Bivariate Correlation in SPSS

**Background:** Bivariate Correlation tests whether the relationship between two variables is linear (as one variable increases, the other also increases or as one variable increases, the other variable decreases).

**Pearson Correlation**
This type of bivariate correlation test requires that the variables both have a scale level of measurement (there is a rank order for the values and the distance in between the values can be determined).

1) **Formulate a hypothesis about your variables**
What do you think is the relationship between the two variables? In this example, we are going to test our hypothesis that as the number of instruction sessions increase (represented by a variable named `number_of_sessions` in the dataset), students’ test scores (represented by a variable named `test_score` in the dataset) will also increase.

2) **Select the test**
Click on the “Analyze” tab at the top of the page ⇒ Select “Correlate” from the list ⇒ Select “Bivariate”

3) **Select your variables for the test**
To select your variables, click on the variable name in the left hand column so it is highlighted and then click the arrow in between the two columns to move the variable to the right column.

Note that SPSS automatically selects the Pearson Correlation statistic for you

Once both of your variables have been moved over, you can click “OK” to run the test.
4) Analyze the results for significance

<table>
<thead>
<tr>
<th>Correlations</th>
<th>number_of_sessions</th>
<th>test_score</th>
</tr>
</thead>
<tbody>
<tr>
<td>number_of_sessions</td>
<td>Pearson Correlation</td>
<td>.806</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td><strong>.000</strong></td>
</tr>
<tr>
<td>N</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

Look at one of the numbers next to “Sig.” (both should be the same number)

In Communication, it is convention that if this value is less than .05, then the correlation is considered to be significant (meaning that the researcher can be 95% confident that the relationship between these two variables is not due to chance).

In this example, since the Sig value is .000 (which is less than .05), we can say that there is a significant correlation between the number of sessions attended and test score.

5) Analyze the results for direction

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Next look at one of the values for the Pearson Correlation (both should be the same number)

The values of the Pearson Correlation range from -1 to +1 with negative numbers representing a negative correlation (as one variable increases, the other variable decreases) and positive numbers representing a positive correlation (as one variable increases, the other also increases).

The closer the value is to -1 or +1, the stronger the association is between the variables.

In this example, we hypothesized a positive relationship between number of sessions and test score. Since the Pearson Correlation value is .806 and it is significant, we can say that the data support our hypothesis.

6) Write up the results in APA style

In text

When reporting the results of a correlation within the text of a paper, first write the \( r \) value (correlation value) with the degrees of freedom (that would be \( N-2 \) where \( N \) represents the sample size) in parentheses and then write the significance level. Note that the exact significance level should be reported unless it is less than .001 (that would be written \( p < .01 \)). Also note that most statistics should be rounded to two decimal places.

For example: Number of sessions attended and test scores were strongly correlated, \( r(48) = .81, p < .01. \)

Table

If you are reporting a number of correlations, you may want to represent them in a table. When using a table, you should still include sentences describing your findings and reference the table.

For example: Number of sessions attended and test scores were strongly correlated as shown in Table 1.

To see an example of a correlation table in APA format see the first example at http://www.muhlenberg.edu/depts/psychology/ExampleTables.pdf