

Brian Habing

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Education

Ph.D. in Statistics, University of Illinois at Urbana-Champaign, 1998
Specialization in Educational Measurement
Dissertation: Some Issues in Weak Local Independence in Item Response Theory
Advisor: Dr. William Stout

M.S. in Mathematics, University of Illinois at Urbana-Champaign, 1994

B.S. in Mathematics, University of Illinois at Urbana-Champaign, 1991
Cum Laude with High Distinction

Academic Positions

Associate Professor (Tenured) - Department of Statistics, University of South Carolina, 8/04 – present
Adjunct Associate Professor – Department of Educational Studies, 5/07 – present
Adjunct Associate Professor – Experimental Psychology Program, 12/08 - 11/17.

Assistant Professor (Tenure Track) - Department of Statistics, University of South Carolina, 8/98 – 8/04

Graduate Fellow, Teaching Assistant, and Research Assistant - Department of Mathematics and
Department of Statistics, University of Illinois at Urbana-Champaign, 8/91 - 8/98

Research Interests

Psychometrics – Item Response Theory, Scale Construction, Multivariate Statistics, and Educational
Measurement

Articles in Press and Print

Donevant, S.B., Estrada, R.D., Culley, J.M., Habing, B., & Adams, S.A. (2018). *Exploring app features with outcomes in mHealth studies involving chronic respiratory diseases, diabetes, and hypertension: a targeted exploration of the literature*. Journal of the American Medical Informatics Association. On-line preprint.

Sherlock, P., Chezian, L.C., Wolfe, K., Drasgow, E., & Habing, B. (2018). Using linear mixed effects models: A single-case experimental design meta-analysis of functional communication training. *Evidence Based, Communications Assessment and Intervention*, 12, 31-53.

Li, T., Habing, B., & Roussos, L. (2017). Conditional covariance based subtest selection for polytomous DIMTEST. *Applied Psychological Measurement*, 41 (3), 209-226.

Heiney, S.P., Gullatte, M., Hayne, P.D. Powe, B., & Habing, B. (2016). Fatalism revisited: Further psychometric testing across two studies. *Journal of Religion and Health*, 55 (4), 1472-1481.

Deutsch, R., Habing, B. & Piegorsch, W.W. (2014). A PAV-algorithm approach to detect infinite parameter estimates in one-regressor dose-response models with asymptotes. *Journal of Statistical Computation and Simulation*, 84 (12) 2545-2556.

Feng, Y., Habing, B., & Huebner, A. (2014). Parameter estimation of the reduced RUM using the EM algorithm. *Applied Psychological Measurement*, 38 (2), 137-150.

- Cacciola, J.S., Alterman, A.I., Habing, B., & McClellan, A.T. (2011). Recent status scores for version 6 of the Addiction Severity Index (ASI-6). *Addiction*, 106, 1588-1602.
- Deutsch, R.C., Grego, J.M., Habing, B., & Piegorsch, W.W. (2010). Maximum likelihood estimation with binary-data regression models: small-sample and large-sample features. *Advances and Applications in Statistics*, 14, 101-116.
- Alterman, A.I., Cacciola, J.S., Ivey, M.A., Coviello, D.M., Lynch, K.G., Dugosh, K.L., & Habing, B. (2010). Relationship of mental health and illness in substance abuse patients. *Personality and Individual Differences*, 49, 880-884.
- Alterman, A.I., Cacciola, J.S., Ivey, M.A., Habing, B. & Lynch, K.G. (2009). Reliability and validity of the alcohol short index of problems and a newly constructed drug short index of problems. *Journal of Studies on Alcohol and Drugs*. 70: 34-307.
- Froelich, A.G., & Habing, B. (2008). Conditional covariance based subtest selection for DIMTEST. *Applied Psychological Measurement*, 32, 138-155.
- Finch, H. & Habing, B. (2007). Performance of DIMTEST and NOHARM based statistics for testing unidimensionality. *Applied Psychological Measurement*, 31, 292-307.
- Alterman, A.I., Cacciola, J.S., Habing, B., & Lynch, K.G. (2007). ASI recent and lifetime summary indices based on nonparametric IRT models. *Psychological Assessment*, 19, 119-132.
- Habing, B., Finch, H. & Roberts, J.S. (2005). A Q_3 statistic for unfolding item response theory models. *Applied Psychological Measurement*, 29, 457-471.
- Finch, H. & Habing, B. (2005). Comparison of NOHARM and DETECT in item cluster recovery: counting dimensions and allocating items. *Journal of Educational Measurement*, 42, 149-169.
- Habing, B., & Roussos, L.A. (2003). On the need for negative local item dependence. *Psychometrika*, 68, 435-452.
- Habing, B. (2001). Nonparametric regression and the parametric bootstrap for local dependence assessment. *Applied Psychological Measurement*, 25, 221-233.
- Douglas, J., Kim, H.R., Habing, B., & Gao, F. (1998) Investigating local dependence with conditional covariance functions. *Journal of Educational and Behavioral Statistics*, 23, 129-151.
- Stout, W., Habing, B., Douglas, J., Kim, H.R., Roussos, L., & Zhang, J. (1996). Conditional covariance based nonparametric multidimensionality assessment. *Applied Psychological Measurement*, 20, 331- 354.
- Stout, W., Nandakumar, R., & Habing, B. (1996). Analysis of latent dimensionality of dichotomously and polytomously scored test data. *Behaviormetrika*, 23, 37-65.

Other Publications

- Habing, B. (2003). [Review of the book *Introduction to nonparametric item response theory*]. *Journal of the American Statistical Association*, 98, 774-775.
- Stout, W., Bolt, D., Goodwin Froelich, A., Habing, B., Hartz, S., & Roussos, L. (2003). *Development of a SIBTEST bundle methodology for improving test equity with applications for GRE® test development* (GRE Board Professional Report No. 98-15P). Princeton, NJ: Educational Testing Service.
- Habing, B., & Nitcheva, D. (2001) Boundary Correction for Kernel Smoothing IRF Estimation. *University of South Carolina Statistics Technical Report* No. 209 62G08-01.

Grants Funded

- National Science Foundation, "NSF INCLUDES Statewide Consortium Supporting Underrepresented Populations in Precalculus by Organizational Redesign toward Engineering Diversity (SC:SUPPORTED)" (15510-FD01) 12/01/2017 - 11/30/2018. Co-investigator on USC portion of Clemson led grant under USC lead-PI Michael Matthews, and Co-PIs John Gerdes and Jed Lyons.
- National Science Foundation (Methodology, Measurement, and Statistics Program), "Item Response Theory Models for Mixtures of Dominances and Proximity Items", 9/07-8/09 (no cost extension through 8/10), \$143,227 (\$100,326 to Statistics). Co-investigator with Christopher Zorn, Penn State University.
- South Carolina Dept. of Education, "Advanced Placement Teacher Institute in Statistics", 6/01-8/01, \$10,114; 3/03-6/03, \$12,029; and 2/05-6/05, \$15,278.
- National Science Foundation (Methodology, Measurement, and Statistics Program, and Statistics and Probability Program) , "Advances in Local Independence and Unidimensionality Assessment for Dichotomous and Polytomous Items", 5/01 - 4/04 (no cost extension through 4/06), \$114,954.
- University of South Carolina (Research and Productive Scholarship Award), "Unidimensional Locally Dependent Item Response Theory Model Based on the 3-PL Model and the Item Pair Conditional Covariances", 1/99 - 1/00, \$5,241.

Recent Seminar and Meeting Presentations (*Since August, 2010; 65 others beginning June, 1996*)

- "Evaluating Competing MIRT Models Using Different Goodness of Fit Statistics." With Xinchu Zhao. Annual Meeting of the National Council on Measurement in Education, April 14, 2018, New York.
- "Examining Compensation at the Item-level in a Multidimensional Assessment." With Xinchu Zhao. Annual Meeting of the National Council on Measurement in Education, April 14, 2018, New York.
- "A Rotatable Asymmetric Variable Compensation MIRT Model and Its Estimation." With Xinchu Zhao. Annual Meeting of the National Council on Measurement in Education, April 30, 2017, San Antonio.
- "Comparing a New Variable Compensation MIRT Model and Existing MIRT Models." With Xinchu Zhao. Annual Meeting of the National Council on Measurement in Education, April 28, 2017, San Antonio.
- "Alternative Test Structures and their Effect on Item Information." With Louis Roussos. International Meeting of the Psychometric Society, July 13, 2016, Asheville, NC.
- "Non-compensatory MIRT with Rotation." With Xinchu Zhao. International Meeting of the Psychometric Society, July 12, 2016, Asheville, NC.
- "Modifying Mantel-Haenzel DIF Detection Hypotheses to Include Effect Size." With Philip Sherlock. Graduate Student Poster Session, National Council on Measurement in Education. April 18, 2015, Chicago.
- "Impact of ICC Model Misspecification on CAT." With Han Lee and Jessalyn Smith. Annual Meeting of the National Council on Measurement in Education, April 4, 2014, Philadelphia, PA.

Sessions Discussed, Chaired, or Organized (*Since August, 2010; 17 others beginning April, 2001*)

- "An Introduction to Using R for Quantitative Methods". Training session co-organizer/instructor at the National Council of Measurement in Education with Jessalyn Smith. April 26, 2017, San Antonio.
- "Item Response Theory." Session Organizer and Chair. Latent Variables 2016, October 13, 2016, Columbia, SC.
- "Item Response Theory." Session Chair. International Meeting of the Psychometric Society, July 13, 2016, Asheville, NC.
- "An Introduction to Using R for Quantitative Methods". Training session co-organizer/instructor at the National Council of Measurement in Education with Jessalyn Smith. April 16, 2015, Chicago.
- "An Introduction to R for Teachers of Quantitative Methods". Training Session Co-leader with Jessalyn Smith at the Annual Meeting of the National Council on Measurement in Education, April 26, 2013, San Francisco, CA.

Doctoral Students Directed in Statistics (*with initial appointment*)

Roland Deutsch, 2007 (co-chaired with John Grego) – Assistant Professor of Statistics, University of North Carolina at Greensboro

Litong Zhang, 2007 – Research Scientist at CTB/McGraw Hill

Meng Wu, 2008 – Associate Psychometrician at Educational Testing Service

Leslie Hendrix, 2011 – Instructor, University of South Carolina

Tan Li, 2011 – Visiting Assistant Professor of Biostatistics, Florida International University

Yuling Feng, 2013 – Senior Statistical Analyst

Na Yang, 2013 – Senior Statistician at AdvanceMed

Yin Fu, 2015 – Quantitative Associate at Wells Fargo

Han Lee, 2016 – Predictive Modeler at State Auto Insurance

Xinchu Zhao, in progress

Doctoral Students Directed in Educational Psychology and Research (*with initial appointment*)

Holmes Finch, 2002 (co-chaired with Huynh Huynh) – Assistant Professor of Educational Psychology at Ball State University

Tammiee Dickenson, 2005 (co-chaired with Michael Seaman) – Director and Research Assistant Professor, Office of Program Evaluation at USC

Beth Johnson, 2009 (co-chaired with Robert Johnson) – Visiting Assistant Professor, The College of New Jersey

Jessalyn Smith, 2009 (co-chaired with Christine DiStefano) - Research Scientist at CTB/McGraw Hill

Maureen Petkewich, 2016 (co-chaired with Christine DiStefano) – Senior Instructor and Assistant Chair, University of South Carolina

B.S., M.I.S., and M.S. Students Directed in Statistics

Senior Honors Thesis

Jamie Winterton, 2000

Barth Kelly, 2001

James Wu, 2010

Jonathan Tregde, 2017

Thomas Duncan, 2018

Austin Kock, 2018

Master of Industrial Statistics

Chris Finney, 2003

Randy Ewart, 2006

Mariana Toma-Drane, 2006

April Bolin, 2008

Lisa Dilks, 2008

Renee Dowdy, 2008

Erika Rhett, 2009

Master of Science

Beth Beard, 2002

Sharon Dziuba, 2002

Dorota Staniewska, 2002

Alex McLain, 2005

Chaitali Datta, 2006

Jessalyn Smith, 2006

Cristina Ungureanu, 2007

Brenna Veale, 2007

Barth Kelly, 2008

Bryonna Bowen, 2018

Dongho Shin, in progress

Courses Taught at the University of South Carolina (*2/2 load except 1/1 while graduate director*)

SCCC 312 – Proseminar in Statistics

STAT 110 – Introduction to Statistical Reasoning (x7)

STAT 511/MATH 511 – Probability

STAT 512 – Mathematical Statistics (x2)

STAT 513 – Theory of Statistical Inference (x2)

STAT 515 – Statistical Methods I (x20)

STAT 516 – Statistical Methods II (x8)

STAT 518 – Nonparametric Statistical Methods (x4)

STAT 530 – Applied Multivariate Statistics (x4)

STAT 599 – AP Statistics for Teachers (x3)

STAT 600 – Statistics for Applied Management (x4)

STAT 700 – Applied Statistics I (x6)

STAT 701 – Applied Statistics II (x5)

STAT 702 – Introduction to Statistical Theory I (x3)

STAT 703 – Introduction to Statistical Theory II (x2)

STAT 718 – Statistical Rating Methods

STAT 730 – Multivariate Analysis (x3)

STAT 740 – Statistical Computing

STAT 778/EDRM 828 – Item Response Theory (x7)

Course and Curricular Development

Revamped and updated bulletin description for STAT 515 – Statistical Methods I
Revamped and updated bulletin description for STAT 516 – Statistical Methods II
Chaired re-creation of STAT 510 – Applied Stochastic Processes
Co-created STAT 530 – Applied Multivariate Statistics, with Don Edwards in Statistics
Co-created STAT 591/SMED 591 – Data Analysis for Teachers, with Don Jordan in Science Education
Created STAT 600 – Statistics for Applied Management
Co-created STAT 778/EDRM 828 – Item Response Theory, with Huynh Huynh in Educational Studies
Co-created the Minor in Data Science with Jed Lyons and Manton Matthews in Engineering, and John Grego and David Hitchcock in Statistics
Revised the Minor in Risk Management and Insurance with Doug Meade in Mathematics and Jean Helwege and Gregory Niehaus in Finance
Co-created the Minor in Secondary Education Mathematics with Ed Dickey and Jan Yow in Education

Teaching Honors

Nominated for Michael J. Mungo Undergraduate Teaching Awards 2001, 2005 (finalist), and 2009, and Michael J. Mungo Graduate Teaching Award 2006 and 2008 (finalist).
1994 University of Illinois, Department of Mathematics, Teaching Assistant Instructional Award.
Incomplete List of Excellent Instructors at the University of Illinois three times. For courses taught Spring 1992, Spring 1994, and Fall 1994 - an all university student selected honor.

Current Society Memberships

National Council on Measurement in Education
Psychometric Society

Selected Professional Service

Associate Editor for the *Journal of Statistical Computation and Simulation*, 2009-present.
Statistical Methodology Editor for the *Journal of the First Year Experience and Students in Transition*, 1998-2004.
Co-chair for the 2004 Annual Meeting Program Committee for Division D of the American Educational Research Association
Reviewer for the Methodology, Measurement, and Statistics program of NSF
Review panel member for the National Institutes of Mental Health
AP Reader for the Statistics Exam, 2005-2009.
Article reviewer for *Alcoholism: Clinical and Experimental Research*; *Applied Psychological Measurement*; *Bernoulli Journal*; *British Journal of Mathematical and Statistical Psychology*; *Controlled Clinical Trials: Design, Methods, & Analysis*; *Educational and Psychological Measurement*; *Electronic Journal of Statistics*; *Evaluation and Health Professions*; *Journal of Classification*; *Journal of Educational & Behavioral Statistics*; *Journal of Educational Measurement*; *Journal of Multivariate Analysis*; *Journal of Statistical Computation and Simulation*; *Journal of the American Statistical Association*; *Psychological Assessment*; *Psychological Methods*; *Psychometrika*; and *Statistics in Medicine*.
Presentation proposal reviewer for the 1999-2008, 2011-2013, 2016 National Council on Measurement in Education and 2005-2009, 2012-2015 American Educational Research Association Annual Meetings
Past President and Webmaster for the South Carolina Chapter of the American Statistical Association.
South Carolina Region II Science Fair Judge - 1999-2001, 2003-2006.

Selected Department, College, and University Service

Department of Statistics	
Faculty Search Committee	8/98 – 8/05
Undergraduate Advisor	8/00 – 8/04, 7/16-present
Graduate Director	10/04 – 6/07
Undergraduate Director	8/09 – 6/16
Distributed Learning Coordinator	8/17 – present
Program of Educational Psychology, Research, and Foundations	
Faculty Search Committee	1/00 – 4/00
Research Consortium on Children and Families	
Faculty Search Committee	8/05 – 4/07
College of Arts and Sciences	
Petitions and Standards Committee (COSM)	8/00 – 8/05
Curriculum Committee (Chair 9/14-5/18)	8/07 – 8/10, 2/12-8/12, 9/14-5/18
University	
Faculty and Staff Moving Crew Volunteer	8/99 – 8/12
Assessment Advisory Committee	8/00 – 8/02
Graduate Council (Chair 8/06-7/07)	8/04 – 7/07
QEP Technology Committee Co-Chair	8/10 – 3/11
USC Connect Director Search Committee	5/11 – 7/11
Faculty Senate Committee on Curricula and Courses (Chair)	8/12 – 9/14
Faculty Senate Steering Committee	8/12 – 9/14
University Carolina Core Committee	8/12 – 5/18
University Academic Program Liaison Committee	8/12 – 9/14
Director of Institutional Assessment and Compliance Search Committee	4/13 – 7/13