Xinran Liu

Department of Psychology
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Education

Ph.D., *Quantitative Research Methods in Psychology* Expected May 2026
Arizona State University, Tempe, AZ
Dissertation: Dynamic model fit assessment in growth curve modeling using the growth direct discrepancy dynamic fit index
Advisor: Dr. Daniel McNeish

M.A., *Quantitative Research Methods in Psychology* December 2023
Arizona State University, Tempe, AZ
Thesis: Alternative effect size estimation in randomized controlled trials with heterogeneous treatment effects
Advisor: Dr. Samantha F. Anderson
GPA: 4.00/4.00

B.A., *Mathematics and Psychology* May 2021
Ithaca College, Ithaca, NY
Summa cum laude with honors
GPA: 4.00/4.00

Publications

Liu, X. & McNeish, D. (2024). Optimal number of replications for obtaining stable dynamic fit index cutoffs. *Educational and Psychological Measurement, 85*(3), 539-564. https://doi.org/10.1177/00131644241290172

Anderson, S. F., & **Liu, X.** (2023). Questionable research practices and cumulative science: The consequences of selective reporting on effect size bias and heterogeneity. *Psychological Methods.* Advance online publication. https://dx.doi.org/10.1037/met0000572

Weibley, H., DiFilippo, M., **Liu, X.**, Lazenby, L., Goscha, J., Ferreira, A., Rader, N., Muscalu, L., Zuckerman, S. (2021). fNIRS monitoring of infant prefrontal cortex during crawling and an executive functioning task. *Frontiers in Behavioral Neuroscience, 15*. https://doi.org/10.3389/fnbeh.2021.675366

Publications under Review

Liu, X., MacKinnon, D. P., & Palo, A. (letter of intent under review) Connections between effect decomposition in structural equation modeling and adjustment for time-varying confounders in the potential outcomes model. *Prevention Science.*

Liu, X. & Anderson, S. F. (under review) Alternative effect size estimation in randomized studies: An investigation of Hand's paradox. *Multivariate Behavioral Research.*

Publications in Preparation

Georgeson, A.R., Alvarez-Bartolo, D., **Liu, X.**, & MacKinnon, D. P. Working with cross-sectional or incomplete longitudinal data: A tutorial with the phantSEM R package.

Alt, M., **Liu, X.**, Levy, R., Gray, S., & Cowan, N. Measurement invariance in working memory structure in two samples of second grade children using the comprehensive assessment battery for children – working memory (CABC-WM).

Gray, S., **Liu, X.**, Levy, R., Alt, M., & Cowan, N. Evaluating measurement invariance of working memory structure across grades 1–4 in school-age children.

Conference Presentations

Liu, X. & McNeish, D. (2024, October 9-12). *Optimal number of replications for obtaining stable dynamic fit index cutoffs* [poster session]. Society of Multivariate Experimental Psychology Conference. Ithaca, NY, United States.

Liu, X. & Anderson, S. F. (2024, August 8-10). *Alternative effect size measure in randomized controlled trials with heterogeneous treatment effects* [poster session]. American Psychological Association Convention, Seattle, WA, United States.

Russell, A., Anderson, S. F., Rogers, J., & **Liu, X.** (2024, April 18-20). *Social media use and daily well-being during the pandemic* [paper presentation]. Midwestern Psychological Association Conference, Chicago, IL, United States.

Liu, X. & Anderson, S. F. (2023, June 26-28). *The role of cherry picking in the replication crisis* [poster session]. Modern Modeling Methods Conference, Storrs, CT, United States.

Weibley, H., **Liu, X.**, Rader, N., & Muscalu, L. (2020, May 21-24). *Prefrontal lobe activity during cognitive and motor tasks in infancy using fNIRS* [poster session]. Association for Psychological Science Convention.

Liu, X., Ferreira, A., Rader, N., & Muscalu, L. (2020, April 11). *Using fNIRS to measure infant prefrontal lobe activity during cognitive and motor tasks* [poster session]. James J. Whalen Academic Symposium, Ithaca, NY, United States.

Teaching Experiences

Lab Instructor, *Research Methods* Fall 2023 – Spring 2024

Department of Psychology, Arizona State University

- Taught and facilitated lab sessions on research design, statistical methods, and academic writing for undergraduate students in Psychology.
- Assisted faculty with curriculum development and administrative tasks.
- Student evaluation average score (scored on a 10-item Likert scale with 1 = most positive and 5 = most negative):
  - Session 1, Fall 2023: 1.6 (Response rate: 5/ 12)
  - Session 2, Fall 2023: 1.5 (Response rate: 2 / 7)
  - Session 1, Spring 2024: 1.4 (Response rate: 6 / 13)
  - Session 2, Spring 2024: 1.1 (Response rate: 3 / 4)
- Students' comments to the question "Do you have any suggestions for this instructor?":
  - "This class can easily be boring, but Xinran was amazing. The balance between intellectual course work and personable discussion made."
  - "[T]his class worth showing up for. With a different TA I could definitely see myself not wanting to attend."
  - "No remarks Xinran is a remarkable instructor!"
  - "Nothing really, Professor Liu is really sweet and caring and wants her students to get the best grade possible."
  - "No, it is clear the instructor has a passion for psychology!"

Graduate Teaching Assistant, *Multiple Regression* Spring 2023

Department of Psychology, Arizona State University

- Facilitated faculty and advised students on course materials.
- Gave a guest lecture on power analysis.

Graduate Teaching Assistant, *Intermediate Statistics* Fall 2022

Department of Psychology, Arizona State University

- Facilitated faculty and advised students on course materials.
- Taught weekly lab sessions on class materials.

Graduate Teaching Assistant, *Introduction to Statistics* Fall 2021 – Spring 2022

Department of Psychology, Arizona State University

- Facilitated faculty and advised students on course materials.
- Gave a guest lecture on independent samples t-test.

Undergraduate Teaching Assistant, *Infant, Child and Adolescent Development* Spring 2020

Department of Psychology, Ithaca College

- Facilitated faculty and advised students on course materials.
- Organized class materials and led group discussions.
- Facilitated online learning during the Covid-19 pandemic.

Undergraduate Teaching Assistant, *Psychology of Adjustment* Fall 2019

Department of Psychology, Ithaca College

- Facilitated faculty and advised students on course materials.
- Organized class materials and led review sessions.

Research Experiences

Research Assistant January 2025 – present

Department of Psychology, Arizona State University

- Research assistant to Dr. Roy Levy to investigate the psychometric properties and the structure of working memory in young school-age children.
- Conducting both Bayesian and frequentist confirmatory factor analysis, measurement invariance analyses, and growth curve modeling to examine change in children's working memory.

Research Assistant May 2024 – present

Department of Psychology, Arizona State University

- Research assistant to Dr. David MacKinnon in the Research in Prevention Laboratory to develop and evaluate research methods in mediation analysis.
- Conducting research involving topics such as time-varying confounding and sensitivity analyses with cross-sectional or incomplete longitudinal data.

Comprehensive Examination March 2024 – April 2025

Department of Psychology, Arizona State University

- Conducting a literature review to examine direct discrepancy dynamic fit index, growth curve modeling, and their intersection.

Master's Thesis August 2022 – October 2023

Department of Psychology, Arizona State University

- Conducted Monte Carlo simulation studies investigating alternative effect size measures, ψ and δ, in randomized controlled trial experiments with heterogeneous treatment effects.

Graduate First Year Project January 2022 – May 2022

Department of Psychology, Arizona State University

- Conducted Monte Carlo simulation studies examining the consequences of multiplicity on original and replication studies.

Experimenter/fNIRS Technician July 2019 – July 2020

Department of Psychology, Ithaca College

- Served as the experimenter, fNIRS technician, and involved in the data collection and analyses.
- Conducted research on infants using Functional Near-Infrared Spectroscopy (fNIRS) to measure oxygenation and blood flow in the left prefrontal lobe to examine the link of the prefrontal cortex to both self-guided locomotion and executive functioning during infancy.

National Science Foundation Research Intern June 2019 – August 2019

Department of Psychology, Ithaca College

- Conducted data organization and exploratory data analyses on data collected in an infant research study examining the link between executive function and locomotion.

Undergraduate Honors Thesis Fall 2020 – Spring 2021

Department of Mathematics, Ithaca College

- Analyzed water flow data of Fall Creek, Ithaca and climate data of Ithaca.
- Examined the link between the water flow data and the climate data in attempt to find evidence for global warming.

Services and Contributions

Guest Speaker, *Professional Issues in Psychology* October 2024

Department of Psychology, Arizona State University

- Facilitated a discussion on replication and open science with first-year psychology PhD students, providing additional context to enhance their understanding of key issues.

Poster Judge, *Psi Chi Research Conference* April 2022

Department of Psychology, Arizona State University

- Evaluated posters and gave recommendations for winner selection at the Arizona Psychology Undergraduate Research conference (AZPURC).

Technical Skills

Statistical Software: R, Mplus, SAS, SPSS, Excel, GPower

Brain-imaging Technology: Functional Near-Infrared Spectroscopy (fNIRS)

Honors and Awards

Arizona State University

Teaching Excellence Award	Jan 2024
Graduate College Travel Award	April 2023

Ithaca College

Summa cum laude	May 2021
Dean's Award	May 2021
Dean's List	August 2018 – May 2021
John Harcourt Scholarship	August 2018 – May 2021

POC Superior Gold Senior Award August 2020
POC Academic Achievement Award August 2019

Relevant Coursework

Calculus I, II, and III, Probability, Differential Equations, Linear Algebra, Data Science, Intermediate Statistics, Multiple Regression, Psychometric Methods, Item Response Theory, Machine Learning in Psychology, Multilevel Models for Psychological Research, Categorical Data Analysis, Statistical Mediation Analysis, Structural Equation Modeling, Quantitative Meta-Science, Bayesian Analyses in Social Sciences, Advanced Bayesian Analyses, Longitudinal Growth Modeling

Languages

Bilingual and Full Professional Proficiency in English and Mandarin Chinese