**Correlations**

The parametric correlation is called Pearson’s correlation.

The one used most often is ‘Bivariate correlation’ (also known as product-moment) which describes the association between two or more variables.

**Bivariate Correlation**

Preparation:

Before you start, make sure that your measured variables are scale variables. You may want to examine their association before the test in scatter plots. To do that go to:

* Graphs – Legacy dialogs – Scatter/Dot
* Select ‘Simple Scatter’ and click ‘Define’
* Move one of your scale variables to the Y-axis box and one to the X-axis box (in any order).
* Click ok

A scatter plot will pop-up for your chosen variables. If you have more variables to examine you need to repeat this process (but not really necessary if you went through the data screening stage).

If you double click on the scatter plot another window will pop-up and in that window click this symbol: Chart

Description automatically generated

Then you will get one of these two results showing you a potential positive or negative correlation:

The line indicates the nature of the correlation.

Positive correlation:

Chart, scatter chart

Description automatically generated

Negative correlation:

Chart, scatter chart

Description automatically generated

Now to the actual test…

Bivariate correlation in SPSS:

1. Analyse – Correlate – Bivariate
2. Pearson
3. Two-tailed
4. Flag significant correlations
5. Move all the variables you want to test to the ‘Variables’ box
6. Under ‘Options’ check the box for ‘Means and standard deviations’
7. Click ok

Based on how many variables you had, a table (or a complicated one) will pop-up.

Inside the table:

* The ‘Pearson Correlation’ for each variable displays the correlation coefficient (r value) with the associated variable
* The ‘Sig.’ shows the significance of their relationship

For example:

Table

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1. The r value for the association between M\_age with M\_Partners is positive (0.265, a positive correlation shown by the positive value) and it’s a significant correlation p=0.009.
2. The r value for the association between M\_age with M\_attract is negative (-0.075, a negative correlation shown by the negative value) and it’s not a significant correlation p=0.466.
3. Etc

We can now report our findings in scatterplots:

1. Graphs – Chart builder – ok
2. Under ‘Choose from’ double click ‘Scatter/Dot’
3. Move your independent variable to the x-axis and your dependent to the y-axis and click ok
4. Double click on the scatter plot produced and click this symbol Chart

   Description automatically generated and close.
5. Press the ‘x’ button

Here is your scatter plot showing you a positive association between the variables:

Chart, scatter chart

Description automatically generated

Interpretation of results:

The correlation coefficient (r) ranges between -1 and +1. The further away the r-value is from zero, the stronger the direction of the correlation is.

r=-1 perfect negative correlation

r=+1 perfect positive correlation

r=0 no correlation

The significance of the correlation is displayed by the p-value.

Reporting the results:

* Italicise r and p. Omit the leading zero from r.
* Include number of cases (displayed by the ‘N’ value in the table above) and the p-value

For example:

Pearson’s *r*(N)= r-value, *p*-value

M\_age and M\_partners were positively correlated, Pearson’s *r*(96) = .265, *p*=.009

**Partial Correlations**

Like bivariate correlations, partial correlations measure the relationship between two or more continues variables but it also controls the effect of one or more independent variables (also known as covariates or control variables).

For example, you could use partial correlation to understand whether there is a linear relationship between 10,000 m running performance and VO2max (a marker of aerobic fitness), whilst controlling for wind speed.

You basically do this when you want to ‘isolate’ the effect of an independent variable on the dependent variable.

Partial correlations in SPSS:

1. Analyze – Correlate – Partial
2. Move the variables that you are testing to the ‘Variables’ box and the ones you want to control to the ‘Controlling for’ box
3. Under options: check the boxes for ‘Means and standard deviations’ and ‘Zero-order correlations’
4. Click continue and ok

Look at the ‘Correlation’ table and its pretty easy to interprete.

Example (controlling for age):

Table

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Example report:

Text

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