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

· Ph.D. Scholar in Data Science   2024 - present

Sun Yat-sen University

· M.S. in Psychology   2019 - 2022

· B.S. in Psychology   2015 - 2019

PUBLICATIONS 🆔

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

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

2. 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. (2024). Awe Inducing Elements in Virtual Reality Applications: A Prospective Study of Hospitalized Children and Caregivers. *Games for Health Journal.* Advance Online Publication. [doi]

3. Ahmed, I., Bertling, M., **Zhang, L.**, Ho, A., Loyalka, P., Xue, H., Rozelle, S., & Domingue, B.W. (2024). Heterogeneity of item-treatment interactions masks complexity and generalizability in randomized controlled trials. *Journal of Research on Educational Effectiveness.* Advance Online Publication. [doi]

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

5. 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]

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

7. 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]

8. 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]

9. 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]

10. **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]

11. **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]

12. 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]

13. 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]

14. 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]

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

16. 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]

17. 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]

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

19. **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

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

21. **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]

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

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

24. Domingue, B.W., Kanopka, K.†, Ulitzsch, E.†, & **Zhang, L.**† (manuscript drafted). Implied probabilities of polytomous response functions for model-based prediction and comparison. [preprint]

25. 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]

26. Shen, H., Stafford, C., Meijsen, J., **Zhang, L.**, Reiter, J., Lawn, R.B., Smith, A.K., Vermuri, M., & Duncan, L.E. (submitted). Testosterone levels predict future PTSD symptoms among middle and older age UK residents.

27. Pan, J., **Zhang, L.**, & Ip, E.H.* (manuscript drafted). Bayesian Covariance Adaptive Lasso Factor Analysis

Models with Ordinal Data.

28. 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]

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

30. **Zhang, L.**, Domingue, B.W., Vogelsmeier, V., & Ulitzsch, E. (in prep). Careless Respondents Detection for Visual Analogue Scale Data.

Invited Talk

31. **Zhang, L.**, Domingue, B.W., Vogelsmeier, V., & Ulitzsch, E. (To be presented). *Mixture Modeling for Identifying Careless Responding.* The Norwegian Psychometrics Gathering, 19-20 Sep, Stavanger.

32. **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]

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

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

35. **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)

36. **Zhang, L.**, Ulitzsch, E., & Domingue, B.W. (2024). *Bayesian Factor Mixture Modeling with Response Time for Detecting Careless Respondents.* International Meeting of Psychometric Society, 16-19 July, Prague, Czech.

37. Domingue, B.W., Kanopka, K., Ulitzsch, E., & **Zhang, L.** (2024). *The Item Response Warehouse.* International Meeting of Psychometric Society, 16-19 July, Prague, Czech.

38. Cao, C., Liang, X., **Zhang, L.,** & Lu, M. (2024). *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.

39. **Zhang, L.**, Qu, W., & Zhang, Z. (2024). *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.

40. **Zhang, L.**, Kanopka, K.†, Rahal, C.†, Ulitzsch, E.†, Zhang, Z.†, & Domingue, B.W. (2024). *The InterModel Vigorish for Model Comparison in Confirmatory Factor Analysis with Binary Outcomes.* Stanford Data Science Conference, 7 May, California, USA.

41. 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.

42. **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]

43. **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]

44. **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]

45. **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.

46. 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.

47. **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.

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

49. **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]

50. 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.

51. **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]

52. **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]

53. 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]

54. 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

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

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

Software Development

57. **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.

58. **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

Data Science Fellowship (around $100,000), Stanford University	2024 - 2026
EDGE Fellowship, Stanford University	2022 - 2027
GSE Travel Fellowship, Stanford University	2023 - 2024
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 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 [21], Process Data Analysis [20]	
	Item Response Models [3,24,28,25,29]	
Centre for Educational Measurement, University of Oslo		Summer, 2024
Advisor:	Prof. Esther Ulitzsch	
Research Topics:	Mixture Modeling [20,31]	
Lab for Big Data Methodology, University of Notre Dame		Summer, 2021
Advisor:	Prof. Zhiyong Johnny Zhang	
Research Topics:	Text Mining & Network Analysis [6], Longitudinal Analysis [22]	
Liang Lab, University of Arkansas		Summer, 2020
Advisor:	Prof. Xinya Liang	
Research Topics:	Bayesian Regularization, Structural Equation Modeling [4,23]	
Psychological Statistics and Modeling Lab, Sun Yat-sen University		09/2019
Advisor:	Prof. Junhao Pan	
Research Topics:	Bayesian Lasso Confirmatory Factor Analysis [5,10,11,13,27,23]	
	Mediation and Moderation Analysis [16], Longitudinal Analysis [14]	

RESEARCH EXPERIENCES ON SUBSTANTIVE TOPICS

Data Analysis Collaborations with Research Labs in Psychology, Education, and Medicine	*Date*
· LEVANTE Project, Language & Cognition Lab, Stanford University	2024 - present
· ROAR Project, Brain Development & Education Lab, Stanford University	2023 - present
· Chariot Program, Lucile Packard Children's Hospital, Stanford University [1,2,7]	2022 - present
· The Science of Well-being Research Institute, Guangdong, China [12]	2021 - 2022
· Ni Lab, Tsinghua Shenzhen International Graduate School	2020
· Pang Lab, School of International Relations, Sun Yat-sen University	2019 - 2020

TEACHING EXPERIENCES

· TA, EDUC 400A: Introduction to Statistical Methods in Education, Stanford University	2024
· Instructor, Workshop on Bayesian Structural Equation Modeling	2023 - 2024
· Instructor, Workshop on Structural Equation Modeling with Mplus	2023 - 2024
· 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

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
- Frontiers in Psychology

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