

# Merve Sarac

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## CONTACT INFORMATION

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## RESEARCH INTERESTS

Quantitative Research Methodology, Latent Variable Models, Item Response Theory (IRT), Test Security, and Psychometrics

## EDUCATION

### **University of Wisconsin-Madison**, Madison, Wisconsin

Ph.D. Candidate, Quantitative Methods, May, 2023 (expected graduation)  
*Minor in Statistics*

- Advisor: Dr. James Wollack

### **University of Connecticut**, Storrs, Connecticut

M.A., Research Methods, Measurement, and Evaluation, August, 2018

- Masters Thesis: “English as a Second Language Proficiency: An IRT Approach to Scoring”
- Advisor: Dr. Eric Loken

### **Bogazici University**, Istanbul, Turkey

M.S., Secondary School Mathematics Education, August, 2016

- Masters Thesis: “A Prospective Secondary Mathematics Teacher’s Development of the Meaning of the Cartesian Form of Complex Numbers”
- Advisor: Dr. Gulseren Karagoz Akar

B.S., Integrated B.S. and M.S. Program in Teaching Mathematics, May, 2014

## ACADEMIC APPOINTMENTS

Lecturer, University of Wisconsin-Madison (08/19 - 05/20)

–Ed Psych 773: Factor Analysis, Multidimensional Scaling & Cluster Analysis (Spring 2020)

–Ed Psych 771: Test Construction (Fall 2019)

Teaching Assistant, University of Wisconsin-Madison (08/18 - 05/19)

–Ed Psych 761: Statistical Methods Applied to Education II (Spring 2019)

–Ed Psych 760: Statistical Methods Applied to Education I (Fall 2018)

## AWARDS & HONORS

Early Excellence in Teaching Award, University of Wisconsin-Madison (03/20): \$1,000  
Turkish Ministry of National Education Fellowship for Graduate Studies (02/14): \$110,000  
Prof. Dr. Hikmet Sebuktekin Education Grant Award, Bogazici University (11/13): \$900  
Turkish Ministry of National Education Scholarship for Undergraduate Studies: \$7,200  
International Student Exchange Program Grant in the United States: \$20,000  
High Honors Graduation Certificate, Bogazici University (06/14)

## PROFESSIONAL & RESEARCH APPOINTMENTS

Project Assistant, The Office of Testing and Evaluation Services, University of Wisconsin-Madison (09/20 - present)

Research Intern, Office of Research Strategies, National Board of Medical Examiners (NBME) (06/22-08/22)

Statistical Consulting, The Office of Testing and Evaluation Services, University of Wisconsin-Madison (11/21 - 03/22)

Research Intern, Office of Research Strategies, National Board of Medical Examiners (NBME) (06/21-07/21)

Project Assistant, The Institute of Education Sciences (IES; #R305D190053) project *Bayesian dynamic borrowing: A method for utilizing historical data in education research*. Principal Investigators: David Kaplan, University of Wisconsin-Madison & Jianshen Chen, College Board (07/20)

Research Intern, The American Institute of Certified Public Accountants (AICPA) (06/20-08/20)

Project Assistant, The Office of Testing and Evaluation Services, University of Wisconsin-Madison (09/18 - 09/19)

Research Assistant, The Scientific and Technological Research Council of Turkey (10/15 - 09/16)

Research Assistant, Bogazici University (10/13 - 05/14)

#### PUBLICATIONS

Sarac, M. & Loken, E. (2022). Examining Patterns of Omitted Responses in a Large-Scale English Language Proficiency Test. *International Journal of Testing*, 1-17.  
<https://doi.org/10.1080/15305058.2022.2070756>

Sarac, M. & Feinberg, R. (2022). Exploring the Utility of Nonfunctional Distractors. In M. Wiberg, D. Molenaar, J. González, J.-S. Kim, & H. Hwang (Eds.), *Quantitative Psychology: The 86<sup>th</sup> Annual Meeting of the Psychometric Society* (pp. 83-93). Springer.  
[https://doi.org/10.1007/978-3-031-04572-1\\_7](https://doi.org/10.1007/978-3-031-04572-1_7)

Murphy, D., Sarac, M., & Sedivy S. (*in press*). Why U.S. undergraduate students are (not) studying languages other than English. *Second Language Research & Practice*.

Karagoz Akar, G., Sarac, M. & Belin, M. (under review). Exploring Prospective Teachers Development of the Cartesian Form of Complex Numbers. *Mathematics Teacher Educator*.

#### LEADERSHIP & COMMUNITY SERVICES

Inclusion Organizer, Diversity and Inclusion Association (DIA) Leadership, Department of Educational Psychology, University of Wisconsin-Madison (2022-present)

Graduate Student Representative, Diversity Issues and Testing Committee (CODIT), National Council on Measurement in Education (2022-present)

National Council on Measurement in Education-Graduate Student Issues Committee Standards Study Group (2021-present)

Proposal Reviewer, 2023 American Educational Research Association Annual Meeting (09/2022)

Proposal Reviewer, 2023 National Council on Measurement in Education Annual Meeting (10/2022)

Event Organizer, *We're here too! An Exciting Networking Event for Historically Marginalized Researchers & Students*, Diversity Issues and Testing Committee (CODIT), National Council on Measurement in Education (04/2022)

Panel Session Organizer, *Not There Yet: Addressing Differential Educational Outcomes for Marginalized Populations in the Era of COVID-19*, Diversity Issues and Testing Committee (CODIT), National Council on Measurement in Education (04/2022)

Panel Session Organizer, *Intersectional Career Panel*, Diversity and Inclusion Association (DIA)

Leadership, Department of Educational Psychology, University of Wisconsin-Madison (03/2022)

Quantitative Methods Area Student Representative, Diversity and Inclusion Association (DIA) Steering Committee, Department of Educational Psychology, University of Wisconsin-Madison (2022)

Educational Psychology Graduate Student Mentoring Program, University of Wisconsin-Madison (2019-present)

MANUSCRIPTS IN PREPARATION Sarac, M. & Wollack, J. (in preparation). Reducing Score Bias Through Real-Time Rerouting of Examinees with Anomalous Responses.

Sarac, M. & Wollack, J. (in preparation). Real-Time Anomalous Response Detection for Computer-Based Linear Tests.

Karagoz Akar, G. & Sarac, M. (in preparation). Development of Complex Numbers Through Quantitative Reasoning: The Case of Esra.

CONFERENCE PRESENTATIONS Sarac, M. & Wollack, J. (2023, April). Comparison of Likelihood Ratio Test-Based Preknowledge Detection Statistics for Use in Real-Time. *National Council on Measurement in Education*, Chicago, IL.

Sarac, M., Feinberg, R., Liu, C., & Ross, L. (2023, April). Longitudinal Analysis of Response Accuracy and Time: Baseline Trends for Compromised Items. *National Council on Measurement in Education*, Chicago, IL.

Sarac, M. & Wollack, J. (2022, October). Examining Preknowledge Detection Statistics based on Likelihood Ratio Test for Use in Real-Time. *Conference on Test Security*, Princeton, NJ.

Sarac, M., Feinberg, R., Liu, C., & Ross, L. (2022, October). Identifying Statistical Trends for Potentially Exposed Items. *Conference on Test Security*, Princeton, NJ.

Sarac, M., Feinberg, R., O'Donnell, F., & Ong, T. Q. (2022, April). Interactive Score Reporting Dashboard Improvement through NLP Analysis of Focus Group Feedback. *National Council on Measurement in Education*, San Diego, CA.

Sarac, M. & Xu, T. (2021, December). Two-Step Detection of Examinees with Preknowledge and Exposed Items. *Conference on Test Security*, Virtual.

Sarac, M. & Feinberg, R. (2021, November). The Utility of Nonfunctioning Distractors for Credentialing Tests. *Conference on Test Security*, Virtual.

Sarac, M., Feinberg, R., O'Donnell, F., & Ong, T. Q. (2021, November). Topic Modeling and Sentiment Analysis of User Feedback: Improving a Score Reporting Dashboard. *Natural Language Processing (NLP) in Assessment*, National Board of Medical Examiners Educational Virtual Conference.

Sarac, M. & Wollack, J. (2021, October). Reducing Score Bias Through Real-Time Rerouting of Examinees with Anomalous Responses: Impact of Relaxing the Assumption of Identical Forms. *Conference on Test Security*, Virtual.

Feinberg, R. & Sarac, M. (2021, July). Exploring the Utility of Nonfunctioning Distractors. *International Meeting of the Psychometric Society 2021*, Virtual.

Sarac, M. & Wollack, J. (2021, June). Reducing Score Bias Through Real-Time Rerouting of Examinees with Anomalous Responses. *National Council on Measurement in Education*, Virtual.

Sarac, M. & Xu, T. (2021, June). Preknowledge Detection in Multiple-Format Testing. *National Council on Measurement in Education*, Virtual.

Sarac, M. & Wollack, J. (2020, September). Real-Time Anomalous Response Detection for Computer-Based Linear Tests. *National Council on Measurement in Education*, Virtual.

Sarac, M. & Loken, E. (2020, September). An Empirical Study of Omitted Answers on a Language Proficiency Test. *National Council on Measurement in Education*, Virtual.

Sarac, M. & Wollack, J. (2020, July). A Score Differencing Method for Item Preknowledge Detection in Real-time. *International Meeting of the Psychometric Society 2020*, Virtual.

Sarac, M. & Wollack, J. (2019, November). A Score Differencing Index for Real-Time Anomalous Response Detection for Computer-Based Linear Tests. *Ideas in Testing*, Chicago, IL.

Sarac, M. & Wollack, J. (2019, October). A Method for Real-Time Anomalous Response Detection for Computer-Based Linear Tests. *Conference on Test Security*, Miami, FL.

Sarac, M. & Karagoz Akar, G. (2017, October). A Prospective Secondary Mathematics Teachers Development of the Meaning of Complex Numbers Through Quantitative Reasoning. *39th Annual Meeting of the International Group for the Psychology of Mathematics Education North American Chapter (PME-NA 39)*, Indianapolis, IN.

**INVITED PRESENTATIONS & WORKSHOPS** Writing Test Questions (2019, November). *Nursing Professional Development Fall Workshop*. South Central Wisconsin Affiliate of the Association for Nursing Professional Development, Madison, WI.

**PROFESSIONAL TRAINING** Creating an Individual Development Plan (2021, March). University of Wisconsin-Madison Graduate School Professional Development, Madison, WI.

Working Effectively in Teams: Fundamentals of Team Dynamics and From Conflict to Collaboration in Teams (2021, March). University of Wisconsin-Madison Graduate School Professional Development, Madison, WI.

Modern Meta-analysis Research Workshop (2021, February). The AERA-ICPSR PEERS Data Hub.

Grant Writing (2021, January). University of Wisconsin-Madison Graduate School Professional Development, Madison, WI.

A Practical Approach to Project Management for Graduate Students (2021, January). University of Wisconsin-Madison Graduate School Professional Development, Madison, WI.

Learning Environment and Pedagogics Workshop (2021, January). *Teaching Academy*. University of Wisconsin-Madison, Madison, WI.

Inclusive Teaching Workshop (2020, November). *Inclusive Teaching in a Difficult Semester Series*. Delta Program in partnership with the UW-Madison Collaborative for Advancing Learning and Teaching, Madison, WI.

Workshop by Scott Long (2018, January). *Reproducible Results and the Workflow of Data Analysis*. University of Connecticut, Storrs, CT.

**PROFESSIONAL  
MEMBERSHIPS**

Psychometric Society  
National Council on Measurement in Education  
American Educational Research Association  
American Psychological Association  
American Evaluation Association

**COMPUTER  
SKILLS**

Programming Languages & Software: R, *Mplus*, OpenBUGS, HLM, SPSS, G\*Power, AMOS  
Applications: R Shiny, L<sup>A</sup>T<sub>E</sub>X, R Markdown