

Xingyao (Doria) Xiao

Tel: 510-385-3542 • Email: xiaoxg@berkeley.edu

EDUCATION

University of California, Berkeley (Berkeley School of Education) 08/2020–05/2025 (anticipated)

Ph.D., Major: Social Research Methodologies Current GPA: 4.00/4.00

Boston College (Lynch School of Education and Human Development) 08/2018–05/2020

M.S., Major: Applied Statistics and Psychometrics GPA: 3.88/4.00 Major GPA: 4.00/4.00

➤ Dean's Merit Scholarship 07/2018 & 08/2019

University of Minnesota, Morris 01/2016–09/2018

B.A., Major: Statistics; Minor: Mathematics; GPA: 3.82/4.00 Major GPA: 4.00/4.00 (**Graduated with Distinction**)

➤ Awards: Project Stipend (VSDUSA) 11/2017, Outstanding Performance Award 08/2017, Dean's List 12/2016

RESEARCH INTERESTS

Fields: Measurement, Psychometrics, and Applied Statistics in Education and Psychology

Methods: Bayesian Inference, Multilevel and Longitudinal (Latent Variable) Modeling (e.g., Growth Mixture Modeling).

TECHNICAL SKILLS

➤ Programming languages and mathematical packages: R, Python, Matlab, Stan, Shiny, and Mathematica

➤ Others: Stata, SPSS, Mplus, and ConQuest

SERVICES

➤ Conference Reviewer: 2020 NEERO Conference

➤ Manuscript Reviewer: Measurement: Interdisciplinary Research and Perspectives 05/2023

AWARD

Psychometric Society Travel Award, IMPS 2023: Selected as a recipient of the award sponsored by EdAstra Tech

PUBLICATIONS

- [1] Zhang, J., Liu, F., Chen, Z., Yu, Z., **Xiao, X.**, Shi, L., & Guo, Z. (2023). A multi-level analysis on the causes of train-pedestrian collisions in Southwest China 2011–2020. *Accident Analysis & Prevention*, 193, 107332. <https://doi.org/10.1016/j.aap.2023.107332>
- [2] **Xiao, X.**, Xue, M., Cheng, Y. (2023). Bayesian Partial Credit Model and Its Applications in Science Education. In: Liu, X., Boone, W.J. (eds) *Advances in Applications of Rasch Measurement in Science Education*. Contemporary Trends and Issues in Science Education, vol 57. Springer, Cham. https://doi.org/10.1007/978-3-031-28776-3_4
- [3] **Xiao, X.**, Ji, F. & Rabe-Hesketh, S. (2022). Introduction to multilevel logistic regression using rstanarm. *Stan Case Study*. https://education-stan.github.io/tutorial_glm.html
- [4] **Xiao, X.**, & Cheng, Y. (2021). Movie title keywords: A text mining and exploratory factor analysis of popular movies in the United States and China. *Journal of Risk and Financial Management*, 14(2). <https://doi.org/10.3390/jrfm14020068>
- [5] Kim, J. M., **Xiao, X.**, & Kim, I. (2020). Hollywood movie data analysis by social network analysis and text mining. *International Journal of Electronic Commerce Studies*, 11(1), 75-92. <https://doi.org/10.7903/ijecs.1731>
- [6] Kim, J. M., Lee, N, & **Xiao, X.** (2019). Directional dependence between major cities in China based on copula regression on air pollution measurement. *PLOS ONE* 14(3). <https://doi.org/10.1371/journal.pone.0213148>

CONFERENCES

Individual Paper Presentations

- [1] **Xiao, X.** & Rabe-Hesketh, R. (2023, July). *Bayesian model evaluation and local identifiability for growth mixture models*. International Meeting of the Psychometric Society 2023, College Park, Maryland, USA.
- [2] **Xiao, X.**, Ji, F., & Ernst, A. (2023, July). – Sample Heterogeneity in Dynamic Psychological Processes. Symposium conducted at the International Meeting of the Psychometric Society 2023, College Park, Maryland, USA. Contributors include: Jody Zhou, Emilio Ferrere etc...
- [3] **Xiao, X.** (2023, June). *Bayesian Model Evaluation using Marginal Likelihood for Growth Mixture Models*. Modern Modeling Methods (M3) Conference, Storrs, CT, United States.
- [4] **Xiao, X.**, Ji, F. (2023, June). – Sample Heterogeneity in Dynamic Psychological Processes. Symposium conducted at

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the Modern Modeling Methods (M3) Conference, Storrs, CT. Contributors include: Jody Zhou, Emilio Ferrere etc...

- [5] **Xiao, X.**, Rabe-Hesketh, R., & Cheng, Y. (2023, April). *Bayesian comparison of growth mixture models: To better pursue truth*. American Educational Research Association 2023, Chicago, IL, United States.
- [6] **Xiao, X.** (2023, April). *Bayesian comparison of growth mixture models*. National Council on Measurement in Education 2023, Chicago, IL, United States.
- [7] **Xiao, X.** (2022, April). *Bayesian Growth Mixture Models for classifying and measuring individual trajectories*. National Council on Measurement in Education 2022, San Diego, CA, United States.
- [8] **Xiao, X.**, Li, Y., & Park, Y. (2022, March). *Automating book-to-curriculum mapping using representation learning*. Association for Education Finance & Policy 47th Annual Conference, Denver, CO, United States.
- [9] **Xiao, X.** (2019, June). *Directional dependence between major cities in China based on copula regression on air pollution measurements*. Southern Regional Council on Statistics 2019, Carrolton, KY, United States.
- [10] **Xiao, X.** (2019, April). *Investigation of the psychometric characteristics of Taylor Manifest Anxiety Scale (TMAS)*. New England Educational Research Organization 2019, Portsmouth, NH, United States.
- [11] **Xiao, X.** (2018, April). *Visualizing statistical data on United States agriculture*. Undergraduate Research Symposium 2018, Twin Cities, MN, United States.

GRANT RECEIVED

Barbara White Bequest Competition, \$3,300

Graduate School of Education, UC Berkeley

Xiao, X. (2021). *Using Item Response Theory to critique, develop, and validate concept inventories in STEM education*.

RESEARCH EXPERIENCES

Edmentum

Remote Engagement

Summer Intern

06/2023-08/2023

- Led the ChatGPT transadaptation project, assessing GPT translation quality in educational content using both machine algorithms and human evaluations.

Chinese Academy of Sciences, Institute of Psychology

Beijing, China

Statistical Modeling Consultant

06/2022-04/2023

- Provided cutting-edge statistical modeling expertise for renowned social sciences researchers.
- Developed and delivered highly sought-after tutorials on advanced modeling techniques using R.

Bayesian Modeling using Stan

Berkeley, California

Graduate Student Researcher

11/2020-present

- Authored a tutorial on rstanarm-focused Multilevel Logistic Regression.
- Resolved identifiability challenges in Growth Mixture Models (GMMs).
- Analyzed trade-offs between conditional and marginal likelihoods for Bayesian GMMs.
- Utilized marginal likelihood estimation to refine posterior predictive distributions and employed WAIC and LOO-CV for in-depth model comparison and data validation.

Berkeley Evaluation and Assessment Research (BEAR) Center

Berkeley, California

Graduate Student Researcher

11/2020-present

- Collaborated with renowned experts to refine construct maps for K-12 STEM education, enhancing assessment precision and validity.
- Guided the improvement of assessment frameworks and prototype tasks through collaboration with external advisors.
- Led a research team in conducting comparative studies between human-rating and machine learning (ML) based rating systems, exploring advancements in assessment methodologies.

California Computer Science Project (CCSP)

Berkeley, California

Graduate Student Researcher

11/2020-01/2022

- Curated academic texts and distance learning resources for pre-service and in-service teachers.
- Utilized project management skills to track progress and evaluate outcomes.

City Connects: Program Evaluation and Statistical Analysis

Boston, MA

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Graduate Research Assistant

08/2019-07/2020

- Managed intervention program databases and contributed to statistical analysis plans for program evaluation.
- Applied inverse probability weighting and marginal structural models to evaluate time-varying City-Connects treatments and control confounding in observational studies.
- Conducted Confirmatory Factor Analysis (CFA) and Multitrait-multimethod (MTMM) analyses to validate the non-academic barrier component and assess its factorial, convergent, and discriminant validity.

Innovation in Urban Science Education Lab : Data Analysis and AI Concept Inventory Development Boston, MA

Data Analyst

05/2019-06/2020

- Analyzed STEM intervention program data, identifying patterns to inform program modifications and optimize the student experience.
- Executed cognitive interviews for AI Concept Inventory development, refining misfit items using advanced IRT analyses, including multilevel and unidimensional IRT, meansquare stats, and ICC-fit diagrams.

Research Service at Boston College

Boston, MA

Statistical Research Consultant

02/2019-06/2019

- Provided expert statistical guidance to researchers using various tools and programming languages.

TEACHING EXPERIENCES

Hierarchical and Longitudinal Modeling, UC Berkeley

Fall 2021, 2022, &2023

Data Analysis in Education Research II, UC Berkeley

Spring 2022&2023

Intermediated Statistics, Boston College

Spring 2020

Statistics I, Boston College

Fall 2019

Introduction to Statistics, UMM

Fall 2017