

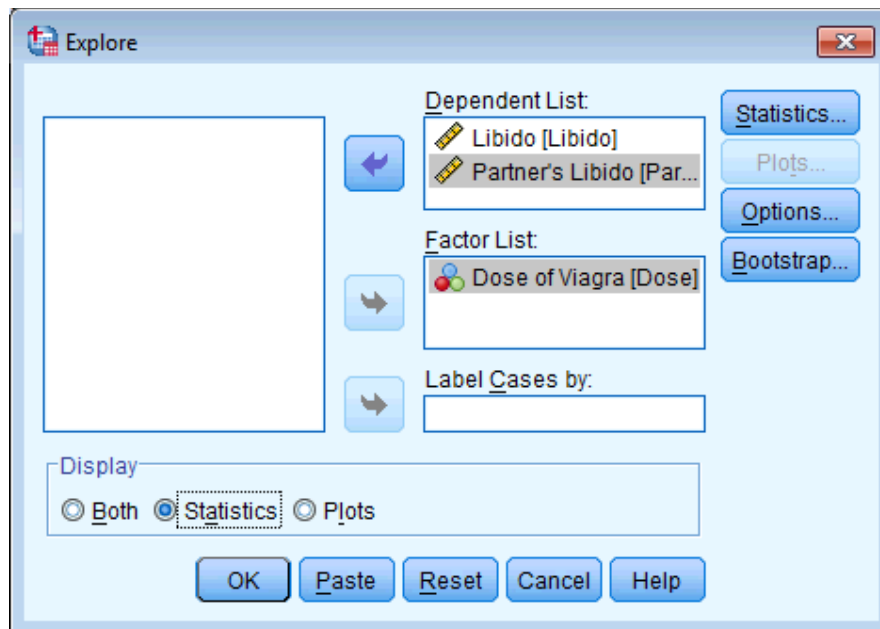
Chapter 12: Analysis of covariance, ANCOVA

Self-test answers

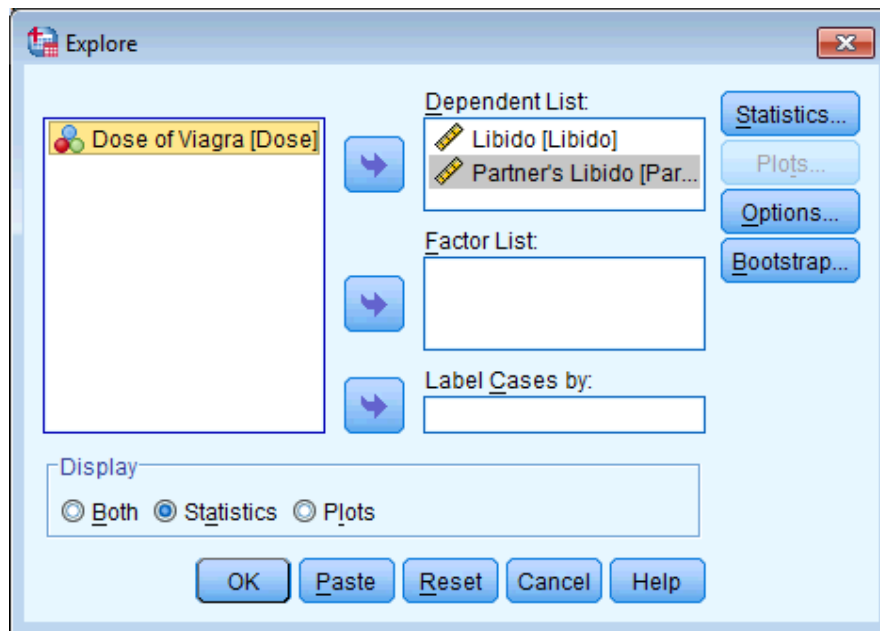


SELF-TEST Use SPSS to find out the means and standard deviations of both the participant's libido and that of their partner in total, and within the three groups.

The easiest way to get these values is to select **Analyze** > **Descriptive Statistics** > **Explore...** because this allows us to split the analysis by group. (Another way would be to split the file and then run the *descriptives* command. We could also select **Analyze** > **Compare Means** > **M Means...**; although we don't use this command in the book, it is fairly self-evident how to use it.) Complete the dialog box as below and you'll get a beautiful(?) table of descriptive statistics for both variables, split by each group.



To get the overall mean for the two variables simply remove **Dose** from the *Factor list* and run the analysis again:




SELF-TEST Add two dummy variables to the file **ViagraCovariate.sav** that compare the low dose to the placebo (**Low_Placebo**) and the high dose to the placebo (**High_Placebo**). If you get stuck then download **ViagraCovariateDummy.sav**.




SELF-TEST Run a hierarchical regression analysis with **Libido** as the outcome. In the first block enter partner's libido (**Partner_Libido**) as a predictor, and then in a second block enter both dummy variables (forced entry).

To get to the main *regression* dialog box select **Analyze Regression** > **Linear...** Select the outcome variable (**Libido**) and then drag it to the box labelled *Dependent* or click on . To specify the predictor variable for the first block we select **Partner_Libido** and drag it to the box labelled *Independent(s)* or click on . Underneath the *Independent(s)* box, there is a drop-down menu for specifying the *Method* of regression. The default option is forced entry, and this is the option we want.

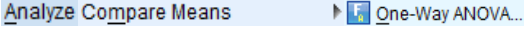
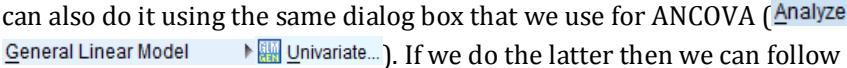
Having specified the first block in the hierarchy, we need to move on to the second. To tell the computer that you want to specify a new block of predictors you must click on **Next**. This process clears the *Independent(s)* box so that you can enter the new predictors (you should also note that above this box it now reads *Block 2 of 2*, indicating that you are in the second block of the two that you have so far specified). The second block must contain both of the dummy variables, so you should click on **Low_Placebo** and **High_Placebo** in the variables list and drag them to the *Independent(s)* box by clicking on

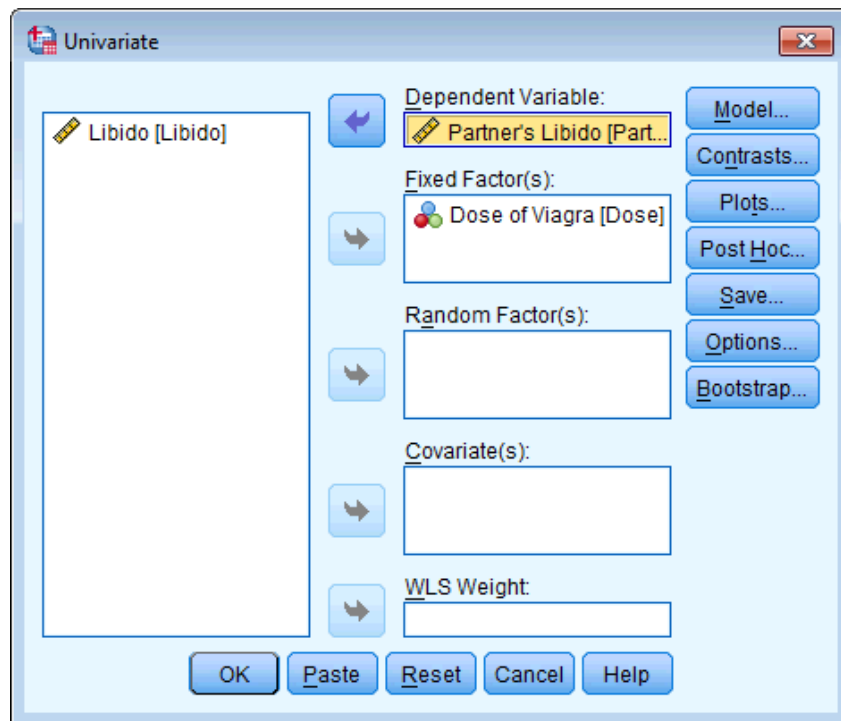
 We also want to leave the method of regression set to *Enter*. The dialog boxes for the two stages in the hierarchy are shown below:

We just want to run a basic analysis, so we can leave all of the default options as they are and click on .



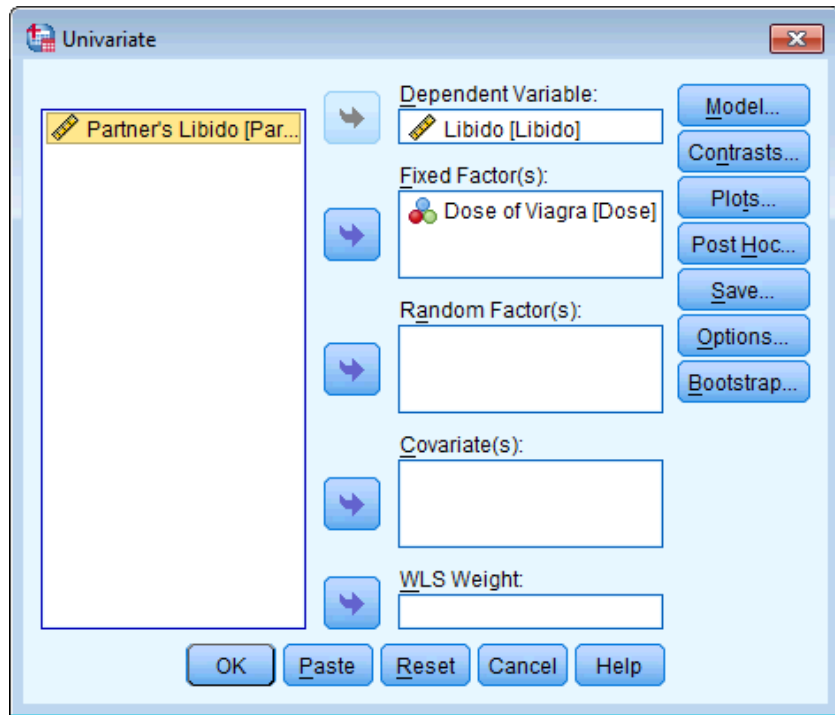
SELF-TEST Conduct an ANOVA to test whether partner's libido (our covariate) is independent of the dose of Viagra (our independent variable).

We can do this analysis by selecting , but we can also do it using the same dialog box that we use for ANCOVA (). If we do the latter then we can follow the example in the chapter but simply exclude the covariate. Therefore, the completed dialog box would look like this:



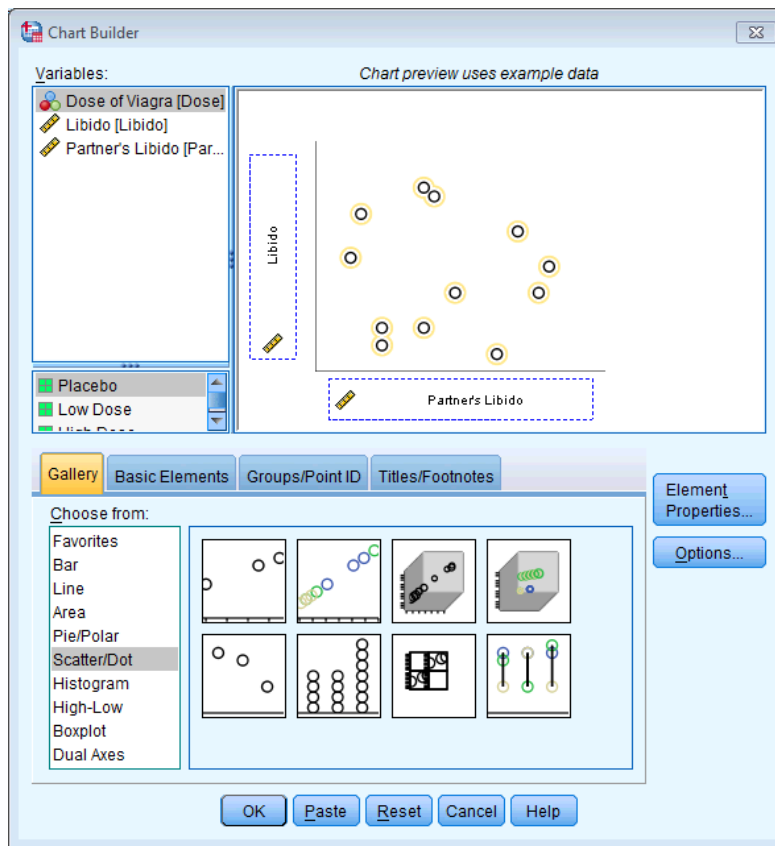
SELF-TEST Run a one-way ANOVA to see whether the three groups differ in their levels of libido.

We can do this analysis by selecting **Analyze > Compare Means > One-Way ANOVA...**, but we can also do it using the same dialog box that we use for ANCOVA (**Analyze > General Linear Model > Univariate...**). If we do the latter then we can follow the example in the chapter but simply exclude the covariate. Therefore, the completed dialog box would look like this:



SELF-TEST Produce a scatterplot of partner's libido (horizontal axis) against libido (vertical axis).

DISCOVERING STATISTICS USING SPSS



SELF-TEST Rerun the ANCOVA but select Estimates of effect size. Do the values of partial eta squared match the ones we have just calculated?

You should get the following output:

Tests of Between-Subjects Effects

Dependent Variable: Libido

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	31.920 ^a	3	10.640	3.500	.030	.288
Intercept	76.069	1	76.069	25.020	.000	.490
Partner_Libido	15.076	1	15.076	4.959	.035	.160
Dose	25.185	2	12.593	4.142	.027	.242
Error	79.047	26	3.040			
Total	683.000	30				
Corrected Total	110.967	29				

a. R Squared = .288 (Adjusted R Squared = .205)

This table is the same as the main ANCOVA that we did in the chapter, except that there is an extra column at the end with the values of partial eta squared. For **Dose**, partial eta squared is .24, and for **Partner_Libido** it is .16, both of which are the same as we calculated by hand in the chapter.