

Jihong Zhang

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Research Assistant, Educational Measurement

*"To work in a place with a professional work driven environment
where I can utilize and apply my knowledge."*

CONTACT INFORMATION

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RESEARCH INTEREST

Bayesian Model Fitting and Model Diagnosis
Diagnostic Classification Modeling
Longitudinal and Multilevel Modeling
R Packages Development
Visulization of DCM using R - ggdcmm package
Educational Data Mining using Python
Data Mining in Education

EDUCATION BACKGROUND

1/2019–Current **Phd**, *University of Iowa*, Educational Measurement & Statistics.
8/2015–12/2018 **M.S.**, *University of Kansas*, Educational Psychology.
Resarch, Evaluation, Measurement and Statistics
8/2009–5/2013 **B.A.**, *Soochow University, China*, Applied Psychology.
8/2012–5/2013 **B.A.**, *Soochow University, China*, Law.

HONORS & AWARDS

2020–2021 **Educational Measurement Statistics(EMS) Research Award**, *University of Iowa*.
2020–2021 **Blommers/Hieronimus/Feldt Fellowship**, *University of Iowa*.
2012–2013 **Excellent Graduate**, *University of Soochow*.
2012–2013 **Excellent Bachelor's Thesis**, *University of Soochow*.
2011–2012 **Scholarship for Outstanding Learning**, *University of Soochow*.
2010–2011 **People Fellowship Award**, *University of Soochow*.

RESEARCH

Publications

- 2021 **Yurou Wang, Jihong Zhang**, *Examining the Relation between Cultural Intelligence and International Students' Academic Performance: A Structure Equation Modeling Analysis*, SCIREA Journal of Sociology, Volume 5, Issue 1, February 2021.
- 2021 **Jihong Zhang, Jonathan Templin, Catherine E. Mintz**, *A Model Comparison Approach to Posterior Predictive Model Checks in Bayesian* (pre-print), <https://doi.org/10.31234/osf.io/rf64x>.
- 2021 **Ling Zhang, James D Basham, Richard Allen Carter Jr, Jihong Zhang**, *Exploring Factors associated with the implementation of student-centered instructional practices in US classrooms*, Teaching and Teacher Education, <https://doi.org/10.1016/j.tate.2020.103273>.
- 2020 **Zhehan Jiang, Wenchao Ma, Ren Liu, Dexin Shi, Jihong Zhang**, *Comment on: How sure can we be that a student really failed? On the measurement precision of individual pass-fail decisions from the perspective of Item Response Theory*. *Medical Teacher.*, doi: 10.1080/0142159X.2020.1832207.
- 2018 **Zhehan Jiang, Jihong Zhang, Dexin Shi (2018)**, *Particle Swarm Optimization for Diagnosis Task: An Exploratory Study*. *Infonomics Society*.

Publications Abstract

- 2019 **Zhang, J., Templin, J., Mintz, C.**, *A Bayesian Saturated Model Approach to Posterior Predictive Model Checks in Confirmatory Factor Analysis*, *Multivariate Behavioral Research*, DOI:10.1080/00273171.2019.1700773.
- 2019 **Mintz, C., Zhang, J., Templin, J.**, *Assessment of Item Response Model-Data Fit Via Bayesian Limited Information Model Comparison Posterior Predictive Checks*, *Multivariate Behavioral Research*, DOI:10.1080/00273171.2019.1700772.

Posters

- 2019 **Guanlan Xu, Jihong Zhang, Minqin Zhang, Zhiang Zhao, Keyuan Zhao**, *Using LASSO to Identify PISA 2015 Student and Teacher Predictors for Science Achievement*, 2019 Iowa Educational Research and Evaluation Association annual conference, Ankeny, Iowa.
- 2019 **Jihong Zhang, Jonathan Templin, & Catherine E. Mintz**, *A Bayesian Saturated Model Approach of Posterior Predictive Model Checks in Confirmatory Factor Analysis*, SMEP 2019, Baltimore.
- 2019 **Catherine E. Mintz, Jonathan Templin, & Jihong Zhang**, *Assessment of Item Response Model-Data Fit Via Bayesian Limited Information Model Comparison Posterior Predictive Checks*, SMEP 2019, Baltimore.
- 2019 **Yurou Wang, Jihong Zhang**, *Discovering the relationship between Cultural Intelligence and International Students' Academic Performance using Multi-group CFA model*, AERA 2019, Toronto.
- 2017 **Jun Ai, Jihong Zhang, Hao Liu, Jingjing Huang, Eva Horn**, *Examining Chinese Professors' Attitudes to Inclusion on the Multidimensional Attitudes towards Inclusive Education Scale-Chinese Translation: A Pilot Study*.

Presentation

- 2021 **Jihong Zhang, Terry Ackerman, Yurou Wang**, *2PL Model: Compare Generalized Linear Mixed Model with Latent Variable Model based IRT framework*, Virtual.
- 2020 **Jihong Zhang, Templin, J., Mintz, C.**, *A Bayesian Saturated Model Approach to Posterior Predictive Model Checks in Confirmatory Factor Analysis*, NCME 2020 Annual Meeting, Virtual.

Software

- 2020 **Zhang, J.**, *ggdcm*, <https://github.com/JihongZ/ggdcm>, A package to plot DCM models based on ggplot2.
- 2019 **Jiang, Z. & Zhang, J.**, *StanDCM*, <https://github.com/JihongZ/StanDCM>, A package to analyze DCM models via Stan.

R shiny apps

2020 **Zhang, J. & Jiang, Z.**, *BayesNetShiny*, <https://github.com/JihongZ/bayesnetgo>.

Thesis

2019 **Zhang, Jihong**, *Multidimensional Item Response Theory: Validation study of the Social Capital Rating Scale Among High School Students* .

Projects

2019–2020 **Bayesian Logistic Growth Curve Modeling: Study of Headache Predicted by Emotional States Using Kansas City Hospital Data.**

2019–2020 **Using LASSO to Identify PISA 2015 Student and Teacher Predictors Science Achievement.**

2018–2019 **Internship Project: Detect Item Exposure Issue In Computerized Adaptive Testing, Edmentum Cop..**

A project during the internship with Edmentum. It's aimed to explore item exposure issues using R. Two algorithms are designed for the specific data structures

2018–2019 **Tweet Data Mining Method: Evaluate Educational Program.**

With Tweet Data Mining Method, this project is to analyze students' opinions about lectures, online courses. The programming language would be python.

2018–2019 **A Shiny App for Decision Consistency.**

A shiny app aimed to interactively visualize decision consistency of Cut score and Kappa Coefficient. See detail at <https://jihongz.shinyapps.io/Cutscore-1>

2018–2019 **Longitudinal Hierarchical Linear Model to identify Side Effect of Parental Monitoring on Academic Motivation.**

My proposal titled "Using Longitudinal Hierarchical Linear Model to identify Side Effect of Parental Monitoring on Academic Motivation" has been accepted to the 14th Annual KU Professionals for Inclusion and Social Justice Graduate Student Research Conference. The Conference will be held on Friday, February 2, 2018.

2017–2018 **TIMSS 2015 Multilevel Confirmatory Factor Analysis and Measurement Invariance Study.**

This project is what I'm now also working for my Master Thesis. Trend In Math And Statistics study (TIMSS) is a popular International Test used for decades to measure 4th or 8th grade student's math and science ability across countries. Basically I'm interested in a) how class environment, family environment, students' characteristics influence students' math scores b) Are there any difference across different cultures? c) Are these items fair to students from different culture context?

2016-2017 **Kansas Assessment Program (KAP).**

The Kansas Assessment Program (KAP) includes a variety of tests aligned to Kansas' content standards, which help educators and policymakers evaluate student learning and meet the requirements for federal and state accountability. My job in this program is to calculate the CTT and make summary report using R

2016-2017 **FlexmirtAutomation Package for R.**

This is a project I'm working on to make the equating process more efficient and less painful, which is basically to create a R package to run IRT models by calling Flexmirt software. FlexMirt is a very popular software running IRT models but very difficult to create a large number of models (e.g. estimate parameters from different models of Multigroup and Multiform.) This project deals with creating FlexMirt and reading, writing and running multiple models by calling FlexMirt using R.

2015-2017 **Kansas English Language Proficiency Assessment (KELPA).**

This project deals with the assessment of English Language Learner in Kansas using Multidimensional IRT model. My statistics analysis works are always based on R and Flexmirt. I have been working on this project for more than one year. From this project, I learnt a lot of testing measurement skills such as standard testing building and how to manipulate, clean, transform, modeling big data using R.

2012–2013 **Project Coding of Working Memory supported by National University Undergraduate Student Innovation Foundation, University of Kansas.**

This undergraduate students program is one cognitive psychological research on revealing the relationship between coding of working memory and selective attention. I and my collengue finish the program successfully and presented our research results in

Extra-Curricular Activities

- 2019 **Society of Multivariate Experimental Psychology (SMEP) Poster Session, Baltimore,** Oct 9-12.
- 2017 **Attended NCME and AERA, San Antonio,** April 28-30.
- 2017 **Attended the Bayesian workshop from CRMDA, University Of Kansas.**
- 2016 **Attended the LaTeX workshop from CRMDA, University Of Kansas.**
- 2016 **Attended NCME and AERA, Annual Meeting, April 7-11.**
- 2016 **Attended APA Conference, Annual Meeting, May 14-18.**

PEER-REVIEWED PUBLICATIONS

- 2019 **Wang, Y. & Zhang, J. (2019), Examining the Relation between Cultural Intelligence and International Students' Academic Performance: A Structure Equation Modeling Analysis.,** International Journal of Intercultural Relations.
- 2017 **Applying Particle Swarm Optimization to the Log-linear Cognitive Diagnosis Model Estimation, San Antonio, April 28-30.**

COMPUTER SKILLS

I personally like R programming for its flexibility. Sometimes I will use MPLUS for effiience but I do not like Mplus editor. I learnt SAS in longitudinal class and still use it for multi-level research. I have created a R package called usefulR which includes some interesting functions.



Other Softwares:

Microsoft Office
L^AT_EX

Adobe Photoshop
EXCEL

STATA

Languages

Chinese Mother tongue
English Good