Brian Habing

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Education

Ph.D. in Statistics, University of Illinois at Urbana-Champaign, 1998
  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

Senior Research Fellow and Associate Director for Educational Activities and Research, National Institute of
  Statistical Sciences, 9/20 – present

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 Print

Mo, Y., Habing, B, & Sedransk, N. (2022). Tree-based methods: A tool for modeling nonlinear complex
  relationships and generating new insights from data. *Journal of Data Science*, 3, 359-379.

Sherlock, P., DiStefano, C. & Habing, B. (2022). Effects of mixing weights and predictor distributions on
  regression mixture models. *Structural Equation Modeling: A Multidisciplinary Journal*, 29 (1), 70-85.

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 deiseases, diabetes, and hypertension: a targeted exploration of the
  literature. Journal of the American Medical Informatics Association, 25 (8), 1407-1418.

Sherlock, P., Chezan, 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

University of South Carolina, College of Arts and Sciences, Blended/On-line Course Development Grant for STAT 700-701. 5/2019-5/2020. $4,959 awarded.

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 - 11/30/2019. 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 April 2015; 66 others beginning June 1996*)

"Combining Visualization Best Practices with Agency Standards for Statistical Graphics in Government Reports." With Haley Jeppson and Heike Hoffman.   Round Table Discussion at the Joint Statistics Meeting, August 9, 2022, Washington DC.

"Student Insights into Graphical Innovation for Educational and Government Reports." With Haley Jeppson. Poster at the Joint Statistics Meeting, August 9, 2022, Washington DC.

"Studying Response Time and Performance with Students' Online Research and Comprehension Ability." with Ya Mo, Nell Sedransk, and Alexi Albert. Poster at the Annual Meeting of the National Council on Measurement in Educaiton, April 23, 2022, San Diego.

"Statistically Accurate Interactive Displays for Educational & Government Reports." With Lynne Stokes, Nola du Toit, Andrew White, and Mark Wilson. Joint Statistics Meeting, August 8, 2021, Virtual.

"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.

NISS Expert Panels and Technical Forums for National Center for Education Statistics

School Survey Participation and Burden. (June 2022).
https://www.niss.org/sites/default/files/technical_reports/School%20Survey%20Participation%20and%20Burden%20-%20FT.pdf
NISS Lead for reruitment, management and running of panel, and writing and editing of report.

Coordinating Designs for Multiple Surveys. (May 2022).
https://www.niss.org/sites/default/files/Coordinating%20Designs%20for%20Multiple%20Surveys.pdf
Provided logistics assistance for technical panel.

Connecting the Dots, I & II: Integrated Sampling Approach for Multiple Surveys. (November 2021).
https://www.niss.org/sites/default/files/ConnectingtheDots-2022-04-29-Final.pdf
Assisted in recrutiing (part II), running and logistics of panels, and editing of report.

Setting Priorities for Federal Data Access to Expand the Context for Education Data. (March 2021).
https://www.niss.org/sites/default/files/research_attachments/FT%20-%20Setting%20Priorities%20-%201%20June%202021%20final.pdf
Assisted in running and logisitics of panel, and co-authored report.

Innovative Graphics for NCES Online Reports. (January 2021).
https://www.niss.org/sites/default/files/Innovative%20Visualization%20Panel%20-%20Final%20Report.pdf
Assisted in recruiting, running and logistics of panel, and co-authored report.

Post COVID Surveys (December 2020).
https://www.niss.org/sites/default/files/research_attachments/FT%20-%20Post-Covid%20Surveys%20-%20FINAL%20-%207%20June%202021.pdf
Assisted with panelist selection, reivew of material, running and logistics of panel, and editing of report.

Selected other NISS Activities

Principal NISS Researcher in Phase II proposal for Procurement of Research Evaluation and Statistics Task Orders (PRESTO) IESE220353AP with Institute of Education Sciences. (Successfully obtained ID/IQ Contract).

Assisted in Phase I proposal for Procurement of Research Evaluation and Statistics Task Orders (PRESTO) IESE220353AP with Institute of Education Sciences. (Successfully advanced to phase two).

Assisted in NISS portion of proposal for AHRQ-22-10004 Scientific Resource Center to Support the USPSTF proposal (AIR Main). Proposal was scored competitive and qualified for negotiation period. Unsuccessful.

Coordinator of Interactive Visualization for Education Data and Statistics project for National Center of Education Statistics (With Heike Hoffman and Will Ju at Iowa State; Haley Jeppson and Nell Sedransk at NISS).

Managed 2022 SAID in Graphics Data Visualization Contest
https://www.niss.org/news/winners-announced-niss-2022-data-visualization-contest-%E2%80%93-said-graphics

Managed 2020-2021 SAID in Graphics Data Visualization Contest
https://www.niss.org/news/winners-announced-2020-2021-said-graphics-data-visualization-contest

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 Statistican at AdvanceMed

Yin Fu, 2015 – Quantitative Associate at Wells Fargo

Han Lee, 2016 – Predictive Modeler at State Auto Insurance

Xinchu Zhao, 2018 – Statistical Modeler at Imbellus

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

Phillip Sherlock, 2019 (co-directed with Christine DiStefano) – Special Data Projects Coordinator, Office of Special Education Services, South Carolina Department of Education.

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

Senior Honors Thesis	*Master of Industrial Statistics*	*Master of Science*	
Jamie Winterton, 2000	Chris Finney, 2003	Beth Beard, 2002	Brenna Veale, 2007
Barth Kelly, 2001	Randy Ewart, 2006	Sharon Dziuba, 2002	Barth Kelly, 2008
James Wu, 2010	Mariana Toma-Drane, 2006	Dorota Staniewska, 2002	Bryonna Bowen, 2018
Jonathan Tregde, 2017	April Bolin, 2008	Alex McLain, 2005	Dongho Shin, 20
Thomas Duncan, 2018	Lisa Dilks, 2008	Chaitali Datta, 2006	
Austin Kock, 2018	Renee Dowdy, 2008	Jessalyn Smith, 2006	
Jacqueline Purtell, 2022	Erika Rhett, 2009	Cristina Ungureanu, 2007	

Courses Taught at the University of South Carolina

SCCC 312 – Proseminar in Statistics

STAT 110 – Introduction to Statistical Reasoning (x8)

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 (x9)

STAT 518 – Nonparametric Statistical Methods (x4)

STAT 530 – Applied Multivariate Statistics (x6)

STAT 599 – AP Statistics for Teachers (x3)

STAT 600 – Statistics for Applied Management (x4)

STAT 700 – Applied Statistics I (x7)

STAT 701 – Applied Statistics II (x7)

STAT 702 – Introduction to Statistical Theory I (x4)

STAT 703 – Introduction to Statistical Theory II (x4)

STAT 718 – Statistical Rating Methods

STAT 730 – Multivariate Analysis (x3)

STAT 740 – Statistical Computing

STAT 778/EDRM 828 – Item Response Theory (x9)

Course and Curricular Development

Departmental lead for development of BS in Data Science and BS in Data Analytics
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
Revised STAT 110 – Introduction to Statistical Reasoning to remove basic review material and add modern topics.

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.

Selected Department, College, and University Service

Department of Statistics
Faculty Search Committee	8/98 – 8/05
Undergraduate Advisor	8/00-8/04, 7/16-7/18, 8/19-pres
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
Distributed Learning Advisory Board	11/21 – present

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)	8/12 – 9/14, 10/22 – present
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

Current Society Memberships

American Educational Research Association
American Statistical Association
National Council on Measurement in Education
Psychometric Society

Selected Professional Service

Associate Editor for *Applied Psychogical Measurement*, 2019-present.

Associate Editor for the *Journal of Statistical Computation and Simulation*, 2009-2018.

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

Annual Award Committee for the National Council on Measurement in Education, 2018-2021

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, 2022-2023 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.

Sessions Discussed, Chaired, or Organized (*Since April 2015; 18 others beginning April 2001*)

"Differential Item Functioning and Measurement Invariance". Paper session discussion for Virtual Session at the 2022 Annual Meeting of the American Education Research Association, April 23, 2022, San Diego.

"Item Development". Paper session discussant for session at the 2022 Annual Meeting of the American Education Research Association, April 22, 2022, San Diego.

"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.

Last updated: March 6, 2023