Instructions for carrying out statistical procedures and tests using Minitab

These instructions are closely linked to the author's book:

Essential Statistics for the Pharmaceutical Sciences
John Wiley & Sons Ltd **http://eu.wiley.com**
2007
ISBN: 978-0-470-03468-2

For all references to chapters or tables, see the above book.

Using Minitab to obtain a Spearman correlation coefficient

Using Minitab to perform a Spearman correlation coefficient

Example: Table 17.9 Educational levels and knowledge scores after reading revised information leaflet

The procedure is not directly implemented in Minitab, but is available indirectly. Using the data in Table 17.9, proceed in two stages - first convert the Education and Knowledge scores into rankings and then perform Pearson correlation on the rankings. As rankings are being used, the overall procedure will constitute Spearman correlation.

Minitab can be used to generate the rankings. Label two columns to receive the rankings (eg RankEduc and RankKnow for the ranks of the Education and Knowledge scores respectively). Then starting from 'Data' on the menu bar, follow the menus:

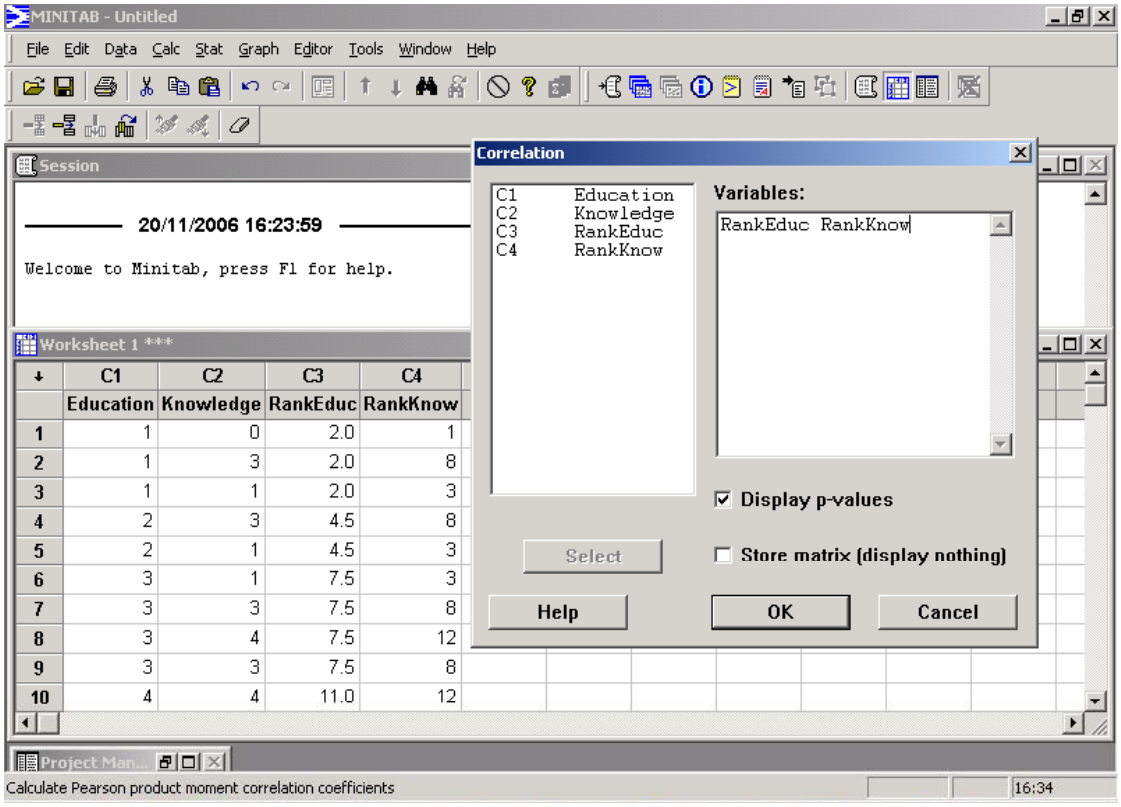
Data / Rank …

First, produce the rankings for the Education scores. Enter the name of the column containing data that is to be ranked ('Education') into the box labelled 'Rank data in:' and the name of the column to receive the ranks ('RankEduc') into the 'Store ranks in:' box. When you click OK, the ranking will be generated. Then do the same for the Knowledge scores.

Call up a correlation coefficient

Stat / Basic Statistics / Correlation…

Indicate the two columns containing the ranks. The screen should appear as on next page:



	C1	C2	C3	C4
	Education	Knowledge	RankEduc	RankKnow
1	1	0	2.0	1
2	1	3	2.0	8
3	1	1	2.0	3
4	2	3	4.5	8
5	2	1	4.5	3
6	3	1	7.5	3
7	3	3	7.5	8
8	3	4	7.5	12
9	3	3	7.5	8
10	4	4	11.0	12

The output is:

Correlations: RankEduc, RankKnow

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Pearson correlation of RankEduc and RankKnow = 0.748
P-Value = 0.000
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Minitab is not aware that the data you fed it, is actually a series of rankings so the output says ‘Pearson correlation’ but this is now in fact Spearman correlation.

The Spearman correlation coefficient is +0.748 and the result is clearly significant (P should be reported as <0.001).