Lijin Zhang

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Psychometrics, Quantitative Psychology, Educational Measurement

EDUCATION

Stanford University
· Ph.D. Candidate in Developmental 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 IN PSYCHOMETRICS

Note. [x] refers to the papers in the publication list.   *Starting Date*

Domingue Lab, Stanford University   09/2022

Advisor:	Prof. Ben Domingue
Research Topics:	Model Selection [19], Process Data Analysis [18]
	Item Response Models [1,22,27,23,28]

Lab for Big Data Methodology, University of Notre Dame   06/2021

Advisor:	Prof. Zhiyong Johnny Zhang
Research Topics:	Text Mining & Network Analysis [4], Longitudinal Analysis [20]

Liang Lab, University of Arkansas   07/2020

Advisor:	Prof. Xinya Liang
Research Topics:	Bayesian Regularization, Structural Equation Modeling [2,21]

Psychological Statistics and Modeling Lab, Sun Yat-sen University   09/2019

Advisor:	Prof. Junhao Pan
Research Topics:	Bayesian Lasso Confirmatory Factor Analysis [3,8,9,11,26,21]
	Mediation and Moderation Analysis [14], Longitudinal Analysis [12]

PUBLICATIONS ⓘ

Journal Articles (+ indicates alphabetical order or reverse, * indicates correspondent author)

1. Ahmed, I., Bertling, M., **Zhang, L.**, Ho, A., Loyalka, P., Xue, H., Rozelle, S., & Domingue, B.W. (accepted). Heterogeneity of item-treatment interactions masks complexity and generalizability in randomized controlled trials. *Journal of Research on Educational Effectiveness.* [preprint]

2. **Zhang, L.**, & Liang, X.* (2023). Bayesian Regularization in Multiple-Indicators Multiple-Causes Models. *Psychological Methods.* Advance Online Publication. [doi]

3. Gu, X., Zhu, X., **Zhang, L.**, & Pan, J.* (2023). Testing Informative Hypotheses in Factor Analysis Models using Bayes Factors. *Psychological Methods.* Advance Online Publication. [doi]

4. **Zhang, L.**, Li, X., & Zhang, Z. (2023). Variety and Mainstays of the R Developer Community. *R Journal, 15*(3), 5-25. [doi]

5. Wang, E. Y., Kennedy, K. M., **Zhang, L.**, Qian, D., Forbes, T., Zuniga-Hernandez, M., Li, B. S-K., Domingue, B.W., Caruso, T.J. (2023). Predicting pediatric healthcare provider use of virtual reality using a technology acceptance model. *Journal of the American Medical Informatics Association Open, 6*(3), ooad076. [doi]

6. 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. [doi]

7. 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. [doi]

8. **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. [doi]

9. **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. [doi]

10. 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. [doi]

11. 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. [doi]

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. [doi]

13. Zhang, X., **Zhang, L.**, Ding, Y., Qu, Z.* (2021). Behavioral Oscillations in Attention. *Advances in Psychological Science, 29* (3): 461-471. [doi]

14. 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. [doi]

15. 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. [doi]

16. **Zhang, L.**, Wei, X., Lu, J., & Pan, J.* (2020). Lasso Regression: From Explanation to Prediction. *Advances in Psychological Science, 28* (10), 1777-1788. [doi]

17. **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. [doi]

Manuscripts Drafted

18. **Zhang, L.**, Ulitzsch, E., & Domingue, B.W. (submitted). Bayesian Factor Mixture Modeling with Response Time for Detecting Careless Respondents. [preprint]

19. **Zhang, L.**, Kanopka, K.[+], Rahal, C.[+], Ulitzsch, E.[+], Zhang, Z.[+], & Domingue, B.W. (manuscript drafted). The InterModel Vigorish for Model Comparison in Confirmatory Factor Analysis with Binary Outcomes. [preprint]

20. **Zhang, L.**, Qu, W., & Zhang, Z. (manuscript drafted). Bayesian Growth Curve Modeling with Measurement Error in Time.

21. **Zhang, L.**, Liang, X., & Pan, J. (manuscript drafted). Comparison Between Bayesian and Frequentist Regularization in Factor Analysis.

22. Domingue, B.W., Kanopka, K.[+], Ulitzsch, E.[+], & **Zhang, L.**[+] (submitted). Implied probabilities of

polytomous response functions for model-based prediction and comparison. [preprint]

23. Gilbert, J.B., **Zhang, L.**, Ulitzsch, E., Domingue, B.W. (submitted). Polytomous Explanatory Item Response Models for Item Discrimination: Assessing Negative-Framing Effects in Social-Emotional Learning Surveys. [preprint]

24. He, E., Arshad, F., Li, B.S., Brinda, R., Ganesan, A., **Zhang, L.**, Fehr, S., Renavikar, M., Rodriguez, S.T., Wang, E., Rosales, O., & Caruso, T.J. (submitted). Awe Inducing Elements in Virtual Reality Applications: A Prospective Study of Hospitalized Children and Caregivers.

25. Wang, E., Kennedy, K.M., **Zhang, L.**, Qian, D., Forbes, T., Zuniga-Hernandez, M., Li, B.S., Domingue, B.W., & Caruso, T.J. (submitted) A Technology Acceptance Model to Predict Anesthesiologists' Clinical Adoption of Virtual Reality.

26. Pan, J., **Zhang, L.**, & Ip, E.H.* (manuscript drafted). Bayesian Covariance Adaptive Lasso Factor Analysis Models with Ordinal Data.

27. Domingue, B.W., Kanopka, K., Braginsky, M., **Zhang, L.**, Caffrey-Maffei, L., Kapoor, R., Liu, Y., Zhang, S., & Frank, M. (manuscript drafted). The Item Response Warehouse. [preprint]

28. **Zhang, L.**, Liu, Y., & Domingue, B.W. (in preparation). Incorporating Characteristics of Real-World Item Difficulty Distributions into Simulation Design.

Invited Talk

29. **Zhang, L.**, Qu, W., & Zhang, Z. (2023). *Bayesian Growth Curve Modeling with Measurement Error in Time.* University of Notre Dame, 31 Aug, South Bend, USA. [slides]

30. **Zhang, L.**, & Pan, J.* (2022). *Latent Multiple Mediation Analysis with the Bayesian Lasso.* The 15th Chinese R Conference, 25 Nov, Virtual. [slides]

31. **Zhang, L.**, Pan, J., & Ip, E.H., (2022). *Bayesian Lasso Confirmatory Factor Analysis.* Utrecht University, 23 May, Virtual. [slides]

32. **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. [slides]

Contributed Conference Presentations (underline: presenter)

33. **Zhang, L.**, Ulitzsch, E., & Domingue, B.W. (To be presented). *Bayesian Factor Mixture Modeling with Response Time for Detecting Careless Respondents.* International Meeting of Psychometric Society, 16-19 July, Prague, Czech.

34. Domingue, B.W., Kanopka, K., Ulitzsch, E., & **Zhang, L.** (To be presented). *Implied probabilities of polytomous response functions for model-based prediction and comparison.* International Meeting of Psychometric Society, 16-19 July, Prague, Czech.

35. Cao, C., Liang, X., **Zhang, L.,** & Lu, M. (To be presented). *The Performance of Bayesian Fit Measures in Approximate Measurement Invariance Testing in Cross-Cultural Research.* International Meeting of Psychometric Society, 16-19 July, Prague, Czech.

36. **Zhang, L.**, Qu, W., & Zhang, Z. (To be presented). *Bayesian Growth Curve Modeling with Measurement Error in Time.* Annual Meeting of the International Society for Data Science and Analytics, 21-24 July, Vienna, Austria.

37. **Zhang, L.**, Kanopka, K.[+], Rahal, C.[+], Ulitzsch, E.[+], Zhang, Z.[+], & Domingue, B.W. (2024). *The Inter-Model Vigorish for Model Comparison in Confirmatory Factor Analysis with Binary Outcomes.* Stanford

Data Science Conference, 7 May, California, USA.

38. Domingue, B.W., Kanopka, K., Ulitzsch, E., & **Zhang, L.** (2024). *Implied Probabilities of Polytomous Response Functions for Model-Based Prediction and Comparison.* National Council on Measurement in Education Annual Meeting, 11-14 April, Philadelphia, USA.

39. **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]

40. **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]

41. **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]

42. **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.

43. 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.

44. **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.

45. **Zhang, L.**, & Liang, X.* (2021). *Bayesian Regularization in Multiple Indicators Multiple Causes Models.* International Meeting of Psychometric Society, 19-23 July, Virtual. [slides]

46. **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. [slides]

47. 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.

48. **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. [slides]

49. **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. [poster]

50. 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. [slides]

51. 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

52. **Computational Neuroscience and Cognitive Modelling - Chinese Version (Anderson, 2014)**
Translated chapters 9-13 (Neural Networks).

53. **Handbook of Quantitative Methods in Psychological and Behavioral Research**
Wrote the Bayesian Structural Equation Modeling chapter (in Chinese) with Prof. Junhao Pan.

Software Development

54. **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.

55. **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.

HONORS & AWARDS

EDGE Fellowship, Stanford University	2022 - present
GSE Travel Fellowship, Stanford University	2023
Outstanding Graduates, Sun Yat-sen University	2022
National Scholarship, Minister of Education of China	2020
First Prize Scholarship of Outstanding Students, Sun Yat-sen University	2017 - 2021
Outstanding Thesis Award, Chinese Psychological Society	2019
Outstanding Undergraduate Thesis, Sun Yat-sen University	2019
Outstanding Presenter, Undergraduate Psychology Forum, Peking University	2018

RESEARCH EXPERIENCES ON SUBSTANTIVE TOPICS

Data Analysis Collaborations with Research Labs in Psychology, Education, and Medicine	*Date*
· Language & Cognition Lab, Stanford University	2024 - present
· Brain Development & Education Lab, Stanford University	2023 - present
· Chariot Lab, Lucile Packard Children's Hospital, Stanford University [5,24,25]	2022 - present
· The Science of Well-being Research Institute, Guangdong, China [10]	2021 - 2022
· Ni Lab, Tsinghua Shenzhen International Graduate School	2020
· Pang Lab, School of International Relations, Sun Yat-sen University	2019 - 2020

TEACHING EXPERIENCES

· Instructor, Workshop on Bayesian Structural Equation Modeling	2023 & 2024
· Instructor, Workshop on Structural Equation Modeling with Mplus	2023 & 2024
· Teaching Assistant (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

OTHER PROFESSIONAL EXPERIENCES

Reviewer
· Structural Equation Modeling
· Journal of Behavioral Data Science
· Science Progress
· British Journal of Mathematical and Statistical Psychology
· BMC Medical Research Methodology
· BMC Psychology
· American Educational Research Association Annual Meeting
· R Journal

Grants

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

Memberships
· Psychometric Society
· Capital of Statistics, China
· International Society for Data Science and Analytics