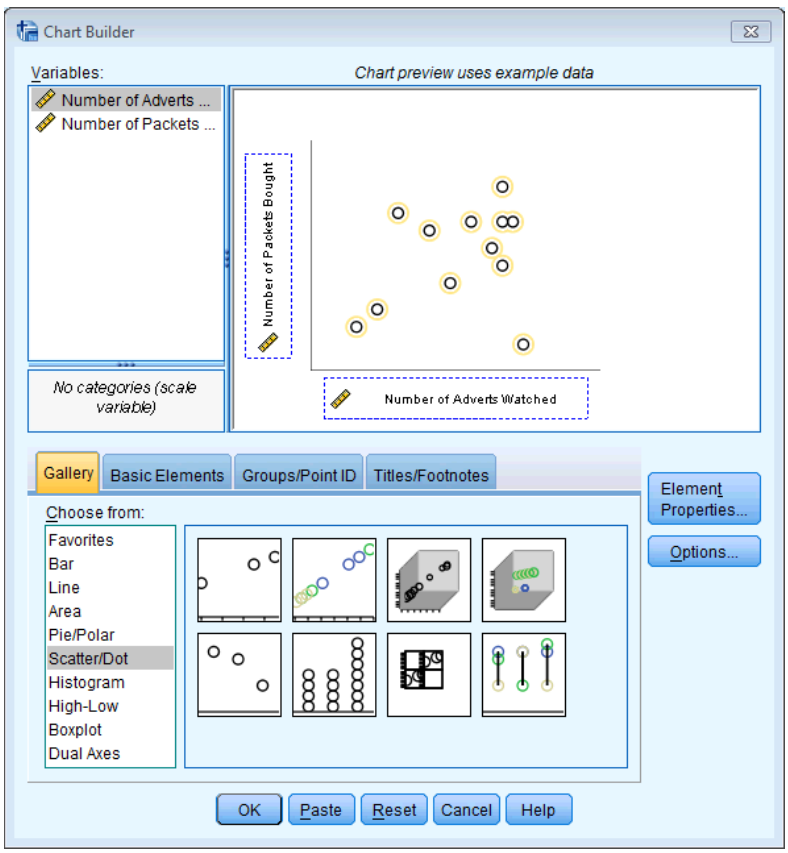
Chapter 7: Correlation

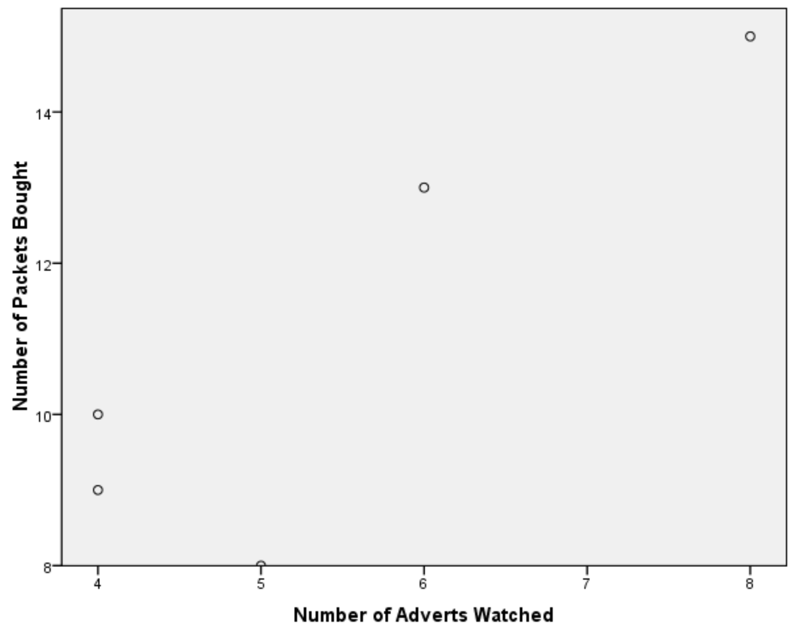
Self-test answers

SELF-TEST Enter the advert data and use the chart editor to produce a scatterplot (number of packets bought on the *y*-axis, and adverts watched on the *x*-axis) of the data.

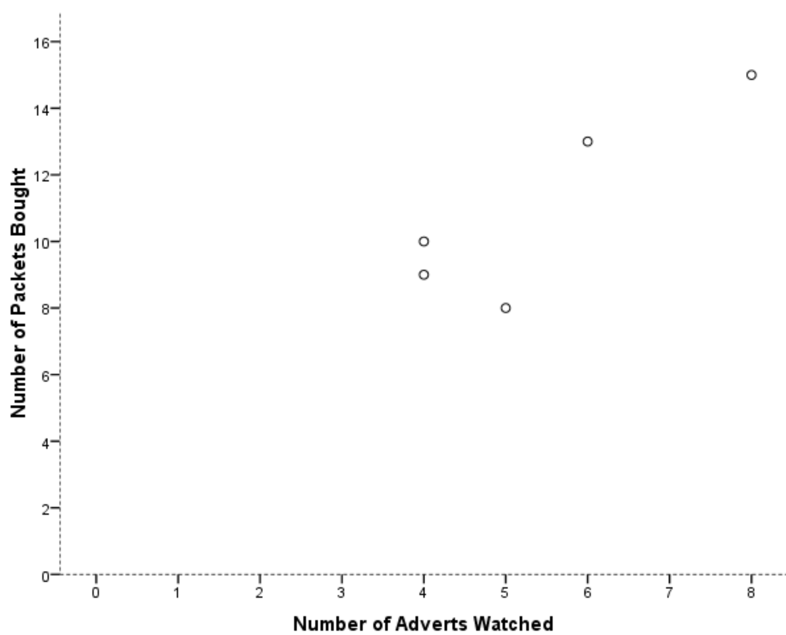
The finished Chart Builder should look like this:



My scatterplot came out like this:



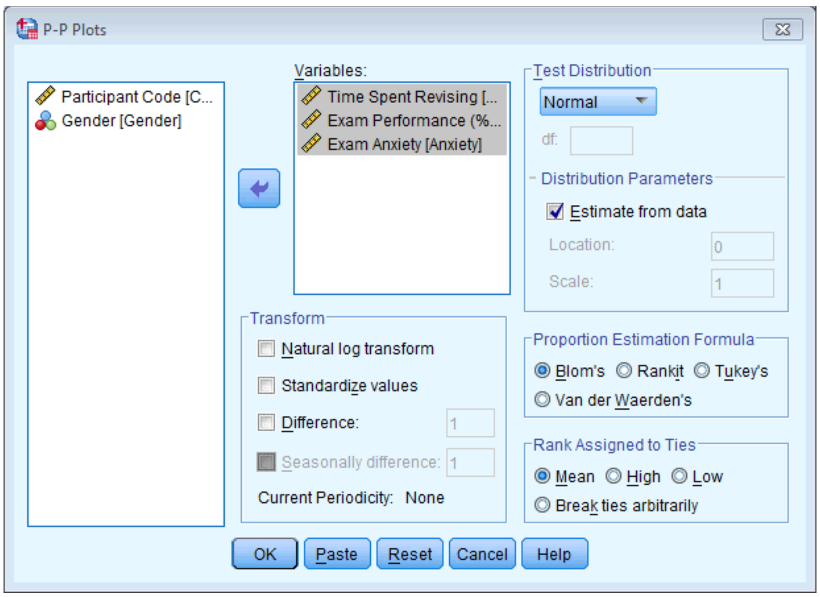
This graph looks stupid because SPSS has not scaled the axes from 0. If yours looks like this too, then, as an additional task, edit it so that the axes both start at 0. While you're at it, why not make it look Tufte style. Mine ended up like this:



Ah, that's better.

SELF-TEST create P-P plots of the variables **Revise**, **Exam** and **Anxiety**.

To get a P-P plot use Analyze Descriptive Statistics ▸ P-P Plots... to access the dialog box below. There's not a lot to say about this dialog box really because the default options will compare any variables selected to a normal distribution, which is what we want (although note that there is a drop-down list of different distributions against which you could compare your data). Select the three variables **Revise**, **Exam and Anxiety** in the variable list and transfer them to the box labelled *Variables* by clicking on the arrow button. Click on OK to draw the graphs.



SELF-TEST Did creativity cause success in the World's Biggest Liar Competition?

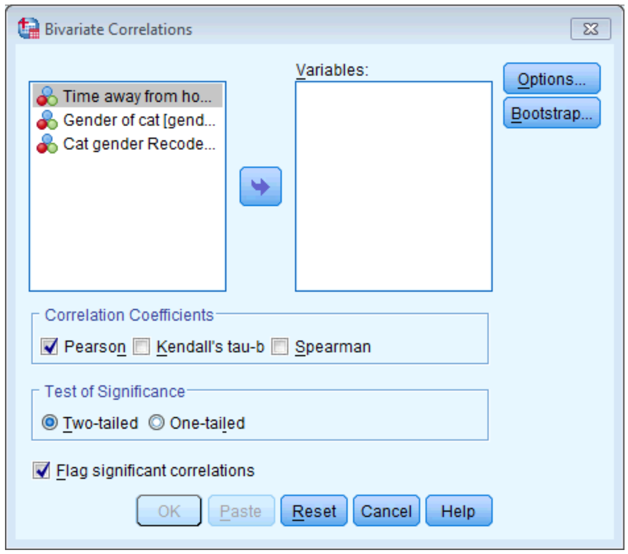
No it didn't. Well, it might have done, but we can't tell this from a correlation coefficient.

SELF-TEST Conduct a Pearson correlation analysis of the advert data from the beginning of the chapter.

See the additional material section and Oliver Twisted's information on 'Options' for an answer to this task.

SELF-TEST Carry out a Pearson correlation on these data.

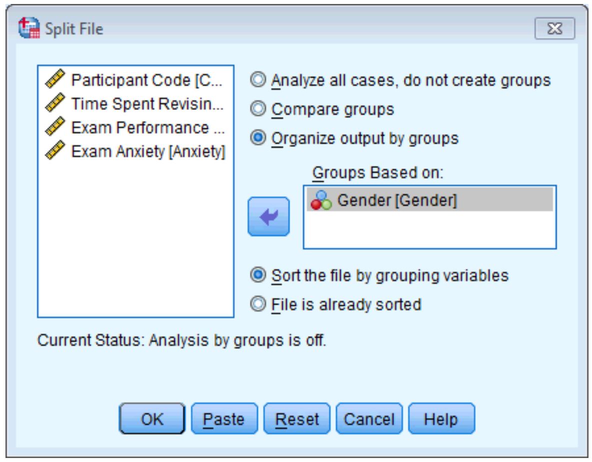
Select Analyze Correlate ▸ Bivariate... to get this dialog box:



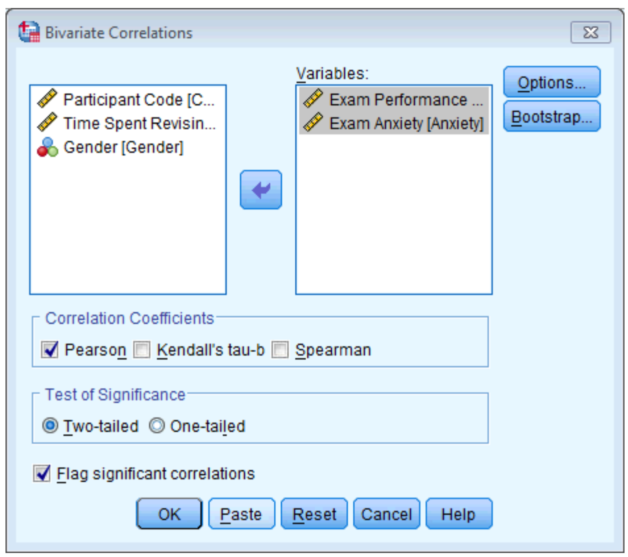
Select the variables **Time away from home [time]** and **Gender of cat [gender]** and drag them to the variables list (or click on ➜). Click on OK to run the analysis. Click on Bootstrap... to get some robust confidence intervals and select ☑ Perform bootstrapping to activate bootstrapping for the correlation coefficient, and to get a 95% confidence interval click ◉ Percentile or ◉ Bias corrected accelerated (BCa). For this analysis, let's ask for a bias corrected (BCa) confidence interval. The output is shown in the book chapter.

SELF-TEST Use the *split file* command to compute the correlation coefficient between exam anxiety and exam performance in men and women.

To split the file, select Data Split File... or click on ▦. In the resulting dialog box select the option *Organize output by groups*. Once this option is selected, the *Groups Based on* box will activate. Select the variable containing the group codes by which you wish to repeat the analysis (in this example select **Gender**), and drag it to the box or click on ➜. The completed dialog box should look like this:



To get the correlation coefficients select Analyze Correlate ▸ Bivariate... to get the main dialog box. Select the variables **Exam Performance [exam]** and **Exam Anxiety [anxiety]** and drag them to the variables list (or click on ➡). Click on OK to run the analysis. The completed dialog box will look like this:



The output for males will look like this:

Correlations[a]

		Exam Performance (%)	Exam Anxiety
Exam Performance (%)	Pearson Correlation	1.000	-.506**
	Sig. (2-tailed)		.000
	N	52.000	52
Exam Anxiety	Pearson Correlation	-.506**	1.000
	Sig. (2-tailed)	.000	
	N	52	52.000

**. Correlation is significant at the 0.01 level (2-tailed).

a. Gender = Male

For females, the output is as follows:

Correlations[a]

		Exam Performance (%)	Exam Anxiety
Exam Performance (%)	Pearson Correlation	1.000	-.381**
	Sig. (2-tailed)		.006
	N	51.000	51
Exam Anxiety	Pearson Correlation	-.381**	1.000
	Sig. (2-tailed)	.006	
	N	51	51.000

**. Correlation is significant at the 0.01 level (2-tailed).

a. Gender = Female

The book chapter has some interpretation of these findings and suggestions for how to compare the coefficients for males and females.