AHMED BEDIWY

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EDUCATION

Ph.D. Educational Measurement and Statistics *Anticipated 2026*

University of Iowa, Iowa City, IA, USA

Advisor: Jonathan Templin

M.Sc. Statistics and Actuarial Science: Data Science *2023 - 2025*

University of Iowa, Iowa City, IA, USA

Advisor: Boxiang Wang

M.A. in Educational Psychology: Assessment and Evaluation *2015-2019*

Cairo University, Egypt

Advisors: Sawsan Shalaby and Doaa Haridy

Special Diploma: Educational Psychology *2009-2010*

Zagazig University, Egypt

Professional Diploma: Educational Technology *2008-2009*

Zagazig University, Egypt

B.Sc.(Edu.) in Mathematical Education *2004-2008*

Zagazig University, Egypt

EXPERIENCE

Pearson June 2025 - August 2025 (Full-time, Remote)
Associate Research & Psychometric Analyst - Intern *Austin, TX*

- Worked closely with Melinda Taylor and under the guidance of Tracey Hembry, Director and Senior Measurement Advisor.
- Gained practical experience with Pearson's item pool storage system, **ABBI**.
- Developed hands-on skills in prompt engineering using a locally hosted version of **GPT-4.1** to extract middle school science assessment items.
- Applied machine learning models for both regression and classification to predict the difficulty and quality of newly generated test items.
- Notable experiences at Pearson:
  - Observed the North Dakota (A+) Grade 10 Math **standard setting cycle** to support the prediction of Achievement Level Descriptor (ALD) cut scores.
  - Earned the **Generative AI Foundation Exam Information** certificate offered by Pearson.
- Concluded the internship by preparing and submitting a proposal to the National Council on Measurement on Education (NCME), currently pending approval.

Edmentum June 2024 - August 2024 (Full-time, Hybrid)
Research Psychometric Intern *Bloomington, MN*

- Collaborated closely with Yi He and received mentorship from Sonya Powers, Director of Psychometrics.
- Acquired hands-on experience with advanced psychometric methodologies through both operational and research-focused projects.
- Key **operational** responsibilities included:
  - Cleaning and processing large-scale K–12 datasets with over 1.5 million records.
  - Merging datasets based on defined key features for analysis.
  - Generating descriptive statistics tables and creating visualizations to support data interpretation.
- Contributed to a **simulation study** aimed at minimizing classification errors in Computerized Adaptive Testing (CAT).
- Concluded the internship by developing a paper presentation that was accepted for the annual meeting of the Psychometric Society (IMPS), held in Minneapolis, MN in July 2025.

University of Iowa January 2022 - Present (Part-time)
Graduate Research Assistant *Iowa City, IA*

- Contributed to transitioning the Iowa Statewide Assessment of Student Progress (ISASP) from a linear to a Multi-Stage Testing (MST) format.
- Analyzed test item data for grades 3–11, with over 35,000 examinees per grade level.
- Conducted Differential Item Functioning (DIF) analysis on Spanish-translated math items for English Learners (ELs).
- Compared psychometric analyses across software (commercial vs open-source) programs to ensure consistency and accuracy.
- Performed extensive data cleaning and pre-processing for large-scale assessment datasets.
- Evaluated performance differences between Technology Enhanced Items (TEIs) and Multiple Choice Items (MCIs).
- Contributed to updating ISASP norms to align with Common Core State Standards
- Participated in the review of AI-generated math items for content alignment, mathematical accuracy, and language clarity.
- Debugged and adapted legacy SAS programs to support current psychometric and reporting workflows.

Cairo University 2015 - 2021 (Full-time)
Teaching Assistant *Cairo, Egypt*

- Assisted in teaching multiple graduate-level courses, including Educational Psychology (E.D. 501), Individual Differences (E.D. 517), and Educational Assessment and Evaluation (E.D. 505)
- Supervised students during lab sessions, guiding them in applying psychological learning theories through hands-on experiments

Universities of Canada 2020 - 2021 (Part-time)
Lecturer of Mathematics *Cairo, Egypt*

- Taught the Finite Mathematics course, designing and delivering engaging instructional content across multiple modules
- Employed diverse teaching methods, learning support strategies, and effective assessment techniques to enhance student understanding
- Identified and implemented improvements to course content and delivery, enhancing the overall quality of instruction and student outcomes

Dover American International School (DAIS) 2017 - 2020 (Part-time)
High School Teacher of Mathematics *Shorouk City, Egypt*

- Taught high school mathematics courses including Algebra I, Algebra II, Geometry, Pre-Calculus, and Calculus
- Designed and implemented engaging lesson plans tailored to diverse student learning needs
- Provided individualized support and targeted instruction to help students prepare for standardized tests such as the SAT and ACT

International Thebes American College in Cairo (ITACC) 2013 - 2017 (Full-time)
High School Teacher of Mathematics *Cairo, Egypt*

Asseddiq Language School 2008 - 2013 (Full-time)
High School Teacher of Mathematics *Tenth of Ramadan City, Egypt*

DATA ANALYTIC SKILLS

Programming Languages	R, Python, SAS 9.4 (certified specialist), LaTeX, Mplus, Stan, MySQL, and PostgreSQL
Software & Tools	MS Office, SPSS, IRTPRO, BILOG-MG, flexMIRT, WINSTEPS, ST, Equating Error, Equating Recipes, IRTEQ, and Critical Career Skills - Generative AI Foundations
Cluster and Cloud Computing	Argon (University of Iowa's servers), Amazon Web Services (AWS), FastX Databricks, and Microsoft Azure

THESES

MA in Educational Psychology: "The relative Effectiveness of Equating Methods of Two Forms of Scholastic Aptitude Test (SAT I) in Mathematics Baed on Item Response Theory IRT."

CONFERENCE PRESENTATIONS

Bediwy, A. (2025, July). *Evaluating the Classification Accuracy of an Adaptive Diagnostic Test.* Oral presentation to be presented at the International Meeting of the Psychometric Society in Minneapolis, Minnesota, USA.

Mojoyinola, M. O., **Bediwy, A.**, & Jung, J. (2025, July). *Machine Learning Methods for Differential Item Functioning: A Systematic Review.* Oral presentation at the International Meeting of the Psychometric Society in Minneapolis, Minnesota, USA.

Bediwy, A., Oakley, A. C., Fina, A. D., & Welch, C. J. (2025, April). *Exploring the efficacy of including technology-enhanced items in large-scale assessments.* e-board presentation at the annual meeting of the National Council for Measurement in Education in Denver, Colorado, USA.

Bediwy, A., Olson, J., Patterson, C., & Templin, J. (2025, April). *Using the two-stage estimation approach for cutscore estimation in standard setting procedures.* Paper presented at the annual meeting of the National Council for Measurement in Education in Denver, Colorado, USA.

Tang, X., **Bediwy, A.**, & Kern, J. L. (2025, April). *Conditional dependence in RT-incorporated item selection methods for CAT.* Paper presented at the annual meeting of the National Council for Measurement in Education in Denver, Colorado, USA.

Templin, J., **Bediwy, A.**, Haab, S., Jung, A. K., & Patterson, C. (2025, April). *Bayesian estimation of scale score cutpoints Using a two-stage mixture model likelihood.* Paper to be presented at the annual meeting of the National Council for Measurement in Education in Denver, Colorado, USA.

Mojoyinola, M. O., **Bediwy, A.**, Ma, J., & Fina, A. D. (2024, April). *MST Calibration: Impact of software and priors on parameter recovery.* e-board presentation at the annual meeting of the National Council for Measurement in Education in Philadelphia, Pennsylvania, USA.

Ma, J., Wang, X., Mojoyinola, M. O., **Bediwy, A.**, & Fina, A. D. (2024, April). *The impact of different MST calibration designs on parameter estimation.* e-board presentation at the annual meeting of the National Council for Measurement in Education in Philadelphia, Pennsylvania, USA.

Griger, C., **Bediwy, A.**, & Templin, J. (2024, April). *Evaluating Algorithm Efficacy of an Item-Level Computer Adaptive Test with Routing Stage.* e-board presentation at the annual meeting of the National Council for Measurement in Education in Philadelphia, Pennsylvania, USA.

Bediwy, A., Griger, C. & Templin, J. (2023, April). *Identifying methods for multistage testing routing with mixture modeling.* Paper presented at the annual meeting of the National Council for Measurement in Education in Chicago, Illinois, USA.

Chen, H., **Bediwy, A.**, Mojoyinola, M. O., Fina, A., & Welch, C. J. (2023, April). *Impact of MST design decisions on precision and error: Lessons for practice.* e-board presentation at the annual meeting of the National Council for Measurement in Education in Chicago, Illinois, USA.

Bediwy, A., Shalaby, S. & Haridy, D. (2019, April). *The relative effectiveness of equating methods of two forms of scholastic aptitude test (SAT I) in mathematics based on item response theory IRT.* Paper presentation at the annual meeting of College of Education, Azhar University, Cairo, Egypt.

AWARDS

1. Egyptian Fully Funded PhD Scholarship (4 Years). *Fall 2021 - Spring 2025*
2. The University of Iowa Scholarship: H D Hoover Fund for Excellence in Education. *2025-2026*
3. Audrey Qualls Travel Award from Iowa Testing Programs. *2023 - 2025*
4. Center for Measurement Justice's NCME Conference Travel Scholarship. *2023*

GRANTS

Principal Investigator: Doctoral Dissertation Research: Dynamic Parameter Estimation for AI-Generated Test Items Using Explanatory IRT Approach. The Society of Multivariate Experimental Psychology (SMEP) Dissertation Research Grant, [$5,000] (Funding Period: 2025–2026).

Co-Principal Investigator: Doctoral Dissertation Research: Dynamic Parameter Estimation for AI-Generated Test Items Using Explanatory IRT Approach. (Principal Investigator: Dr. Jonathan Templin), National Science Foundation, Division of Social and Economic Sciences Award. Proposal Submitted in January 2025, [not funded].

VOLUNTEERING

National Council for Measurement in Education NCME September 2024
Annual Meeting Proposal Reviewer *Remote*

I contributed to the review of proposals for the NCME Annual Conference in Denver, Colorado. I was assigned multiple papers to review, including both individual and graduate student submissions. My involvement demonstrates my commitment to fostering quality research and supporting the academic community.

National Council for Measurement in Education NCME 2022 - 2023
GSIC Volunteer Student *Remote*

As a member of the Graduate Student Issues Committee (GSIC) at NCME, I worked with a team to ensuring that the organization addressed the needs of graduate students, shaping strategic planning and initiatives. I served on the website subcommittee, collaborating with team members during monthly meetings to organize and improve the GSIC webpage. Additionally, I took on the role of team leader for the GSIC podcast subcommittee, where I worked with colleagues to interview experts in psychometrics from both academia and industry. The podcasts aimed to guide graduate students in exploring career options post-graduation and are available on platforms such as RSS and SPOTIFY.

College of Education, University of Iowa Spring 2022 - Spring 2023
GSEC Student Member *Iowa City, IA*

As a member of the Graduate Students Executive Committee (GSEC), I contributed to fostering a strong professional climate and sense of community for graduate students within the College of Education. The Council aimed to facilitate communication between the administration and graduate students, offering recommendations on major changes in curricula, student policies, and administrative procedures. Additionally, I served as a team member of the research subcommittee, where we organized monthly colloquium events. These events provided graduate students the opportunity to present their class projects, papers, or posters, encouraging active participation and academic growth.

University of Iowa: iPeer mentoring community Fall 2024 - Spring 2025
Gradlife Peer-to-Peer (P2P) *Iowa City, IA*

As a Peer Mentor in the Gradlife Peer-to-Peer (P2P) and iPeer Mentoring Community, I served as a mentor of a new international graduate student in her transition to graduate life at the University of Iowa. This role involves providing guidance on academic and personal challenges, offering insights into off-campus living and campus resources, and fostering a welcoming environment through regular meetings and engagement.