LATENT VARIABLES AND FACTOR ANALYSIS

VOLUME I

SAGE BENCHMARKS IN SOCIAL RESEARCH METHODS

LATENT VARIABLES AND FACTOR ANALYSIS

VOLUME I

The Conceptualization and Operationalization di Variables 章

Edited by
Salvatore Babones



Los Angeles | London | New Delhi Singapore | Washington DC



Los Angeles | London | New Delhi Singapore | Washington DC

SAGE Publications Ltd 1 Oliver's Yard 55 City Road London EC1Y 1SP

SAGE Publications Inc. 2455 Teller Road Thousand Oaks, California 91320

SAGE Publications India Pvt Ltd B 1/I 1, Mohan Cooperative Industrial Area Mathura Road New Delhi 110 044

SAGE Publications Asia-Pacific Pte Ltd 3 Church Street #10-04 Samsung Hub Singapore 049483

Editor: Chris Rojek

Assistant editor: Colette Wilson Permissions: Enid Andrews

Production controller: Bhairav Sharma

Proofreader: Asish Sahoo Marketing manager: Teri Williams Cover design: Wendy Scott

Typeset by Zaza Eunice, Hosur, India Printed and bound by CPI Group (UK) Ltd, Croydon, CR0 4YY [for Antony Rowe]



At SAGE we take sustainability seriously. Most of our products are printed in the UK using FSC papers and boards. When we print overseas we ensure sustainable papers are used as measured by the Egmont grading system. We undertake an annual audit to monitor our sustainability.

© Introduction and editorial arrangement by Salvatore Babones, 2015

First published 2015

Apart from any fair dealing for the purposes of research or private study, or criticism or review, as permitted under the Copyright, Designs and Patents Act, 1988, this publication may be reproduced, stored or transmitted in any form, or by any means, only with the prior permission in writing of the publishers, or in the case of reprographic reproduction, in accordance with the terms of licences issued by the Copyright Licensing Agency. Enquiries concerning reproduction outside those terms should be sent to the publishers.

Every effort has been made to trace and acknowledge all the copyright owners of the material reprinted herein. However, if any copyright owners have not been located and contacted at the time of publication, the publishers will be pleased to make the necessary arrangements at the first opportunity.

Library of Congress Control Number: 2014943396

British Library Cataloguing in Publication data

A catalogue record for this book is available from the British Library

ISBN: 978-1-4462-9460-4 (set of four volumes)

LATENT VARIABLES AND FACTOR ANALYSIS

Methods and methodology underpin all the social sciences. Published since 2001 and now exceeding 60 four-volume sets, the **SAGE Benchmarks in Social Research Methods** series has proven itself the definitive reference collection on methods available today. From ethnography to measurement, the series continues to systematically map the history of thought on the vast range of quantitative and qualitative methods in the social sciences. Edited by leaders in their fields, each set presents a careful selection of the key historical and contemporary works – classics and previously inaccessible works alike – and includes an authoritative introduction by the editor.

Salvatore Babones is an associate professor in sociology & social policy at the University of Sydney. Prior to this he was an assistant professor of sociology, public health, and public & international affairs at the University of Pittsburgh. He has worked as a statistician and statistical consultant in both the private and university sectors. He is the author or editor of ten books and more than two dozen academic research articles. His academic research focuses on emerging market societies and statistical methods for comparative social science research. He is the author most recently of *Methods for Quantitative Macro-Comparative Research* (SAGE, 2014).

Appendix of Sources

All articles and chapters have been reproduced exactly as they were first published, including textual cross-references to material in the original source.

Grateful acknowledgement is made to the following sources for permission to reproduce material in this book.

- 1. 'Latent Variables and Factor Analysis', Salvatore Babones
- 'The Presidential Address: Measurement and Conceptualization Problems –
 The Major Obstacle to Integrating Theory and Research', H.M. Blalock, Jr
 American Sociological Review, 44(6) (1979): 881–894.
 Published by American Sociological Association. Reprinted with
 permission.
- 'Detection and Determinants of Bias in Subjective Measures', Kenneth A. Bollen and Pamela Paxton American Sociological Review, 63(3) (1998): 465–478. Published by American Sociological Association. Reprinted with permission.
- 'Conventional Wisdom on Measurement: A Structural Equation Perspective', Kenneth Bollen and Richard Lennox Psychological Bulletin, 110(2) (1991): 305–314.
 Copyright © (1991) by the American Psychological Association. Reproduced with permission from American Psychological Association.
- 'Measurement in Sociology', Floyd N. House
 American Journal of Sociology, XL(1) (1934): 1–11.

 Published by the University of Chicago. Reprinted with permission from the University of Chicago Press.
- 6. 'A History of Social Science Measurement', *Benjamin D. Wright Educational Measurement: Issues and Practice*, 16(4) (1997): 33–45. Reprinted with permission from John Wiley and Sons Ltd.
- 'Classical and Modern Methods of Psychological Scale Construction',
 Leonard J. Simms
 Social and Personality Psychology Compass, 2(1) (2008): 414–433.
 © 2007 The Author. Journal Compilation © 2007 Blackwell Publishing Ltd.
 Reprinted with permission from John Wiley and Sons Ltd.

xii Appendix of Sources

- 'Construct Validity in Psychological Tests', Lee J. Cronbach and Paul E. Meehl Psychological Bulletin, 52(4) (1955): 281–302.
 Published by American Psychological Association. Article is in the public domain.
- 'Convergent and Discriminant Validation by the Multitrait-Multimethod Matrix', Donald T. Campbell and Donald W. Fiske Psychological Bulletin, 56(2) (1959): 81–105.
 Published by American Psychological Association. Article is in the public domain.
- 'Assessing Construct Validity in Organizational Research', Richard P. Bagozzi, Youjae Yi and Lynn W. Phillips Administrative Science Quarterly, 36(3) (1991): 421–458.
 Published by SAGE Publications, Inc. Reprinted with permission.
- 11. 'The Empirical Assessment of Construct Validity', Scott W. O'Leary-Kelly and Robert J. Vokurka
 Journal of Operations Management, 16(4) (1998): 387–405.
 © 1998 Elsevier Science B.V. All rights reserved. Reprinted with permission from Elsevier via Copyright Clearance Center's RightsLink service.
- 12. 'The Dangers of Poor Construct Conceptualization', Scott B. MacKenzie Journal of the Academy of Marketing Science, 31(3) (2003): 323–326. Copyright © 2003 by Academy of Marketing Science. Reprinted with kind permission from Springer Science and Business Media via Copyright Clearance Center's RightsLink service.
- 'The New Rules of Measurement', Susan E. Embretson
 Psychological Assessment, 8(4) (1996): 341–349.

 Copyright © (1996) by the American Psychological Association.
 Reproduced with permission from American Psychological Association.
- 14. 'Applying Item Response Theory (IRT) Modeling to Questionnaire Development, Evaluation, and Refinement', Maria Orlando Edelen and Bryce B. Reeve Quality of Life Research, 16(1) (Supplement: Applying Item Response Theory to Enhance Health Outcomes Assessment) (2007): 5–18.
 © Springer Science+Business Media B.V. 2007. Reprinted with kind permission from Springer Science and Business Media via Copyright Clearance Center's RightsLink service.
- 'The Past and Future of Multidimensional Item Response Theory', Mark D. Reckase
 Applied Psychological Measurement, 21(1) (1997): 25–36.
 Published by SAGE Publications, Inc. Reprinted with permission.

- 16. 'Exploratory Factor Analysis: A Users' Guide', Eamonn Ferguson and Tom Cox International Journal of Selection and Assessment, 1(2) (1993): 84-94. © Basil Blackwell Ltd. 1993. Reprinted with permission from John Wiley and Sons Ltd.
- 17. 'Evaluating the Use of Exploratory Factor Analysis Psychological Research', Leandre R. Fabrigar, Duane T. Wegener, Robert C. MacCallum and Erin J. Strahan Psychological Methods, 4(3) (1999): 272-299. Copyright © (1999) by the American Psychological Association. Reproduced with permission from American Psychological Association.
- 18. 'The Quality of Factor Solutions in Exploratory Factor Analysis: The Influence of Sample Size, Communality, and Overdetermination', Kristine Y. Hogarty, Constance V. Hines, Jeffrey D. Kromrey, John M. Ferron and Karen R. Mumford Educational and Psychological Measurement, 65(2) (2005): 202-226. Published by SAGE Publications, Inc. Reprinted with permission.
- 19. 'A Review and Evaluation of Exploratory Factor Analysis Practices in Organizational Research', James M. Conway and Allen I. Huffcutt Organizational Research Methods, 6(2) (2003): 147-168. Published by SAGE Publications, Inc. Reprinted with permission.
- 20. 'Use of Exploratory Factor Analysis in Published Research: Common Errors and Some Comment on Improved Practice', Robin K. Henson and J. Kyle Roberts Educational and Psychological Measurement, 66(3) (2006): 393-416. Published by SAGE Publications, Inc. Reprinted with permission.
- 21. 'Evaluating the Use of Exploratory Factor Analysis in Developmental Disability Psychological Research', Megan Norris and Luc Lecavalier Journal of Autism and Developmental Disorders, 40(1) (2010): 8-20. © Springer Science+Business Media, LLC 2009. Reprinted with kind permission from Springer Science and Business Media via Copyright Clearance Center's RightsLink service.
- 22. 'Factor Analytic Models: Viewing the Structure of an Assessment Instrument from Three Perspectives', Barbara M. Byrne Journal of Personality Assessment, 85(1) (2005): 17-32. Copyright © 2005, Lawrence Erlbaum Associates, Inc. Reprinted by permission of Taylor & Francis Ltd, http://www.tandf.co.uk/journals via Copyright Clearance Center's RightsLink service.

- 23. 'The Generality of Criminal Behavior: A Confirmatory Factor Analysis of the Criminal Activity of Sex Offenders in Adulthood', Patrick Lussier, Marc LeBlanc and Jean Proulx
 Journal of Criminal Justice, 33(2) (2005): 177–189.
 © 2005 Elsevier Ltd. All rights reserved. Reprinted with permission from Elsevier via Copyright Clearance Center's RightsLink service.
- 24. 'Confirmatory Factor Analyses of Multitrait-Multimethod Data: Many Problems and a Few Solutions', *Herbert W. Marsh Applied Psychological Measurement*, 13(4) (1989): 335–360. Published by SAGE Publications, Inc. Reprinted with permission.
- 25. 'Sample Size and Number of Parameter Estimates in Maximum Likelihood Confirmatory Factor Analysis: A Monte Carlo Investigation', Dennis L. Jackson Structural Equation Modeling: A Multidisciplinary Journal, 8(2) (2001): 205–223. Copyright © 2001, Lawrence Erlbaum Associates, Inc. Reprinted by permission of Taylor & Francis Ltd, http://www.tandf.co.uk/journals via Copyright Clearance Center's RightsLink service.
- 26. 'Reporting Practices in Confirmatory Factor Analysis: An Overview and Some Recommendations', *Dennis L. Jackson, J. Arthur Gillaspy, Jr and Rebecca Purc-Stephenson*Psychological Methods, 14(1) (2009): 6–23.
 Copyright © (2009) by the American Psychological Association.
 Reproduced with permission from American Psychological Association.
- 27. 'Reporting Structural Equation Modeling and Confirmatory Factor Analysis Results: A Review', James B. Schreiber, Frances K. Stage, Jamie King, Amaury Nora and Elizabeth A. Barlow
 The Journal of Educational Research, 99(6) (2006): 323–337.
 Copyright © 2006 Heldref Publications. Reprinted by permission of Taylor & Francis Ltd, http://www.tandf.co.uk/journals via Copyright Clearance Center's RightsLink service.
- 28. 'Factor Analysis in Counseling Psychology Research, Training, and Practice: Principles, Advances, and Applications', *Jeffrey H. Kahn The Counseling Psychologist*, 34(5) (2006): 684–718. Copyright © 2006 by the Division of Counseling Psychology. Reprinted by permission of SAGE Publications via Copyright Clearance Center's RightsLink service.
- 29. 'Exploratory and Confirmatory Factor Analysis: Guidelines, Issues, and Alternatives', Amy E. Hurley, Terri A. Scandura, Chester A. Schriesheim, Michael T. Brannick, Anson Seers, Robert J. Vandenberg and Larry J. Williams Journal of Organizational Behavior, 18(6) (1997): 667–683.
 © 1997 John Wiley & Sons, Ltd. Reprinted with permission from John Wiley and Sons Ltd.

- 30. 'Current Methodological Considerations in Exploratory and Confirmatory Factor Analysis', Thomas A. Schmitt Journal of Psychoeducational Assessment, 29(4) (2011): 304-321. Published by SAGE Publications, Inc. Reprinted with permission.
- 31. 'Comparing Exploratory and Confirmatory Factor Analysis: A Study on the 5-Factor Model of Personality', Peter Borkenau and Fritz Ostendorf Personality and Individual Differences, 11(5) (1990): 515-524. Copyright © 1990 Pergamon Press plc. Reprinted with permission from Elsevier via Copyright Clearance Center's RightsLink service.
- 32. 'In Search of Underlying Dimensions: The Use (and Abuse) of Factor Analysis in Personality and Social Psychology Bulletin', Daniel W. Russell Personality and Social Psychology Bulletin, 28(12) (2002): 1629-1646. Copyright © 2002 by the Society for Personality and Social Psychology, Inc. Reprinted by permission of SAGE Publications via Copyright Clearance Center's RightsLink service.
- 33. 'Component Analysis versus Common Factor Analysis: Some Issues in Selecting an Appropriate Procedure', Wayne F. Velicer and Douglas N. Jackson Multivariate Behavioral Research, 25(1) (1990): 1-28. Copyright © 1990, Lawrence Erlbaum Associates, Inc. Reprinted by permission of Taylor & Francis Ltd, http://www.tandf.co.uk/journals via Copyright Clearance Center's RightsLink service.
- 34. 'Component Analysis versus Common Factor Analysis: A Monte Carlo Study', Steven C. Snook and Richard L. Gorsuch Psychological Bulletin, 106(1) (1989): 148-154. Copyright © (1989) by the American Psychological Association. Reproduced with permission from American Psychological Association.
- 35. 'Common Factor Analysis versus Principal Component Analysis: Differential Bias in Representing Model Parameters?', Keith F. Widaman Multivariate Behavioral Research, 28(3) (1993): 263-311. Copyright © 1993, Lawrence Erlbaum Associates, Inc. Reprinted by permission of Taylor & Francis Ltd, http://www.tandfonline.com via Copyright Clearance Center's RightsLink service.
- 36. 'Constructing Socio-Economic Status Indices: How to Use Principal Components Analysis', Seema Vyas and Lilani Kumaranayake Health Policy and Planning, 21(6) (2006): 459-468. © The Author 2006. Published by Oxford University Press in association with The London School of Hygiene and Tropical Medicine. All rights reserved. Reprinted by permission of Oxford University Press.

xvi Appendix of Sources

- 37. 'Index Construction with Formative Indicators: An Alternative to Scale Development', Adamantios Diamantopoulos and Heidi M. Winklhofer Journal of Marketing Research, XXXVIII(2) (2001): 269–277. Published by the American Marketing Association. Reprinted with permission.
- 38. 'A Critical Review of Construct Indicators and Measurement Model Misspecification in Marketing and Consumer Research', Cheryl Burke Jarvis, Scott B. MacKenzie and Philip M. Podsakoff Journal of Consumer Research, 30(2) (2003): 199–218.
 © 2003 by Journal of Consumer Research, Inc. Published by the University of Chicago. Reprinted with permission from the University of Chicago Press.
- 39. 'Interpretation of Formative Measurement in Information Systems Research', Ronald T. Cenfetelli and Geneviève Bassellier MIS Quarterly, 33(4) (2009): 689–707. Published by MIS Quarterly, Carlson School of Management, University of Minnesota. Reprinted with permission.
- 40. 'Advancing Formative Measurement Models', Adamantios Diamantopoulos, Petra Riefler and Katharina P. Roth
 Journal of Business Research, 61(12) (2008): 1203–1218.
 © 2008 Elsevier Inc. All rights reserved. Reprinted with permission from Elsevier via Copyright Clearance Center's RightsLink service.
- 41. 'The Error Term in Formative Measurement Models: Interpretation and Modeling Implications', Adamantios Diamantopoulos
 Journal of Modelling in Management, 1(1) (2006): 7–17.
 © Emerald Group Publishing Limited all rights reserved. Reprinted with permission from Emerald Group Publishing Limited via Copyright Clearance Center's RightsLink service.
- 42. 'Questions about Formative Measurement', James B. Wilcox, Roy D. Howell and Einar Breivik
 Journal of Business Research, 61(12) (2008): 1219–1228.
 © 2008 Elsevier Inc. All rights reserved. Reprinted with permission from Elsevier via Copyright Clearance Center's RightsLink service.
- 43. 'Formative Measurement and Academic Research: In Search of Measurement Theory', Andrew M. Hardin, Jerry Cha-Jan Chang, Mark A. Fuller and Gholamreza Torkzadeh

 Educational and Psychological Measurement, 71(2) (2011): 281–305.

 Published by SAGE Publications, Inc. Reprinted with permission.

- 44. 'On the Nature and Direction of Relationships between Constructs and Measures', Jeffrey R. Edwards and Richard P. Bagozzi Psychological Methods, 5(2) (2000): 155-174. Copyright © (2000) by the American Psychological Association. Reproduced with permission from American Psychological Association.
- 45. 'Reconsidering Formative Measurement', Roy D. Howell, Einar Breivik and James B. Wilcox Psychological Methods, 12(2) (2007a): 205-218. Copyright © (2007) by the American Psychological Association. Reproduced with permission from American Psychological Association.
- 46. 'Interpretational Confounding Is Due to Misspecification, Not to Type of Indicator: Comment on Howell, Breivik, and Wilcox (2007)', Kenneth A. Bollen Psychological Methods, 12(2) (2007): 219-228. Copyright © (2007) by the American Psychological Association. Reproduced with permission from American Psychological Association.
- 47. 'On the Meaning of Formative Measurement and How It Differs from Reflective Measurement: Comment on Howell, Breivik, and Wilcox (2007)', Richard P. Bagozzi Psychological Methods, 12(2) (2007): 229-237. Copyright © (2007) by the American Psychological Association. Reproduced with permission from American Psychological Association.
- 48. 'Is Formative Measurement Really Measurement? Reply to Bollen (2007) and Bagozzi (2007)', Roy D. Howell, Einar Breivik and James B. Wilcox Psychological Methods, 12(2) (2007b): 238-245. Copyright © (2007) by the American Psychological Association. Reproduced with permission from American Psychological Association.
- 49. 'The Fallacy of Formative Measurement', Jeffrey R. Edwards Organizational Research Methods, 14(2) (2011): 370-388. Published by SAGE Publications, Inc. Reprinted with permission.
- 50. 'An Empirical Evaluation of Alternative Methods of Estimation for Confirmatory Factor Analysis with Ordinal Data', David B. Flora and Patrick J. Curran Psychological Methods, 9(4) (2004): 466-491. Copyright © (2004) by the American Psychological Association. Reproduced with permission from American Psychological Association.
- 51. 'Evaluating Estimation Methods for Ordinal Data in Structural Equation Modeling', Pui-Wa Lei Quality & Quantity, 43(3) (2009): 495-507. © Springer Science + Business Media B.V. 2007. Reprinted with kind permission from Springer Science and Business Media via Copyright

Clearance Center's RightsLink service.

- 52. 'The Sensitivity of Confirmatory Maximum Likelihood Factor Analysis to Violations of Measurement Scale and Distributional Assumptions', *Emin Babakus, Carl E. Ferguson, Jr and Karl G. Jöreskog Journal of Marketing Research*, XXIV(2) (1987): 222–228. Published by the American Marketing Association. Reprinted with permission.
- 53. 'Polychoric versus Pearson Correlations in Exploratory and Confirmatory Factor Analysis of Ordinal Variables', Francisco Pablo Holgado-Tello, Salvador Chacón-Moscoso, Isabel Barbero-García and Enrique Vila-Abad Quality & Quantity, 44(1) (2010): 153-166.
 © Springer Science+Business Media B.V. 2008. Reprinted with kind permission from Springer Science and Business Media via Copyright Clearance Center's RightsLink service.
- 54. 'Rotations', *Hervé Abdi*Michael Lewis-Beck, Alan E. Bryman and Tim Futing Liao (eds), *The SAGE Encyclopedia of Social Sciences Research Methods* (Volume 3)
 (Thousand Oaks, CA: SAGE Publications, Inc., 2003), pp. 978–982.
 Published by SAGE Publications, Inc. Reprinted with permission.
- 55. 'The Invariance Problem in Factor Analysis', *J.P. Guilford Educational and Psychological Measurement*, 37(1) (1977): 11–19. Published by SAGE Publications, Inc. Reprinted with permission.
- 56. 'Rotation Criteria and Hypothesis Testing for Exploratory Factor Analysis: Implications for Factor Pattern Loadings and Interfactor Correlations', Thomas A. Schmitt and Daniel A. Sass Educational and Psychological Measurement, 71(1) (2011): 95–113. Published by SAGE Publications, Inc. Reprinted with permission.
- 57. 'A Comparison of Factor Rotation Methods for Dichotomous Data', W. Holmes Finch
 Journal of Modern Applied Statistical Methods, 10(2), Article 14 (2011): 549–570.
 Published as an open source journal by Wayne State University. Reprinted with permission.
- 58. 'Searching for Ideal Types: The Potentialities of Latent Class Analysis', Jacques A. Hagenaars and Loek C. Halman European Sociological Review, 5(1) (1989): 81–96. Reprinted by permission of Oxford University Press.
- 59. 'Latent Class Models in Social Work', Susan Neely-Barnes
 Social Work Research, 34(2) (2010): 114–121.
 ©2010 National Association of Social Workers. Reprinted by permission of Oxford University Press.

60. 'Identifying Class Structure: A Latent Class Analysis of the Criterion-Related and Construct Validity of the Goldthorpe Class Schema', Geoffrey Evans and Colin Mills

European Sociological Review, 14(1) (1998): 87-106. Reprinted by permission of Oxford University Press.

61. 'Integrating Person-Centered and Variable-Centered Analyses: Growth Mixture Modeling with Latent Trajectory Classes', Bengt Muthén and Linda K. Muthén

Alcoholism: Clinical and Experimental Research, 24(6) (2000): 882-891. Copyright © 2000 by the Research Society on Alcoholism. Reprinted with permission from John Wiley and Sons Ltd.

62. 'The Integration of Continuous and Discrete Latent Variable Models: Potential Problems and Promising Opportunities', Daniel J. Bauer and Patrick J. Curran

Psychological Methods, 9(1) (2004): 3-29.

Copyright © (2004) by the American Psychological Association. Reproduced with permission from American Psychological Association.



Contents

Appendix of Sources		xi
	Volume I: The Conceptualization and Operationalization of Variables	
1.	Latent Variables and Factor Analysis Salvatore Babones	1
1.]	Perspectives on Measurement	
2.	The Presidential Address: Measurement and Conceptualization Problems – The Major Obstacle to Integrating Theory and Research H.M. Blalock, Jr	27
3.	Detection and Determinants of Bias in Subjective Measures Kenneth A. Bollen and Pamela Paxton	47
4.	Conventional Wisdom on Measurement: A Structural Equation Perspective	65
5.	Kenneth Bollen and Richard Lennox Measurement in Sociology	85
6.	Floyd N. House A History of Social Science Measurement Benjamin D. Wright	93
2. (Construct Validity	
7.	Classical and Modern Methods of Psychological Scale Construction Leonard J. Simms	121
8.	Construct Validity in Psychological Tests Lee J. Cronbach and Paul E. Meehl	141
9.	Convergent and Discriminant Validation by the Multitrait- Multimethod Matrix Donald T. Campbell and Donald W. Fiske	167
10.	Assessing Construct Validity in Organizational Research	193
11.	Richard P. Bagozzi, Youjae Yi and Lynn W. Phillips The Empirical Assessment of Construct Validity	235
12.	Scott W. O'Leary-Kelly and Robert J. Vokurka The Dangers of Poor Construct Conceptualization Scott B. MacKenzie	261

3. Item Response Theory

,		
13.	The New Rules of Measurement	
	Susan E. Embretson	
4 9	1 1 1 T. D. ml (TDM) 14 1 1 C	

14. Applying Item Response Theory (IRT) Modeling to Questionnaire Development, Evaluation, and Refinement 287 Maria Orlando Edelen and Bryce B. Reeve 309

271

15. The Past and Future of Multidimensional Item Response Theory Mark D. Reckase

Volume II: Exploratory and Confirmatory Factor Analysis

4. Exploratory Factor Analysis

16.	Exploratory Factor Analysis: A Users' Guide	3
	Eamonn Ferguson and Tom Cox	
17.	Evaluating the Use of Exploratory Factor Analysis Psychological	
	Research	21
	Leandre R. Fabrigar, Duane T. Wegener, Robert C. MacCallum and	
	Erin J. Strahan	
18.	The Quality of Factor Solutions in Exploratory Factor Analysis: The	
	Influence of Sample Size, Communality, and Overdetermination	63
	Kristine Y. Hogarty, Constance V. Hines, Jeffrey D. Kromrey,	
	John M. Ferron and Karen R. Mumford	
19.	A Review and Evaluation of Exploratory Factor Analysis Practices	
	in Organizational Research	85
	James M. Conway and Allen I. Huffcutt	
20.	Use of Exploratory Factor Analysis in Published Research: Common	
	Errors and Some Comment on Improved Practice	109
	Robin K. Henson and J. Kyle Roberts	
21.	Evaluating the Use of Exploratory Factor Analysis in	
	Developmental Disability Psychological Research	133
	Megan Norris and Luc Lecavalier	

5. Confirmatory Factor Analysis

22.	Factor Analytic Models: Viewing the Structure of an Assessment	
	Instrument from Three Perspectives	157
	Barbara M. Byrne	
23.	The Generality of Criminal Behavior: A Confirmatory Factor	

Analysis of the Criminal Activity of Sex Offenders in Adulthood 183

Patrick Lussier, Marc LeBlanc and Jean Proulx 24. Confirmatory Factor Analyses of Multitrait-Multimethod Data: Many Problems and a Few Solutions 205 Herbert W. Marsh