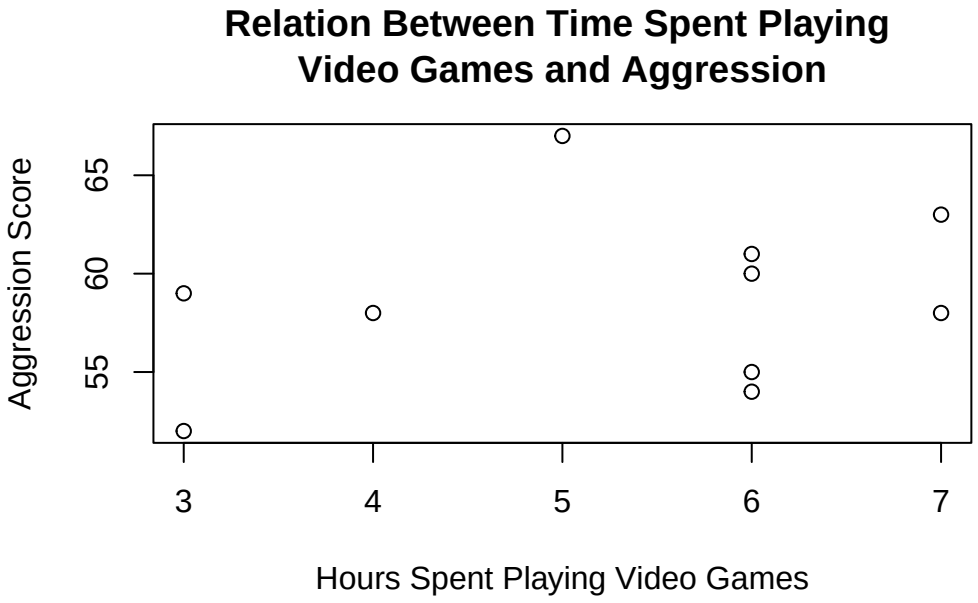
How are variance and standard deviation related? Why might we prefer to use the standard deviation? (1 pt)

`Standard deviation is the square root of variance. We might prefer to use standard deviation because its units match the units of our variable, making it easier to interpret (variance has units that are the squared units of our variable)`

Question 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). Show your code. (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")
```



Question 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? Show your code. (2 pt)

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

```
[1] 1.766667
```

This covariance tells us that there is a positive relation between amount of time spent playing video games and aggression scores - the more time people spent playing video games, the higher their aggression score was. We cannot use the covariance to tell us anything about the strength of this relation because the scale of the covariance is arbitrary, and depends on the scale of our variables.

Question 7

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