

CHAPTER 7: FACTOR ANALYSIS

Data used in Chapter 7 are provided in ASCII (*.txt). All data files are in the form of correlation matrices. The SPSS syntax for carrying out the analysis presented in the book is also given (*.sps) together with the output file (*.spo). SPSS output files (*.spo) can only be viewed in SPSS, but output files are also provided in pdf format.

Note that the first line of each syntax file will need to be edited to give the correct location of the data file.

subject.txt

The data are pairwise correlation coefficients between subject scores for a sample of 220 boys. The file *subject.txt* contains the lower triangle of the correlation matrix which is given in Table 5.2. Syntax for reading the correlation matrix into SPSS and carrying out a PCA is given in *subject.sps*.

The subject scores are in the following order: Gaelic, English, History, Arithmetic, Algebra, Geometry.

anxiety.txt

The data are from the text anxiety inventory which is used to assess overall anxiety associated with taking tests. The data are correlations between the responses to 20 items given by a sample of 335 male students in British Columbia (see Table 7.9). Students were asked to report how frequently they experienced various symptoms of anxiety in taking the tests.

Brief descriptions of the tests (in the order they appear in the data file) are as follows.

- X1=Lack of confidence during tests
- X2=Uneasy, upset feeling
- X3=Thinking about grades
- X4=Freeze up
- X5=Thinking about getting through school
- X6=The harder I work, the more confused I get
- X7=Thoughts interfere with concentration
- X8=Jittery when taking tests
- X9=Even when prepared, get nervous
- X10=Uneasy before getting the test back
- X11=Tense during test
- X12=Exams bother me
- X13=Tense/stomach upset
- X14=Defeat myself during tests
- X15=Panicky during tests
- X16=Worry before important tests
- X17=Think about failing
- X18=Heart beating fast during tests
- X19=Can't stop worrying
- X20=Nervous during tests, forget facts

psycho.txt

The data are correlations between tests taken by a sample of 197 airmen (see Table 7.14). The data file *psycho.txt* contains the lower triangle of the correlation matrix. Variables X1-X8 are average scores in criterion practice tasks for 8 time segments. The remaining variables are written tests and practical tests.

Descriptions are given below.

- X1=Criterion task, stage 1
- X2=Criterion task, stage 2
- X3=Criterion task, stage 3
- X4=Criterion task, stage 4
- X5=Criterion task, stage 5
- X6=Criterion task, stage 6
- X7=Criterion task, stage 7
- X8=Criterion task, stage 8
- X9=Written test in numerical operations
- X10=Written test in dial and table reading
- X11=Written test in mechanical principles
- X12=Practical test in plane control
- X13=Practical test in reaction time
- X14=Practical test in rate of movement

socmob.txt

The data are based on information provided by 713 male or female married respondents to a survey carried out in 1949. The variables relate to the respondent, his or his spouse, father, father-in-law, and firstborn son. The file *socmob.txt* contains the full correlation matrix, shown in Table 5.14.

The 10 variables are coded as follows:

- X1=Husband's father's occupational status
- X2=Wife's father's occupational status
- X3=Husband's further education
- X4=Husband's qualifications
- X5=Husband's occupational status
- X6=Wife's further education
- X7=Wife's qualifications
- X8=Firstborn's further education
- X9=Firstborn's qualifications
- X10=Firstborn's occupational status