

Lijin Zhang

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Psychometrics, Bayesian Analysis, Structural Equation Models

EDUCATION

Stanford University

- Ph.D. student in Development and Psychological Science 2022 - present
(Advisors: Prof. Ben Domingue & Prof. Jason Yeatman)

Sun Yat-sen University

- M.S. in Psychology 2019 - 2022
- B.S. in Psychology 2015 - 2019

RESEARCH EXPERIENCES

Note. [x] refers to the journal articles, working papers, and software packages in the publication list.

Domingue Lab, Stanford University 09/2022 - present

- Advisor: Prof. Ben Domingue
- Research Topics: Model Selection [18], Item Response Theory [16]

Brain Development & Education Lab, Stanford University 04/2023 - present

- Website: <https://www.brainandeducation.com>
- Advisor: Prof. Jason Yeatman
- Research Topics: Applied Psychometrics

Psychological Statistics and Modeling Lab, Sun Yat-sen University 09/2017 - 06/2022

- Advisor: Prof. Junhao Pan
- Research Topics: Bayesian Lasso Confirmatory Factor Analysis [6,7,9,20,39]
Mediation and Moderation Analysis. [10]
Longitudinal Data Analysis [12]

Lab for Big Data Methodology, University of Notre Dame Summer, 2021

- Website: <https://bigdatalab.nd.edu>
- Advisor: Prof. Zhiyong Johnny Zhang
- Research Topics: Text Mining & Network Analysis [2]

Prof. Xinya Liang's Lab, University of Arkansas Summer, 2020

- Advisor: Prof. Xinya Liang
- Research Topics: Bayesian Regularization, Structural Equation Modeling [3]

PUBLICATIONS

Journal Articles (+ indicates co-first author, * indicates correspondent author)

1. Gu, X., Zhu, X., **Zhang, L.**, Pan, J.* (conditionally accepted). Testing Informative Hypotheses in Factor Analysis Models using Bayes Factors. *Psychological Methods*.
2. **Zhang, L.**, Li, X., & Zhang, Z. (accepted). Variety and Mainstays of the R Developer Community. *The R Journal*.
3. **Zhang, L.**, & Liang, X.* (2023). Bayesian Regularization in Multiple-Indicators Multiple-Causes Models. *Psychological Methods*. Advance Online Publication. [doi]

4. Zheng, S., **Zhang, L.**, Jiang, Z., & Pan, J. (2023). The Influence of Using Inaccurate Priors on Bayesian Multilevel Estimation. *Structural Equation Modeling*, 30 (3), 429-448. [[pdf](#)]
5. Wei, X.⁺, Huang, J.⁺, **Zhang, L.**, Pan, D.*⁺, & Pan, J.* (2022). Evaluation and Comparison among SEM, ESEM and BSEM in Estimating Structural Models with Potentially Unknown Cross-loadings. *Structural Equation Modeling*, 29 (3), 327-338. [[pdf](#)]
6. **Zhang, L.**, Pan, J.*⁺, & Ip, E.H. (2021). Criteria for Parameter Identification in Bayesian Lasso Methods for Covariance Analysis: Comparing Rules for Thresholding, p -value, and Credible Interval. *Structural Equation Modeling*, 28 (6), 941-950. [[pdf](#)]
7. **Zhang, L.**, Pan, J.*⁺, Dubé, L., & Ip, E.H. (2021). blcfa: An R Package for Bayesian Model Modification in Confirmatory Factor Analysis. *Structural Equation Modeling*, 28 (4), 649-658. [[pdf](#)]
8. Zeng, G., **Zhang, L.**, Fung, S.*⁺, Li, J., Liu, Y-M., Xiong, K-Z., Jiang, Z-Q., Zhu, F-F., Chen, Z-T., Luo, S-D., Yu, P., & Huang, Q. (2021). Problematic Internet Usage and Self-Esteem in Chinese Undergraduate Students: The Mediation Effects of Individual Affect and Relationship Satisfaction. *International Journal of Environmental Research and Public Health*, 18 (13), 6949. [[pdf](#)]
9. Chen, J.*⁺, Guo, Z., **Zhang, L.**, & Pan, J.* (2021). A Partially Confirmatory Approach to Scale Development with the Bayesian Lasso. *Psychological Methods*, 26 (2), 210-235. [[pdf](#)]
10. Feng, Q.⁺, Song, Q.⁺, **Zhang, L.**⁺, Zheng, S., & Pan, J.* (2020). Integration of Moderation and Mediation in a Latent Variable Framework: A Comparison of Estimation Approaches for the Second-stage Moderated Mediation Model. *Frontiers in Psychology*, 11, 2167. [[pdf](#)]
11. Liu, S., Huang, Z., **Zhang, L.**, Pan, J., Lei, Q., Meng, Y., & Li, Z.* (2020). Plasma Neurofilament Light Chain may be a Biomarker for the Inverse Association between Cancers and Neurodegenerative Diseases. *Frontiers in Aging Neuroscience*, 12 (10), 1-8. [[pdf](#)]

In Chinese:

12. Zheng, S., **Zhang, L.**, Qiao, X., & Pan, J.* (2021). Intensive Longitudinal Data Analysis: Models and Application. *Advances in Psychological Science*, 29 (11), 1948-1969. [[pdf](#)]
13. Zhang, X., **Zhang, L.**, Ding, Y., Qu, Z.* (2021). Behavioral Oscillations in Attention. *Advances in Psychological Science*, 29 (3): 461-471. [[pdf](#)]
14. **Zhang, L.**, Wei, X., Lu, J., & Pan, J.* (2020). Lasso Regression: From Explanation to Prediction. *Advances in Psychological Science*, 28 (10), 1777-1788. [[pdf](#)]
15. **Zhang, L.**, Lu, J., Wei, X., & Pan, J.* (2019). Bayesian Structural Equation Modeling and Its Current Research. *Advances in Psychological Science*, 27 (11), 1812-1825. [[pdf](#)]

Manuscripts Drafted

16. Ahmed, I., Bertling, M., **Zhang, L.**, Ho, A., Loyalka, P., Xue, H., Rozelle, S., & Domingue, B.W. (submitted). Heterogeneity of item-treatment interactions masks complexity and generalizability in randomized controlled trials. [[preprint](#)]
17. Wang, E., Kennedy, K.M., **Zhang, L.**, Qian, D., Forbes, T., Rodriguez, S., Zuniga-Hernandez, M., Li, B., Domingue, B.W., & Caruso, T.J. (submitted). Predicting Pediatric Healthcare Provider Use of Virtual Reality using a Technology Acceptance Model.
18. **Zhang, L.**, Zhang, Z., Kanopka, K., Ulitzsch, E., & Domingue, B.W. (manuscript drafted). The InterModel Vigorish for Model Comparison in Confirmatory Factor Analysis with Binary Outcomes.

19. **Zhang, L.**, Liang, X., & Pan, J. (manuscript drafted). Comparison Between Bayesian and Frequentist Regularization in Factor Analysis.
20. Pan, J., **Zhang, L.**, & Ip, E.H.* (manuscript drafted). Bayesian Covariance Adaptive Lasso Factor Analysis Models with Ordinal Data.

Invited Talk

21. **Zhang, L.**, & Pan, J.* (2022). Latent Multiple Mediation Analysis with the Bayesian Lasso. The 15th Chinese R Conference, 25 Nov, Virtual. [[slides](#)]
22. **Zhang, L.**, Pan, J., & Ip, E.H., (2022). *Bayesian Lasso Confirmatory Factor Analysis*. Utrecht University, 23 May, Virtual. [[abstract](#)][[slides](#)]
23. **Zhang, L.**, Lu, J., Wei, X., & Pan, J.* (2019). *Bayesian Structural Equation Modeling and Its Current Research*. The 12th Chinese R Conference, 24-26 May, Beijing. [[abstract](#)][[slides](#)]

Contributed Conference Presentations (underline: presenter)

24. **Zhang, L.**, & Domingue, B.W. (2023). *The InterModel Vigorish for Model Comparison in Confirmatory Factor Analysis with Binary Outcomes*. International Meeting of Psychometric Society, 25-28 July, Maryland, USA. [[slides](#)]
25. **Zhang, L.**, Liang, X., & Pan, J. (2023). *Comparison between Bayesian and Frequentist Regularization in Factor Analysis*. International Meeting of Psychometric Society, 25-28 July, Maryland, USA. [[slides](#)]
26. **Zhang, L.**, & Domingue, B.W. (2023). *The InterModel Vigorish for Model Comparison in Confirmatory Factor Analysis with Binary Outcomes*. Annual Meeting of the International Society for Data Science and Analytics, 4-6 July, Shanghai. [[slides](#)]
27. **Zhang, L.**, & Liang, X.* (2023). *Bayesian Regularization in Multiple Indicators Multiple Causes Models*. National Council on Measurement in Education Annual Meeting, 12-15 April, Chicago, USA.
28. Ip, E.H., Sandberg, J., **Zhang, L.**, & Pan, J.* (2022). *Matched-pair Binary Item Response Analysis Using Bayesian Adaptive Lasso Factor Model*. International Meeting of Psychometric Society, 11-15 July, Bologna, Italy.
29. **Zhang, L.**, & Pan, J.* (2021). *How to Select Prior Variance in Bayesian Approximate Measurement Invariance?* The 6th Eastern Chapter of International Society for Bayesian Analysis Conference, 17 November, Virtual.
30. **Zhang, L.**, & Liang, X.* (2021). *Bayesian Regularization in Multiple Indicators Multiple Causes Models*. International Meeting of Psychometric Society, 19-23 July, Virtual. [[abstract](#)][[slides](#)]
31. **Zhang, L.**, Pan, J.*, & Ip, E.H. (2021). *Comparison between Different Parameter Identification Criteria using the Bayesian Lasso*. International Meeting of Psychometric Society, 19-23 July, Virtual. [[abstract](#)][[slides](#)]
32. Pan, J., **Zhang, L.**, & Ip, E.H.* (2021). *Bayesian Covariance Adaptive Lasso Factor Analysis Models with Ordinal Data*. International Meeting of Psychometric Society, 19-23 July, Virtual. [[abstract](#)]
33. **Zhang, L.**, Pan, J.*, & Ip, E.H. (2020). *blcfa: An R package for Bayesian Model Modification in Confirmatory Factor Analysis*. International Meeting of Psychometric Society, 14-17 July, Virtual. [[abstract](#)][[slides](#)]
34. **Zhang, L.**, Lu, J., Zhang, Y., & Pan, J.* (2019). *The Influence of Social Support on Career Decision-Making Difficulty: Bayesian Modeling Based on Longitudinal Data*. The 22nd National Academic Conference of Psychology, 18-20 Oct, Hangzhou. [[abstract](#)][[poster](#)]

35. Pan, J., **Zhang, L.**, & Ip, E.H.* (2018). *Bayesian Lasso Factor Analysis Models with Ordered Categorical Data*. The 13th Cross-Straits Conference on Educational and Psychological Testing, 22-25 Oct, Taiwan. [[abstract](#)][[slides](#)]
36. Pan, J., **Zhang, L.**, Ip, E.H.* (2017). *Bayesian Lasso Factor Analysis Models with Ordered Categorical Data*. The 20th Chinese Academic Conference of Psychology, 3-5 November, Chongqing.

Book Chapters

37. **Computational Neuroscience and Cognitive Modelling - Chinese Version (Anderson, 2014)**
Translated chapters 9-13 (Neural Networks).
38. **Handbook of Quantitative Methods in Psychological and Behavioral Research (in Chinese)**
Wrote the Bayesian Structural Equation Modeling chapter with Prof. Junhao Pan.

Software Development

39. **Zhang, L.**, Pan, J., & Ip, E.H. (2020). *blcfa: An R Package for Bayesian Model Modification in Confirmatory Factor Analysis*. Retrievable from <https://github.com/zhanglj37/blcfa>.
40. **Zhang, L.**, Sun, R., & Pan, J. (2020). *sampleMplus: An R Package for Sample Size Determination in Structural Equation Modeling*. Retrievable from <https://github.com/zhanglj37/sampleMplus>.

GRANTS

National Innovation Training Program for Undergraduates, China	2018
Climbing Plan for Undergraduate and Graduate Students, Guangdong Province	2018

HONORS & AWARDS

EDGE Fellowship, Stanford University	2022
Outstanding Graduates, Sun Yat-sen University	2022
First Prize Scholarship of Outstanding Students, Sun Yat-sen University	2017 - 2021
National Scholarship, Minister of Education of China	2020
Third Prize, Outstanding Thesis Award, Chinese Psychological Society	2019
Outstanding Undergraduate Thesis, Sun Yat-sen University	2019
Outstanding Presenter, Undergraduate Psychology Forum, Peking University	2018

PROFESSIONAL EXPERIENCES

Instructor / Teaching Assistant

· Instructor, Workshop on Bayesian Structural Equation Modeling	2023
· Instructor, Workshop on Structural Equation Modeling with Mplus	2023
· TA, Workshop on Experience Sampling Method	2022
· TA, Advanced Structural Equation Modeling, Sun Yat-sen University	2021
· TA, Structural Equation Modeling, Sun Yat-sen University	2020
· TA, Psychological Statistics, Sun Yat-sen University	2020

Data Analyst & Statistical Consultant

· Data Analyst, Chariot Lab , Lucile Packard Children's Hospital, Stanford University ^[17]	2022 - present
· Data Analyst, The Science of Well-being Research Institute, Guangdong, China ^[8]	2021 - 2022
· Statistical Consultant, Ni Lab, Tsinghua Shenzhen International Graduate School	2020
· Statistical Consultant, Pang Lab, School of International Relations, Sun Yat-sen University	2019 - 2020

Reviewer

- Structural Equation Modeling
- Journal of Behavioral Data Science
- Science Progress
- British Journal of Mathematical and Statistical Psychology
- BMC Medical Research Methodology
- BMC Psychology

Memberships

- Psychometric Society
- Capital of Statistics, China
- National Council on Measurement in Education