

SHENGHAI DAI

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EDUCATION

Ph. D. Inquiry Methodology, Indiana University Bloomington <i>Specialization:</i> Psychometrics & Quantitative Methodology <i>Chair:</i> Dr. Dubravka Svetina Valdivia	July 2017
M. S. Applied Statistics, Indiana University Bloomington	Dec. 2016
M. A. Language Testing, Beijing Language and Culture University	June 2011
B. A. Teaching Chinese as a Second Language, Beijing Language and Culture University	June 2005

PROFESSIONAL POSITIONS

Assistant Professor of Educational Psychology Department of Kinesiology and Educational Psychology, College of Education, Washington State University, Pullman, WA	August 2017- present
Research Assistant/Associate Center for Collaborative Systems Change, Indiana Institute on Disability and Community, Bloomington, IN	2016 -17
Instructor of Statistics Labs (EDUC-Y500) Department of Counseling and Educational Psychology, Indiana University Bloomington, IN	2014-16
Research Associate Lilly Family School of Philanthropy, Indiana University–Purdue University Indianapolis, IN	Summer 2015
Research Assistant AM-I-STEM Project (with Dr. Adam Maltese), Indiana University Bloomington, IN	Summer 2014
Psychometrician Human Anatomy and Physiology Society (HAPS)	2013-14
Research Assistant Project “ <i>What Mathematics Do Students Know? Implications from NAEP for Curriculum and Policy</i> ”, Center for Evaluation and Education Policy, Indiana University Bloomington, IN	2011-14
Test Item Writer & Rater Chinese Proficiency Test (HSK) Center, BLCU, Beijing, China	2008-11
Exam/Test Assistant Chinese Proficiency Test (HSK) Center, BLCU, Beijing, China	2006-08

Teaching Assistant

IIEPM, Tsinghua University, Beijing, China

2005-06

Intern Instructor of Chinese

College of Advanced Chinese Training, BLCU, Beijing, China

2004

TEACHING EXPERIENCE

College of Education, Washington State University

2017-present

Courses (with Semesters)

ED RES 565 Quantitative Research (17F, 18F, 19F, 20F, 21S, 21F)

ED PSYCH 508 Educational Statistics (21SU, 22SU)

ED PSYCH 511 Classical and Modern Test Theory (20F)

ED PSYCH 521 Special Topic: Data Management & Visualization (19SU, 20SU)

ED PSYCH 569 Multivariate Data Analysis (18S, 19S, 20S, 22S)

ED PSYCH 574 Seminar in Educational Psychology (18S, 18F, 19F)

ED PSYCH 577 Item Response Theory (19S, 21S)

ED PSYCH 578 Advanced Item Response Theory (21F)

ED PSYCH 579 Large-Scale Surveys in Education (22S)

Workshop

Introduction to R Programming, LPRC Methods Workshop pre-session, May 31st, 2022

School of Education, Indiana University Bloomington

2014-16

Statistics Labs (EDUC-Y500) associated with Intermediate Statistics

(Y502), Psychometric Theory (Y617), Experimental Design in Education

Research (Y603), and Multivariate Data Analysis (Y604)

PUBLICATIONS

(* = Work with Students)

Peer-Reviewed Journal Articles

16. **Dai, S.**, French, B.F., & Finch, W.H. (in press). DIFplus: An R package for multilevel differential item functioning detection. *Applied Psychological Measurement*.
15. **Dai, S.**, Hao, T., Ardashaeva, Y., Ramazan, O., Danielson, R., & Austin, B. (accepted). PISA reading achievement: Identifying predictors and examining model generalizability for multilingual students. *Reading and Writing*.
14. *Kehinde, O.J., **Dai, S.**, French, B. (2022). Item parameter estimation for multidimensional graded response model under complex structure. *Frontiers in Education - Assessment, Testing and Applied Measurement*. 7, 947581.
<https://www.frontiersin.org/articles/10.3389/feduc.2022.947581>
13. **Dai, S.** & Svetina Valdivia, D. (2022). Dealing with missing responses in cognitive diagnostic modeling. *Psych*. 4(2), 318-341. <https://doi.org/10.3390/psych4020028>.
12. ***Dai, S.**, Vo, T., Kehinde, O.J., He, H., Xue, Y., Demir, C., & Wang, X. (2021). Performance of Polytomous IRT Models with Rating Scale Data: An Investigation over Sample Size, Instrument Length, and Missing Data. *Frontiers in Education - Assessment, Testing and*

- Applied Measurement*. 6, 721963.
<https://www.frontiersin.org/articles/10.3389/feduc.2021.721963>
11. **Dai, S.** (2021). Handling missing responses in psychometrics: Methods and software. *Psych*. 3(4), 673-693. <https://doi.org/10.3390/psych3040043>.
 10. *Zhang, X., **Dai, S.**, & Ardasheva, Y. (2020). Contributions of (de)motivation, engagement, anxiety in English listening and speaking. *Learning and Individual Differences*, 79, 101856. <https://doi.org/10.1016/j.lindif.2020.101856>
 9. **Dai, S.**, Wang, X., & Svetina, D. (2019). The application of minimum discrepancy estimation in the implementation of diagnostic classification models. *Behaviormetrika*, 46, 453-481. <https://doi.org/10.1007/s41237-019-00094-4>
 8. *Higheagle Strong, Z., McMain, E.M., Frey, K.S., Wong, R.M., **Dai, S.**, & Jin, G., (2019). Ethnically diverse adolescents recount third-party actions that amplify their anger and calm their emotions after perceived victimization. *Journal of Adolescent Research*, 35(4), 461-488. <https://doi.org/10.1177/0743558419864021>
 7. Liu, Z., Roggio, R., Day, D., Zheng, C., **Dai, S.**, & Bian, Y. (2019). Leader development begins at home: Overparenting harms adolescent leader emergence. *Journal of Applied Psychology*, 104(10), 1226–1242. <https://doi.org/10.1037/apl0000402>
 6. Wang, X., Svetina, D., & **Dai, S.** (2019). Exploration of factors affecting the added value of test subscores. *Journal of Experimental Education*. 87(2), 179-192. <https://doi.org/10.1080/00220973.2017.1409182>
 5. **Dai, S.**, Svetina, D., & Chen, C. (2018). Investigation of missing responses in Q-matrix validation. *Applied Psychological Measurement*. 42(8), 660–676. <https://doi.org/10.1177/0146621618762742>
 4. Svetina, D., Feng, Y., Paulsen, J., Valdivia, M., Valdivia, A., & **Dai, S.** (2018). Examining DIF in the context of CDMs when the Q-matrix is misspecified. *Frontiers in psychology*, 9:696, 1-15. <https://doi.org/10.3389/fpsyg.2018.00696>
 3. **Dai, S.**, Svetina, D., & Wang, X. (2017). Reporting subscores using R: A software review. *Journal of Educational and Behavioral Statistics*. 42(5), 617-638. <https://doi.org/10.3102/1076998617716462>
 2. Svetina, D., **Dai, S.**, & Wang, X. (2017). Use of cognitive diagnostic model to study differential item functioning in accommodations. *Behaviormetrika*, 44(2), 313-349. <https://doi.org/10.1007/s41237-017-0021-0>
 1. Svetina, D., Valdivia, A., Underhill, S., **Dai, S.**, & Wang, X. (2017). Recovery of parameters in multidimensional item response theory models under complexity and nonnormality. *Applied Psychological Measurement*. 41(7), 530-544. <https://doi.org/10.1177/0146621617707507>

Book Chapters

5. **Dai, S.**, & Higheagle Strong, Z. (2021). Educational applications using large-scale assessment and survey data: Opportunities and challenges. In U. Luhanga & G. Allen (Ed.), *Basic elements of survey research in education: Addressing the problems your advisor never told you about*. North Carolina. Information Age Publishing.

4. Wang, X. & **Dai, S.** (2021). Extreme response style in survey research. In U. Luhanga & G. Allen (Ed.), *Basic elements of survey research in education: Addressing the problems your advisor never told you about*. North Carolina. Information Age Publishing.
3. Brown, N., **Dai, S.**, & Svetina, D. (2016). Analyzing NAEP data at the item level. In P. Kloosterman, D. Mohr, & C. Walcott (Ed.), *What mathematics do students know and how is that knowledge changing? evidence from the National Assessment of Educational Progress*. North Carolina. Information Age Publishing.
2. Brown, N., Svetina, D., & **Dai, S.** (2016). Analyzing NAEP data at the construct level. In P. Kloosterman, D. Mohr, & C. Walcott (Ed.), *What mathematics do students know and how is that knowledge changing? evidence from the National Assessment of Educational Progress*. North Carolina. Information Age Publishing.
1. Kloosterman, P., Walcott, C., Brown, N. J. S., Mohr, D., Perez, A., **Dai, S.**, Roach, M., Wilson, L. D., & Huang, H. (2015). Using NAEP to analyze 8th-grade students' ability to reason algebraically. In Middleton, J. A., Cai, J., Hwang, S., (Eds.), *Large-scale studies in mathematics education*. New York. Springer.

Software Packages

4. **Dai, S.**, Wang, X., & Svetina, D. (2022). subscore: Subscore computing functions in classical test theory. (R package version 3.3) [Computer software]. <http://CRAN.R-project.org/package=subscore>.
3. **Dai, S.**, Wang, X., & Svetina, D. (2021). TestDataImputation: Missing item responses imputation for test and assessment data. (R package version 2.3) [Computer software]. <http://CRAN.R-project.org/package=TestDataImputation>.
2. ***Dai, S.**, Kehinde, O.J., French, B.F., & Schmitter-Edgecombe, M. (2020). ROCpsych: Compute and compare diagnostic test statistics across groups. (R package version 1.3) [Computer software]. <https://CRAN.R-project.org/package=ROCpsych>.
1. **Dai, S.**, French, B.F., Finch, W. H. (2020). DIFplus: Multilevel Mantel-Haenszel statistics for differential item functioning detection. (R package version 1.1) [Computer software]. <https://cran.r-project.org/package=DIFplus>.

PRESENTATIONS

Conference Presentations (Refereed)

44. *Ramazan, O., & **Dai, S.** (2022, August 4-6). *Examining gender DIF in reading self-concept for American middle-grade students in PISA 2018*. [Paper presentation]. American Psychological Association Annual Convention, Minneapolis, MN, United States.
43. *Kehinde, O.J., **Dai, S.**, French, B. (2022, April 21-24). *Item parameter estimation for multidimensional graded response model under complex structure* [Poster presentation]. National Council on Measurement in Education Annual Meeting, San Diego, CA, United States.
42. *Alpizar, D., French, B. & **Dai, S.**, (2022, April 21-24). *A comparison of the testlet model against traditional approaches* [Poster presentation]. National Council on Measurement in Education Annual Meeting, San Diego, CA, United States.

41. Svetina Valdivia, D., & **Dai, S.** (2022, April 21-24). *Number of response categories and sample size requirements in polytomous IRT models* [Paper presentation]. National Council on Measurement in Education Annual Meeting, San Diego, CA, United States.
40. *Vo, T., **Dai, S.**, French, B. (2022, April 21-24). *Opportunity-to-Learn as explanatory sources of differential gender math performance: A multilevel framework* [Paper presentation]. National Council on Measurement in Education Annual Meeting, San Diego, CA, United States.
39. Kangas, S., **Dai, S.**, & Ardasheva, Y. (2022, April 22-25). *Progress of English learners with disabilities on NAEP reading* [Paper presentation]. American Educational Research Association Annual Meeting, San Diego, CA, United States.
38. *Ramazan, O., **Dai, S.**, Danielson, R., Hao, T., & Ardasheva, Y. (2022, April 22-25). *Predicting reading self-concept for English learners on 2018 PISA reading* [Paper presentation]. American Educational Research Association Annual Meeting, San Diego, CA, United States.
37. *Vo, T., French, B., & **Dai, S.** (2022, April 22-25). *Black girls' mathematics and science identities using large-scale data: A QuantCrit framework* [Paper presentation]. American Educational Research Association Annual Meeting, San Diego, CA, United States.
36. Qian, M., & **Dai, S.** (2022, April 22-25) Dimensionality of the creative personality scale: Psychometric network analysis and a simulation study. In K. Berthiaume (Chair), *Innovations in methodological approaches in creativity assessments for gifted student identification* [Symposium]. American Educational Research Association Annual Meeting, San Diego, CA, United States.
35. *Kehinde, O.J., **Dai, S.**, & French, B.F. (2021, August 12-14) *Application of text mining for the motivational-developmental assessment for university students* [Poster presentation]. American Psychological Association (Virtual) Annual Convention.
34. *Kehinde, O.J., **Dai, S.**, & French, B.F. (2021, May 18 – June 11) *Application of multilevel modeling in large-scale assessments: A systematic review* [Paper presentation]. National Council on Measurement in Education (Virtual) Annual Meeting.
33. *Wong, R. & **Dai, S.** (2021, April 8-12) *Does answer order influence undergraduate students' performance on in-class chemistry exams?* [Paper presentation]. American Educational Research Association (Virtual) Annual Meeting.
32. *Ramazan, O., **Dai, S.**, Danielson, R., Austin, B., Hao, T., & Ardasheva, Y. (2021, April 8-12) *Students' 2018 PISA Reading Self-Concept: Identifying Predictors and Examining Model Generalizability for English Learners.* [Roundtable presentation]. American Educational Research Association (Virtual) Annual Meeting.
31. *Hao, T., **Dai, S.**, Ardasheva, Y., Ramazan, O., Danielson, R., & Austin, B. (2021, April 8-12) *Student 2018 PISA reading achievement: Identifying predictors and examining model generalizability for English learners.* [Poster presentation]. American Educational Research Association (Virtual) Annual Meeting.
30. Qian, M., **Dai, S.** & Wang, X. (2020, April 8-12) *Illustration of multilevel explanatory item response theory model differential item functioning testing with the creative thinking scale* [Poster presentation]. American Educational Research Association Annual Meeting, San Francisco, CA. <http://tinyurl.com/stc5x48> (Conference Canceled)

29. *Zhang, X., **Dai, S.** & Ardasheva, Y. (2020, April) *Factors predicting English listening and speaking learning in China's tertiary education* [Roundtable presentation]. American Educational Research Association Annual Meeting, San Francisco, CA. <http://tinyurl.com/vgbte98> (Conference Canceled)
28. **Dai, S.** (2019, April). *Identifying predictors of students' skipping behavior on NAEP mathematics assessments: A random forest approach*. Paper accepted at the annual meeting of the American Educational Research Association, Toronto, Canada.
27. **Dai, S.,** & Wang, X. (2019, April). *Classification methods and criteria in application of cognitive diagnostic models*. Paper accepted at the annual meeting of the American Educational Research Association, Toronto, Canada.
26. *McMain, E.M., Higheagle Strong, Z., Wong, R.M., Frey, K.S., Jin, G., & **Dai, S.** (2019, April). *Ethnically-diverse adolescents describe bystander actions that calm victims' emotions and amplify victims' anger*. Paper presented at the annual meeting of the American Educational Research Association, Toronto, Canada.
25. **Dai, S.,** & Higheagle Strong, Z. (2019, August). *Identifying protective factors for Native American student learning using NAEP data*. Paper presented at the annual meeting of the American Psychological Association, Chicago.
24. *Ceylan, M., & **Dai, S.** (2019, August). *Investigating item parameter drift across computer-based and paper-based assessments in PISA 2015*. Paper presented at the annual meeting of the American Psychological Association, Chicago.
23. Qian, M., **Dai, S.,** & Wang, X. (2019 August). *DIF detection using multi-group CFA and explanatory IRT models*. Paper presented at the annual meeting of the American Psychological Association, Chicago.
22. Wang, X., & **Dai, S.** (2019, August). *Is extreme response style irrelevant to item content?* Paper presented at the annual meeting of the American Psychological Association, Chicago.
21. **Dai, S.,** & Svetina, D. (2018, April). *Impact of Q-matrix and assessment designs on application of cognitive diagnostic models*. Paper presented at the annual meeting of the American Educational Research Association, New York, NY.
20. **Dai, S.,** Wang, X., & Svetina, D. (2018, April). *A further investigation of the generalized dimensionality discrepancy measure for (multi)dimensionality assessment*. Paper presented at the annual meeting of the National Council on Measurement in Education, New York, NY.
19. Paulsen, J., **Dai, S.,** & Wang, X. (2018, April). *Comparing reliability estimation methods in CDMs*. Paper presented at the annual meeting of the American Educational Research Association, New York, NY.
18. Wang, X., **Dai, S.,** Paulsen, J., & Zhang, O. (2018, April). *The comparison of reliability estimates in multidimensional tests*. Paper presented at the annual meeting of the National Council on Measurement in Education, New York, NY.
17. Svetina, D., Valdivia, A., Feng, Y., Valdivia, M., Paulsen, J., & **Dai, S.** (2018, April). *Examining DIF in the context of CDMs when the Q-matrix is misspecified*. Paper presented at the annual meeting of the National Council on Measurement in Education, New York, NY.
16. **Dai, S.,** Wang, X., Svetina, D., Underhill, S., & Feng, Y. (2017, April). *The application of*

- minimum discrepancy estimation in implementation of cognitive diagnostic models.* Paper presented at the annual meeting of the American Educational Research Association, San Antonio, TX.
15. **Dai, S.,** & Svetina, D. (2017, April). *Investigation and treatment of missing responses in implementation of cognitive diagnostic models.* Paper presented at the annual meeting of the American Educational Research Association, San Antonio, TX.
 14. **Dai, S.,** Svetina, D., & Chen, C. (2017, April). *Dealing with missingness in cognitive diagnostic models when the Q-matrix is misspecified.* Paper presented at the annual meeting of the National Council on Measurement in Education, San Antonio, TX.
 13. **Dai, S.,** Svetina, D., & Wang, X. (2017, April). *Making multilevel diagnostic inferences in large-scale assessments.* Paper presented at the annual meeting of the National Council on Measurement in Education, San Antonio, TX.
 12. Chen, C., **Dai, S.,** & Zhang, J. (2017, April). *Comparison of three Q-matrix validation methods for developing cognitive diagnostic assessments.* Paper presented at the annual meeting of the National Council on Measurement in Education, San Antonio, TX.
 11. Wang, X., Svetina, D., **Dai, S.** & Zhang, O. (2017, April). *How much can we gain from collateral information for subscore reporting?* Paper presented at the annual meeting of the National Council on Measurement in Education, San Antonio, TX.
 10. Chen, C, Zhang, J., & **Dai, S.** (2017, April). *The effects of Q-matrix misspecification on classification accuracy and consistency for cognitive diagnostic assessment.* Paper presented at the annual meeting of the American Educational Research Association, San Antonio, TX.
 9. Svetina, D., Valdivia, R., Underhill, S., **Dai, S.,** & Wang, X. (2016, April). *Parameter recovery in multidimensional item response theory models under complexity and nonnormality.* Paper presented at the annual meeting of the National Council on Measurement in Education, Washington, D.C.
 8. Wang, X., Svetina, D., & **Dai, S.** (2016, April). *Exploration of factors affecting the necessity of reporting test subscores.* Paper presented at the annual meeting of the National Council on Measurement in Education, Washington, D.C.
 7. **Dai, S.,** Svetina, D., & Brown, N. J. S. (2015, April). *Predicting skipping behavior in NAEP mathematics assessment: A multilevel modeling approach.* Poster presented at the annual meeting of the National Council on Measurement in Education, Chicago, IL.
 6. Maltese, A., Ross, H., & **Dai, S.** (2015, April). *Assessing multinational interest in STEM.* Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.
 5. Maltese, A., Ross, H., & **Dai, S.** (2014, March). *A comparison of STEM experience in Australia, China, and the United States.* Paper presented at the Midwest Conference of the Comparative and International Education Society (CIES), Bloomington, IN.
 4. Brown, N., **Dai, S.** & Svetina, D., (2014, April). *Predictors of omitted responses on the 2009 National Assessment of Educational Progress (NAEP) mathematics assessment.* Poster presented at the annual meeting of the American Educational Research Association, Philadelphia, PA.
 3. Brown, N., Svetina, D., & **Dai, S.** (2014, April). *Impact of methods of scoring omitted responses on achievement gaps.* Paper presented at the annual meeting of the National Council on

Measurement in Education, Philadelphia, PA.

2. Chen, C., Zhang, J., & **Dai, S.** (2014, April). *A case study of optimizing Q-matrix in cognitive diagnostic assessment*. Paper presented at the annual meeting of the National Council on Measurement in Education, Philadelphia, PA.
1. **Dai, S.** (2013, April) *Do skill profiles and multidimensionality tell the same thing? Application of multidimensional item response theory models and cognitive diagnostic models to Chinese proficiency listening test*. Poster presented at the Cognition and Assessment SIG Poster Session, the annual meeting of the American Educational Research Association, San Francisco, CA.

Other Presentations (Non-Refereed)

2. Howland, A., Wu, P-J., & **Dai, S** (2016). *The Indiana Maternal, Infant, Early Childhood Home Visiting Program (IN-MIECHV) Quarterly Benchmark Reports for FY15*. Report discussions presented to the Indiana State Department of Health, Indiana Department of Child Services, Healthy Families Indiana, and Indiana Nurse-Family Partnership, Indianapolis, IN.
1. Howland, A. & **Dai, S** (2017). *The Indiana Maternal, Infant, Early Childhood Home Visiting Program (IN-MIECHV) Quarterly Benchmark Reports for FY15*. Report discussions presented to the Indiana State Department of Health, Indiana Department of Child Services, Healthy Families Indiana, and Indiana Nurse-Family Partnership, Indianapolis, IN.

GRANTS, CONTRACTS, & FUNDING

Awarded

- 2022-2024, **Co-Principal Investigator**, *Infusing teacher- and leader-preparation curriculum with case-based instruction focused on culturally responsive pedagogy and leadership*. PI: Y. Ardasheva. WSU College of Education Faculty Funding Award. Amount: \$9,976.
- 2021-2022, **Co-Principal Investigator**, *Using case-based instruction to create authentic and effective classroom experiences for preservice teachers*. PI: K. Carbonneau. WSU College of Education Faculty Funding Award. Amount: \$9,705.
- 2022, **Statistician**, *Clinician-in-the-loop smart technology to support health monitoring and intervention for chronic conditions*. PIs: Cook/Fritz/Schmitter-Edgecombe. NIH: National Institute of Nursing Research. #R01 NINR016732, 2017-2022, Amount: \$1,826,091 (Dai share \$19,328).
- 2021-2022, **Psychometrician and Statistician**, *Data analysis for the motivated strategies for learning questionnaire (MSLQ) project*. (With A. Adesope). WSU Pharmacy and Pharmaceutical Sciences. Amount: \$18,288.
- 2019-2021, **Principal Investigator**, *Education research in the era of big data – Evidence from large-scale surveys*. CO-PI: K. Carbonneau. WSU College of Education High-Risk/High-Reward Grant. Amount: \$10,000.
- 2019-2021, **Principal Investigator**, *Advancing education research using large-scale assessment data*. WSU the Office of Research Advancement and Partnerships New Faculty Seed Grant Competition. Amount: \$18,191.
- 2019-2020, **Psychometrician**, *Psychometric analysis for the IT-related self-efficacy measure*. WSU

Carson College of Business. (With D. Compeau). Amount: \$6,000.

Under Review

2023-2028, **Principal Investigator**, *Embracing Machine Learning in Education Research: An Exploration of Interpretability, Replicability, and Model Generalizability to Promote K-12 Mathematics Learning?* NSF Faculty Early Career Development Program (CAREER). Amount requested: \$539,562.

2022-2027, **Co-Principal Investigator**, *Promoting Equity in Learning Environments, Resources, and Opportunity for Multilingual Learners (EQUITY for MLs)*. PI: Y. Ardasheva. Department of Education - National Professional Development (NPD) Grant. Amount requested: \$2,332,136.

Not Awarded

2022-2026, **Principal Investigator**, *Identifying malleable factors and practices supporting culturally and linguistically diverse students' STEM learning: What can we learn from NAEP and state policies?* CO-PIs: Y. Ardasheva, K. Carbonneau, R.W. Danielson, S. Higheagle Strong, and B. Austin. IES Education Research Grants Program. Amount requested: \$1,104,789. [Resubmission].

2022-2025, **Co-Principal Investigator**, *Multilevel explanatory item response theory models and software for detecting differential item functioning*. PI: M. Qian. IES Stats/Methods grant program. Amount requested: \$375,022 (WSU Share).

2022-2027, **Evaluator**, *Interdisciplinary research traineeships in autonomous and robotic systems for sustainable workforce*. PI: C. Mo. NSF Research Traineeship (NRT) program. Amount requested: \$2,191,721.

2022-2026, **Co-Principal Investigator**, *Longitudinal change in fall risk for pregnant women*. PI: R.D. Catena. CDC National Institute for Occupational Safety and Health. Amount requested: \$1,415,060.

2022-2024, **Co-Principal Investigator**, *Early indicators of science achievement for underrepresented K-12 students: Risk and protective factors*. PI: R. Wong. AERA Research Grant Program. Amount requested: \$35,000.

2021-2026, **Co-Principal Investigator**, *Supporting dual language learners' biliteracy in school and at home (Support-DLL)*. PI: E. Johnson. Department of Education - National Professional Development (NPD) Grant. Amount requested: \$2,327,936.

2021-2024, **Principal Investigator**, *Identifying malleable factors and practices supporting culturally and linguistically diverse students' STEM learning: What can we learn from NAEP and state policies?* CO-PIs: K. Carbonneau, Y. Ardasheva, R.W. Danielson, S. Higheagle Strong, and B. Austin. IES Education Research Grants Program. Amount requested: \$786,965.

2021-2026, **Co-Principal Investigator**, *Learning to detect and assess AD/ADRD symptoms from wearable sensor data*. PI: M. Schmitter-Edgecombe. NIH Research on Current Topics in Alzheimer's Disease and Its Related Dementias. Amount requested: \$3,079,081.

2021-2024, **Co-Principal Investigator**, *Examining the use of accommodations among students with disabilities: What can we learn from 2017 NAEP mathematics process data*. PI: A. Howland. IES Education Research Grants Program. Amount requested: \$148,026 (WSU Share).

2021-2023, **Co-Principal Investigator**, *Mathematics instruction and assessment as moderators of*

- student risk factors*. PI: A. Howland. IES Education Research Grants Program. Amount requested: \$138,421 (WSU Share).
- 2021-2022, **Co-Principal Investigator**, *Increasing teachers' self-efficacy and ability to engage all learners across contexts*. PI: J. Egbert. Charles Koch Foundation's Research on K-12 Competition. Amount requested: \$49,028.
- 2020-2022, **Principal Investigator**, *Using machine learning and multilevel modeling to identify predictors of at-risk students' achievement and self-concept on 2018 PISA Reading Assessment*. CO-PIs: Y. Ardsheva & R.W. Danielson. AERA Research Grant Program. Amount requested: \$35,000.
- 2020-2021, **Principal Investigator**, *Strengthening the research capacity of social science faculty at Ala-Too International University*. CO-PI: M. Trevisan. American Councils in International Education - Central Asia University Partnerships Program. Amount requested: \$22,500.
- 2020-2021, **Co-Principal Investigator**, *Teaching how they are taught: Increasing teachers' self-efficacy and ability to engage learners across contexts and situations*. PI: J. Egbert. Spencer Research Grants on Education: COVID-19 Related Special Grant Cycle. Amount requested: \$50,000.
- 2018-2020, **Co-Principal Investigator**, *Equipping the Toolbelt of Biostatistics in the Era of Big Data*. PI: R.W. Danielson. NIH Summer Institute in Biostatistics. Amount requested: \$736,810.
- 2018-2022, **Co-Principal Investigator**, *Development of a measure of test-optional applicants' motivational-developmental attributes*. PI: A. Kaplan. IES Education Research Grants Program. Amount requested: 1,400,000.

PROFESSIONAL MEMBERSHIPS

American Educational Research Association	2012 – present
Division D - Psychometrics, Measurement, and Assessment	
SIG – Cognition and Assessment	
SIG – Measurement and Assessment in Higher Education	
SIG – Large-Scale Assessment	
National Council on Measurement in Education	2012 – present
SIGIMIE – Large-Scale Assessment	2021 – present
Psychometric Society	2012 – present
American Psychological Association	2018 – present
Division 5 - Quantitative and Qualitative Methods	
Division 15 - Educational Psychology	

SERVICE

External/Professional Service

Positions & Committees

Co-Chair, NCME Large-Scale Assessment SIGIMIE	2022 – 2023
Secretary & Treasurer, AERA SIG 167 – Cognition and Assessment	2020 – 2023
Member, NCME Annual Awards Committee	2021 – 2024

Editorial Boards

Associate Editor, <i>Frontiers in Education</i> , section <i>Assessment, Testing and Applied Measurement</i>	2020 – present
Statistical and Methodological Advisor, <i>Journal of School Psychology</i>	2018 – present
Consulting Editor, <i>Journal of Experimental Education</i>	2019 – present
Editorial Board member, <i>Psych</i>	2022 – present
Review Editor, <i>Frontiers in Education</i>	2018 – 2020

Reviewing

<u>Journal Manuscripts</u>	2015 – present
<i>Psychometrika</i>	
<i>Journal of Educational Measurement</i>	
<i>Applied Psychological Measurement</i>	
<i>Educational and Psychological Measurement</i>	
<i>British Journal of Mathematics and Statistical Psychology</i>	
<i>Educational Measurement: Issues and Practice</i>	
<i>International Journal of Testing</i> ,	
<i>Frontiers in Education</i>	
<i>Journal of Engineering Education</i>	
<i>Frontiers in Psychology (section Quantitative Psychology)</i>	
<i>Frontiers in Psychology (section Language Sciences)</i>	
<i>Journal of Modern Applied Statistical Methods, Behaviormetrika</i>	
<i>Cogent Psychology</i> ,	
<i>Journal of Psychoeducational Psychology</i>	
<i>Journal of Research in Education</i> ,	
<i>Journal of Statistical Software</i>	
<i>Psychological Test and Assessment Modeling</i> ,	
<i>Frontiers in Neurology</i>	
<i>Behavior Research Methods</i>	
<i>Methodology – European Journal of Research Methods in Behavioral and Social Sciences</i>	
<i>Foundations (section Mathematical Sciences)</i>	
<i>Research Methods in Applied Linguistics</i>	
<i>Psych</i>	
<i>Frontiers in Medicine (section Healthcare Professions Education)</i>	

Conference Proposals

American Educational Research Association	
Division D - Psychometrics, Measurement, and Assessment	2015-18
SIG - Cognition and Assessment	2015-19
SIG - Large-Scale Assessment	2016-17
National Council on Measurement in Education	
Annual Meeting	2016-18
Graduate Student Research Session	2015-16

Others

NCME Annual Meeting Session Chair 2017

WSU University Service

WSU Center for Institutional Research Computing Advisory Committee 2017 – present
WSU New Faculty SEED Grant Competition reviewer 2021
WSU RA and \$10K Competition reviewer/judge 2019
WSU New Faculty Orientation - Second Year Faculty Panel speaker 2018

WSU College of Education Service

COE Faculty Funding Award reviewer 2022
COE Scholarship reviewer 2018
COE Graduate Studies Committee member 2018 – 2020

WSU Department Service

Ed-Psych Recruitment Committee 2017 – present
Ed-Psych Program website design/maintenance 2017 – present

Others

Faculty Search Committee, Inquiry Methodology, IU, member 2015-16
Workshop in Methods (WIM) Advisory Board, IU, member 2014-16
AERA Division D Membership Committee, student member 2014-15
Inquiry Brownbag Committee, IU, vice president 2014-15
IUPsychometricians Research Group, founder and facilitator 2013-15
Inquiry Brownbag Committee, IU, secretary 2013-14
Beijing Linguistics Association, Beijing, secretary 2007-11

GRADUATE COMMITTEES CHAIRED

<i>Student</i>	<i>Degree</i>	<i>Program</i>	<i>Campus</i>	<i>Duration</i>
Mehriban Ceylan*	M.A.	Educational Psychology	Pullman	Aug 2018 – Dec 2019
Ruochen Zhang*	M.Ed.	Educational Psychology	Pullman	Aug 2018 – Dec 2019
Olasunkanmi Kehinde	Ph.D.	Educational Psychology	Pullman	Aug 2019 –
Onur Ramazan [#]	M.A. & Ph.D.	Educational Psychology	Pullman	Nov 2021 –
Antranik Kirakosian	Ph.D.	Educational Psychology	Pullman	Mar 2022 -

Note. * Graduated. # Co-Chairing.

PROFESSIONAL DEVELOPMENT

Training and Workshops

Research-Related

An Introduction to Machine Learning for The Social Sciences (by Dr. Tracy Sweet), WSU Learning and Performance Research Center (LPRC) Methods Workshop, on Zoom, June 2022.

Mixed Methods (by Dr. Matthew McCrudden), WSU LPRC Methods Workshop, Pullman, WA, May 2019.

Latent Growth Curve Modeling (by Dr. Greg Hancock), WSU LPRC Methods Workshop, Pullman, WA, May 2018.

Manipulating Data and Analytics Using SAS University Edition, WSU Center for Interdisciplinary Statistical Education and Research, Pullman, WA, Nov 2017.

The NAEP Database Training Seminar, sponsored by the National Center for Education Statistics (NCES), Institute of Education Sciences (IES), and U.S. Department of Education, Washington, DC, 2012.

Equipping Your Statistical Toolbelt: The Regression, ANOVA, etc. (GLM) workshop, Indiana Statistical Consulting Center (ISCC), Bloomington, IN, 2012.

Teaching-Related

Teaching Innovation Forum, WSU AOI Faculty Training and Workshop Series, Pullman, WA, 2020.

Refresh and Restart Community of Practice, WSU Academic Outreach and Innovation, Pullman, WA, 2017.

Dealing with Difficult Situations with Students, WSU New Faculty Workshop, Pullman, WA, 2017.

Teaching in the Round in the Spark, WSU Workshop on Learning about Teaching “In the Round” in the New Digital Classroom Building’s Active Learning Hall, Pullman, WA, 2017.

Certificates

Teaching Chinese as a Second Language, the Committee for Certifying Qualification to Teach Chinese as a Foreign Language, 2005

Machine Learning, Coursera (<https://www.coursera.org/course/ml>), 2014

RESEARCH INTERESTS

Psychometrics: Cognitive diagnostic models, (multidimensional) item response theory, large-scale assessments and surveys, classical test theory, validation, measurement invariance and differential item functioning, and language assessment.

Quantitative Methods: Latent variable modeling, missing data analysis, structural equation modeling, multilevel/hierarchical modeling, and multivariate data analysis.