

Michael C. Edwards

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Academic Appointments

- 2011 – Present Associate Professor, Psychology (Quantitative)
The Ohio State University
- 2006 – 2011 Assistant Professor, Psychology (Quantitative)
The Ohio State University

Educational Background

- 2005 PhD, Quantitative Psychology
L.L. Thurstone Psychometric Laboratory
University of North Carolina at Chapel Hill
Advisor: David Thissen, Ph.D.
Dissertation: *A Markov Chain Monte Carlo Approach to Confirmatory Item Factor Analysis*
- 2002 MA, Quantitative Psychology
L.L. Thurstone Psychometric Laboratory
University of North Carolina at Chapel Hill
Advisor: Jack Vevea, Ph.D.
Thesis: *Augmenting IRT Scale Scores: A Monte Carlo Study to Evaluate an Empirical Bayes Approach to Subscale Augmentation*
- 2000 BS, Psychology with a second major in English
Ursinus College, Collegeville, PA

Papers

- 2012
In Press Edwards, M.C., Flora, D.B., Thissen, D. Multi-stage computerized adaptive testing with uniform item exposure. *Applied Measurement in Education*.
- 2012
In Press Lee, C., Zhang, G., & Edwards, M.C. Ordinary least squares estimation of parameters in exploratory factor analysis with ordinal data. *Multivariate Behavioral Research*.
- 2012
In Press MacCallum, R.C., Edwards, M.C., & Cai, L. Hopes and cautions in implementing Bayesian structural equation modeling. *Psychological Methods*.
- 2012
In Press Norris, M., Lecavalier, L., & Edwards, M.C. The structure of autism symptoms as measured by the Autism Diagnostic Observation Schedule. *Journal of Autism and Developmental Disorders*. doi: 10.1007/s10803-011-1348-0
- 2011 Lecavalier, L., Gadow, K.D., DeVincent, C.J., Houts, C.R., & Edwards, M.C. Validity of DSM-IV syndromes in preschoolers with autism spectrum disorders. *Autism*, 15, 527-543. doi: 10.1177/1362361310391115
- 2011 Mielenz, T.J., Edwards, M.C., & Callahan, L. Item response theory analysis of two self-efficacy for exercise behavior scales in people with arthritis. *Journal of Aging and Physical Activity*, 19, 239-248.

- 2010 Edwards, M.C. A Markov chain Monte Carlo approach to confirmatory item factor analysis. *Psychometrika*, 75, 474-497. doi: 10.1007/s11336-010-9161-9
- 2010 Edwards, M.C., Cheavens, J.S., Heiy, J.E., & Cukrowicz, K.C. A reexamination of the factor structure of the Center for Epidemiologic Studies Depression Scale: Is a one-factor model plausible? *Psychological Assessment*, 22, 711-715.
- 2010 Mielenz, T.J., Edwards, M.C., & Callahan, L.F. First item response theory analysis on Tampa Scale for Kinesiophobia (fear of movement) in arthritis. *Journal of Clinical Epidemiology*, 63, 315-320. doi: 10.1016/j.jclinepi.2009.04.011
- 2010 Mielenz, T.M., Edwards, M.C., & Callahan, L.F. Item response theory analysis of two questionnaire measures of arthritis-related self-efficacy beliefs from community-based US samples. *Arthritis*, 2010, 1-8. doi: 10.1155/2010/416796
- 2010 Turner, B.M., Betz, N.E., Edwards, M.C., & Borgen, F.H. Psychometric examination of an inventory of self-efficacy for the Holland vocational themes using item response theory. *Measurement and Evaluation in Counseling and Development*, 43, 188-198.
- 2009 Edwards, M.C. An introduction to item response theory using the Need for Cognition Scale. *Social and Personality Psychology Compass*, 3, 507-529.
- 2009 Edwards, M.C., & Wirth, R.J. Measurement and the study of change. *Research in Human Development*, 6, 74-96.
- 2009 Lecavalier, L., Gadow, K.D., DeVincent, C.J., & Edwards, M.C. Validation of DSM-IV model of psychiatric syndromes in children with Autism Spectrum Disorders. *Journal of Autism and Developmental Disorders*, 39, 278-289.
- 2009 Lecavalier, L., Gadow, K.D., DeVincent, C.J., Houts, C., & Edwards, M.C. Deconstructing the PDD clinical phenotype: Internal validity of the DSM-IV. *Journal of Child Psychology and Psychiatry*, 50, 1246-1254.
- 2009 Stevens, J., Wang, W., Fan, L., Edwards, M.C., Campo, J.V., & Gardner, W. Parental attitudes toward children's use of antidepressants and psychotherapy. *Journal of Child and Adolescent Psychopharmacology*, 19, 289-296.
- 2008 Flora, D.B., Curran, P.J., Hussong, A.M., & Edwards, M.C. Incorporating measurement nonequivalence in a cross-study latent growth curve analysis. *Structural Equation Modeling*, 15, 676-704.
- 2007 Chang, E.C., Sanna, L.J., Riley, M.M., Thornburg, A.M., Zumberg, K.M., & Edwards, M.C. Relations between problem-solving styles and psychological adjustment in young adults: Is stress a mediating variable? *Personality and Individual Differences*, 42, 135-144.
- 2007 Hill, C.D., Edwards, M.C., Thissen, D., Langer, M.M., Wirth, R.J., Burwinkle, T.M., & Varni, J.W. Practical issues in the application of item response theory: A demonstration using the Pediatric Quality of Life Inventory (PedsQL) 4.0 Generic Core Scales. *Medical Care*, 45, S39-S47.
- 2007 Hussong, A.M., Wirth, R.J., Edwards, M.C., Curran, P.J., Chassin, L.A., & Zucker, R.A. Externalizing symptoms among children of alcoholic parents: Entry points for an

antisocial pathway to alcoholism. *Journal of Abnormal Psychology*, 116, 529-542.

- 2007 Wirth, R.J., & Edwards, M.C. Item factor analysis: Current approaches and future directions. *Psychological Methods*, 12, 58-79.
- 2006 Edwards, M.C., & Vevea, J.L. An empirical Bayes approach to subscore augmentation: How much strength can we borrow? *Journal of Educational and Behavioral Statistics*, 31, 241-259.
- 2006 Orlando, M., Wenzel, S.L., Ebener, P., Edwards, M.C., Mandell, W., & Becker, K. The Dimensions of Change in Therapeutic Community Treatment Instrument. *Psychological Assessment*, 18, 118-122.

Chapters

- 2012 Edwards, M.C., & Wirth, R.J. Valid measurement without factorial invariance: A longitudinal example. In G. Hancock & J.R. Harring (Eds.), *Advances in longitudinal methods in the social and behavioral sciences*. Thousand Oaks, CA: Sage.
In Press
- 2012 Edwards, M.C., Wirth, R.J., Houts, C.R., & Xi, N. Categorical data in the structural equation modeling framework. In R. Hoyle (Ed.), *Handbook of structural equation modeling*. New York, NY: Guilford Press.
In Press
- 2010 Bollen, K.A., Bauer, D.J., Christ, S.L., & Edwards, M.C. Overview of structural equation models and recent extensions. In S. Kolenikov, D. Steinley, & L. Thombs (Eds.), *Statistics in the social sciences: Current methodological developments* (pp. 37-79). Hoboken, NJ: Wiley.
- 2009 Edwards, M.C., & Edelen, M.O. Special topics in item response theory. In R.E. Millsap and A. Maydeu-Olivares (Eds.), *The SAGE handbook of quantitative methods in psychology* (pp. 178-198). New York, NY: Sage Publications.
- 2008 Woods, C.M., & Edwards, M.C. Factor analysis and related methods. In C.R. Rao, J.P. Miller, & D.C. Rao (Eds.), *Handbook of statistics 27: Epidemiology and medical statistics* (pp. 367-394). New York, NY: Elsevier.
- 2007 Curran, P.J., Edwards, M.C., Wirth, R.J., Hussong, A.M., & Chassin, L. The incorporation of categorical measurement models in the analysis of individual growth. In T.D. Little, J.A. Bovaird, & N.A. Card (Eds.), *Modeling contextual effects in longitudinal studies* (pp. 89-120). Mahwah, NJ: LEA.

Presentations

- 2011 (October) Edwards, M.C. Implications of applications: An examination of recent developments in item response theory. Seminar given as part of the Biostatistics Seminar Series at Columbia University – New York State Psychiatric Institute, New York, NY.
Invited
- 2011 (August) Edwards, M.C. An overview of computational methods used in psychometric models. Presentation made at the Workshop on Modern Psychometric and Statistical Methods for Large Scale Assessments, Beijing, China.
Invited
- 2011 (August) Edwards, M.C., & Cai, L. A new diagnostic procedure to detect departures from local independence in item response models. Paper presented at the annual meeting of the American Psychological Association, Washington, DC.

- 2011 (July) Tang, Y., Myung, J., Edwards, M.C., & Pitt, M. Computerized adaptive testing and adaptive experimental design. Paper presented at the International Meeting of the Psychometric Society, Hong Kong.
- 2011 (July) Edwards, M.C., Houts, C.R., & Cai, L. A new procedure for detecting departures from local independence in item response models. Paper presented at the International Meeting of the Psychometric Society, Hong Kong.
- 2011 (July) Tang, Y., Myung, J., Edwards, M.C., & Pitt, M. Computerized adaptive testing and adaptive experimental design. Paper presented at the annual meeting of the Society for Mathematical Psychology, Medford, MA.
- 2010 (August)
Invited Edwards, M.C. *Psychometric analysis of the Anger Disorder Scale using latent variable models*. Paper presented at the annual meeting of the American Psychological Association, San Diego, CA.
- 2010 (July) Edwards, M.C. *Minimum detectable change in an IRT framework*. Paper presented at the International Meeting of the Psychometric Society, Athens, GA.
- 2010 (July) Lee, C-T., Zhang, G., & Edwards, M.C. *Standard error of exploratory factor analysis with ordinal variables*. Paper presented at the International Meeting of the Psychometric Society, Athens, GA.
- 2010 (June)
Invited Edwards, M.C., & Wirth, R.J. *Valid measurement without factorial invariance: A longitudinal example*. Paper presented at the 2010 Advances in Longitudinal Methods in the Social and Behavioral Sciences Conference, College Park, MD.
- 2009 (August) Edwards, M.C., & Wirth, R.J. *Constructive non-invariance: Sometimes things are supposed to be different*. Paper presented at the annual meeting of the American Psychological Association, Toronto, Canada.
- 2009 (May)
Invited Edwards, M.C. *Potential applications for multidimensional item response models*. Paper presented at the annual meeting of the Association for Psychological Science, San Francisco, CA.
- 2008 (November) White, R.J., Edwards, M.C., & Nygren, T.E. *Development and validation of the decision making styles inventory*. Paper presented at the annual meeting of the Society for Judgment and Decision Making, Chicago, IL.
- 2008 (August) Edwards, M.C. *At the crossroads of psychometrics and ethics*. Paper presented at the annual meeting of the American Psychological Association, Boston, MA.
- 2008 (July)
Invited Edwards, M.C. *Item factor analysis*. "State of the Art" lecture given at the International Meeting of the Psychometric Society, Durham, NH.
- 2008 (June)
Invited Edwards, M.C. *The current state of quantitative psychology: Dude, where's my field?* Presentation at the inaugural Fordham Council on Applied Psychometrics Conference, New York, NY.
- 2007 (June) Edwards, M.C., & Thissen, D. *Multi-Stage Computerized Adaptive Testing with Uniform*

Item Exposure. Paper presented at the GMAC Conference on Computerized Adaptive Testing, Minneapolis, MN.

- 2007 (March) Edwards, M.C. *A Markov chain Monte Carlo approach to confirmatory item factor analysis*. Paper presented at the International Biometric Society Eastern North American Region Meeting, Atlanta, GA.
- 2006 (October) *Invited* Bollen, K.A., Bauer, D.J., Christ, S.L., & Edwards, M.C. *An overview of structural equation models and recent extensions*. Presentation for the Winemiller Conference on Methodological Developments of Statistics in the Social Sciences, Columbia, MO.
- 2006 (June) *Invited* Edwards, M.C. *A Markov chain Monte Carlo approach to confirmatory item factor analysis*. Presentation for the dissertation award at the annual meeting of the Psychometric Society, Montreal, Canada.
- 2006 (April) Vevea, J.L., & Edwards, M.C. *Who can benefit from subscore augmentation?* Paper presented at the annual meeting of the National Council on Measurement in Education, San Francisco, CA.
- 2005 (October) Guess, H., DeWalt, D., Hill, C. D., & Edwards, M. C. *The UNC patient-reported outcomes measurement system research site: News from the field*. Panel presentation at the University of North Carolina Program on Health Outcomes Pfizer Seminar Series, Chapel Hill, NC.
- 2005 (October) Edwards, M.C., Hill, C.D., Langer, M.M., Wirth, R.J., Thissen, D., Varni, J.W., & Burwinkle, T.M. *Lessons Learned from Confirmatory Factor Analysis of the PedsQL™ 4.0 Generic Core Scales*. Presentation at the annual meeting of the International Society for Quality of Life Research, San Francisco, CA.
- 2005 (October) Hill, C.D., Edwards, M.C., Langer, M.M., Wirth, R.J., Thissen, D., Varni, J.W., & Burwinkle, T.M. *Lessons Learned using Item Response Theory to Examine the PedsQL™ 4.0 Generic Core Scales*. Presentation at the annual meeting of the International Society for Quality of Life Research, San Francisco, CA.
- 2005 (August) Edwards, M.C. *Finding and Defining Quantitative Psychology*. Presentation made at the annual meeting of the American Psychological Association, Washington, D.C.
- 2005 (April) Thissen, D., & Edwards, M.C. *Diagnostic scores augmented using multidimensional item response theory*. Paper presented at the annual meeting of the National Council on Measurement in Education, Montreal, Canada.
- 2005 (March) Edwards, M.C., Hill, C., Langer, M., Thissen, D., Wirth, R.J., Varni, J., & Burwinkle, T. *Using item response theory to examine the PEDSQL 4.0 Generic Core scales*. Presentation for the PROMIS Steering Committee Meeting, Durham, NC.
- 2004 (October) Edwards, M.C. *A Markov chain Monte Carlo approach to item factor analysis*. Paper presented at the annual meeting of the Society of Multivariate Experimental Psychology, Naples, FL.
- 2004 (June) Edwards, M.C., & Thissen, D. *Defining and finding optimal designs for uMFS CATs*. Paper presented at the annual meeting of the Psychometric Society, Monterey, CA.
- 2004 (April) Edwards, M.C. *Multi-stage computerized adaptive testing: Using item response theory for*

design selection. Paper presented at the annual meeting of the National Council on Measurement in Education, San Diego, CA.

2002 (June) Edwards, M.C. *Augmenting IRT scale scores: A Monte Carlo evaluation of an empirical Bayes approach to subscore augmentation*. Presentation made at the North America meeting of the Psychometric Society, Chapel Hill, NC.

Posters

2011 (November) Ing, P.G., Rim, H.B., Nygren, T.E., & Edwards, M.C. *An item response theory investigation of cross-cultural and individual differences in decision making styles*. Poster presented at the Annual Meeting of the Society for Judgment and Decision Making, Seattle, WA.

2010 (July) Houts, C.R., & Edwards, M.C. *The performance of local dependence measures with psychological data*. Poster presented at the International Meeting of the Psychometric Society, Athens, GA.

2009 (February) Kudel, I., Edwards, M.C., Tsevat, J., & VACS Aging Cohort Study Team. *A method of preparing the physical component scale of the SF-12 for IRT analysis*. Poster presented at the annual meeting of the Department of Veterans Affairs Health Services Research and Development, Baltimore, MD.

2008 (October) Stevens, J., Wang, W., Fan, L., Edwards, M.C., Campo, J.V., & Gardner, W. *Parental attitudes towards pediatric antidepressant use and psychotherapy*. Poster presented at the annual meeting of the American Academy of Child & Adolescent Psychiatry, Chicago, IL.

2008 (October) Mielenz, T.J., Edwards, M.C., DeVellis, R.F., & Callahan, L.F. *Item Response Theory Analysis of 2 Self-efficacy for Arthritis Scales from Community-based Physical Activity Programs in People with Arthritis*. Poster presented at the annual meeting of the American College of Rheumatology, San Francisco, CA.

2008 (October) Mielenz, T.J., Edwards, M.C., DeVellis, R.F., & Callahan, L.F. *IRT Analysis of 2 Self-efficacy for Exercise Behavior Scales in People with Arthritis*. Poster presented at the annual meeting of the American College of Rheumatology, San Francisco, CA.

2008 (October) Mielenz, T.J., Edwards, M.C., Jackman, A.M., & Carey, T.S. *Item Response Theory on the Modified Roland-Morris Disability Questionnaire in a population-based study*. Poster presented at the annual Meeting of the American College of Rheumatology, San Francisco, CA.

2008 (September) Kudel, I., Edwards, M. C., Tsevat, J., & VACS Aging Cohort Study Team. *Using the Nominal Model to Correct for Violations of Local Independence*. Poster presented at the International Conference on Outcomes Measurement, Bethesda, MD.

2008 (May) Lecavalier, L., Gadow, K.D., DeVincent, C.J., & Edwards, M.C. *Psychiatric symptoms in school age children with autism spectrum disorders*. Poster presentation at the International Meeting for Autism Research, London, England.

2008 (March) Kudel, I., Edwards, M.C., & Tsevat, J. *Determining response category order using the nominal model: A demonstration with an item from the RASH*. Poster presented at the 2nd PROMIS Conference, Bethesda, MD.

- 2006 (November) *Invited* Edwards, M.C. *Moving beyond summed scores*. Poster presented at the American Psychological Association Science Leadership Conference, Washington, DC.
- 2006 (April) Mielenz, T.J., Edwards, M.C., & Callahan, L.F. *Item response theory analysis of the Tampa Scale of Kinesiophobia in people with arthritis*. Poster presented at the International Congress on Physical Activity and Public Health, Atlanta, GA.
- 2004 (July) Edwards, M.C., Wirth, R.J., & Curran, P.J. *Measurement issues in multilevel models*. Poster presented at the annual meeting of the American Psychological Association, Honolulu, HI.
- 2004 (July) Wirth, R.J., Edwards, M.C., & Curran, P.J. *Latent growth modeling with multiple dichotomous indicators: Testing measurement invariance*. Poster presented at the annual meeting of the American Psychological Association, Honolulu, HI.
- 2004 (June) Wirth, R.J., Edwards, M.C., Curran, P.J., & Hussong, A.M. *Categorical measurement models for the analysis of individual growth: Comparing three analytic approaches*. Poster session presented at the International Summer Institute on Developmental Science, Jyväskylä, Finland

Software

- 2007 Edwards, M.C. *MultiNorm: Multidimensional Normal Ogive Item Response Models*.
- 2005 Thissen, D., & Edwards, M.C. *uMFS: Optimization for uniform multi-form structures*.
- 2002 Vevea, J.L., Edwards, M.C., & Thissen, D. *User's Guide for Augment v2: Empirical Bayes subscore augmentation software*. Electronic Research Memorandum 2002-2, L.L. Thurstone Psychometric Laboratory, Chapel Hill, NC.

Reviewing

Editorial Board Psychological Methods (2009-present)

Ad-hoc Reviewer American Journal on Intellectual and Developmental Disabilities, American Psychologist, Applied Psychological Measurement, Air Force Office of Scientific Research, Computational Statistics and Data Analysis, Educational Assessment, International Journal of Testing, Journal of Educational and Behavioral Statistics, Journal of Experimental Social Psychology, Journal of Mathematical Psychology, Journal of Statistical Software, Multivariate Behavioral Research, National Science Foundation (MMS), Psychological Assessment, Psychological Medicine, Journal of Psychopathology and Behavioral Assessment, Psychometrika, Quality of Life Research, Research and Human Development, Respiriology, Structural Equation Modeling

Courses Taught

- Psychology 321 Quantitative and Statistical Methods in Psychology (Undergraduate)
- Psychology 597.02 Testing in Modern Society (Undergraduate)
- Psychology 821 Fundamentals of Item Response Theory (Graduate)
- Psychology 828 Regression (Graduate)

Awards and Appointments

- 2012 – 2014 Digital Testing Psychometric Advisory Team, The College Board – Chair
- 2012 – 2014 Psychometric Oversight Committee, The American Institute of Certified Public Accountants – Member

2011 2010 Fred Brown Research Award – Department of Psychology, OSU
 2009 – 2011 APA Committee on Early Career Psychologists – Science Representative
 2008 – 2009 APA Division 5 Membership Committee – Chair
 2007 – 2008 Statistics Working Group for the APA *Publication Manual* – Member
 2007 – 2008 APA Division 5 Membership Committee – Member
 2006 – 2010 APA Science Leadership Conference – Participant
 2006 Psychometric Society Dissertation Award
 2006 – 2007 APA Task Force for Increasing the Number of Quantitative Psychologists - Member
 2005 Baughman Dissertation Award, Department of Psychology - UNC Chapel Hill, NC
 2003 Lyle V. Jones Graduate Student Excellence Award - UNC Chapel Hill, NC

Funding

2012 – 2014 Development and Validation of a Measure to Assess Satisfaction with the Patient
 Role: Co-I Centered Medical Home. *Grant from American Academy of Family Physicians
 Foundation.*

2010 – 2013 PROMIS Pediatrics: Longitudinal Validation and Linking Pediatric and Adult Item
 Role: Consultant Banks. *Grant from NIH.*

2009 – 2014 The Ohio State University Center for Clinical and Translational Science
 Role: Consultant *Grant from the NIH/DHHS.*

2008 – 2009 Comparing Different Methods of Collecting Self-report Data in Veterans.
 Role: Consultant *VA Healthcare System of Ohio.*

2008 – 2009 Aging, Stress, Fatty Acids, and Inflammation.
 Role: Consultant *Grant from the NIH/NIA.*

2007 – 2009 Assessing the Impact of Item Type on Dimensionality: An Application of Confirmatory
 Role: PI Item Factor Analysis. *Contract with the College Board, \$151,000.*

2007 – 2008 Improving Cardiovascular Care for Minority Americans: Facilitating Organizational
 Role: Consultant Change. *Grant from the Robert Wood Johnson Foundation.*

2007 – 2009 Self-efficacy in Arthritis: Modern Measurement Theory and Qualitative Item Review.
 Role: Consultant *Grant from the American College of Rheumatology.*

2005 – 2008 Item Response Theory Analysis of 2 HRQOL Measures in Arthritis. *Grant from the
 Arthritis Foundation.*