

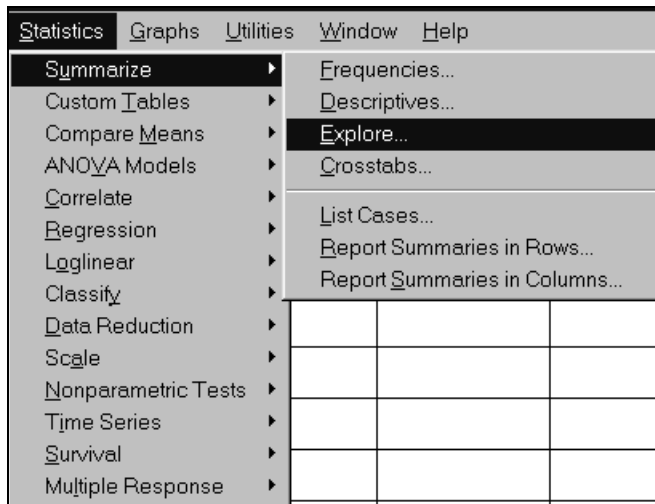
FAILURE TIMES OF BEARINGS

9. Displaying and Describing the Data with SPSS

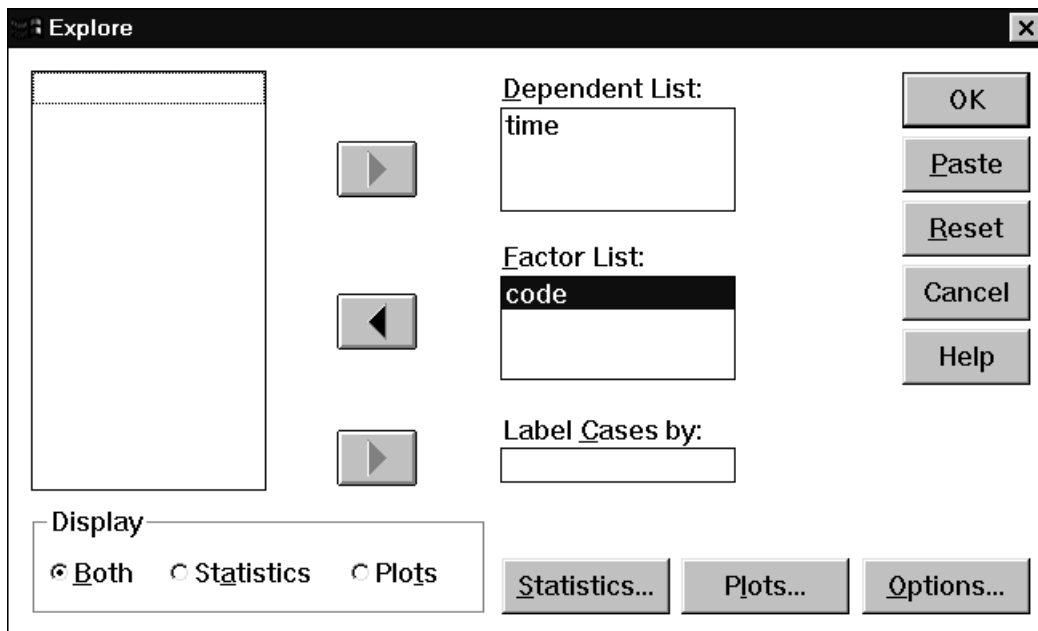
In this part, we will demonstrate how to use SPSS to produce the computer outputs we referred to in Sections 4 and 5. There are hyperlinks between the section and Sections 3 and 4 containing the statistical outputs.

Open the file *ex0619.xls* with the data in the experiment. It consists of two columns, named *Time* and *Code*. The column *Time* contains the failure times of bearings expressed in millions of cycles, the entry in the column *Code* contains the number of the group the observation comes from.

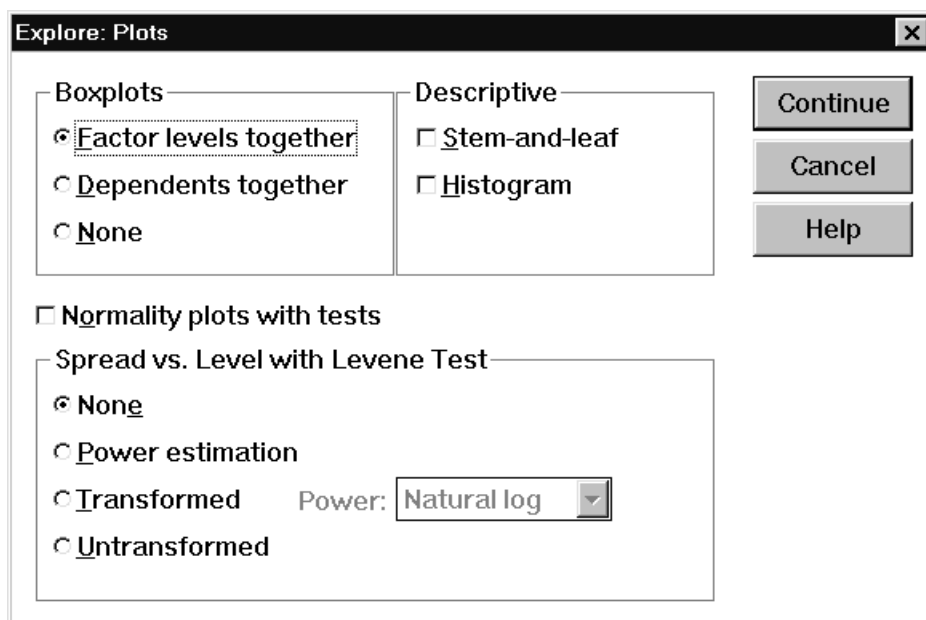
In order to obtain side-by-side boxplots of the failure times for the five materials, and then the summary statistics for each group, click on *Statistics* in the main menu, select *Summarize*, and then *Explore* from the pull-down menu.



Fill out the *Explore* dialog box as follows:



In order to make sure that your output will include side-by-side boxplots, click on *Plots* and check the radio button *Factor levels together*.



The image shows the 'Explore: Plots' dialog box in SPSS. It has a title bar with a close button. The dialog is divided into several sections. The 'Boxplots' section has three radio buttons: 'Factor levels together' (which is selected), 'Dependents together', and 'None'. The 'Descriptive' section has two checkboxes: 'Stem-and-leaf' and 'Histogram', both of which are unchecked. To the right of these sections are three buttons: 'Continue', 'Cancel', and 'Help'. Below the 'Boxplots' section is a checkbox for 'Normality plots with tests', which is unchecked. Below that is a section titled 'Spread vs. Level with Levene Test' containing four radio buttons: 'None' (selected), 'Power estimation', 'Transformed', and 'Untransformed'. Next to the 'Transformed' radio button is a 'Power:' label followed by a dropdown menu currently showing 'Natural log'.

Explore: Plots

Boxplots

- ☒ Factor levels together
- ☐ Dependents together
- ☐ None

Descriptive

- ☐ Stem-and-leaf
- ☐ Histogram

Continue

Cancel

Help

☐ Normality plots with tests

Spread vs. Level with Levene Test

- ☒ None
- ☐ Power estimation
- ☐ Transformed Power: Natural log
- ☐ Untransformed

The side-by-side boxplots and summary statistics will be displayed. In order to view the SPSS outputs click on the corresponding hyperlinks to **Section 4.1** and **Section 5**.