

Education

Ph.D., Educational Psychology: Measurement and Statistics, June 2015

University of Washington, College of Education, Seattle, WA

Dissertation: *Estimating individual-level interaction effects in multilevel models: A Monte Carlo simulation study with application*

M.Ed., Educational Psychology: Measurement and Statistics, March 2010

University of Washington, College of Education, Seattle, WA

Thesis: *The robustness of the t-test given deviations from the normality assumption*

B.S., Operations Research and Industrial Engineering, May 2006

Cornell University, College of Engineering, Ithaca, NY

Experience

Assistant Professor, Clemson University

August 2022 – present

Department of Education and Human Development

College of Education, Clemson, SC

Assistant Professor, Indiana University

August 2016 – May 2022

Department of Counseling and Educational Psychology

School of Education, Bloomington, IN

Visiting Assistant Professor, Indiana University

August 2015 – August 2016

Department of Counseling and Educational Psychology

School of Education, Bloomington, IN

Pre-Doctoral Teaching Assistant II (Instructor), University of Washington

September 2014 – June 2015

College of Education, Seattle, WA

Research Assistant, University of Washington

June 2011 – September 2014

Center for Workforce Development, Seattle, WA

Contributed to the study of climate and culture in undergraduate engineering programs through data collection (survey and focus groups), data analysis (quantitative models), and assisting with program logistics and organization.

Statistical Research Intern, ACT

May 2012 – July 2012

Iowa City, IA

Contributed to the study of college achievement gaps for ethnic/racial minority, low-income, and male students.

Teaching Assistant I (TA), University of Washington
September 2009 – June 2011
College of Education, Seattle, WA
Assisted with an introductory statistics course

RESEARCH

Summary Statement

I am interested in the study and application of advanced statistical models, particularly the multilevel model, moderation model, and survival model; and methods for interpreting these models, including particularly measures of effect size. In addition, I continue to investigate and engage with issues of diversity within the field of statistics and statistics education.

Peer-Reviewed Publications

- Lorah, J. A. (2022b).** Effect Size for a Multilevel Model Random Slope Effect: Change in Variance Accounted for with Likelihood-based versus Variance Partition Measures. *Practical Assessment, Research and Evaluation, 27*(9). Available online: <https://scholarworks.umass.edu/pare/vol27/iss1/9/> DOI: <https://doi.org/10.7275/ec1f-j130>
- Lorah, J. A. (2022a).** Interpretation and visualization of moderation effects and random slopes in multilevel models. *The Quantitative Methods in Psychology, 18*(1), 111-127. doi:10.20982/tqmp.18.1.p111
- Lorah, J. A. & *Valdivia, M. (2021).** Diversity in statistics education at postsecondary institutions. *International Journal of Research in Undergraduate Mathematics Education, 7*, 21-32. <https://doi.org/10.1007/s40753-020-00120-x>
- Lorah, J. A. (2020).** Interpretation of main effects in the presence of non-significant moderation effects. *The Quantitative Methods for Psychology, 16*(1).
- Lorah, J. A. (2019).** Estimating a multilevel model with complex survey data: Demonstration using TIMSS. *Journal of Modern Applied Statistical Methods, 18*(2). 10.22237/jmasm/1604190360. (published fall 2020, back-dated 2019)
- Lorah, J. A. & Womack, A. J. (2019).** Value of sample size for computation of Bayesian information criterion (BIC) in multilevel modeling. *Behavior Research Methods, 51*, 440-450. DOI: 10.3758/s13428-018-1188-3. (Published on: 3/17/19)
- Lorah, J. A. & Miksza, P. (2019).** Applications of moderation analysis for music education research. *Bulletin of the Council for Research in Music Education, 220*, 21-41. DOI: 10.5406/bulcouresmusedu.220.0021. (Published: Spring 2019)
- Nichols, B. & Lorah, J. A. (2018).** Solo or doubled singing accuracy: An examination of previous findings. *Psychology of Music. https://doi.org/10.1177/0305735618799171.*

- Lorah, J. A.** (2018a). Effect size measures for multilevel models: Definition, interpretation, and TIMSS example. *Large-scale Assessments in Education*, 6(8). DOI: <https://doi.org/10.1186/s40536-018-0061-2>.
- Lorah, J. A., & Wong, Y. J.** (2018). Contemporary applications of moderation analysis in counseling psychology. *Journal of Counseling Psychology*, 65, 629-640. DOI: <http://dx.doi.org/10.1037/cou0000290>.
- Lorah, J. A.** (2018b) Estimating individual-level interaction effects in multilevel models: A Monte Carlo simulation study with application. *Journal of Applied Statistics*, 45(12), 2238-2255, DOI: 10.1080/02664763.2017.1414163.
- Litzler, E., & **Lorah, J. A.** (2018). Degree aspirations of undergraduate engineering students at the intersection of race/ethnicity and gender. *Journal of Women and Minorities in Science and Engineering* 24(2), 165-193.
- Lorah, J. A., Morrison, S. J., & Sanders, E. A.** (2015). Music achievement of English language learner eighth-grade students. *The Bulletin of the Council for Research in Music Education*, 206, 23-39.
- Litzler, E., Samuelson, C. C., & **Lorah, J. A.** (2014). Breaking it down: Engineering student STEM confidence at the intersection of race/ethnicity and gender. *Research in Higher Education*, 55, 810-832. DOI 10.1007/s11162-014-9333-z
- Lorah, J. A., Sanders, E. A., & Morrison, S. J.** (2014). The relationship between English language learner status and music ensemble participation. *Journal of Research in Music Education*, 62, 234-244.

Book Chapters

- Lorah, J. A.** (2022). Analyzing large-scale assessment data with multilevel analyses: Demonstration using the Programme for International Student Assessment (PISA) 2018 data. In M. S. Khine (Ed.), *Methodology for Multilevel Modeling in Educational Research: Concepts and Applications* (pp. 121-139). Springer. <https://doi.org/10.1007/978-981-16-9142-3>

Reports & Unpublished Papers

- Lorah, J. A.** (2015). *Estimating individual-level interaction effects in multilevel models: A Monte Carlo simulation study with application* (Doctoral dissertation). University of Washington, Seattle, WA
- Lorah, J. & Ndum, E.** (2013). Trends in achievement gaps in first-year college courses for racial/ethnic, income, and gender subgroups: A 12-year study. (ACT Research Report Series 2013 (8)). ACT, Inc., Iowa City, IA.
- Lorah, J. A.** (2009). *The robustness of the t-test given deviations from the normality assumption* (Unpublished master's thesis). University of Washington, Seattle, WA.

*Signifies student collaborator

Presentations

- Lorah, J., Jones, C., Fridmanski, E. (2022, June 10). Investigating authority and promoting social justice in statistics education [Conference presentation]. Connecticut Information Literacy Conference, Online. <https://libguides.southernct.edu/cilc/2022>
- Stewart, M. S. & **Lorah**, J. A. (2022, March). A systematic comparison of K-12 grading scales in the U.S. and analysis of policy implications. Paper to be presented at the Association for Education Finance and Policy (AEFP) conference, Denver, Colorado.
- Lorah**, J. A. (2022, April). Increasing STEM diversity: A workshop and mentoring program for undergraduate women to explore statistics careers. Paper to be presented at the AERA Annual Meeting, San Diego, CA.
- Lorah**, J. A. & Miller, A. (2022, April). Educational aspirations of diverse groups among undergraduate statistics majors. Roundtable presentation to be presented at the AERA Annual Meeting, San Diego, CA.
- Lorah**, J. A. (2021, April) New Effect Size Measures for Random Slope Effect in Multilevel Models. Roundtable presentation at the Virtual AERA Annual Meeting.
- Lorah**, J. A. (2020, April) Exploring Effect Size Measures for Random Slopes in Multilevel Models [Paper Session]. AERA Annual Meeting San Francisco, CA <http://tinyurl.com/wh7qzax> (Conference Canceled)
- *Li, J., **Lorah**, J. A., *Lee, B. & *Housh, K. (2020, April) Applying Effect Sizes in Positive Psychology Research: Three Empirical Benchmarks [Poster Session]. AERA Annual Meeting San Francisco, CA <http://tinyurl.com/ubzy5mv> (Conference Canceled)
- Lorah**, J. A. & *Valdivia, M. (2020, April) Diversity in Statistics Education at Postsecondary Institutions [Roundtable Session]. AERA Annual Meeting San Francisco, CA <http://tinyurl.com/wlftvd9> (Conference Canceled)
- Lorah**, J. A. (2020, March). Interpretation and effect size measures for random effects in multilevel survival models [Poster Session]. Society for Research on Educational Effectiveness (SREE) annual conference, Washington, D.C. (Conference Canceled)
- Lorah**, J. A., *Qian, Y., *Demattee, A., & *Lau, P. (2019, April). Type I error and power rates for discrete multilevel survival models with varying sample size. Paper presented at American Educational Research Association (AERA) Annual Meeting, Toronto, Canada.
- Lorah**, J. A. (2019, March). Substantive interpretation of moderation effects in multilevel logistic regression models. Paper presented at Society for Research on Educational Effectiveness (SREE) annual conference, Washington, D.C.
- Lorah**, J.A. (2018, September). Diversity in statistics education at postsecondary institutions. Invited talk presented at Indiana University Center for Teaching and Learning (CITL) Scholarship of Teaching and Learning (SOTL) ignite talk, Bloomington, Indiana.

- Lorah, J. A.** (2018, July). Interpretation of main effects for moderated regression models. Paper presented at the VIII European Congress of Methodology [EAM 2018], University of Jena, Germany.
- Lorah, J. A.** (2018, April). Panel member to discuss AERA submission reviews, Survey Research SIG business meeting. American Educational Research Association (AERA) Annual Meeting, New York City, NY.
- Lorah, J. A.** (2018, April). Value of N for computation of Bayesian information criterion (BIC) in multilevel modeling. Paper presented at American Educational Research Association (AERA) Annual Meeting, New York City, NY.
- Lorah, J. A.** (2017, June). Effect size measures for multilevel models: Definition, interpretation, and TIMSS Example. Paper presented at IEA International Research Conference (IRC), Prague, Czech Republic.
- Nichols, B. E. & **Lorah, J. A.** (2016, March). Does doubled singing or solo singing produce higher outcomes? New data and synthesis inform previous findings. Paper presented at the NAFME Biennial Music Educators National Conference, Atlanta, Georgia.
- Lorah, J. A.** (2015, May). Estimating Interaction Effects in Multilevel Models: A Simulation Study Examining Power and Type I Error Rates. Poster presented at the Modern Modeling Methods (M³) Conference in Storrs, CT.
- Samuelson, C., Litzler, E., & **Lorah, J.A.** (2014, April). Collaboration between researchers and practitioners for mutual benefit. Paper presented at the AERA Annual Meeting, Philadelphia, PA.
- Litzler, E. & **Lorah, J.** (2013, June). A natural experiment: NAE's *Changing the Conversation* report and students' changing perceptions of engineering. *Proceedings of the American Society for Engineering Education, USA.*
- Litzler, E. & **Lorah, J.** (2013, April). *The intersection of gender and race/ethnicity with educational aspirations of undergraduate engineering students.* Paper presented at the AERA Annual Meeting, San Francisco, CA.
- Lorah, J.** (2013, April). *Trends in college achievement gaps in first-year college courses for ethnic/racial minorities, low-income students, and males.* Paper presented at the AERA Annual Meeting, San Francisco, CA.
- Lorah, J.** (2012, April). *Participation of English language learners in school music ensembles.* Paper presented at the AERA Annual Meeting, Vancouver, British Columbia.
- Lorah, J.** (2012, March). *Musical achievement of English language learners compared with native English speakers.* Poster presented at the NAFME Biennial Music Educators National Conference, St. Louis, Missouri.
- Lorah, J.** (2011, November). *Is there really a gap? English language learners' lower rates of participation in music ensembles.* Paper presented at University of Washington School of Education.
- Lorah, J.** (2011, April). *Predicting school band membership.* Poster presented at the AERA Annual Meeting, New Orleans, Louisiana.

Klockars, A. & Lorah, J. (2010, April). *The robustness of the t-test with different, non-normal distributions*. Paper presented at the AERA Annual Meeting, Denver, Colorado.

Funded Grants

Lorah, J. A., Jones, C., & Fridmanski, E. (2021). Information literacy for social justice in quantitative methods classes. *Indiana University Libraries at Bloomington, instructional development grant*. (\$5000 in research and travel funds)

Lorah, J. A. (2021). Effect size measures for multilevel models with random slopes. Indiana University Faculty Assistance in Data Science (FADS) Program (\$2000 fellowship for student assistant).

Lorah, J. A. (PI) and Stewart, M. (2021). Early warning predictors for “mid-decreasing” students. Indiana University School of Education Seed Funding Grant. (\$7988.28)

Lorah, J. A. (2018). Indiana University Overseas Conference Grant (\$1000 to support international conference travel).

Lorah, J. A. (2017). Indiana University Scholarship of Teaching and Learning (SOTL) grant (\$2000).

Unfunded Grants

Lorah, J. A. (2020). Effect size measures for multilevel models with random slopes. Submitted to *Institute of Education Sciences (IES) statistical and research methodology in education grant*.

Stewart, M. (PI), **Lorah, J. A. (Co-PI)** (2021). Expanding PK-12 data system interoperability to research datasets: A new method for education research building on best data practices from other sectors. Submitted to *Institute of Educational Sciences (IES) Statistical and Research Methodology in Education*. (submitted August 12, 2021)

Stewart, M. (PI), **Lorah, J. A. (Co-PI)**, & Shirley, M. (Co-PI) (2021). Modeling and visualizing student engagement trajectories and the influence of interventions on those trajectories with local education agency partners. Submitted to *Spencer Foundation Large Research Grant on Education*. (5/1/2022 to 12/31/3036; \$372,292.92, submitted June 15, 2021)

Lorah, J. A. (PI) & Stewart, M. (co-PI) (2022). The relationship between timing and quantity of school disciplinary actions and academic achievement among diverse groups. Submitted to *Indiana University Institute for Advanced Study Collaborative Awards for IU Faculty*. (funding for summer 2022, \$15,000, submitted Jan 15, 2022)

TEACHING

List of Courses Taught

- Multivariate educational research (Clemson University; hybrid; EDF 9780)
- Quantitative research designs & statistics for educational contexts (Clemson University; hybrid; EDF 9270)
- Multilevel modeling (Indiana University; in person and online)
- Covariance structure analysis (Indiana University; in person)
- Multivariate statistics (Indiana University; in person and online)
- ANOVA/experimental design (Indiana University; in person)
- Intermediate statistics applied to education (Indiana University; in person and online)
- Survey research methodology (University of Washington; in person)
- Methods of educational research (University of Washington; in person)

New Courses Developed and Taught

- Statistics in society: Examining cases from Spotify and in sports analytics (Intensive freshman seminar (IFS) 2.5-week intensive class for incoming freshman, developed as new course, Indiana University)
- Exploring careers in statistics (1-credit seminar designed for underrepresented undergraduate students, developed as new course, Indiana University)

Invited Talks

- Measures of Effect Size for Multilevel Models, 11/10/20, Michigan State University, conducted online
- Guest lecturer, Indiana University Bloomington E632 [Advanced quantitative research in music education], spring 2018, conducted lecture on logistic regression

Awards

- Indiana University School of Education Trustees Teaching award nomination (spring 2021)

Workshops and Training

- Cultural humility workshop with Dr. Joel Wong (Indiana University School of Education, 8/19/20)
- Bias in the classroom workshop, counseling and educational psychology department (Indiana University School of Education, 2/18/21)

SERVICE

Committee Membership

National/International Service

- AERA Educational Statisticians SIG [webmaster officer, 2022-present]
- AERA Multilevel Modeling SIG (SIG #140) [chair-elect, 2022-2023; chair, 2023-2024]

- AERA Division D Business Meeting and Reception Committee [member, 2018-2019; assistant chair, 2019-2020; chair, 2020-2021]
 - Manage the planning and logistics for the Division D Business Meeting & Reception
- AERA Annual Meeting chair [1 session]; discussant [3 sessions] for paper sessions [April 2021]
- Volunteer for South Sudan Higher Education Initiative for Equity and Leadership Development (SSHIELD) Masters of Education project (MEP)
 - Traveled to Juba, South Sudan for one week during March 2016 to assist team in working with University of Juba faculty in setting up new courses, providing curriculum guidance, and developing new syllabi for the new Masters of Education in Emergencies program

School/University Service

- Indiana University School of Education undergraduate scholarship committee [member, 2021-2022]
- Indiana University School of Education international program committee [member, 2019-2022]
- Indiana University parking appeals committee [member, Jan 2019 – Jan 2022]
- Indiana University campus sustainability advisory board, part of Bloomington Faculty Council [member, 2018-2022]
- Indiana University scholarship of teaching and learning (SOTL) grants selection committee [member, spring 2018]
- Indiana University joint EPC-FAC subcommittee on online course questionnaire response rates [member, 2017]
- Indiana University School of Education grievance committee [member, 2017-2020]

Department/Program Service

- Clemson University, Education & human development department, Quantitative Clinic affiliated faculty (provide quantitative consulting for research projects, fall 2022-present)
- Indiana University, counseling psychology program, search committee for assistant professor in counseling psychology tenure-track position [member, fall 2021]
- Indiana University, inquiry methodology program, search committee for open-rank faculty position in quantitative research methods [member, fall 2020-spring 2021]
- Indiana University, inquiry methodology program, recruitment video for prospective students team [member, fall 2020]
- Indiana University, Counseling & Educational Psychology department, student awards committee [member, Oct 2020 – present]
- Indiana University, Counseling & Educational Psychology department, academic administrator review committee [member, spring 2021]
- Indiana University, inquiry methodology program, sub-committee to update doctoral student handbook [member, fall 2020]
- Indiana University, Counseling & Educational Psychology department, merit review committee [member, spring 2019]
- Indiana University, Counseling & Educational Psychology department, fellowship award committee [member, spring 2018]

Review Activity

Ad hoc reviewer for the following organizations and journals:

- Frontiers in Education (4/1/22)
- The Quantitative Methods for Psychology journal (2/14/22)
- Society for Research on Educational Effectiveness conference proposals (5/14/21)

- Bulletin of the Council for Research in Music Education, Outstanding Dissertation Award (1 review completed January 2021)
- Journal of Statistical Computation and Simulation (1 review completed December 2020)
- International Journal of Research & Method in Education [1 review completed Oct 2020]
- American Educational Research Association (AERA) annual meeting proposals (reviews completed Sept. 2020 for 2021 annual meeting) for the following divisions and special interest groups (SIGs):
 - Division D: Measurement and research methodology
 - Multiple linear regression: the general linear model
 - Survey research in education
- Behavior Research Methods [1 review completed August 2020; December 2020]
- The data.org Inclusive Growth and Recovery Challenge sponsored by datakind.org [approximately 10 hours of reviewing, July 2020]
- European Journal of Information Systems [1 review completed April 2020]
- Graduate Women In Science (GWIS) Fellowship application review [1 review completed March 2020]
- Large-scale Assessments in Education [1 review completed February 2020]
- Sociology of Education [1 review completed May 2019]
- Journal of Applied Statistics [1 review completed February 2019; 1 review completed April 2020; 1 review completed August 2020; October 2020; December 2020]
- Structural Equation Modeling: A Multidisciplinary Journal [1 review completed February 2019; 1 review completed August 2019]
- Outstanding dissertation award of the council for research in music education (ODA) [December 2018]
- Journal of Research in Music Education [1 review completed fall 2018]
- Sociological Methods and Research [1 review completed fall 2018]
- American Educational Research Association (AERA) annual meeting proposals (reviews completed Aug. 2018 for 2019 annual meeting) for the following divisions and special interest groups (SIGs):
 - Division D: Measurement and research methodology
 - Multilevel modeling
 - Multiple linear regression: the general linear model
 - Music education
 - Survey research in education
- Journal of Women and Minorities in Science and Engineering [1 review completed fall 2017]
- American Educational Research Association (AERA) annual meeting proposals (reviews completed Aug. 2017 for 2018 annual meeting) for the following special interest groups (SIGs):
 - Multilevel modeling
 - Music Education
 - Survey Research in education
- Psychology of Men & Masculinity [1 review completed spring 2017]
- American Educational Research Association (AERA) Division D graduate student in-progress research gala [2 reviews completed 1/17; 1 review completed 2/18]
- Graduate-level text book prospectus for Pearson [Oct. 2016; August 2017]
- Bulletin for the Council for Research in Music Education [2 reviews completed; 2016 - present]
- Journal of Research on Leadership Education [1 review completed spring 2016]

Professional Associations

- American Educational Research Association (AERA), member, 2016-present
- Society for Research on Educational Effectiveness (SREE), member, 2018 - present

