

Contents

List of figures	viii
List of tables	x
Preface	xi
1 Introduction to quantitative research	1
What is quantitative research?	1
Foundations of quantitative research methods	3
When do we use quantitative methods?	7
Summary	11
Exercises	11
Further reading	12
2 Experimental and quasi-experimental research	13
Types of quantitative research	13
How to design an experimental study	15
Advantages and disadvantages of experimental research in education	22
Quasi-experimental designs	26
Summary	32
Exercises	33
Further reading	33
3 Designing non-experimental studies	34
Survey research	34
Observational research	51
Analysing existing datasets	57
Summary	60
Exercises	61
Appendix 3.1 Example of a descriptive form	62
Appendix 3.2 Rating the quality of interactions between teachers and pupils	63

4	Validity, reliability and generalisability	64
	Validity	65
	Reliability	71
	Generalisability	75
	Summary	82
	Exercises	83
	Further reading	83
5	Introduction to SPSS and the dataset	85
	Introduction to SPSS	85
	Summary	90
	Exercises	90
6	Univariate statistics	91
	Introduction	91
	Frequency distributions	91
	Levels of measurement	97
	Measures of central tendency	99
	Measures of spread	105
	Summary	110
	Exercises	112
	Further reading	112
7	Bivariate analysis: comparing two groups	113
	Introduction	113
	Cross tabulation – looking at the relationship between nominal and ordinal variables	114
	The t-test: comparing the means of two groups	127
	Summary	139
	Exercises	140
	Further reading	140
8	Bivariate analysis: looking at the relationship between two variables	142
	The relationship between two continuous variables: Pearson's r correlation coefficient	142
	Spearman's rho rank-order correlation coefficient: the relationship between two ordinal variables	151

Summary	156
Exercises	157
Further reading	158
9 Multivariate analysis: using multiple linear regression to look at the relationship between several predictors and one dependent variable	159
Introduction	159
What is multiple linear regression?	160
Doing regression analysis in SPSS	163
Using ordinal and nominal variables as predictors	169
Diagnostics in regression	176
Summary	183
Exercises	184
Further reading	184
10 Using analysis of variance to compare more than two groups	185
What is ANOVA?	185
Doing ANOVA in SPSS	187
The effect size measure	194
Using more than one independent variable	196
Summary	200
Exercises	201
Further reading	201
11 One step beyond: introduction to multilevel modelling and structural equation modelling	202
Multilevel modelling	202
Structural equation modelling	209
Summary	217
Exercises	218
Further reading	219
References	220
Index	222