Merve Sarac

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RESEARCH
INTERESTS

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

EDUCATION

University of Wisconsin-Madison, Madison, Wisconsin
Ph.D. Candidate, Quantitative Methods, May, 2023 (expected graduation)
Minor in Statistics

- Doctoral Thesis: "Real-Time Detection and Mitigation of Preknowledge in Computerized Linear and Adaptive Tests"
- 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

AWARDS &
HONORS

Early Excellence in Teaching Award, University of Wisconsin-Madison (03/20): $1,000
Patricia and Michael Busk Travel Award, University of Wisconsin-Madison (04/20): $500
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)

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 86th Annual Meeting of the Psychometric Society* (pp. 83-93). Springer.
https://doi.org/10.1007/978-3-031-04572-1_7

Murphy, D., **Sarac, M.**, & Sedivy S. (2022). Why U.S. undergraduate students are (not) studying languages other than English. *Second Language Research & Practice*, *3*(1), 1-33.
https://doi.org/10125/69866

Karagoz Akar, G. & **Sarac, M.** (under review). Development of complex numbers through quantitative reasoning: The case of Esra. *Journal of Mathematical Behavior*.

Karagoz Akar, G., **Sarac, M.** & Belin, M. (under review). Exploring prospective teachers' development of the Cartesian form of complex numbers. *Mathematics Teacher Educator*.

MANUSCRIPTS IN PREPARATION	**Sarac, M.** & Wollack, J. (in preparation). Reducing score bias through real-time rerouting of examinees with preknowledge. **Sarac, M.** & Wollack, J. (in preparation). Real-time preknowledge detection for computer-based linear tests.
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. (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. **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.** & Wollack, J. (2020, September). Real-Time Anomalous Response Detection for Computer-Based Linear Tests. *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.
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)
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)

LEADERSHIP & SERVICES

Dean's Graduate Student Advisory Committee Member, Graduate School Dean's Advisory Board, School of Education, University of Wisconsin-Madison (2022-present)

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

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

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

Brown Bag Panelist, *What to Expect from Faculty and What they Expect from You*, Educational Psychology Student Association, University of Wisconsin-Madison (09/2022)

Proposal Reviewer, 2023 American Educational Research Association Annual & National Council on Measurement in Education Annual Meeting (09/2022)

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, Educational Psychology Student Association, University of Wisconsin-Madison (2019-present)

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.
	Technical Advisory (2021, October). *Test Development Committee (Mathematics).* The Office of Testing and Evaluation Services, University of Wisconsin-Madison, Madison, WI.
PROFESSIONAL TRAINING	The NAEP Research Development Data Training Workshop (2023, January), The American Institutes for Research, Arlington, VA.
	People from Multiple Races or Identities: Best Practices in Handling Complex Social Identity Data (2022, September). Culturally Responsive and Equitable Evaluation (CREE) Learning Opportunities, The Society for Research on Educational Effectiveness.
	Resilience & Wellbeing (2022, September). Mentoring Session, Women in Measurement.
	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, Educators of Measurement SIGIMIE, Large-scale Assessment SIGIMIE, Certification and Licensure SIGIMIE, Society for Research on Educational Effectiveness, American Educational Research Association
COMPUTER SKILLS	Programming Languages & Software: R, M*plus*, Python, OpenBUGS, HLM, SPSS, G*Power Applications: R Shiny, LaTeX, R Markdown
REFERENCES	**James Wollack** Professor Department of Educational Psychology University of Wisconsin-Madison jwollack@wisc.edu

Daniel Bolt
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Department of Educational Psychology
University of Wisconsin-Madison
dmbolt@wisc.edu

David Kaplan
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Department of Educational Psychology
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