

Contents

Preface	v
1. Describing Categorical Variables	1
1.1 Scale Levels and Categorical Variables	1
1.2 Graphic Representation of Categorical Data Information	3
1.3 Cross-Tabulation	7
Exercises	13
2 Log-Linear Modeling	15
2.1 Log-Linear Modeling: A Tutorial	15
2.1.1 Log-Linear Models and the Analogy to the General Linear Model	16
2.1.2 Design Matrices, Main Effects, and Interactions in Log-Linear Models	20
2.1.3 Fitting and Testing in Log-Linear Modeling	26
2.2 Log-Linear Modeling: A Data Example	32
2.2.1 Hierarchical and Nonstandard Log-Linear Models	39
Exercises	42
3 Log-Linear Models for Repeated Observations	45
3.1 Conditions for Valid Application of Log-Linear Modeling	45
3.2 Log-Linear Models for Repeated Observations I: Two Occasions	49

3.2.1	The Concepts of Persistence, Symmetry, and Association in 2 x 2 Tables	52
3.2.2	Axial Symmetry in I x I Tables	56
3.2.3	Axial Symmetry as a Nonstandard Log-Linear Model	59
3.2.4	Group Comparisons in Axial Symmetry	60
3.2.5	More Models and Options	65
3.3	Residual Analysis	66
3.4	A Special Case: Marginal Homogeneity in 2 x 2 Tables	70
3.5	Curve Fitting	72
3.6	Quasi-Independence	77
3.7	Marginal Homogeneity and Quasi-Symmetry	79
3.7.1	Marginal Homogeneity	80
3.7.2	Lehmacher's Simultaneous Marginal Homogeneity Sign Test	86
3.8	Computational Issues	88
3.8.1	Nonstandard Log-Linear Modeling Using CDAS	89
3.8.2	Nonstandard Log-Linear Modeling Using SPSS	97
	Exercises	105
4	Chi-Square Partitioning Models	107
4.1	A Data Example	109
4.2	Decomposition Strategies	109
4.3	χ^2 Partitioning by Joining	110
4.3.1	Helmert Contrasts and Hierarchical Contrasts	110

4.3.2	Application of Joining Methods in χ^2 Partitioning	114
4.4	Splitting	119
4.5	More Repeated Measures Applications	120
	Exercises	124
5	Prediction Analysis	125
5.1	An Introduction to Prediction Analysis of Cross-Classifications	127
5.1.1	Formulating Prediction Hypotheses: Making it Right	127
5.1.2	Identification of Hit Cells and Error Cells	134
5.1.3	Estimation of Expected Cell Frequencies	137
5.1.4	Running a Complete Prediction Analysis	141
5.2	Prediction Models for Longitudinal Data	151
5.2.1	Statement Calculus and Log-Linear Base Model	152
5.2.2	Composite Models for Longitudinal Data	153
5.2.3	Equifinality Models for Longitudinal Data	158
5.2.4	Equicausality Models for Longitudinal Data	161
5.3	Computational Issues	166
	Exercises	172
6	Configural Frequency Analysis of Repeated Observations	175
6.1	Configural Frequency Analysis: A Tutorial	175
6.1.1	Types and Antitypes	176
6.1.2	Specification of a CFA Chance Model	177
6.1.3	Estimation of Expected Cell Frequencies	180

6.1.4	Testing for Types and Antitypes	183
6.1.4.1	Statistical Tests for Types and Antitypes	183
6.1.4.2	α Adjustment in CFA testing	185
6.1.5	A Data Example: CFA of Drug Abuse Patterns	189
6.1.6	Computer Application	197
6.2	CFA of Longitudinal Data	201
6.2.1	CFA of First, Second, and Higher Differences	201
6.2.2	CFA of Trend and Level Information	209
6.2.2.1	CFA of Trend and Level Information: Level as a Covariate	209
6.2.2.2	CFA of Trend and Level Information: Level Cross-Classified	212
6.2.3	CFA of Treatment Effects	217
6.2.4	CFA of Differences Over Time	220
6.2.5	Prediction CFA	225
6.2.6	Computational Issues	227
	Exercises	233
	Selected Possible Solutions to Exercises	235
	References	243
	Author Index	253
	Subject Index	257