Xiao Liu

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EDUCATION

Ph.D. in Quantitative Psychology Expected May 2022
University of Notre Dame Notre Dame, IN
Advisor: Dr. Lijuan (Peggy) Wang

M.S. in Applied and Computational Mathematics and Statistics May 2020
University of Notre Dame Notre Dame, IN
Advisor: Dr. Fang Liu

B.S. in Statistics June 2017
Renmin University of China Beijing, China
Minor: Department,
List honors (if appropriate, ex: *magna cum laude*)

RESEARCH INTERESTS

- Mediation analysis
- Longitudinal data analysis (e.g., latent growth curve; intra-individual variability)
- Causal inference
- Bayesian hypothesis testing via Bayes factor
- Study design (e.g., sample size planning)

TEACHING INTERESTS

Undergraduate Courses

Introduction to Statistics, Advanced Statistics, Introduction to Testing and Measurement, and Introduction to Multivariate Analysis

Graduate Courses

Longitudinal Data Analysis, Multilevel Modeling, Bayesian Statistics, Applied Linear Models, Generalized Linear Models, Structural Equation Modeling, Statistical Inference

PUBLICATIONS

Liu, X., & Wang, L. (2020). The impact of measurement error and omitting confounders on statistical inference of mediation effects and tools for sensitivity analysis. Psychological Methods. doi: 10.1037/met0000345.

Liu, X., & Wang, L. (2020). The Combined Effects of Omitting Confounders and Measurement Error on Statistical Inference of Mediation and a New Tool for Sensitivity Analysis (abstract), Multivariate Behavioral Research, 55(1), 137-138. doi: 10.1080/00273171.2019.1694478.

Liu, X., & Wang, L. (2019). Latent growth curve models with VAR residuals for longitudinal mediation analysis. In Z. Zhang, K. Yuan, Y. Wen, & J. Tang (Ed.), Proceedings of the 2019 Meeting of International Society for Data Science and Analytics (pp. 9-22). Granger, IN: ISDSA Press.

Liu, X., & Wang, L. (2019). Sample Size Planning for Detecting Mediation Effects: A Power Analysis Procedure Considering Uncertainty in Effect Size Estimates. Multivariate Behavioral Research, 1-18. doi: 10.1080/00273171.2019.1593814.

Wang, L., Yang, M., & **Liu, X.** (2019). The Impact of Over-Simplifying the Between-Subject Covariance Structure on Inferences of Fixed Effects in Modeling Nested Data. Structural Equation Modeling: A Multidisciplinary Journal, 26(1), 1-11. doi: 10.1080/10705511.2018.1489725.

MANUSCRIPTS UNDER REVIEW OR IN PREPARATION

Liu, X., Wang, L, Liu, F., Miller-Graff, L., & Howell, K. H. (drafted). Causal inference for treatment effect in partially nested design.

Liu, X., & Wang, L. (in preparation). Testing mediation via Bayes factors and the impact of prior odds specifications.

Wang, L., **Liu, X.,** & Yang, M. (in preparation). Methods for modeling intraindividual variability indicators as a predictor with longitudinal data.

Li, Y., Liu, F., & **Liu, X.** (2018). Panda: AdaPtive Noisy Data Augmentation for regularization of undirected graphical models. arXiv preprint arXiv:1810.04851.

Li, Y., Liu, F., & **Liu, X.** (2018). AdaPtive Noisy Data Augmentation (PANDA) for simultaneous construction of multiple graph models. arXiv preprint arXiv:1810.08361.

PRESENTATIONS

Liu, X., Wang, L, Liu, F., Miller-Graff, L., & Howell, K. H. (2020, July). *Causal inference with partially nested designs: A propensity-score-based approach.* Talk presented at the 2020 International Meeting of the Psychometric Society (Virtual).

Liu, X, & Wang, L**.** (2019, October). *The combined effects of omitting confounders and measurement error on statistical inference of mediation and a new tool for sensitivity analysis.* Poster presented at the 17th Annual Society of Multivariate Experimental Psychology Graduate Student Conference, Baltimore, Maryland.

Liu, X., & Wang, L. (2019, July). *Latent growth curve models with VAR residuals for longitudinal mediation analysis.*Talk presented at the 2019 Meeting of The International Society for Data Science and Analytics, Nanjing, China.

SOFTWARE DEVELOPMENT

Liu, X., Wang, L & Liu, F. (2021). R package "IPWpn": Inverse-propensity-weighting estimation for partially nested design. https://cran.r-project.org/package=IPWpn

Liu, X., & Wang, L. (2020). R shiny web application for sensitivity analysis of statistical inference of mediation to measurement error and omitting confounders. https://xiaoliu.shinyapps.io/MediationSensitivityAnalysis/

Liu, X., & Wang, L. (2019). R shiny web application for sample size planning for detecting mediation effects with accounting for uncertainty in effect size estimates. https://xiaoliu.shinyapps.io/MediationPowerAnalysis/

TEACHIING EXPERIENCE

Teaching Assistant & Lab Instructor, Experimental Psy I: Statistics Spring 2019
Lecture instructor: Dr. Guangjian Zhang

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Lecture instructor: Dr. Guangjian Zhang

Teaching Assistant & Lab Instructor, Longitudinal Data Analysis Spring 2021
Lecture instructor: Dr. Lijuan Wang

STATISTICAL CONSULTING EXPERIENCE

Statistical Consultant, Department of Psychology Fall 2020
Provide services to faculty and graduate students in the psychology department regarding study designs, statistical modeling, software problems, and data analysis.

Statistical Consultant, Department of Psychology Summer 2021

AWARDS & FELLOWSHIPS

Psychology Department's Excellence in Graduate Student Teaching Award 2021
University of Notre Dame

Competitive Society of Multivariate Experimental Psychology (SMEP) Travel Award 2019
17th Annual SMEP Graduate Student Conference

University Presidential Fellowship 2017-present
University of Notre Dame

China Petrol Scholarship 2016
Renmin University of China

Fei Hsiao-Tung Scholarship 2015
Renmin University of China

China National Scholarship 2014
The State Council of the People's Republic of China

ACADEMIC SERVICE

Reviewer:
Multivariate Behavioral Research 2020-present
Psychological Methods 2018-present

PROGRAMMING SKILLS

R, M-Plus, SAS, and SPSS Syntax