Xingyao Xiao

El Cerrito, CA 94530 • 510-385-3542 • xiaoxg@berkeley.edu

EDUCATION

University of California, Berkeley (Graduate 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**)

- Project Stipend (VSDUSA) 11/2017; Outstanding Performance Award (BOC) 08/2017; Dean's List (UMM) 12/2016

RESEARCH INTEREST

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

PUBLICATIONS

[1] **Xiao, X.**, Xue, M., & Cheng, Y. (in press). Bayesian partial credit model and its applications in science education. In X. Liu & W. Boone (Eds.), *Advances in applications of Rasch Measurement in science education.* Springer Nature.

[2] **Xiao, X.**, Ji, F. & Rabe-Hesketh, S. (2022). Introduction to multilevel logistic regression using rstanarm. *Stan Case Study*. https://education-stan.github.io/tutorial_glmm.html

[3] **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

[4] 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 \

[5] 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. (2022, April). *Bayesian Growth Mixture Models for classifying and measuring individual trajectories.* National Council on Measurement in Education 2022, San Diego, CA, United States.

[2] 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.

[3] 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.

[4] 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.

[5] 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

Chinese Academy of Sciences, Institute of Psychology Beijing, China

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Statistical Modeling Consultant 06/2022-present

- Provided statistical modeling related consultation for social sciences researchers
- Drafted tutorials for modeling techniques using R and instructed corresponding online instruction sessions

Bayesian Modeling using Stan Berkeley, California

Graduate Student Researcher 11/2020-present

- Developed Bayesian Growth Mixture Models for classifying and modelling individual trajectories
- Created a tutorial introduction to Multilevel Logistic Regression using rstanarm

Berkeley Evaluation and Assessment Research (BEAR) Center Berkeley, California

Graduate Student Researcher 11/2020-present

- Drafted construct maps of instruments for K-12 STEM education after extensive literature review.
- Discussed with external advisors ways to improve assessment frameworks, construct definitions, and prototype assessment tasks.
- Developed construct maps that described the growth of and development in students' understandings of important ideas and practices in computational thinking in the context of college readiness.
- Collected responses to prototype items, conducted unidimensional calibration for each construct, performed preliminary analyses of reliability and validity evidence, and obtained feedback for improving construct definitions, construct maps, items, and scoring guides.

California Computer Science Project (CCSP) Berkeley, California

Graduate Student Researcher 11/2020-01/2022

- Collaborated with the CCSP Academic Coordinator to identify academic texts and distance and digital learning resources to support seminar modules for pre-service and in-service teachers and for school administrators and counselors.
- Facilitated research on and assessment of the project's activities and outcomes, including the use of project management tools to track progress.

City Connects Boston, MA

Graduate Research Assistant 08/2019-07/2020

- Developed and maintained large databases for City Connects' intervention programs.
- Assisted with implementing statistical analysis plans for evaluating the efficacy of City Connects' intervention programs.

Innovation in Urban Science Education (I-USE) Lab Boston, MA

Data Analyst 05/2019-06/2020

- Collected and analyzed data collected from middle school students who participated in novel innovation programs to learn about their experience and design modifications accordingly.

Research Service at Boston College Boston, MA

Statistical Research Consultant 02/2019-06/2019

- Assisted researchers with using programming languages (SPSS, RStudio, Mplus) and online survey tools (Qualtrics and REDCap) for their research projects.

RESEARCH STUDY EXPERIENCES

Towards Creating a Valid Artificial Intelligence Concept Inventory (AI-CI) 08/2021-04/2022

- Conducted cognitive interviews to investigate empirical patterns of misfit items identified through a Multilevel Item Response Theory (IRT) analysis and a series of consecutive unidimensional IRT analyses (i.e., meansquare stats and ICC-fit diagrams).

Examination of the Effects of Time-Varying City-Connects Treatments 10/2019-05/2020

- Performed inverse probability weighting to control for time-varying confounding in observational studies.
- Conducted marginal structural models to assess the effects of time-varying City-Connects treatments.

Initial Validation of Student Support Assessment of Non-Academic Needs 10/2019-05/2020

- Conducted Confirmatory Factor Analysis (CFA) to assess the factorial validity of the non-academic barrier component of the needs assessment tool.

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- Performed Multitrait-multimethod (MTMM) to assess evidence for convergent validity, discriminant validity, and method effects.

Logistic Regression and Receiver Operating Characteristic (ROC) Curve analysis 01/2019-03/2019

Visualizing Statistical Data on United States Agriculture (VSDUSA) 01/2018-05/2018

- Built a web-based application in RStudio with the Shiny package that generated graphic visualizations, including interactive plots and interactive maps.

TEACHING EXPERIENCE

Hierarchical and Longitudinal Modeling, UC Berkeley 08/2021-12/2021 & 08/2022-12/2022

Data Analysis in Education Research II, UC Berkeley 01/2022-05/2022

Intermediated Statistics, Boston College 01/2020-05/2020

Statistics I, Boston College 08/2019-12/2019

Introduction to Statistics, UMM 08/2017-12/2017