

**CURRICULUM VITAE****Kenneth Bollen****December, 2015**

Department of Psychology and Neuroscience  
Department of Sociology  
CB 3270, Davie Hall  
University of North Carolina  
Chapel Hill, NC 27599-3270

Email: [bollen@unc.edu](mailto:bollen@unc.edu)

Web page: <http://bollen.web.unc.edu/>

Google Scholar: <http://goo.gl/Dpa2X>

Phone: (919) 962-7501

**CURRENT POSITIONS**

- 2015- Henry Rudolph Immerwahr Distinguished Professor of Psychology and Neuroscience & Sociology, University of North Carolina at Chapel Hill (UNC-Chapel Hill).
- 1995- Fellow, Carolina Population Center, UNC-Chapel Hill.
- 1993- Member of Statistical Core, Carolina Population Center, UNC-Chapel Hill.
- 1980- Lecturer for Inter-university Consortium for Political and Social Research (ICPSR) Summer Training Program in Advanced Statistical Techniques. University of Michigan, Ann Arbor, MI.

**EDUCATION**

- 1977 Ph.D. in Sociology, Brown University, Providence, Rhode Island.
- 1975 M.A. in Sociology, Brown University, Providence, Rhode Island.
- 1973 B.A. Drew University, Madison, NJ  
Major: Sociology Minor: Mathematics

## HONORS AND AWARDS

- 2015            Awarded Senior Visiting Fellowship at the Institute of Advanced Studies of the University of Bologna, Bologna, Italy, August 28 – October 1, 2015.
- 2015            Elected President, Society of Multivariate Experimental Psychology (SMEP).
- 2014-2015     Excellence in Teaching, 2014-2015. Annual Award by Sociology Graduate Students, UNC-Chapel Hill.
- 2014-2015     RTI Visiting Scholar Award, RTI International, Research Triangle Park, NC.
- 2014            Elected Member, Society of Multivariate Experimental Psychology (SMEP).
- 2011            Elected Fellow, American Statistical Association.
- 2010-2012     Elected Chair, Chair, Past Chair of the Section on Social, Economic, and Political Sciences of the American Association for the Advancement of Science (AAAS).
- 2010            Visiting Fellow at the Institute of Education Sciences. University of California, Berkeley, April 2010.
- 2009            Distinguished Teaching Award for Post-Baccalaureate Instruction. University-wide competition. UNC-Chapel Hill.
- 2008            Elected Fellow, American Association for the Advancement of Science (AAAS).
- 2007            Perreria, Deeb-Sossa, Harris, & K. A. Bollen (2005) “honorable mention” for the 2007 Best Publication in the Sociology of Mental Health by the Mental Health Section of the American Sociological Association.
- 2005            Bollen (1980), Bollen (1983), & Bollen and Phillips (1982) named as “ASR Greatest Hits” by Jerry Jacobs, editor of American Sociological Review (ASR). The list includes the most cited papers in the history of the American Sociological Review since its inception in 1936. See Publications below for complete reference to papers.
- 2002            Named one of the World’s Most Cited Authors in the General Social Science literature by the Institute for Scientific Information (ISI) for 1981-1999.
- 2002            Henry Rudolph Immerwahr Distinguished Professor, UNC-Chapel Hill.

- 2000 Paul F. Lazarsfeld Memorial Award for Distinguished Contributions in the Field of Sociological Methodology. August, 2000. American Sociological Association (Methodology Section), Washington, DC.
- 1999-2000 Mentoring Award, 1999-2000. Sociology Graduate Student Association. UNC-Chapel Hill.
- 1996-2001 Zachary Smith Professorship, UNC-Chapel Hill.
- 1993-1994 Fellowship Award, Center for Advanced Study in the Behavioral Sciences. Stanford, California. Notification May, 1990, Fellow 1993-1994.
- 1988-1989 Excellence in Teaching, 1988-89. Third Annual Award by Sociology Graduate Students, UNC-Chapel Hill.
- 1989- Sociological Research Association. Elected member.
- 1986-1987 Excellence in Teaching, 1986-87. Inaugural Annual Award by Sociology Graduate Students, UNC-Chapel Hill.

#### **OTHER PROFESSIONAL EXPERIENCE**

- 2002- 2014 Henry Rudolph Immerwahr Distinguished Professor, Department of Sociology, University of North Carolina, Chapel Hill, NC (UNC-Chapel Hill).
- 2013-2015 Appointed American Sociological Association (ASA) representative to the American Association for the Advancement of Science (AAAS).
- 2013-2015 Member of National Science Foundation (NSF) Advisory Committee for Cyberinfrastructure (ACCI).
- Provides advice, recommendations, and oversight to the NSF Office of Cyberinfrastructure on support for research, education, and human resources.
- 2012-2016 Member of National Science Foundation (NSF) Advisory Committee for Social, Behavioral and Economic Sciences (SBE).
- Provides advice, recommendations, and oversight to the SBE Directorate on support for research, education, and human resources.

- 2012-2014 Member of Subcommittee for Support for the Statistical Sciences at NSF (StatSNSF)
- Formed by NSF Directorate for Mathematical and Physical Sciences to examine the current structure of support of the statistical sciences within NSF and to provide recommendations for NSF to consider.
- 2009-2014 Adjunct Professor of Statistics and Operations Research, UNC-Chapel Hill.  
(1996-2006)
- 2000-2010 Director, H.W. Odum Institute for Research in Social Science, UNC-Chapel Hill.
- The Odum Institute ([www.Odum.unc.edu](http://www.Odum.unc.edu)) (founded 1924) is the world's oldest interdisciplinary university institute for the social sciences. It provides training and consulting in statistics, spatial analysis, survey methodology, qualitative methods, and other topics that cut across the social sciences. It contains one of the nation's largest social science data archives and provides external funding support.
- 2009- Member of Advisory Board for the Penn State Social Science Research Institute (SSRI), Pennsylvania State University, University Park, Pennsylvania.
- 2008- Member of Board of Trustees of National Institute of Statistical Science (NISS), Research Triangle Park, North Carolina.
- 2006-2010 Member of Advisory Board for Social Science Research Institute, Duke University, Durham, North Carolina.
- 2004-2007 Electorate Nominating Committee of American Association for the Advancement of Science (AAAS) Section on Social, Economic, and Political Sciences (K).
- 2004-2005 Chair, Program on Latent Variables in the Social Sciences, SAMSI, National Institute of Statistical Sciences, Research Triangle Park, NC.
- Year long interdisciplinary program involving national and international participants. Six working groups regularly met to share knowledge across disciplines and to advance statistical and methodological work on latent variable modeling.

- 2004 Founding member of core team of five who launched the Citizen-Soldier Support Program to help family and relatives of the National Guard and Reserve. Based at the Odum Institute for Research in Social Science at UNC-Chapel Hill.
- 2003 Co-founded the Certificate Program in Survey Methodology (CPSM) based at Odum Institute for Research in Social Science at UNC-Chapel Hill.
- 1997-2000 Director of Graduate Studies, Department of Sociology, UNC-Chapel Hill.
- 1996-2001 Zachary Smith Professor of Sociology, UNC-Chapel Hill.
- 1995-1999 Elected Term on Interuniversity Consortium for Political and Social Research (ICPSR) Council. University of Michigan, Ann Arbor, MI.  
Council represents over 300 university/college members of ICPSR.
- 1993-1995 Chair, Methodology Section, American Sociological Association.
- 1991-1993 Member of Sociology Panel, National Science Foundation, 1991-1993.
- 1991-1995 Social Science Analyst, EVALUATION Project - USAID, Carolina Population Center, UNC-Chapel Hill.
- 1989-96 Professor, Department of Sociology, UNC-Chapel Hill.
- 1989-1991 Member, Methodology Council, American Sociological Association.
- 1985-1989 Associate Professor, Department of Sociology, UNC-Chapel Hill.
- 1982-1985 Assistant Professor, Department of Sociology, Dartmouth College, Hanover, NH
- 1981,1984, 1987,1990- ICPSR Summer Training Program Planning Committee, University of Michigan.
- 1981-1985 Consultant for Institute of Gerontology, Wayne State University, Detroit, MI.

- 1981-1982     Staff Research Scientist. Societal Analysis Department, General Motors Research Laboratories, Warren, MI.
- Member of Interdisciplinary research group. Responsible for design and implementation of a number of projects.
- 1980-1981     Senior Research Scientist, Societal Analysis Department, General Motors Research Laboratories. (See above)
- 1977-1980     Associate Senior Research Scientist at GM. (See above.)

## BOOKS

- Bollen, K.A.** and P. J. Curran. 2006. *Latent Curve Models: A Structural Equation Perspective*. Wiley Series in Probability and Mathematical Statistics. New York: Wiley, 285 pages.
- Bollen, K.A.** and J.S. Long (eds). 1993. *Testing Structural Equation Models*. Newbury Park, CA: Sage, 320 pages.
- Bollen, K. A.** 1989. *Structural Equations with Latent Variables*. Wiley Series in Probability and Mathematical Statistics. New York: Wiley, 514 pages.

## PUBLISHED PAPERS

- Bollen, K.A.**, Paul P. Biemer, Alan Karr, Stephen Tueller, and Marcus Berzofsky. (accepted for publication). "Are Survey Weights Needed? A Review of Diagnostic Tests in Regression Analysis." *Annual Review of Statistics and its Practice*.
- Arterberry, Brooke J., Ting-Huei Chen, Alvaro Verges, **K.A. Bollen**, and Matthew P. Martens. (accepted for publication). "How Should Alcohol Problems be Conceptualized? Causal Indicators with the RAPI." *Evaluation and the Health Professions*.
- Bollen, K.A.** and Adamantios Diamantopoulos. (accepted for publication). "In Defense of Causal-Formative Indicators: A Minority Report." *Psychological Methods*.
- Bollen, K.A.** and Shawn Bauldry. (2015). "Indicator: Methodology." Pages 750-54 in James D. Wright (editor-in-chief) *International Encyclopedia of the Social & Behavioral Sciences* Volume 11. Oxford: Elsevier.

- Bauldry, Shawn, **K. A. Bollen**, and L. S. Adair. (2015). "Evaluating Measurement Error Readings of Blood Pressure for Adolescents and Young Adults." *Blood Pressure* 24:96-102.
- Bainter, Sierra and **K. A. Bollen**. (2014). "Interpretational Confounding or Confounded Interpretations of Causal Indicators." Focus Article, *Measurement: Interdisciplinary Research & Perspectives* 12:125-140.
- Shimizu, Shohei and **K. A. Bollen**. (2014). "Bayesian Estimation of Causal Direction in Acyclic Structural Equation Models with Individual-specific Confounder Variables and non-Gaussian Distributions." *Journal of Machine Learning Research* 15:2629-2652.
- Bollen, K.A.**, Stanislav Kolenikov, and Shawn Bauldry. (2014). "Model-Implied Instrumental Variables – Generalized Method of Moments (MIIV – GMM) Estimator of Latent Variable Models." *Psychometrika* 79:20-50.
- Bollen, K.A.**, Jeff Harden, Surajit Ray, and Jane Zavisca (2014). "BIC and Alternative Bayesian Information Criteria in the Selection of Structural Equation Models." *Structural Equation Modeling* 21:1-19.
- Bollen, K.A.**, Mark Noble, and Linda Adair. (2013). "Are Gestational Age, Birth Weight and Birth Length Indicators of Favorable Fetal Growth Conditions? A Structural Equation Analysis of Filipino Infants." *Statistics in Medicine* 32:2950-2961.
- Bollen, K. A.** and Judea Pearl. (2013). "Eight Myths about Causality and Structural Equation Models." Pages 301-28 in Stephen L. Morgan (ed) *Handbook of Causal Analysis for Social Research*. Dordrecht, Netherlands: Springer.
- Guo, Shenyang and **K.A. Bollen**. (2013). "Research Using Longitudinal Ratings Collected by Multiple Raters: One Methodological Problem and Approaches to Its Solution." *Social Work Research* 37:85-98.
- Bollen, K.A.** 2012. "Instrumental Variables in Sociology and the Social Sciences." *Annual Review of Sociology* 38:37–72.
- Reprinted in *Fundamentals of Regression Modeling* Four-volume Set edited by Salvatore Babones (2014). Newbury, CA:Sage.
- Bollen, K.A.** and Rick H. Hoyle. 2012. "Latent Variables in Structural Equation Models." Pages 56-67 in Rick H. Hoyle (ed) *Handbook of Structural Equation Modeling*. New York:Guilford Publications.

**Bollen, K.A.**, Surajit Ray, Jane Zavisca, and Jeffrey J. Harden. 2012. "A Comparison of Bayes Factor Approximation Methods Including Two New Methods." *Sociological Methods and Research* 41: 294-324.

Kolenikov, Stanislav and **K.A. Bollen**. 2012. "Testing Negative Error Variances: Is a Heywood Case a Symptom of Misspecification?" *Sociological Methods and Research* 41: 124-167.

Grace, J.B., J. E. Keeley, D. J. Johnson, and **K. A. Bollen**. 2012. "Structural Equation Modelling and the Analysis of Long-term Data." Pages 325-358 in R. A. Gitzen, A. B. Cooper, J. J. Millspaugh, and D. S. Litch (eds.) *Design and Analysis of Long-term Ecological Monitoring Studies*. Cambridge: Cambridge University Press.

**Bollen, K. A.** and M. Noble. 2011. "Structural Equation Models and the Quantification of Behavior." *Proceedings of the National Academy of Sciences* 108 (suppl.3): 15639-15646. (Donald Pfaff (ed) Quantification of Behavior: Sackler Colloquium.)

**Bollen, K.A.** and S. Bauldry. 2011. "Three Cs in Measurement Models: Causal Indicators, Composite Indicators, and Covariates." *Psychological Methods* 16(3):265-84.

**Bollen, K.A.** 2011. "Evaluating Effect, Composite, and Causal Indicators in Structural Equation Models (SEMs)." *Management Information Systems Quarterly (MISQ)* 35:359-72.

Shimizu, S., T. Inazumi, Y. Sogawa, A. Hyvärinen, Y. Kawahara, T. Washio, P. O. Hoyer, **K. A. Bollen**. 2011 "DirectLiNGAM: A Direct Method for Learning a Linear Non-Gaussian Structural Equation Model." *Journal of Machine Learning Research* 12:1225-1248.

**Bollen, K.A.** and J. Brand. 2010. "A General Structural Equation Model for Panel Data with Random and Fixed Effects." *Social Forces* 89(1):1-34.

Reprinted in *Fundamentals of Regression Modeling* Four-volume Set edited by Salvatore Babones (2014). Newbury, CA:Sage.

**Bollen, K.A.** and S. Bauldry. 2010. "Model Identification and Computer Algebra." *Sociological Methods and Research* 39(2) 127-156.

**Bollen, K.A.** and C. Zimmer. 2010. "An Overview of the Autoregressive Latent Trajectory (ALT) Model." Pages 153-176 in K. van Montfort, J. H. L. Oud, & A. Satorra (eds) *Longitudinal Research with Latent Variables*. New York: Springer-Verlag.



- Bollen, K. A.**, D. J. Bauer, S.L. Christ, & M. C. Edwards. 2010. "An Overview of Structural Equations Models and Recent Extensions." Pages 37-79 in S. Kolenikov, D. Steinley, and L. Thombs. *Statistics in the Social Sciences: Current Methodological Developments*. Hoboken, NJ: Wiley.
- Bollen, K.A.** and S. Bauldry. 2010. "A Note on Algebraic Solutions to Identification." *Journal of Mathematical Sociology* 34:136–145.
- Griffin, L.J. and **K.A. Bollen**. 2009. "What Do These Memories Do? Civil Rights Remembrance and Racial Attitudes." *American Sociological Review* 74:594-614.
- Kirby, J. and **K.A. Bollen**. 2009. "Using Instrumental Variable (IV) Tests to Evaluate Model Specification in Latent Variable Structural Equation Models." *Sociological Methodology* 39: 327-355.
- Bollen, K.A.** 2009. "Liberal Democracy Series I, 1972-1988: Definition, Measurement, and Trajectories." *Electoral Studies* 28: 368–374.
- Bollen, K.A.**, R.D. Lennox, and D.L. Dahly. 2009. "Practical Application of the Vanishing Tetrad Test for Causal Indicator Measurement Models: An Example from Health-Related Quality of Life." *Statistics in Medicine* 28: 1524-36.
- Bollen, K. A.** and W. R. Davis. 2009. "Causal Indicator Models: Identification, Estimation, and Testing." *Structural Equation Modeling* 16:498-522.
- Bollen, K. A.** and W. R. Davis. 2009. "Two Rules of Identification for Structural Equation Models." *Structural Equation Modeling* 16:523-36.
- Abrahamson, M., **K. A. Bollen**, M. Gutmann, G. King, and A. M. Pienta. 2009. "Preserving Quantitative Research-Elicited Data for Longitudinal Analyses." *Historical Social Research* 34: 51-59.
- Dahly, D. L., L. S. Adair, and **K. A. Bollen**. 2009. "Investigating the Developmental Origins of Blood Pressure with Structural Equation Modeling." *International Journal of Epidemiology* 38:538-48.
- Gutmann, M. P., M. Abrahamson, M.O. Adams, M. Altman, C. Arms, **K.A. Bollen**, M. Carlson, J. Crabtree, D. Donakowski, G. King, J. Lyle, M. Maynard, A. Pienta, R. Rockwell, L. Timms-Ferrara, and C. Young. 2009. "From Preserving the Past to Preserving the Future: The Data-PASS Project and the Challenges of Preserving Digital Social Science Data." *Library Trends* 57: 315-337.

- Bollen, K. A.**, S. Rabe-Hesketh, and A. Skrondal. 2008. "Structural Equation Models." Pages 432-55 in J. Box-Steffensmeier, H. Brady, and D. Collier (eds) *The Oxford Handbook of Political Methodology*. New York:Oxford University Press.
- Grace, James B. and **K. A. Bollen**. 2008. "Representing General Theoretical Concepts in Structural Equation Models: The Role of Composite Variables." *Environmental and Ecological Statistics* 15:191-213.
- Chen, F., P.J. Curran, **K. A. Bollen**, J. B. Kirby, and P. M. Paxton. 2008. "An Empirical Evaluation of the Use of Fixed Cutoff Points in RMSEA Test Statistics in Structural Equation Models." *Sociological Methods and Research* 36:462-494.
- Bollen, K.A.**, J. B. Kirby, P. J. Curran, P. M. Paxton, and F. Chen. 2007. "Latent Variable Models under Misspecification: Two Stage Least Squares (2SLS) and Maximum Likelihood (ML) Estimators." *Sociological Methods and Research* 36:46-86.
- Bollen, K. A.** and Albert Maydeu-Oliveres. 2007. "A Polychoric Instrumental Variable (PIV) Estimator for Structural Equation Models with Categorical Variables." *Psychometrika* 72:309-26.
- Siemsen, E. and **K.A. Bollen**. 2007. "Least Absolute Deviation Estimation in Structural Equation Modeling." *Sociological Methods and Research* 36: 227-65.
- Bollen, K.A.**, Jennifer Glanville, and Guy Stecklov. 2007. "Socioeconomic Status, Permanent Income, and Fertility: A Latent Variable Approach." *Population Studies* 61: 15-34.
- Bollen, K.A.** 2007. "On the Origins of Latent Curve Models." Pages 79-98 in Robert Cudeck and Robert MacCallum (eds) *Factor Analysis at 100*. Mahwah, NJ:Lawrence Erlbaum .
- Palomo, Jesus, David B. Dunson, and **K. A. Bollen**. 2007. "Bayesian Structural Equation Modeling." Pages 163-88 in Sik-Yum Lee (ed.) *Handbook of Structural Equation Models*. Elsevier Publishing.
- Grace, James B. and **K. A. Bollen**. 2005. "Interpreting the Results from Multiple Regression & Structural Equation Models." *Bulletin of the Ecological Society of America* 86:283-95.
- Bollen, K.A.**, P.M. Paxton, and R. Morishima. 2005. "Assessing International Evaluations: An Example from USAID's Democracy and Governance Programs." *American Journal of Evaluation* 26: 189-203.

Perreria, K., N. Deeb-Sossa, K. M. Harris, and **K. A. Bollen**. 2005. "What Are We Measuring? An Evaluation of the CES-D across Race, Ethnicity, and Immigrant Generation." *Social Forces* 83: 1567-1602.

Selected as "honorable mention" for the 2007 Best Publication in the Sociology of Mental Health by the Mental Health Section of the American Sociological Association.

Hipp, J., D.J. Bauer, and **K. A. Bollen**. 2005. "Conducting Tetrad Tests of Model Fit and Contrasts of Tetrad-Nested Models: A New SAS Macro." *Structural Equation Modeling* 12:76-93.

**Bollen, K.A.** and P.J. Curran. 2004. "Autoregressive Latent Trajectory (ALT) Models: A Synthesis of Two Traditions." *Sociological Methods and Research* 32:336-83.

**Bollen, K.A.** and D.J. Bauer. 2004. "Automating the Selection of Model-Implied Instrumental Variables." *Sociological Methods and Research* 32:425-52.

Biesanz, J., N. Deeb-Sossa, A. Papadakis, **K. A. Bollen**, and P. Curran. 2004. "The Role of Coding Time in Estimating and Interpreting Growth Curve Models." *Psychological Methods* 9:30-52.

Hipp, J., D.J. Bauer, P.J. Curran, and **K. A. Bollen**. 2004. "Crimes of Opportunity or Crimes of Emotion? Testing Two Explanations of Seasonal Change in Crime." *Social Forces* 82:1333-1372.

**Bollen, K. A.**, Christ, S. L., and Hipp, J. R. 2004. "Growth Curve Model." Pages 446-449 in Michael Lewis-Beck, Alan Bryan and Tim Futing Liao (eds.), *Encyclopedia of Social Science Research Methods*. Thousand Oaks, CA: Sage.

Curran, P.J., **K. A. Bollen**, F. Chen, P. Paxton, & J. Kirby. 2003. "Finite sampling properties of the RMSEA: Point estimates and confidence intervals." *Sociological Methods and Research* 32:208-52.

Hipp, J. and **K. A. Bollen**. 2003. "Model Fit in Structural Equation Models with Censored, Ordinal, and Dichotomous Variables: Testing Vanishing Tetrads." *Sociological Methodology* 2003. 33: 267-305.

Paxton, P., **K. A. Bollen**, D. Lee, and H. Kim. 2003. "A Half Century of Suffrage: New Data and a Comparative Analysis." *Studies in Comparative International Development* 38:93-122.

Paxton, P. and **K. A. Bollen**. 2003. "Perceived Quality and Methodology in Graduate Department Ratings: The Case of Sociology, Political Science, and Economics." *Sociology of Education* 76:71-88.

**Bollen, K.A.** 2002. "Latent Variables in Psychology and the Social Sciences." *Annual Review of Psychology* 53:605-34.

Reprinted in Martin Bulmer, Patrick Sturgis, and Nick Allum (eds.) (2009) *The Secondary Analysis of Survey Data*, Sage Publications Ltd.

**Bollen, K.A.**, J. Glanville, and G. Stecklov. 2002. "Economic Status Proxies in Studies of Fertility in Developing Countries: Does the Measure Matter?" *Population Studies* 56:81-96.

**Bollen, K.A.** and J. Biesanz. 2002. "A Note on a Two Stage Least Squares (2SLS) Estimator for Higher Order Factor Analysis." *Sociological Methods & Research* 30:568-79.

**Bollen, K. A.** 2001 (print) 2002 (electronic). "Indicator: Methodology." Pages 7282-7287 in Neil J. Smelser and Paul B. Baltes (editors-in-chief). *International Encyclopedia of the Social and Behavioral Sciences*. Oxford, U.K.:Elsevier Science.

Curran, P.J., **K. A. Bollen**, P. Paxton, J. Kirby, & F. Chen. 2002. "The Noncentral chi-square distribution in misspecified structural equation models: Finite sample results from a Monte Carlo simulation." *Multivariate Behavioral Research* 37:1-36.

**Bollen, K. A.**, J. Glanville, and G. Stecklov. 2001. "Socioeconomic Status and Class in Studies of Fertility And Health in Developing Countries." *Annual Review of Sociology* 27:153-85.

**Bollen, K.A.** 2001. "Two-stage Least Squares and Latent Variable Models: Simultaneous Estimation and Robustness to Misspecifications." Pages 119-38 in Robert Cudeck, Stephen Du Toit, and Dag Sörbom (eds), *Structural Equation Modeling: Present and Future, A Festschrift in Honor of Karl Jöreskog*. Lincoln, IL:Scientific Software.

Curran, P. J. and **K. A. Bollen**. 2001. "The Best of Both Worlds: Combining Autoregressive and Latent Curve Models." Pages 107-35 in L. Collins and A. Sayer (eds), *New Methods for the Analysis of Change*. Washington, DC: American Psychological Association.

Paxton, P.M., P. Curran, **K. A. Bollen**, J. Kirby, and F. Chen. 2001. "Monte Carlo Simulations in Structural Equation Models." *Structural Equation Modeling* 8:287-312.

- Chen, F., **K. A. Bollen**, P. Paxton, P. Curran, and J. Kirby. 2001. "Improper Solutions in Structural Equation Models: Causes, Consequences, and Strategies." *Sociological Methods & Research* 29:468-508.
- Speizer, Ilene and **K. A. Bollen**. 2000. "How Well Do Perceptions of Family Planning Service Quality Correspond To Objective Measures? Evidence From Tanzania." *Studies in Family Planning* 31:163-177.
- Bollen, K.A.** and Kwok-fai Ting. 2000. "A Tetrad Test for Causal Indicators." *Psychological Methods* 5:3-22
- Bollen, K.A.** and P. Paxton. 2000. "Subjective Measures of Liberal Democracy." *Comparative Political Studies* 33:58-86.
- Mroz, T., **K. A. Bollen**, I. Speizer, and D. Dominic. 1999. "Quality, Accessibility, and Contraceptive Use in Rural Tanzania." *Demography* 36:23-40.
- Bollen, K. A.** and Juan Diez Medrano. 1998. "Who are the Spaniards? Nationalism and Identification in Spain." *Social Forces* 77:587-621.
- Bollen, K.A.** and P. Paxton. 1998. "Detection and Determinants of Bias in Subjective Measures." *American Sociological Review* 63:465-78.
- Reprinted in *Latent Variables and Factor Analysis* edited by Salvatore Babones (2015). Newbury, CA:Sage.
- Bollen, K.A.** and Kwok-fai Ting. 1998. "Bootstrapping a Test Statistic for Vanishing Tetrads." *Sociological Methods and Research* 27:77-102.
- Bollen, K.A.** 1998. "Structural Equation Models." Pages 4363-4372 in *Encyclopedia of Biostatistics*. P. Armitage and T. Colton (editors-in chief) Sussex, England:John Wiley.
- Bollen, K.A.** 1998. "Path Analysis." Pages 3280-3284 in *Encyclopedia of Biostatistics*. P. Armitage and T. Colton (editors-in-chief) Sussex, England:John Wiley.
- Bollen, K. A.** 1998. "LISREL Models." Pages 2305-2306 in *Encyclopedia of Biostatistics*. P. Armitage and T. Colton (editors-in-chief) Sussex, England:John Wiley.

**Bollen, K.A.** and Pamela Paxton. 1998. "Interactions of Latent Variables in Structural Equation Models." *Structural Equation Modeling* 5:267-93.

Reprinted as "Two-Stage Least Squares Estimation of Interaction Effects", pages 125-51 in R.E. Schumacker and G.A. Marcoulides (eds), 1998, *Interaction and Nonlinear Effects in Structural Equation Modeling*, Mahwah, NJ: Erlbaum.

**Bollen, K.A.** and Pamela Paxton. 1997. "Democracy Before Athens." Pages 13-44 in M. Midlarsky (ed) *Inequality and Democracy*. NY:Cambridge University Press.

Slifkin, Rebecca, Kerry E. Kilpatrick, Matthew C. Johnsen, and **Kenneth A. Bollen**. 1997. "A Resident-Based Reimbursement System for Intermediate Care Facilities for the Mentally Retarded." *Health Care Financing Review* 18:61-72.

**Bollen, K.A.** 1996. "An Alternative 2SLS Estimator for Latent Variable Models." *Psychometrika* 61:109-21.

**Bollen, K.A.** 1996. "A Limited-Information Estimator for LISREL Models With and Without Heteroscedastic Errors." Pages 227-41 in George Marcoulides and Randy Schumacker (eds). *Advanced Structural Equation Modeling Techniques*. Mahwah, NJ:Erlbaum.

**Bollen, K.A.**, D. Guilkey, and T. Mroz. 1995. "Binary Outcomes and Endogenous Explanatory Variables: Tests and Solutions with an Application to the Demand for Contraceptive Use in Tunisia." *Demography* 32: 111-131.

**Bollen, K.A.**, 1995. "Structural Equation Models that are Nonlinear in Latent Variables: A Least Squares Estimator." *Sociological Methodology* 25:223-51.

**Bollen, K.A.**, 1995. "Measures of Political Democracy." Pages 817-21 in Seymour Martin Lipset (ed.) *The Encyclopedia of Democracy*. Washington, D.C.: Congressional Quarterly.

**Bollen, K.A.** and S. Appold. 1993. "National Industrial Structure and the Global System." *American Sociological Review*, 58:283-301.

**Bollen, K.A.** 1993. "Liberal Democracy: Validity and Method Factors in Cross-National Measures." *American Journal of Political Science*, 37:1207-1230.

**Bollen, K.A.** and K. Ting. 1993. "Confirmatory Tetrad Analysis." *Sociological Methodology* 23:147-75.

**Bollen, K.A.**, B. Entwisle, and A. Anderson. 1993. "Macrocomparative Research Methods." *Annual Review of Sociology* 19:321-351.

Reprinted in A. Sica (ed.) 2005. *Comparative Methods in the Social Sciences*. SAGE Benchmarks in Social Research Methods series. Newbury Park, CA: Sage.

**Bollen, K.A.** and J.S. Long (eds.). 1992. Tests for Structural Equation Models. Special issue of *Sociological Methods & Research*, 21, November, pages 123-282.

**Bollen, K.A.** and R. Stine. 1992. "Bootstrapping Goodness of Fit Measures in Structural Equation Models." *Sociological Methods and Research*, 21:205-229.  
Reprinted in K.A. Bollen and J.S. Long (eds.) 1993. *Testing Structural Equation Models*.

**Bollen, K.A.** and G. Arminger. 1991. "Observational Residuals in Factor Analysis and Structural Equation Models." *Sociological Methodology* 21:235-62.

**Bollen, K.A.** and R. Lennox. 1991. "Conventional Wisdom on Measurement: A Structural Equation Perspective." *Psychological Bulletin*, 110: 305-314.

Reprinted in *Latent Variables and Factor Analysis* edited by Salvatore Babones (2015). Newbury, CA:Sage.

**Bollen, K.A.** and R. Hoyle. 1990. "Perceived Cohesion: A Conceptual and Empirical Examination." *Social Forces* 69:479-504.

**Bollen, K.A.** 1990. "Political Democracy: Conceptual and Measurement Traps." *Studies in Comparative International Development* 25:7-24.

Reprinted in *On Measuring Democracy* edited by Alex Inkeles (1991).

**Bollen, K.A.** and Robert Stine. 1990. "Direct and Indirect Effects: Classical and Bootstrap Estimates of Variability." *Sociological Methodology* 20:115-140.

**Bollen, K.A.** and Robert Jackman. 1990. "Regression Diagnostics: An Expository Treatment of Outliers and Influential Cases." Pages 257-291 in J. Fox and J. Scott Long (eds.) *Modern Methods of Data Analysis*. Newbury Park, CA: Sage. (Revised 1985 SMR paper).

**Bollen, K.A.** 1990. "Overall Fit in Covariance Structure Models: Two Types of Sample Size Effects." *Psychological Bulletin*, 107:256-259.

**Bollen, K.A.** and Robert Jackman. 1989. "Democracy, Stability, and Dichotomies." *American Sociological Review*, 54: 612-621.

- Bollen, K.A.** 1989. "A New Incremental Fit Index for General Structural Equation Models." *Sociological Methods and Research*, 17:303-316.
- Bollen, K.A.** and J. Liang. 1988. "Some Properties of Hoelter's CN." *Sociological Methods and Research* 16:492-503.
- Bollen, K.A.** 1987. "World System Status and Development Status: Overfitting or Proxy Variables?" *International Journal of Comparative Sociology* 28:75-79.
- Bollen, K.A.** 1987. "Total, Direct, and Indirect Effects in Structural Equation Models." *Sociological Methodology* 17:37-69.  
Reprinted in Salvatore Babones (ed.). 2013. *Applied Statistical Modeling*. London:SAGE.
- Bollen, K.A.** 1987. "Outliers and Improper Solutions: A Confirmatory Factor Analysis Example." *Sociological Methods and Research* 15:375-84.
- Bollen, K.A.** and R. Schwing. 1987. "Air Pollution-Mortality Models: A Demonstration of the Effects of Measurement Error." *Quality and Quantity* 21:37-48.
- Liang, J., R.H. Lawrence, and **K. A. Bollen**. 1987. "Race Differences in Two Measures of Subjective Well-Being." *Journal of Gerontology* 42:426-28.
- Bollen, K.A.** 1987. "Structural Equation Approaches to Subjective Air Quality." pp. 57-72 in H. S. Koelega (ed.) *Environmental Annoyance: Characterization, Measurement, and Control*. Amsterdam: Elsevier Science Publishers.
- Liang, J., H. Asano, **K. A. Bollen**, E.F. Kahana, and D. Maeda. 1987. "Cross-Cultural Comparability of the Philadelphia Geriatric Center Morale Scale: An American-Japanese Comparison." *Journal of Gerontology* 42:37-43.
- Bollen, K.A.** and J. Kmenta. 1986. "Estimation of Simultaneous Equation Models with Autoregressive or Heteroscedastic Disturbances." pp. 704-11 in J. Kmenta *Elements of Econometrics*. New York: Macmillan.
- Bollen, K.A.** 1986. "Sample Size and Bentler and Bonett's Nonnormed Fit Index." *Psychometrika* 51:375-77.
- Bollen, K.A.** 1986. "Political Rights and Political Liberties in Nations: An Evaluation of Human Rights Measures, 1950 to 1984." American Association for the Advancement of Science's special issue of *Human Rights Quarterly* 8:567-91.



- Liang, J., R.H. Lawrence, and **K. A. Bollen**. 1986. "Age Differences in the Structure of the Philadelphia Geriatric Center Morale Scale." *J. of Psychology and Aging* 1:27-33.
- Bollen, K.A.** and Karl G. Jöreskog. 1985. "Uniqueness Does Not Imply Identification: A Note on Confirmatory Factor Analysis." *Sociological Methods and Research* 14:155-63.
- Bollen, K.A.** and Robert Jackman. 1985. "Political Democracy and the Size Distribution of Income." *American Sociological Review* 50:438-57.
- Phillips, David P. and **K. A. Bollen**. 1985. "Same Time Last Year: Selective Data Dredging for Negative Findings." *American Sociological Review* 50:364-76.
- Liang, J. and **K. A. Bollen**. 1985. "Sex Differences in the Structure of the Philadelphia Geriatric Center Morale Scale." *Journal of Gerontology* 40:468-77.
- Bollen, K.A.** and Robert Jackman. 1985. "Regression Diagnostics: An Expository Treatment of Outliers and Influential Cases." *Sociological Methods and Research* 13:510-42.
- Reprinted in *Fundamentals of Regression Modeling* Four-volume Set edited by Salvatore Babones (2014). Newbury, CA:Sage.
- Bollen, K.A.** and Robert Jackman. 1985. "The Economic and Noneconomic Determinants of Political Democracy in the 1960s." *Research in Political Sociology* 1:27-48.
- Reprinted in *The Political Sociology of the State* edited by R. Braungart and M. Braungart (1990). Greenwich CT: JAI Press.
- Bollen, K.A.** 1984. "Multiple Indicators: Internal Consistency or No Necessary Relationship." *Quality and Quantity* 18:377-85.
- Bollen, K.A.** and B. Entwisle. 1984. "Economic Development and Fertility: A Note on Functional Form Specification." *Comparative Social Research* 7:179-93.
- Bollen, K.A.** 1983. "World System Position, Dependency and Political Democracy." *American Sociological Review* 48:468-79. (Named as one of "ASR Greatest Hits" by Jerry Jacobs, Editor of American Sociological Review.)
- Bollen, K.A.** 1983. "Temporal Variations in Mortality: A Comparison of U. S. Suicides and Motor Vehicle Fatalities, 1972-1976." *Demography* 20:45-59.
- Liang, J. and **K. A. Bollen**. 1983. "The Structure of the Philadelphia Geriatric Center Morale Scale: A Reinterpretation." *Journal of Gerontology* 38:181-89.

Cermak, G. and **K. A. Bollen**. 1983. "Observer Consistency in Judging Extent of Cloud Cover". *Atmospheric Environment* 17:2109-2110.

**Bollen, K.A.** and D. Phillips. 1982. "Imitative Suicides: A National Study of the Effects of Television News Stories." *American Sociological Review* 47:802-809.

(Named as one of "ASR Greatest Hits" by Jerry Jacobs, Editor of American Sociological Review.)

**Bollen, K.A.** and S. Jones. 1982. "Political Instability and Production: Motor Vehicle Output in Argentina, Brazil, and Mexico." *Studies in Comparative International Development* 27:73-91.

**Bollen, K.A.** and S. Jones. 1982. "Political Instability and Foreign Direct Investment: The Motor Vehicle Industry, 1948-1965." *Social Forces* 60:1070-88.

**Bollen, K.A.** 1982. "A Confirmatory Factor Analysis of Subjective Air Quality." *Evaluation Review* 6:521-35.

Cermak, G. and **K. A. Bollen**. 1982. "The Relationship Between Judged Visibility and Judged Air Quality: Results of a Survey." *Journal of the Air Pollution Control Association* 32:86-88.

**Bollen, K.A.** and B. Grandjean. 1981. "The Dimension(s) of Democracy: Further Issues in the Measurement and Effects of Political Democracy." *American Sociological Review* 46:232-39.

**Bollen, K.A.** and D. Phillips. 1981. "Suicidal Motor Vehicle Fatalities (MVF) in Detroit: A Replication." *American Journal of Sociology* 87:404-12.

**Bollen, K.A.** and K.H. Barb. 1981. "Pearson's R and Coarsely Categorized Measures." *American Sociological Review* 46:232-39.

**Bollen, K.A.** 1980. "Issues in the Comparative Measurement of Political Democracy." *American Sociological Review* 80:370-90. (Named as one of "ASR Greatest Hits" by Jerry Jacobs, Editor of American Sociological Review.)

Covello, V. and **K. A. Bollen**. 1979. "Status Consistency in Comparative Perspective: An Examination of Educational, Occupational, and Income Data in Nine Societies." *Social Forces* 58:528-39.

**Bollen, K.A.** 1979. "Political Democracy and the Timing of Development." *American Sociological Review* 44:572-87.

**Bollen, K.A.** and S. Ward. 1979. "Ratio Variables in Aggregate Data Analysis: Their Uses, Problems, and Alternatives." *Sociological Methods and Research* 7:431-50. Also, reprinted in *Aggregate Data Analysis* edited by D.J. Jackson and E.F. Borgatta (1980).

#### **ARCHIVE CONSTRUCTION AND DOCUMENTATION**

**Bollen, K.A.** 1998. Cross National Indicators of Liberal Democracy, 1950-1990. (NSF Funded Project. *ICPSR Study No. 2532*).

#### **COMMENTS, REPLIES, AND FOREWORDS**

Bainter, Sierra A. and **K.A. Bollen**. 2015. "Moving forward in the debate on causal indicators: Rejoinder to comments." *Measurement: Interdisciplinary Research and Perspectives* 13:63-74.

**Bollen, K.A.** 2012. "'Cause' and 'effect' indicators." Page 163 in Earl Babbie's *The Practice of Social Research*. (Also appears in other editions of text since 1986.)

**Bollen, K.A.** 2007. "Interpretational confounding is due to misspecification, not to type of indicator: Comment on Howell, Breivik, and Wilcox (2007)." *Psychological Methods* 12: 219-228.

Reprinted in *Latent Variables and Factor Analysis* edited by Salvatore Babones (2015). Newbury, CA:Sage.

C. Zimmer and **K. A. Bollen**. 2002. "Is What You Ask, What You Get?" *North Carolina Data Net* September, 31:14.

**Bollen, K.A.** 2000. "Modeling Strategies: In Search of the Holy Grail." *Structural Equation Modeling* 7: 74-81.

Reprinted in W. P. Vogt & R. B. Johnson (eds) 2012. *Correlation and Regression Analysis*. Newbury Park, CA: SAGE.

**Bollen, K.A.** 1995. "Apparent and Nonapparent Significance Tests." *Sociological Methodology* 25:459-468.

- Bollen, K.A.** and R.W. Jackman. 1995. "Inequality and Democratization Revisited." *American Sociological Review* 60:983-989.
- Bollen, K.A.** 1994. "Foreword" Pages xvii-xix in Rick Hoyle (ed.) *Structural Equation Modeling: Issues and Applications*. Newberry Park: California: Sage.
- Bollen, K.A.** 1990. "A Comment on Model Modification and Evaluation." *Multivariate Behavioral Research* 25:181-185.
- Bollen, K.A.** 1990. "Outlier Screening and a Distribution-Free Test for Vanishing Tetrads." *Sociological Methods and Research* 19:80-92.
- Bollen, K.A.** 1988. "If You Ignore Outliers, Will They Go Away? A Response to Gasiorowski." *Comparative Political Studies* 20:516-522.
- Bollen, K.A.** and K.H. Barb. 1983. "Collapsing Variables and Validity Coefficients (Reply to O'Brien)." *American Sociological Review* 48:286.
- Bollen, K.A.** and B. Grandjean. 1983. "Issues of Theory, Issues of Fact (Reply to Fornell)." *American Sociological Review* 48:138-40.

## REVIEWS

- Bollen, K.A.** 1997. "Review of L. Hayduk LISREL:Issues, Debates, and Strategies." *Social Forces* 76:352-354.
- Bollen, K.A.** and Kwok-fai Ting. 1991. "Review of P. Bentler's EQS 3.0 and K. Jöreskog and D. Sörbom's LISREL 7.16." *American Statistician* 45:68-73.
- Bollen, K.A.** 1988. "Review of The Statistical Analysis of Quasi-Experiments by C. Achen." *Contemporary Sociology* 17:433-434.
- Bollen, K.A.** 1988. "Review of Matrices and Society: Matrix Algebra and its Applications in the Social Sciences by Ian Bradley and Ronald L. Meek." *Contemporary Sociology* 17:127.
- Bollen, K.A.** 1985. "Review of Industrialization and Development: A Third World Perspective by Pradip K. Ghosh (ed) and Contending Approaches to World System Analysis by William R. Thompson (ed)." *Contemporary Sociology* 14:250-51.
- Bollen, K.A.** 1981. "Review of The Political Economy of Distribution by Michael D. Ward." *American Journal of Sociology* 87:502-4.

**Bollen, K.A.** and B. Entwisle. 1978. "Review of Mortality Patterns in National Populations by Samuel Preston." *American Journal of Sociology* 84:785-88.

#### **CONVENTION PAPERS AND INVITED PRESENTATIONS (Partial Listing)**

- "Measurement Matters: Democracy, Distance, and Department Rankings." Invited presentation at the Institute for Advanced Studies of the University of Bologna, Bologna, Italy, 23 September 2015.
- "Social, Behavioral and Economic Sciences Perspectives on Robust and Reliable Science." Invited speaker at *NSF Director's Symposium on Robust and Reliable Science: The Path Forward*. National Science Foundation, Arlington, Virginia, 10 September, 2015.
- "The Latent Variable – ALT (LV-ALT) Model: A General Framework for Longitudinal Data Analysis." Presented at Duke Workshop on Sensing and Analysis of High-Dimensional Data. Duke University, Durham, North Carolina, 27-29 July 2015.
- "The Latent Variable – ALT (LV-ALT) Model: A General Framework for Longitudinal Data Analysis." Presented at Annual International Meeting of the Psychometric Society IMPS 2015, Beijing Normal University, China, 12-16 July 2015.
- "Are Survey Weights Needed? A Review of Diagnostic Tests in Regression Analysis." Presented at the ASA Methodology Section Mid-Year Meeting, San Diego, California, April 29, 2015. (Based on collaborative work with Paul Biemer, Alan Karr, Stephen Tueller, & Marcus Berzofsky, RTI International.)
- "Reflections on Causal Indicators in Structural Equation Models." Invited speaker, Department of Business Administration, Faculty of Business, Economics & Statistics, University of Vienna, Vienna, Austria, May 2014.
- "Measuring the Unmeasurable: Concepts and Latent Variables." Keynote speaker at Complex Causality in Structural Equation Modeling: Latent Variables & Nonrecursive Flows. QIPSR Miniconference. University of Kentucky, April 2014.
- "Measuring the Unmeasurable: Concepts and Latent Variables." Keynote speaker at "Concepts as building Blocks of Theories" workshop at Berlin Graduate School of Social Sciences at the Humboldt University and the Social Science Research Center Berlin, Berlin, Germany, July 2013.

Discussant for "IRT Models for Aggregating V-Dem Data" by D. Pemstein at Institute for Qualitative and Multimethod Research workshop. Maxwell School, Syracuse University, Syracuse, NY. June 2013.

"An Overview of Structural Equation Models." at Robert Wood Johnson Foundation. New Connections: Increasing Diversity of RWJF Programming at Princeton University, Princeton, NJ. June 2013.

"Longitudinal Structural Equation Models." Invited speaker at Graduate Methods Workshop at the Penn State Population Research Institute, State College, PA. June 2013.

"Structural Equation Models" Workshop sponsored by Biostatistics Group at University of Missouri, Columbia, Missouri. March 2013.

"New Tests of the Number of Factors in Factor Analysis Using Instrumental Variables." Invited talk. Seminar series of the Department of Mathematics and Statistics, University of North Carolina at Greensboro, Greensboro, North Carolina. February 2013.

"Model Implied Instrumental Variables (MIIVs)-Two Stage Least Squares (2SLS): An Alternative Approach to SEMs" and "Latent Growth Curve Models." Keynote Speaker at Structural Equation Modeling and Latent Variable Models Conference, University of Bologna, Bologna, Italy. September 2012.

"A General Panel Model for Random and Fixed Effects Using Structural Equation Models." Invited Lecture at Center for Lifespan Psychology of the Max Planck Institute for Human Development, Berlin, Germany. September 2012.

"What Are Latent Variable Structural Equation Models?" Invited talk. Academy of Mathematics and System Sciences, Chinese Academy of Sciences. Beijing, China. July 2012.

"Structural Equation Models" Invited workshop. Peking University. Beijing, China. July 2012.

"A General Panel Model for Random and Fixed Effects using Structural Equation Models." Invited talk. Department of Statistics, Chinese University of Hong Kong, Hong Kong, July 2012.

"Determining the Number of Factors using Model Implied Instrumental Variables (MIIVs)" Invited Talk. Association for Psychological Science Annual Convention. Washington, DC, May 2011.

- “An Overview of Latent Growth Curve Models.” Invited Workshop. SMEP-APS Sponsored. Association for Psychological Science Annual Convention. Washington, DC, May 2011.
- “Model Implied Instrumental Variables (MIIVs)-Two Stage Least Squares (2SLS): An Alternative Approach to SEMs.” Keynote Speaker. Modern Modeling Methods Conference. University of Connecticut, Storrs, CN, May 2011.
- “Advanced Topics in Structural Equation Models.” Invited Workshop. SPIDA 2011, York University, Toronto, Ontario, Canada, May 2011.
- “Model Implied Instrumental Variables (MIIVs)-Two Stage Least Squares (2SLS): An Alternative Approach to SEMs.” Invited talk. Department of Business Studies, Uppsala University, Uppsala, Sweden, May 2011.
- “Longitudinal Modeling with Structural Equation Models.” Invited talks. Departments of Statistics & Business Studies, Uppsala University, Uppsala, Sweden, May 2011.
- “A General Panel Model with Random and Fixed Effects: A Structural Equations Approach.” Colloquium, Department of Statistics, Pennsylvania State University, University Park, PA, November 2010.
- “Measuring the Unmeasurable: Democracy, Depression, and Distance.” Invited Address, 2010 Clifford C. Clogg Memorial Lecture, Departments of Sociology & Statistics, Pennsylvania State University, University Park, PA, November 2010.
- “A General Panel Model with Random and Fixed Effects: A Structural Equations Approach.” Demography Workshop, Population Center, University of Chicago, Chicago, IL, October 2010.
- “Measuring the Unmeasurable: Latent Variables and Structural Equation Models.” Invited presentation at Quantification of Behavior, Arthur M. Sackler Colloquia of the National Academy of Sciences, Washington, D.C., June 2010.
- “Longitudinal Models with Structural Equation Models (SEMs).” Invited presentations at Norwegian School of Management, Oslo, Norway, May-June 2010.
- Visiting Fellow at the Institute of Education Sciences and BEAR seminar presentations on variety of structural equation models topics. University of California, Berkeley, April 2010.
- “A General Panel Model with Fixed and Random Effects: A ‘Cost of Motherhood’ Example.” Workshop in Methods. Indiana University, Bloomington, IN, April 2010.

“Measuring the Unmeasurable: Depression, Democracy, and Distance.” Karl S. Schuessler  
Lecture in Social Science Research. Indiana University, Bloomington, IN, April 2010.

“A General Panel Model with Fixed and Random Effects: A ‘Cost of Motherhood’ Example.”  
Office of Population Research, Princeton University, Princeton, NJ, February 2010.

“Longitudinal Measurement of Patient Reported Outcomes: Latent Curve Models Using  
Structural Equation Models.” Invited talk at 2009 Summer Program on Psychometrics,  
SAMSI Program at NISS, Research Triangle Park, NC, July 2009.

“Fixed and Random Effects Models in Panel Data using Structural Equation Models.” & “An  
Overview of Latent Curve Models.” Invited talks presented at the Swiss Foundation for  
Research in Social Sciences, University of Lausanne, Lausanne, Switzerland,  
September 2008.

“An Overview of the Odum Institute for Research in Social Science.” Invited talk presented at  
the Swiss Foundation for Research in Social Sciences, University of Lausanne,  
Lausanne, Switzerland, September 2008.

“Fixed and Random Effects Models in Panel Data using Structural Equation Models.” Invited  
talk presented at the California Center for Population Research and Department of  
Sociology, UCLA, February 2008.

“Liberal Democracy Series I, 1972-1988: Definition, Measurement, And Trajectories.” Invited  
talk presented at “Producing Better Measures by Combining Data Cross-Temporally”  
conference at University of Oxford, Oxford, England, November 2007.

Invited Speaker at the South African Statistical Association (SASA), Variety of topics and  
locations in South Africa. October - November 2007.

“Structural Equation Models Lectures.” Invited talk at the European Courses in Advance  
Statistics (ECAS) program of the European Union. Grenoble, France, September 2007.

“Causality and Structural Equation Models.” Invited talk at International Psychometric Society  
Meetings, Tokyo University, Tokyo, Japan, July 2007.

“Topics in Random Effects Models for Longitudinal Data.” Invited talk in SPIDA program at  
Institute for Social Research at York University, Toronto, Ontario, Canada, June 2007.

“Latent Variable Models under Misspecification: Two Stage Least Squares (2SLS) and  
Maximum Likelihood (ML) Estimators.” Invited talk at Department of Statistics,  
University of Chicago, April 2007.



- “Latent Variable Models.” Invited talk at Second Annual Miami University CACR Symposium on State-of-the-Art Statistical Computing Methods for Social Science, Behavioral Science, and Business. Center for the Advancement of Computational Research, Miami University, Oxford, Ohio, March 2007.
- “Structural Equation Models (SEMs) for Pooled Time-Series and Cross-Sectional Data.” Invited talk at Methods of Analysis Program in Social Sciences (MAPSS) Colloquium at Stanford University, January 2007.
- “Structural Equation Models and Recent Extensions.” Invited Speaker at Winemiller 2006 Conference on Methodological Developments of Statistics in the Social Sciences. University of Missouri, Columbia, Missouri, October 2006.
- “Missing Data in Structural Equation Models” and “Growth Curve Models” Invited Speaker at SPIDA 2006. York University. Toronto, Canada, May 2006.
- “Structural Equation Models (SEMs) for Pooling Cross-Sectional and Time-Series (Panel) Data.” Keynote Speaker at Southampton Statistical Sciences Research Institute Symposium on the Convergence of Methods for the Analysis of Panel Data, University of Southampton, Southampton, UK, April 2006.
- “Latent Variable Models under Misspecification: Two Stage Least Squares (2SLS) and Maximum Likelihood Estimators.” Department of Statistics, University of Missouri, Columbia, Missouri, October 2005.
- “Latent Variables in Psychology and the Social Sciences: A Sample Realization Definition.” Invited Talk. Institute for Statistics and Decision Sciences, Duke University, Durham, North Carolina, September 2004.
- “Dissecting the Chi Square Test Statistic in Structural Equation Models.” Invited talk at Model Selection Conference. University of Amsterdam, Netherlands, August 2004.
- “Polychoric Two-Stage Least Squares for Categorical Variables in Structural Equation Models.” Keynote Speaker at the Society for Multivariate Analysis in the Behavioral and Social Sciences (SMABS) Conference, Jena, Germany, July 2004.
- “The Future of Social Science Data Archiving in the United States: A Discussion with Five Archive Directors” IASSIST Conference, Madison, Wisconsin, May 2004.

- “Latent Variables in Psychology and the Social Sciences.” Keynote Speaker at Congress on Methodology of Health and the Social Sciences, University of Valencia, Valencia, Spain, September 2003.
- “Latent Trajectory/Growth Curve Analysis.” Invited Speaker at Congress on Methodology of Health and the Social Sciences, University of Valencia, Valencia, Spain, September 2003.
- “Latent Variable Models under Misspecification: A Comparison of Full Information Maximum Likelihood and Two Stage Least Squares (2SLS) Estimators.” Invited Speaker at Research Methods 2003 Conference, Free University, Amsterdam, Netherlands, June 2003.
- “A Weightless Estimator for Categorical Variables in Structural Equation Models.” Psychometric Society Annual Meeting, Chapel Hill, NC, June 2002.
- “A Tetrad Test for Categorical Variables in Structural Equation Models.” (with John Hipp) Psychometric Society Annual Meeting, Chapel Hill, NC, June 2002.
- “An Evaluation of RMSEA Tests of ‘Close Fit’ and ‘Not Close Fit’ in Structural Equation Models.” (with Curran, P.J., Chen, F., Paxton, P., & Kirby, J.B.) Psychometric Society Annual Meeting, Chapel Hill, NC, June 2002.
- “Economic Status and Fertility: Does the Measure Matter?” Invited talk at the Office of Population Research, Princeton University, Princeton, NJ, September 2001.
- “Latent Trajectory/Growth Curve Analysis.” Presented at the Methods Section Workshop of The American Sociological Association, Anaheim, California, August 2001.
- “Latent Variables in Psychology and the Social Sciences.” Invited talk at the International Meeting of the Psychometric Society, Osaka, Japan, July 2001.
- “Growth Modeling using Structural Equation Models.” Invited talk at Seminar in Recent Developments in Structural Equation Modeling. Norwegian School of Economics and Business Administration, Bergen, Norway, May 2001.
- “Interactions of Latent Variables in Structural Equation Models.” Invited talk at Seminar in Recent Developments in Structural Equation Modeling. Norwegian School of Economics and Business Administration, Bergen, Norway, May 2001.
- “Two-stage Least Squares and Latent Variable Models: Simultaneous Estimation and Robustness to Misspecifications.” Invited talk. International Symposium on Structural Equation Modeling, Chicago, IL, December 2001.

- “Causal Inferences in Structural Equation Models.” Invited talk. Symposium on Causal Inferences, School of Public Health, Johns Hopkins University, Baltimore, MD, September 2000.
- “Structural Equation Models.” Invited talk. Quantitative Methods Symposium. Institute for Social Research. York University, Toronto, Ontario, June 2000.
- “An Autoregressive Latent Trajectory Model: A Synthesis of Two Traditions.” Paper presented at Factor Analysis and Structural Equation Modeling: Perspectives and Visions. An International Symposium honoring the Research of Karl G. Jöreskog, University of Uppsala, Uppsala, Sweden, March - April 2000.
- “An Empirical Deconstruction of Graduate School Ratings Using a Merit-Artifact Model.” (with P. Paxton), American Sociological Association meetings. Chicago, IL, August 1999.
- “An Overview of Structural Equation Models.” 1999 American Sociological Association Convention, Chicago, IL, August 1999.
- “Improper Solutions in Structural Equation Models: Causes, Consequences, and Strategies.” Paper presented at the 1999 Annual Meeting Psychometric Society at the University of Kansas, Lawrence, Kansas, June 1999.
- “Latent Growth Curve Modeling.” (with P. Curran) Invited presentation at the Second International Institute on Developmental Science, Stockholm, Sweden, May 1999.
- “An Autoregressive Latent Trajectory (ALT) Model: Synthesizing Two Traditions.” (with P. Curran) Gertrude M. Cox Statistics Conference, RTI, Research Triangle Park, NC. September 1999. Also presented at Methodology Section Conference, American Sociological Association, Duke University, March 1999.
- “An Empirical Examination of the RMSEA for Assessing Fit in Structural Equation Modeling: Finite Sampling Properties and Statistical Power.” (with P. Curran, P. Paxton, F. Chen, J. Kirby) Methodology Section Conference of the American Sociological Association, Duke University, March 1999.
- “A hybrid latent trajectory model of stability and change: Applications in developmental psychopathology.” (with P. Curran) Biennial meeting of the Society for Research in Child Development, Albuquerque, NM, April 1999.

- "Toward Synthesizing Autoregressive and Latent Trajectory Models." (with P. Curran) APA: New Methods for the Analysis of Change conference hosted by Methodology Center, The Pennsylvania State University, University Park, PA, October 1998.
- "Structural Equation Models with Interactions of Latent Variables: A Two-Stage Least Squares Estimator." Invited presentation at Osaka University, Seventh Colloquium of Psychology and Behavioral Sciences, Osaka, Japan, September 1998.
- "Illiberal Democracies: Commonplace or Exceptional?" Invited Lecture at Department of Sociology, Brown University, Providence, R.I., May 1998.
- "Change Scores, Fixed Effects, and Random Components in Longitudinal Models." Invited Lecture, Department of Sociology, University of Akron, Akron, Ohio, April 1998.
- "Does Liberal Democracy Matter?" Invited Lecture at the Alpha Kappa Delta Banquet, University of Akron, Akron, Ohio, April 1998.
- "Structural Equation Modeling." Invited Lecture at Fourth Annual Population Research Institute Methodology Workshop. Pennsylvania State University, University Park, Pennsylvania, June 1997.
- "An Overview of Structural Equation Models." Invited Lecture at Workshop on Statistical Association Models with Latent Variables, Wiesbaden, Germany, July 1996.
- "Measurement Models." Invited Lecture at Nordic Conference on Scale Validation. University of Copenhagen, Denmark, May 1996.
- "An Introduction to Structural Equation Models." Invited Workshop at Swinburne University. Melbourne, Australia, November 1996.
- "Interactions of Latent Variables in Structural Equation Models." Social Science and Statistics Conference in Honor of Clifford C. Clogg. Pennsylvania State University, State College, PA, September 1996.
- "Subjective Measures of Democracy." (with Pamela Paxton). Presented at the 1996 American Sociological Association Convention. New York City, August 1996.
- "A Monte Carlo Study of the Instrumental Variables and Two Stage Least Squares Estimators in Confirmatory Factor Analysis." (with Andrey Lukashou). Presented at the 1996 American Sociological Association Convention. New York City, August 1996.

- "Family Planning Facilities in Tanzania: His and Her Perceptions of Distance and Time."  
Presented at 1996 Population Association of America Convention, New Orleans, Louisiana, May, 1996; Also presented at Population Seminar, Pennsylvania State University, State College, Pennsylvania, October 1995.
- "Ideas on Teaching Undergraduate Methodology Courses in Sociology." Invited presentation  
Pew Charitable Trust Program in Preparing Future Faculty, Department of Sociology,  
University of Washington, Seattle, Washington, January 1996.
- "Ideas on Teaching Graduate Methodology Courses in Sociology." (same as above).
- "The Measurement of Democracy". Invited presentation at 1996 Midwest Political Science  
Association Convention, Chicago, Illinois, April 1996.
- "Democracy Before Athens," (with Pamela Paxton). Inequality and Democracy Conference at  
Rutgers University, New Brunswick, New Jersey, February 1994.
- "A 2SLS Estimator for Latent Variable Models," Interdisciplinary Consortium for Statistical  
Applications at Indiana University, Bloomington & RMD Conference on Causal  
Modeling, Purdue University, West Lafayette, Indiana, March 1994.
- "Theoretical Frameworks for Democratic Political Development Assessments." National  
Academy of Science. Washington, D.C., January 1993.
- "Bootstrapping Goodness of Fit Measures in Structural Equation Models." (With R. Stine).  
1992. Social Science Methodology Conference. ISA Trento, Italy. Also presented at  
Department of Economics, Universitat Pompeu Fabra, Barcelona, Spain, Summer,  
1992.
- "Outliers and Residual Analysis." Keynote Speaker at Third National Symposium on  
Methodological Issues in Advanced Causal Modeling. Atlanta, GA, January 1992.
- "Indicators of Progress Toward Democracy Workshop." National Research Council.  
Washington, D.C., May 1991.
- "High Level Expert Group Meeting on Freedom and Development." United Nations  
Development Program. New York, NY, November 1991.
- "Confirmatory Tetrad Analysis." (With K. Ting). American Sociological Association, Cincinnati,  
Ohio, August 1991.

- "Observational Residuals in Factor Analysis" (with G. Arminger) American Sociological Association, Washington, D.C., August 1990.
- "Perceived Cohesion: Its Dimensions and Measurement." (With R. Hoyle) American Sociological Association, New York, New York, August 1989.
- "Conventional Wisdom on Measurement: A Structural Equation Perspective." (with R. Lennox) American Sociological Association, New York, New York, August 1989.
- "Bootstrapping Structural Equation Models." (with R. Stine) American Sociological Association, Atlanta, Georgia, August 1988.
- "Political Democracy: Conceptual and Measurement Traps." Invited paper, "The Measurement of Democracy," Hoover Institution, Stanford, California, May 1988.
- "A New Incremental Fit Index for General Structural Equation Models." Southern Sociological Society, Nashville, Tennessee, March 1988.
- "Structural Equation Approaches to Subjective Air Quality." Invited paper at the 350th Anniversary Symposium of the University of Utrecht, The Netherlands, Fall 1986.
- "Outliers and Improper Solutions in Structural Equation Models." American Sociological Association, New York, NY, August 1986.
- "Toward a model of Social Integration Among the Elderly." (with J. Liang) American Sociological Association, New York, NY, August 1986.
- "A Panel Analysis of the Philadelphia Geriatric Center Morale Scale" (with J. Liang & R. Lawrence) The Gerontological Society of America's 39th Annual Scientific Meeting, 1986.
- "Structural Equation Models: Unresolved Problems and Neglected Issues." Roundtable Discussion Chair, American Sociological Association, Washington, D.C., August 1985.
- "World System Position, Democracy, and Inequality." (with R. Jackman), General Conference of the European Association of Development Research and Training Institutes, Madrid, Spain, Summer 1984.
- "A Note on 2SLS with Heteroskedastic and/or Autoregressive Disturbances." American Sociological Association, San Antonio, TX, August 1984.

- "Multiple Indicators: Internal Consistency or No Necessary Relationship?" American Sociological Association, Detroit, Michigan, August 1983.
- "Noneconomic Determinants of Political Democracy" (with Robert Jackman). American Sociological Association, Detroit, Michigan, August 1983.
- "Daily Temporal Variations in Mortality." Population Association of America, San Diego, CA, April 1982.
- "The Dimension(s) of Democracy." (with B. Grandjean), American Sociological Association, Toronto, Ontario, Canada, August 1981.
- "Ratio Variables in Social Science Research." Roundtable Discussion Chair, American Sociological Association, Toronto, Ontario, Canada, August 1981.
- "Ratio Variables in Correlation and Regression Analysis." Roundtable Discussion Chair, American Sociological Association, New York, NY, August 1980.
- "The Effects of Early and Late Development on Political Democracy." American Sociological Association, Boston, MA, August 1979.
- "Ratio Variables in Aggregate Data Analysis: Their Uses, Problems, and Alternatives." (with S. Ward), Population Association of America, Philadelphia, PA, April 1979.
- "A Comparative Analysis of Status Consistency." (with V. Covello), Eastern Sociological Association, Philadelphia, PA, Spring 1978.

#### **EDITORIAL BOARDS:**

American Sociological Review (2007-2010)  
Journal of Causal Inference (2011-)  
Journal of Statistical Theory and Practice (2008-)  
Psychological Methodology (1997-2004)  
Multivariate Behavioral Research (1998-)  
American Journal of Sociology (1997-1999)  
Social Forces (1985-)  
Contemporary Sociology (1987-1991)  
Sage Quantitative Applications in the Social Science Series (1988-)  
Sociological Methods & Research (1987-)  
Sociological Methodology (1992-1995, 1998-2000, 2011-)  
Studies in Comparative International Development (2000-)

Structural Equation Modeling: A Multidisciplinary Quarterly (1994-)  
Journal of Educational and Behavioral Statistics (2008-2014)

**REFEREE FOR:**

*American Sociological Review, American Journal of Sociology, Demography, Biometrika, Psychological Bulletin, Journal of the American Statistical Association, Psychometrika, American Political Science Review, American Journal of Political Science, Psychological Methodology, Sociological Forum, International Studies Quarterly, Multivariate Behavioral Research, British Journal of Mathematical and Statistical Psychology, Studies in Comparative International Development, Journal of Political and Military Sociology, Journal of Conflict Resolution, Social Problems, Suicide and Life-Threatening Behavior, Law and Society, National Science Foundation, National Institute of Health, Veterans Administration, and others.*

**GRANT ACTIVITIES**

Harris, KM. (PI), K.A. Bollen (Co-Investigator). "The National Longitudinal Study of Adolescent to Adult Health." National Institute of Child Health and Human Development, Subproject III on Developmental Origins of Health and Disease Paradigm. July 16, 2014 to April 30, 2019 (2P01HD031921-16A1: \$26,512,883 [\$682,338 Subproject III]).

Bollen, K.A. (PI), "Structural Equation Modeling for Complex Survey Data." Research Triangle Institute (RTI International) from April 1, 2014 to July 31, 2015. (C00600408: \$120,000).

Bollen, K.A. (PI), "A Virtue Ethics Perspective on Stress." Yale University and John Templeton Foundation from July 1, 2013 to June 30, 2015 (C14R11679: \$117,396).

Mooney, Margarita (PI), K.A. Bollen (Investigator). "A Virtue Ethics Perspective on Stress and Human Flourishing from Youth to Young Adulthood." John Templeton Foundation from July 1, 2012 to June 30, 2013 (A13-0085-001: \$603,650).

McLean, S. (PI), K.A. Bollen (Investigator), and L. Diatchenko (Investigator). "Applying Biopsychosocial Model to Post-MVC Pain Development in African Americans." National Institute of Health from September 15, 2011 to August 31, 2016 (1R01ARD60852-01A1: \$763,687).

Adair, L. S. (PI), K.A. Bollen (Co-investigator), J. Brja, A. Feranil, C. Kuzawa, and T. McDade. "Modeling the Developmental Origins of Adult Disease Risk Factors." National Institute of Health from April 1, 2008 to March 31, 2013 (1R01HD054501-01A1: \$2,545,893.00).



- Bollen, K. A. (PI). "Structural Misspecification in Latent Variable Models: Symptoms, Consequences, and Diagnostic Tests." National Science Foundation Funded from September 15, 2006 to September 14, 2011 (SES-0617276: \$177,000).
- Curran, P.J. (PI) and K.A. Bollen (Co-PI). "Measurement models in latent curve analysis." National Institute on Drug Abuse of NIH funded from July 1, 2005 to April 30, 2011 (DA013148-05A2: \$1,146,275). Effort: 25% per year.
- Bollen, K. A. (PI). Continuation Award "Library of Congress National Digital Information Infrastructure and Preservation Program Award" funded from September 1, 2007 to March 30, 2010. ( Subcontract # F011777: \$328,000) Effort: 10% per year.
- Bollen, K. A. (PI). "Library of Congress National Digital Information Infrastructure and Preservation Program Award" funded from September 1, 2004 to August 31, 2007 ( Subcontract # F011777: \$434,719) Effort: 10% per year.
- Frierson, H. (PI), K. A. Bollen (Co-PI), and L. Dykstra (Co-PI). "SBE COLLABORATIVE RESEARCH: Atlantic Coast Social, Behavioral, and Economic Sciences Alliance," National Science Foundation (minority training grant) Funded from October 1, 2005 to September 30, 2007 (SES-0548858: \$541,406).
- Alan Karr (PI), K. A. Bollen (investigator). "Dynamics for Social Networks Processes: Comparing Statistical Models with Intelligent Agents." National Science Foundation (DMS-0437183 and SES-0537239) 10/01/04-9/30/05, \$300,000.
- Bollen, K.A. (PI), Mark Montgomery, Jennifer Glanville, and Guy Stecklov. "Socioeconomic Status in Population and Health Studies in Developing Countries" MEASURE-USAID Grant funded July 1, 1998 to December 31, 2000, \$125,250.
- Curran, P. J. (PI) and K. A. Bollen (Co-PI). 1999. "Innovative Latent Curve Models of Adolescent Drug Use" NIDA funded from July1, 1999 to June 30, 2004, \$923,420.
- Bollen, K.A. (PI) "Democracy and Democratization: Social Conditions, Institutional Forms, Transitions." National Science Foundation Graduate Traineeship Award, September 1, 1995 to August 31, 2002, (GER-9554569), \$562,500.
- Bollen, K.A. (P.I.) "Measures of Liberal Democracy, 1980-1991." National Science Foundation Award, May 1, 1992 to April 30, 1995.
- Bollen, K.A. (P.I.) "Cross-National Measures of Political Democracy." National Science Foundation Award, July 1, 1989 to April 30, 1991.