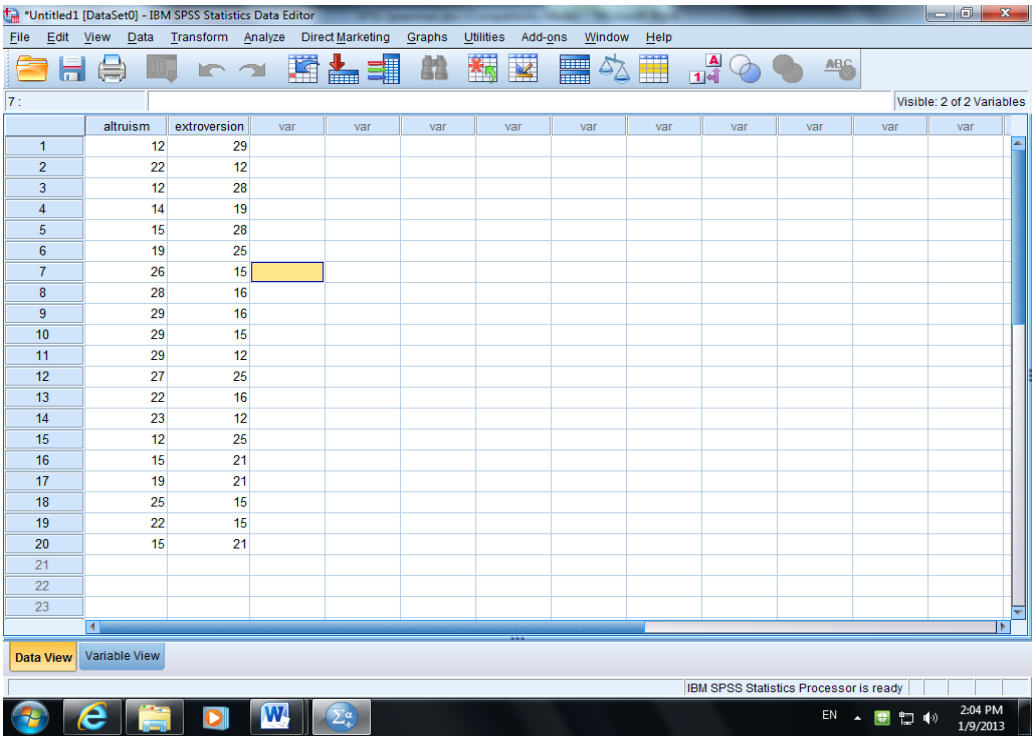
Pearson Correlation

In this workshop we will use the Pearson correlation to analyse the results of the Extraversion and Altruism study. The data in the following example are those from the lecture looking at the relation between rhyme awareness and reading in children. You just need to substitute these with the data you collected in class.

<u>Enter the data</u>

This is pretty straightforward - here we have two scores from each student - an extraversion and altruism score, so these can be inputted in two columns in the usual manner

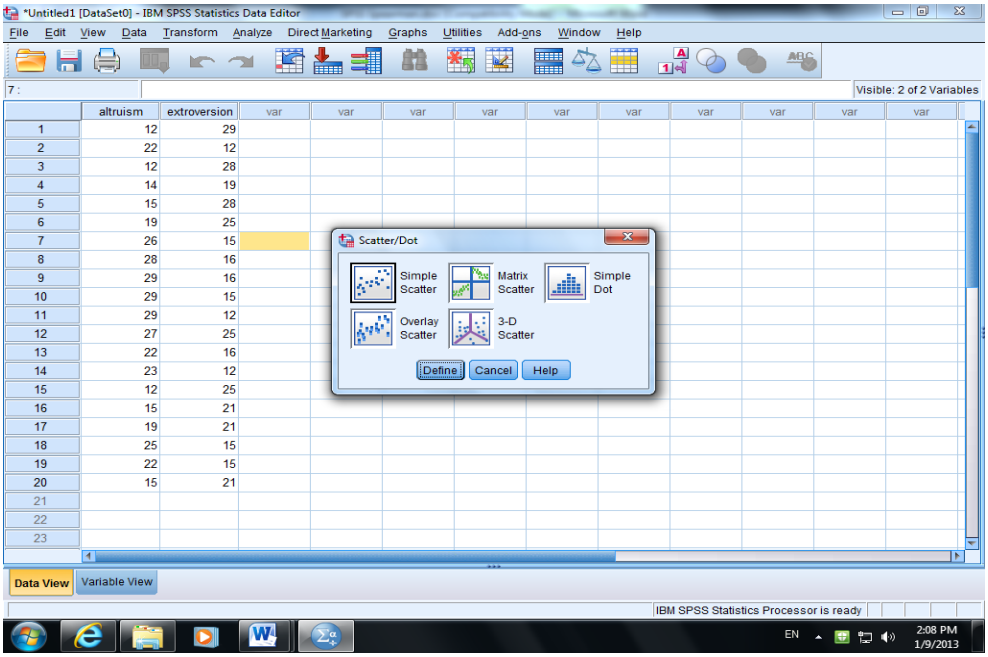


	altruism	extroversion
1	12	29
2	22	12
3	12	28
4	14	19
5	15	28
6	19	25
7	26	15
8	28	16
9	29	16
10	29	15
11	29	12
12	27	25
13	22	16
14	23	12
15	12	25
16	15	21
17	19	21
18	25	15
19	22	15
20	15	21

In your study, you will also have two scores from each participant - an *extraversion* score and an *altruism* score which can be represented in a similar manner (with appropriate variable names).

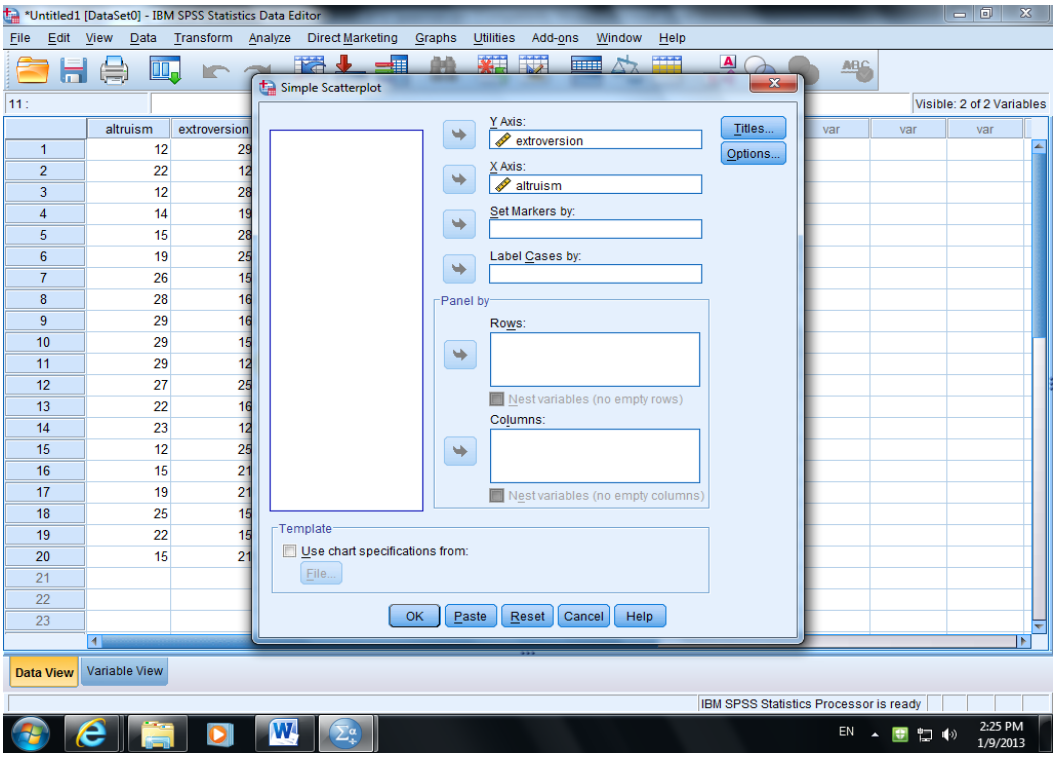
<u>Obtain a scatterplot.</u>

Before going on to calculate a correlation coefficient, it would be useful to get a visual representation of the relationship between the two variables. To obtain this, first go to the **Graphs** menu, **Legacy dialogs** and from this select **Scatter/dot** , which will lead to the following dialogue box:

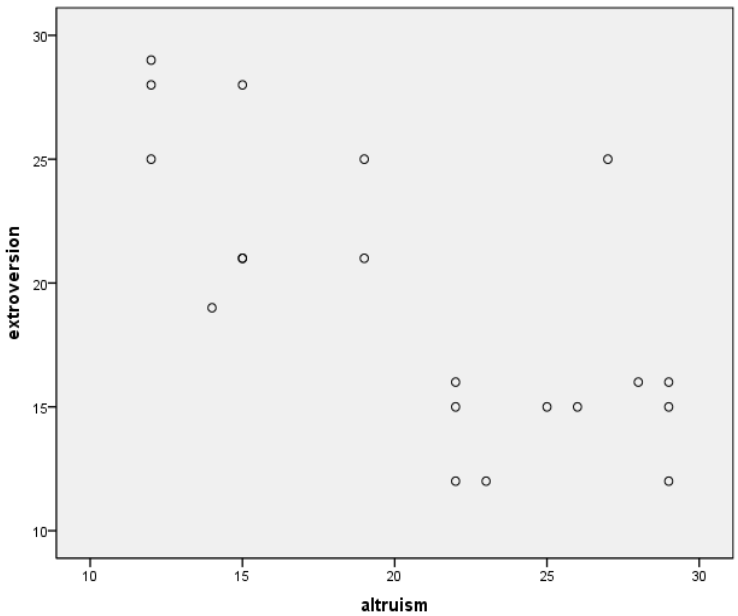


Indicate what type of scatterplot you want here. Most of the time, you will just want a **Simple** scatterplot so click the mouse over this option, and then click **Define** to proceed to the next step:

Just decide which of the two variables will be plotted along the horizontal (X) axis, select it with the mouse and use the arrow button to move it to the relevant box. Do the same with the second variable which will be plotted along the vertical (Y) axis. I will select the rhyme score to go along the *x-axis* and the reading score to go along the *y-axis*, so my dialogue box will look as follows:

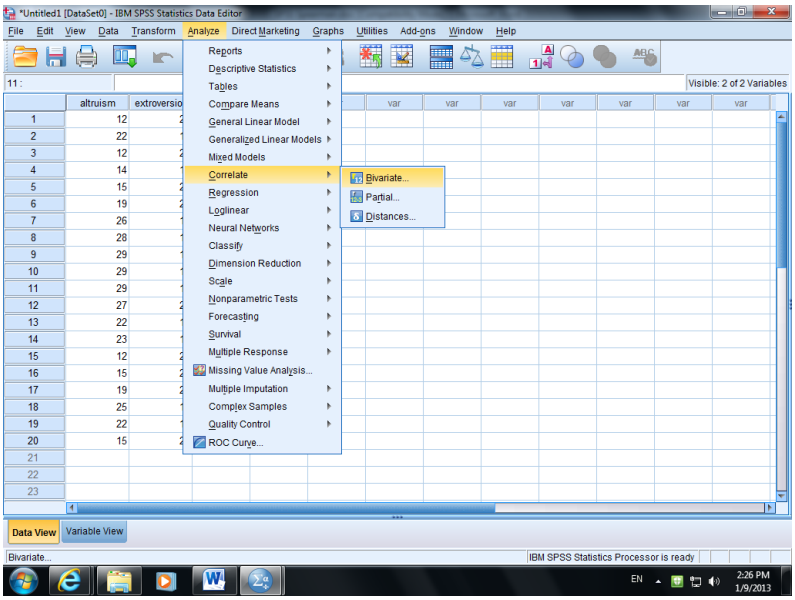


When you have done this, simply click **OK**, and SPSS will produce the scatterplot for you:



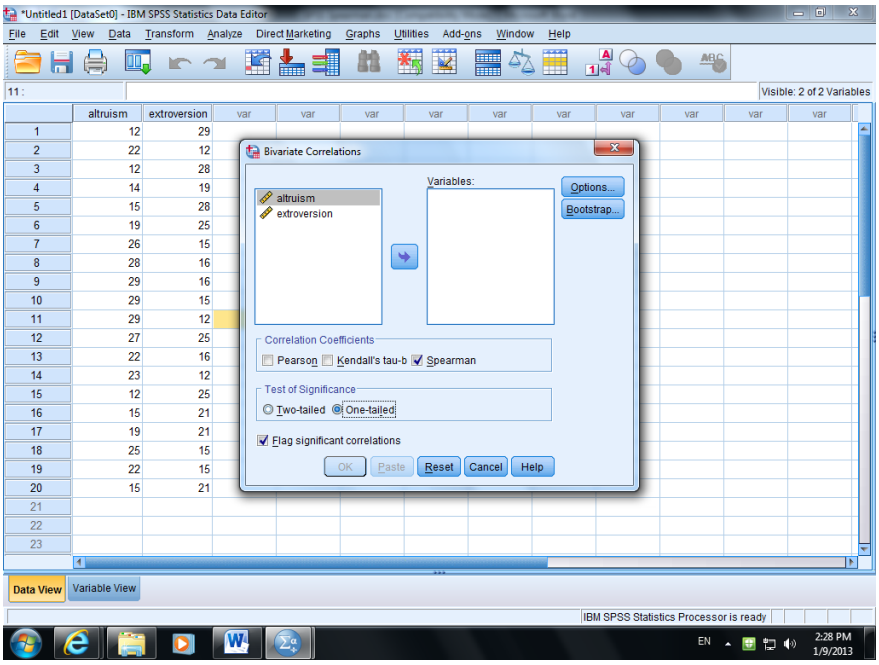
The above example indicates a negative correlation between the two sets of scores - high extroversion scores are associated with low altruism scores. What does the pattern in your scatterplot indicate? Remember, if the hypothesis is to be supported, you expect a negative correlation between extraversion and altruism (high extraversion scores associated with low altruism scores).

Obtain Pearson correlation.
From the **Analyse** menu select correlate, and from the sub-menu, select **Bivariate…**



This will produce the following dialogue box:

Simply transfer the variables in your data file into the variables box by selecting them and using the arrow button. By default SPSS has chosen the **Pearson** correlation coefficient**.** As the prediction is **one-tailed** (a positive correlation is predicted between reading and rhyming scores, you need to select this option. Once you have done this, the **OK** button will become active, and click this to get SPSS to calculate the correlation coefficient:



Correlations

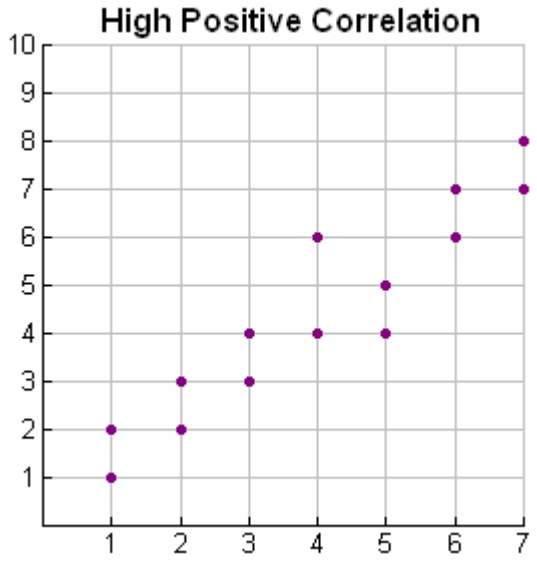
		altruism	extroversion
altruism	Pearson Correlation	1	-.711**
	Sig. (1-tailed)		.000
	N	20	20
extroversion	Pearson Correlation	-.711**	1
	Sig. (1-tailed)	.000	
	N	20	20

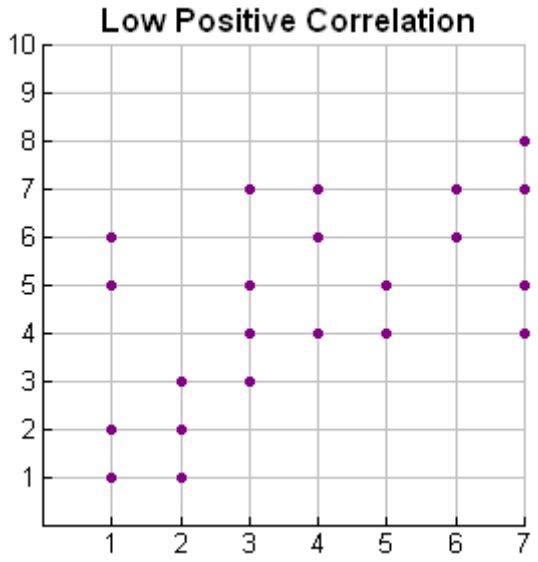
**. Correlation is significant at the 0.01 level (1-tailed).

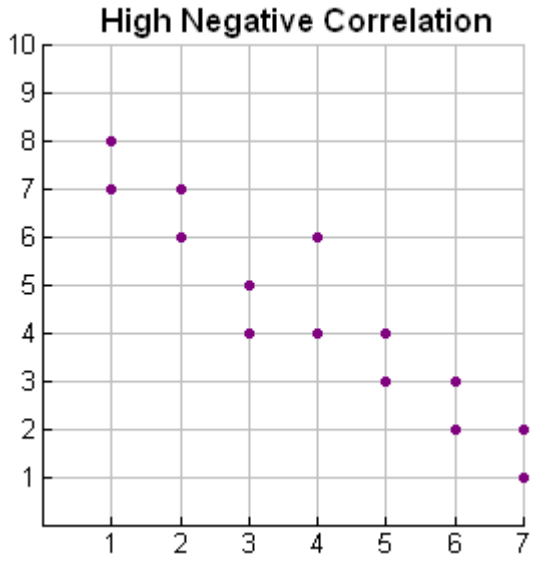
SPSS will produce the correlation coefficient, which in this case is -.71 (to 2 decimal places), indicating a strong negative correlation. Below this is the Sig. (1-tailed) value which is the exact probability of obtaining your result by chance alone. As the value here is less than .05, we can conclude that there is a significant correlation between the two variables.

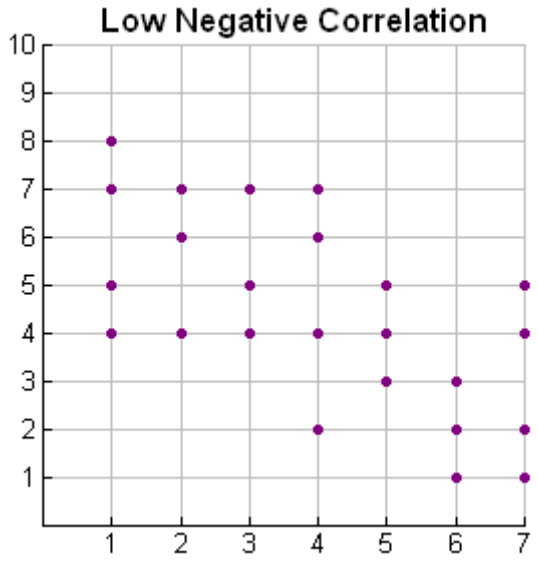
What do the results indicate about the results of the extraversion/altruism correlation? Is the correlation negative as predicted? Is it statistically significant?

There was a significant negative correlation between extraversion and altruism (r= -.71, n=20, p<0.05, one-tailed).






High Negative Correlation
10
9
8
7
6
5
4
3
2
1
1
2
3
4
5
6
7


Low Negative Correlation
10
9
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1
1
2
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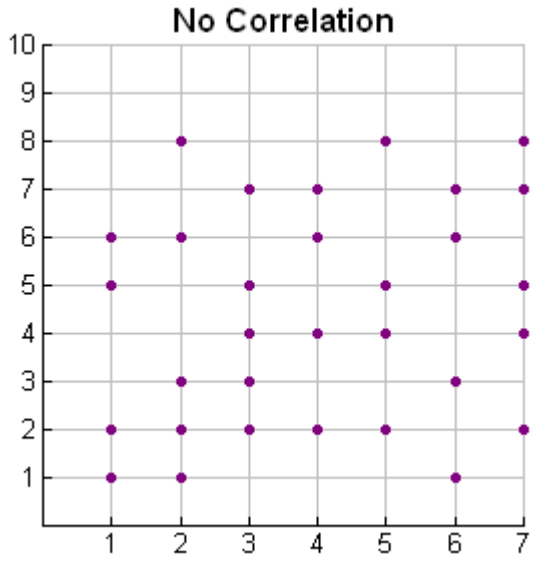
4
5
6
7


No Correlation
10
9
8
7
6
5
4
3
2
1
1
2
3
4
5
6
7