Sample Exam

The aim of this exam is for you to practise using SPSS to analyse data. You should attempt each of the questions detailed on the following pages using the *SPSS Survival Manual* as your guide. You will need to have read through the *SPSS Survival Manual* first to familiarise yourself with its contents and to revise the various statistical procedures covered.

There are a number of parts to this exercise.

- In Part A you are asked to create your own data file and to perform analyses on this data file.
- In Part B you will be asked to interpret some output generated by SPSS.
- In Part C you will be using the data file included with the *SPSS Survival Manual* website. Full details of this data file are included in the appendix of the book, and you should read through this section thoroughly before beginning. This is a real data file that is condensed from data collected by Postgraduate Diploma of Psychology students.

For a number of the questions in this exercise you are asked to report the results of analyses you have performed on the data file. These should be formatted as you would present them in a thesis or research report. When requested, full details should be provided concerning the analyses performed, assumptions that were checked, and the results obtained. The more practice you get with this process, the easier it will be for you to write up the results of your analyses. (For details on correct APA style, which is often used in the social sciences, see Presenting a research report, which is part of the *SPSS Survival Manual* website.)

Part A

Sample questionnaire

1. Sex ___ *Male* ___ *Female*

2. Age in years _____

3. Education level (please indicate the highest level of schooling that you completed)

_____ *Year 10* _____ *Year 12* _____ *University or College*

4. Are you currently on a diet to lose weight? ____ *Yes* ____ *No*

Mastery Scale

Please indicate how much you either agree or disagree with each of the following statements.

Write a number from 1 to 4 on the line next to each statement.

strongly disagree 1 2 3 4 strongly agree

1. _____ I have little control over the things that happen to me
2. _____ I can do just about anything I really set my mind to
3. _____ There is really no way I can solve some of the problems I have
4. _____ There is little I can do to change many of the important things in my life
5. _____ What happens to me in the future mostly depends on me
6. _____ I often feel helpless in dealing with the problems of life
7. _____ Sometimes I feel that I'm being pushed around in life

1. Prepare a codebook for this questionnaire, detailing each of the variable names and codes to be used to prepare the data for entry into SPSS.

2. Using the codebook you developed, describe how you would create value labels for Question 3 (Education level). Describe the steps you would use in SPSS.

3. Using SPSS, create a new data file for this questionnaire. Enter some pretend data in this data file (for at least five cases).

4. It is important to check your data set for errors, prior to conducting your major analyses.
(a) Describe how you would go about doing this using SPSS. In particular how would you identify cases that had values that did not fall in the range of possible values for a particular variable?
(b) Perform a check for errors on your pretend data file. Correct any errors you find.

5. Using your pretend data file, calculate total scale scores for the Mastery scale used in the questionnaire (make sure you reverse the negatively worded items first). High scores on the Mastery scale should represent high levels of mastery. Report the mean and standard deviation for the Mastery scale.

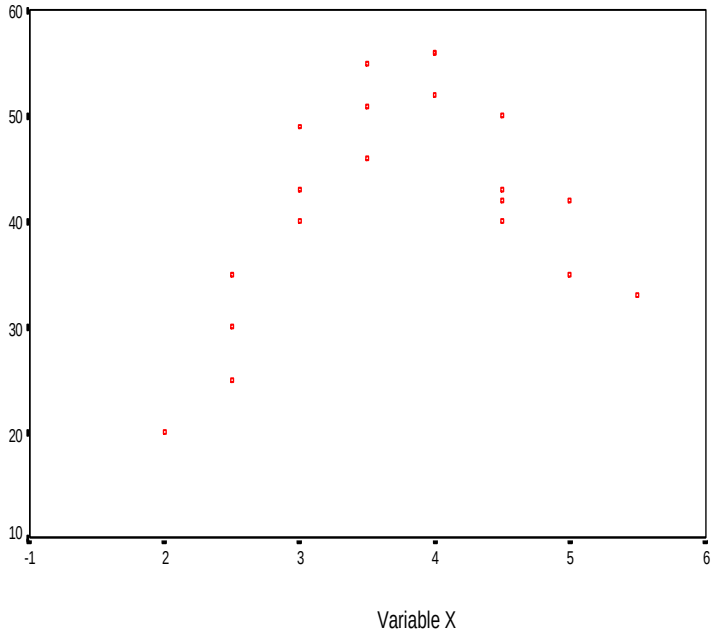
6. Create a new variable by recoding the responses to Question 3 (education level) so that there are only two groups (Yr 10 and Yr 12 = 1; University/College = 2).

7. Create a new age group variable (agegp4) which breaks the sample into 4 groups: 18-25yrs = 1, 26-45yrs =2, 46-60yrs = 3, 61yrs and above = 4. Remember to attach value labels to describe what each value in the new variable represents.

Part B

1. A researcher is interested in exploring the relationship between two variables. She obtains a correlation coefficient of r=.30. She is surprised at this result as she expected a stronger relationship. She remembers that she should have checked for violation of the underlying assumptions for correlation. The output obtained when she tests one of the major assumptions is shown below.

Scatterplot of variable X and variable Y



(a) Which assumption/s is the researcher testing with the output shown above?

(b) Interpret this output and discuss it in terms of the effect it might have on the researcher's interpretation of the correlation coefficient obtained.

2. A market researcher is interested in the coffee drinking habits of males and females. He asks a sample of male and female office workers to record the number of cups of coffee they consume during a week.

(a) Which parametric statistical technique could the researcher use to determine if males and females differ in terms of the number of cups of coffee consumed in a week? Explain why you have chosen this technique.

(b) What assumptions should you check for when using the technique that you chose in question 2(a) above.

(c) What are the key values you would look for in the output to determine if there is a difference in coffee consumption between males and females?

(d) What non-parametric technique could be used to address this research question?

3. The following output was obtained using SPSS.

Tests of Between-Subjects Effects

Dependent Variable: total perceived stress

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	839.252[a]	9	93.250	2.831	.003
Intercept	295968.489	1	295968.489	8985.743	.000
SEX	277.994	1	277.994	8.440	.004
AGEGP5	503.367	4	125.842	3.821	.005
SEX * AGEGP5	64.874	4	16.219	.492	.741
Error	13932.591	423	32.938		
Total	324089.000	433			
Corrected Total	14771.843	432			

a. R Squared = .057 (Adjusted R Squared = .037)

(a) Which parametric statistical technique was used to obtain this output?

(b) What research question/s could be addressed using this output?

(c) Interpret this output in terms of the research question/s you gave in question 3(b), above.

4. A researcher is interested in assessing the impact of a number of changes in a factory on the job satisfaction of workers. Before the changes are implemented the researcher distributes a questionnaire to a sample of workers which measures their attitudes to their work and their overall job satisfaction. The same questionnaire is distributed to the same

group of workers one month after the workplace changes were implemented, and again three months later.

(a) Which parametric statistical technique could the researcher use to see if workers' job satisfaction levels had changed across the three time periods measured? Briefly justify your answer.

(b) What non-parametric technique (if any) could be used to explore this question?

Part C

In this part you will need to open the data file that accompanies the SPSS Survival Manual, *survey.sav—this can be downloaded from* SPSS Survival Manual *website. Instructions for writing research reports are also provided at this website. Details of the questionnaire, the scales used and the codebook are provided in the appendix of the SPSS Survival Manual.*

1. In the Method section of your thesis/report you will need to report on the characteristics of the sample. This set of questions will give you some practice.

(a) Using the survey.sav data file, perform the appropriate analyses to check the main characteristics of the sample used in the study. This should include gender, age, marital status, and education level.

(b) Write up the results of these analyses as they would appear in the Method section of a research report or thesis.

2. It is important to check the reliability of scales used in your study. Check the Cronbach alpha values for the following scales:

(a) Mastery scale

(b) Life Satisfaction scale

(c) Perceived Control of Internal States scale

(d) Perceived Stress scale

3. For many statistical analyses it is assumed that scores are normally distributed. Check the distribution of scores for each of the scales included in question 7. Briefly describe what you find.

4. A researcher is interested in exploring the possibility of gender differences in levels of perceived stress.

(a) Perform the appropriate statistical analysis to address this question. Be sure to check that you have not violated any assumptions.

(b) Report the results as if they were to be included in the Results section of a research report.

5. The same researcher as in Question 9 is interested in exploring the relationship between perceived control (as measured by the PCOISS) and life satisfaction. She suspects that higher levels of perceived control would be associated with greater life satisfaction.
(a) Perform whatever analyses you feel are appropriate to address this question (including assumption testing).
(b) Describe the analyses you performed and report on these analyses and the results, as you would in a research report.

6. A researcher is interested in exploring the effect of both sex and age group on Life Satisfaction scores. She is interested in the effect of each variable individually, and any interaction that may exist.
(a) Using the sex and agegp3 variables, perform the appropriate analyses to address this question. For this particular question it is not necessary to show assumption testing.
(b) Report the results.

7. A researcher would like to know which is a better predictor of life satisfaction: optimism or perceived control of internal states (PCOISS). Perform the appropriate statistical analyses to address this question. Also, determine how much variance in Life Satisfaction scores the set of variables (optimism, perceived control) explains. For this particular question it is not necessary to show assumption testing, or to write a full report.

8. Are younger people more likely to be smokers than older people? Use the variable agegp5 (which divides the sample into five groups) and the variable smoker (Y/N) to investigate this question.