



## SPSS Tip 18.1

### Correlation or covariance matrix? ■■■■

This far into the book I hope you're happy with the idea that the variance-covariance matrix and correlation matrix are different versions of the same thing. Despite this, generally the results differ depending on which matrix you analyse. Analysing the correlation matrix is a useful default method because it takes the standardized form of the matrix; therefore, if variables have been measured using different scales this will not affect the solution. In this example, all variables have been measured using the same measurement scale (a five-point Likert scale), but often you will want to analyse variables that use different measurement scales. Analysing the correlation matrix ensures that differences in measurement scales are accounted for. In addition, even variables measured using the same scale can have very different variances and this creates problems for principal component analysis. Using the correlation matrix eliminates this problem.

Having said that, there are statistical reasons for preferring to analyse the covariance matrix: correlation coefficients are not sensitive to variations in the dispersion of data, whereas the covariance is and so it produces better-defined factor structures (Tinsley & Tinsley, 1987). However, the covariance matrix should be analysed only when your variables are commensurable.