

*Updated December 23, 2023***KAMAL CHAWLA**

University of Delaware  
 College of Education and Human Development  
 Willard Hall Education Building  
 Newark, DE 19716

Email: kamalc@udel.edu

**EDUCATION**

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| 2024 | PhD Candidate, Educational Statistics & Research Methods<br>University of Delaware,<br>Advisor: Dr. Christina Areizaga Barbieri |
| 2016 | M.Sc, Industrial Mathematics & Informatics<br>Indian Institute of Technology, Roorkee, India<br>Advisor: Dr. Ram Jiwari         |
| 2013 | B.Sc (Hons), Mathematics<br>Sri Venkateswara College, University of Delhi   |

**EXTERNAL METHODOLOGICAL TRAINING**

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- **Advanced Machine Learning**, Statistical Horizons, Instructor: Dr. Ross Jacobucci (July 2023)
- **Introduction to Machine Learning**, Statistical Horizons, Instructor: Dr. Kevin Grimm (May 2023)
- **CMJ Psychometrics Workshop Series**, Center for Measurement Justice, United States (February 2023)
- **Project-Based Learners' Series, SAS**, Instructor: Ms. Angela Fullenkamp (January 2023)
- **Machine Learning, Natural Language Processing, and their Application in Educational Assessment**, The Twentieth Annual MARC Conference, University of Maryland, Instructor: Dr. Jiangang Hao (November 2022)
- **Power Analysis for RCTs with Multiple Outcomes**, Society for Research on Educational Effectiveness (SREE), Arlington, VA, Instructor: Dr. Luke Miratrix (September 2022)
- **Introduction to Qualitative Meta-Synthesis Methods: Achieving STEM Equity and Inclusion through Syntheses**, Virtual, AERA-ICPSR PEERS Data Hub, Instructors: Dr. Maria Ong, Dr. Nuria Jaumot, Dr. Lisette Torres-Gerald, Dr. Christina B. Silva (May 2021)
- **Advance Meta-Analysis**, Virtual, AERA-ICPSR PEERS Data Hub, Instructors: Dr. Terri Pigott, Dr. Ryan Williams, Dr. Tasha Beretvas, Dr. Wim Van Den Noortgate (April 2021)

- **Modern Meta-Analysis Research**, Virtual, AERA-ICPSR PEERS Data Hub, Instructors: Dr. Terri Pigott, Dr. Ryan Williams (February 2021)
- **Linear Algebra and its Applications**, Lady Sri Ram College, University of Delhi; Instructor: Dr. Souman Chakrabarti (November 2012)

## PROGRAMMING AND ANALYTICAL TOOLS

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- **Programming and software:** R, SAS, MATLAB, HLM, SPSS, Python
- **Systematic Reviews:** Abstrakt, Covidence

## PUBLICATIONS (published or in press)

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Collier, Z., **Chawla, K.**, & Soyoye, O. (2024). Optimizing Imputation for Educational Data: Exploring Training Partition and Missing Data Ratios. *Journal of Experimental Education*, <https://doi.org/10.1080/00220973.2023.2287447>

Collier, Z., Kong, M., Soyoye, O., **Chawla, K.**, Aviles, A., & Payne, Y. (2023). Deep learning imputation for unbalanced and incomplete likert-type items. *Journal of Education and Behavioral Statistics*, <https://doi.org/10.3102/10769986231176014>

Barbieri, C.A., Miller-Cotto, D., Clerjuste, S., & **Chawla, K.** (2023). A meta-analysis of the worked examples effect on mathematics performance. *Educational Psychology Review*, 35(1), 11-43. <http://dx.doi.org/10.1007/s10648-023-09745-1>

Barbieri, C.A., Booth, J.L. & **Chawla, K.** (2022). Let's be rational: Worked examples supplemented textbooks improve pre-algebra students' conceptual and fraction magnitude knowledge. *Educational Psychology*. 1-21. <https://doi.org/10.1080/01443410.2022.2144142>

## PUBLICATIONS (under review or revision)

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**Chawla, K.**, Barbieri, C.A. & Acharya, S. (under review). An international comparison of contextual features, single/multi-step problems/examples, and cognitive demands of High School Geometry texts

**Chawla, K.**, Kim, S., Antal, J., & Chawla, R. (under review). IRT score error estimates in item modeling- analytical and bootstrapping methods

Barbieri, C. A., Clerjuste, S., Silla, E., & **Chawla, K.** (under revision). Leveraging common mathematical errors to support core mathematics competencies

## PUBLICATIONS (in preparation or preprints)

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**Chawla, K.**, Barbieri, C., Clerjuste, S., & Miller-Cotto, D. (preprint). How to handle clustering in meta-analysis: Theoretical and Practical Considerations. <https://doi.org/10.17605/OSF.IO/8NB7P>

**Chawla, K.**, Soyoye, O., & Collier, Z. (preprint). Multiple imputation with artificial intelligence: missing data in propensity score analysis. <https://doi.org/10.17605/OSF.IO/FHYMP>

**Chawla, K.**, Ali, U., & van Rijn, P. (preprint). Modern techniques for the treatment of missing responses in large-scale survey assessments. <https://doi.org/10.17605/OSF.IO/GJRT3>

Miller-Cotto, D., **Chawla, K.**, Botello, M., & Barbieri, C.A. (in prep). A meta-analysis exploring the relationship between motivation and executive function [working title]

Walter L., Zhang, H., Collier, Z., **Chawla, K.**, Kong, L., Lee, Y., Quan, J., & Soyoye, O. (in prep). Machine learning for propensity score estimation: a systematic review of applications [working title]

## GRANTS AND AWARDS

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- **Graduate Student Travel Award (\$400)**; University of Delaware for 2023-24
- **Travel Scholarship (\$3000)**; Centre for Measurement Justice (CMJ) for 2022-23
- **Graduate Student Travel Award (\$2300)**; University of Delaware for 2022-23
- **Ascendium Practitioner Fellowship Award (\$2000)**; Society for Research on Educational Effectiveness (SREE) for 2022-23
- **SREE Researchers of Color (SROC) Award (\$1000)**; Society for Research on Educational Effectiveness (SREE) for 2021-22
- **Summer Research Apprenticeship (\$8000)**; School of Education, University of Delaware, Newark, DE, for 2021-22

## CONFERENCE PRESENTATIONS (national or international)

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**Chawla, K.**, Miller-Cotto, D., Botello, M., & Barbieri, C.A. (April 2024). A meta-analysis exploring the relationship between motivation and executive function. Accepted for presentation at the *2024 American Educational Research Association Annual Meeting*, Philadelphia, PA

**Chawla, K.**, Barbieri, C.A. & Acharya, S. (April 2024). An international comparison of dimensional, contextual, and mathematical features and cognitive demands of High School Geometry texts. Accepted for presentation at the *2024 American Educational Research Association Annual Meeting*, Philadelphia, PA

**Chawla, K.**, Ali, U., & van Rijn, P. (April 2024). Modern Techniques for Treatment of Missing Item Responses in Large-Scale Survey Assessments. In Dinesh Prasad Saklani (chair). *Methodological Challenges and Solutions for Administering Large-Scale Assessments in India*. [Symposium]. *2024 National Council on Measurement in Education Annual Meeting*. Philadelphia, PA

- Clerjuste, S., Silla, E., **Chawla, K.**, & Barbieri, C. A. (April 2024). Leveraging common mathematical errors to support core mathematics competencies. Accepted for presentation at the *2024 American Educational Research Association Annual Meeting*, Philadelphia, PA
- Walter L., Zhang, H., Collier, Z., **Chawla, K.**, Kong, L., Lee, Y., Quan, J., & Soyoye, O. (April 2024). Machine learning for propensity score estimation: a systematic review of applications. Accepted for presentation at the *2024 American Educational Research Association Annual Meeting*, Philadelphia, PA
- Walter L., Zhang, H., Collier, Z., **Chawla, K.**, Kong, L., Lee, Y., Quan, J., & Soyoye, O. (Nov 2023). Machine learning for propensity score estimation: a systematic review. *2023 Annual Florida Education Research Association Meeting*, Daytona Beach, FL
- Chawla, K.**, Ali, U., & van Raijn, P., (July 2023). Modern techniques for the treatment of missing responses in large-scale survey assessments. *2023 Annual ETS Research Symposium*, Princeton, NJ
- Soyoye, O., **Chawla, K.**, Collier, Z., Kong, M., Aviles, A., & Payne, Y. (June 2023). Deep learning imputation for unbalanced and incomplete likert-type items. *2023 Modern Modelling Methods Conference*, University of Connecticut
- Chawla, K.** (June 2023). A mathematical approach to finding the IRT score error estimates in item modeling. *2023 Modern Modelling Methods Conference*, University of Connecticut
- Chawla, K.**, Kim, S., & Antal, J. (April 2023). IRT score error estimates in item modeling-analytical and bootstrapping methods. *2023 National Council on Measurement in Education Annual Meeting*, Chicago, IL
- Collier, Z., **Chawla, K.**, & Soyoye, O. (April 2023). Multiple imputation with artificial intelligence: missing data in propensity score analysis. *2023 American Educational Research Association Annual Meeting*, Chicago, IL
- Barbieri, C.A., Miller-Cotto, D., Clerjuste, S., & **Chawla, K.** (April 2023). A Meta-analysis of the worked example effect on mathematics performance. *2023 American Educational Research Association Annual Meeting*, Chicago, IL
- Chawla, K.** & Barbieri, C. A. (March 2023). An international comparison of dimensional, contextual, and mathematical features and cognitive demands of High School Geometry texts. *2023 International Convention of Psychological Sciences*, Brussels, Belgium
- Soyoye, O., **Chawla, K.**, & Collier, Z. (September 2022). Multiple imputation with artificial intelligence: missing data in propensity score analysis. *2022 Society for Research on Educational Effectiveness (SREE) Conference*, Arlington, VA
- Clerjuste, S., **Chawla, K.**, Miller-Cotto, D., & Barbieri, C.A. (April 2022). A meta-analysis of the worked example effect on mathematics performance. *2022 Biennial Meeting Cognitive Development Society*, Madison, WI

**Chawla, K.,** Clerjuste, S., Miller-Cotto, D., Barbieri, C.A., McKinney, G., O’Neill, L., & O’Hara, E. (October 2021). A meta-analysis on the worked examples effect in mathematics. *2021 Society for Research on Educational Effectiveness (SREE) Conference*, Arlington, VA

## DEPARTMENTAL TALKS

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**Chawla, K.** (April 2023). *IRT score error estimates in item modeling- analytical and bootstrapping methods*. Steele Symposium 2022, School of Education, University of Delaware

**Chawla, K.,** McKinney, G., & Barbieri, C.A. (April 2022). *Textbook analysis of high school geometry texts in the United States, Singapore, and India*. Steele Symposium 2022, School of Education, University of Delaware

**Chawla, K.,** Soyoye, O., & Collier, Z. (April 2022). *Multiple imputation with artificial intelligence: missing data in propensity score analysis*. Oral paper presentations presented at the Steele Symposium 2022, School of Education, University of Delaware

Soyoye, O., **Chawla, K.,** Collier, Z. (March 2022). *Multiple imputation with artificial intelligence: missing data in propensity score analysis*. Lightning Talk presented at the University of Delaware’s Delaware Day, virtual

**Chawla, K.,** Clerjuste, S., O’Hara, E., Phuc, L. H., Landy, J., Miller-Cotto, D., & Barbieri, C.A. (August 2021). *The effect of worked examples on mathematics performance: a meta-analytic review*. SOURCE, 2021, University of Delaware

**Chawla, K.,** Clerjuste, S., Barbieri, C.A., Miller-Cotto, D., McKinney, G., & O’Neil, L. (April 2021). *A meta-analysis on the worked examples effect in mathematics*. Steele Symposium 2021, School of Education, University of Delaware

Clerjuste, S., **Chawla, K.,** Barbieri, C.A., Miller-Cotto, D., McKinney, G., & O’Neill, L. (March 2021). *Meta-analysis on the worked examples effect in mathematics*. Lightning Talk presented at the University of Delaware’s Delaware Day, virtual

## RESEARCH EXPERIENCE

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Jan’ 21 - current      Graduate Research Assistant, University of Delaware, PI: Dr. Christina Areizaga Barbieri

- Assistance in various meta-analyses.
- Assistance in General Research Funding (GUR) and University of Delaware Research Foundation (UDRF) grant projects
- Supervising undergraduate research assistants, performing statistical analysis for most of the lab projects, disseminating research findings at conferences and in manuscripts, and designing research for projects related to mathematics learning and instruction
- Conducted an independent study on Comparative Textbook Analysis

- Jun' 23 – Jul' 23      NAEP SPRE Psychometrics Intern, Educational Testing Service (ETS),  
PI: Dr. Usama Ali and Dr. Peter van Rijn
- Project: Modern Techniques for treating missing responses in large-scale survey assessments
  - Presented the findings at the annual ETS research symposium
- Jun' 22 – Jul' 22      Doctoral Psychometrics Intern, The College Board, PI: Dr. Sunhee Kim
- Led the project named 'IRT Score Error Estimates in Item Modeling- Analytical and Bootstrapping Methods'
  - Derived the mathematical equation for 2-PL IRT Ability estimate with variances in item parameters
- Jun' 21 – Jul' 21      Summer Research Apprenticeship, University of Delaware, PI: Dr. Lynsey Gibbons
- Assistance in annotating the bibliography and developing research content for the project titled "Understanding How Elementary Teachers Take Up Discussion Practices to Promote Disciplinary Learning and Equity," funded by the James S. McDonnell Foundation
- Dec' 15 – May' 16      Master's Thesis, Indian Institute of Technology, Roorkee, India, PI: Dr. Ram Jiware
- Performed Radial Based Differential Quadrature Method on Ordinary and Partial Differential Equations to solve various physical, mathematical, and scientific problems
- Aug' 15 – Nov' 15      Research Assistant, Indian Institute of Technology, Roorkee, India, PI: Dr. Ram Jiware
- Analyzed Differential Quadrature Method to solve ordinary differential equations
- May' 15 – July' 15      Visiting Researcher, National Institute of Hydrology, India, PI: Dr. Rama Sharma
- Prepared a stage-discharge report of Dhond HO, a hydroelectric project in Maharashtra, India, using an Adaptive Neuro-Fuzzy Inference System (ANFIS)
  - Compared the results of ANFIS with other statistical tools and concluded which tool is appropriate for finding the results

## **INDUSTRY EXPERIENCE**

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- Jun' 23 – July' 23      NAEP-SPRE Psychometrician (Intern), Educational Testing Service, New Jersey, US
- Jun' 22 – July' 22      Psychometrician (Intern), The College Board, New York, US
- May' 18 – July' 20      Area Manager, Manya- The Princeton Review, Noida, India

## **TEACHING EXPERIENCE**

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- Sep' 23 – Jan' 24      Instructor of Record  
EDUC665- Elementary Statistics (Masters' Level)

- Jan' 23 – May' 23 Teaching Apprentice, EDUC875- Education Data Mining,  
Instructor of Record: Dr. Zachary Collier
- Planning and preparation of lectures, Delivery of instruction, Building relationships with students, Classroom Management, Monitoring, and follow-ups
- Dec' 21– Jan' 23 Co-course developer, EDUC856- Introduction to Statistical Inference  
Instructor of Record: Dr. Christina A. Barbieri
- Assisted the instructor in developing coursework as well as homework
- Jun' 16 – July' 20 Quantitative Aptitude Trainer  
Manya- The Princeton Review, Noida, India
- Preparing and delivering lectures on quantitative aptitude for SAT, GRE, and GMAT examinations
  - Organizing course content and preparing oral lectures and student notes for all international tests

### **INTERNAL TEACHER TRAINING**

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- Welcome to an integrated approach to designing college courses, Graduate College Professional Development Team, University of Delaware, Instructor: Dr. Matthew Trevett-Smith (December 2022)
- Engaging the whole self in the classroom, Graduate College Professional Development Team, University of Delaware, Instructor: Dr. Adam Foley (November 2022)

### **SERVICE**

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- Assistance in reviewing AERA-Division D conference proposals for 2023-24
- Assistance in reviewing NCME conference proposals for 2023-24
- Member of Student Life Committee, Graduate Student Government-University of Delaware for 2021-2023
- Senate member of Graduate Student Government-University of Delaware for 2021-22
- Student Director, *The Internationale*, Student Housing, University of Delaware for 2020-24

### **Professional Memberships**

American Educational Research Association (AERA)  
Society for Research on Educational Effectiveness (SREE)  
National Council for Measurement in Education (NCME)  
Association of Psychological Sciences (APS)