Jordan M. Wheeler

University of Nebraska - Lincoln
Department of Educational Psychology
Quantitative, Qualitative, and Psychometric Methods
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Education

Ph.D., Quantitative Methodology   May 2023
University of Georgia
Department of Educational Psychology
> *Advisor:* Allan S. Cohen, Ph.D.
> *Dissertation:* Exploring the use of Statistical Topic Models with Item Response Models in Educational
> Measurement

M.S., Mathematical Statistics   May 2019
University of Nebraska - Omaha
Department of Mathematical and Statistical Sciences

B.S., Mathematics   May 2017
Nebraska Wesleyan University
Department of Mathematics

Academic Positions

University of Nebraska - Lincoln   August 2023 - Present
Department of Educational Psychology
> *Assistant Professor*, Quantitative and Psychometric Methods

Research Interests

psychometrics; topic models; process data; mixed-format assessments; item response theory; computerized adaptive testing

Publications

Peer Reviewed Journal Articles

5. **Wheeler, J. M.,** Cohen, A. S., & Wang, S. (2023). Comparison of Latent Semantic Analysis and Latent Dirichlet Allocation in Educational Measurement. *Journal of Educational and Behavioral Statistics.*

4. Mardones-Segovia, C. A., **Wheeler, J. M.,** Choi, H.-J., Wang, S., & Cohen, A. S. (2023). Model Selection for Latent Dirichlet Allocation in Assessment Data. *Psychological Test and Assessment Modeling*, 64(1), 3-35.

3. **Wheeler, J. M.,** Raczynski, K., Cohen, A. S., & Engelhard, G. (2022). Using Topic Models to Understand Rater-Mediated Writing Assessments. *The Journal of Experimental Education.* https://doi.org/10.1080/00220973.2022.2130129

2. **Wheeler, J. M.,** Engelhard, G., & Wang, J. (2022). Exploring Rater Accuracy Using Unfolding Models

Combined with Topic Models: Incorporating Supervised Latent Dirichlet Allocation. *Measurement: Interdisciplinary Research and Perspectives*, 20(1), 34-46. https://doi.org/10.1080/15366367.2021.1915094

1. Hyo J.-E., Hulland J., **Wheeler, J. M.,** & Kim S.-H. (2021). Use of item response theory in marketing research. *American Journal of Educational Research and Reviews*, 6:87. https://doi.org/10.28933/ajerr-2021-09-2609

Conference Proceedings (Peer Reviewed)

6. **Wheeler, J. M.,** Xiong, J., Mardones, C., Choi, H.-J., & Cohen, A. S. (2022). An Investigation of Prior Specification on Parameter Recovery for Latent Dirichlet Allocation of Constructed-Response Items. In Wiberg, M., Molenaar, D., Gonzalez, J., Kim, J.-S., & Hwang, H. (Editors) *Quantitative Psychology: The 86th Annual Meeting of the Psychometric Society.*

5. Xiong, J., **Wheeler, J. M.,** Choi, H.-J., & Cohen, A. S. (2022). A Bi-Level Individualized Adaptive Learning Recommendation System Based on Topic Modeling. In Wiberg, M., Molenaar, D., Gonzalez, J., Kim, J.-S., & Hwang, H. (Editors) *Quantitative Psychology: The 86th Annual Meeting of the Psychometric Society.*

4. Mardones, C., Choi, H.-J., Hong, M., **Wheeler, J. M.,** & Cohen, A. S. (2022). Comparison of Estimation Algorithms for Latent Dirichlet Allocation. In Wiberg, M., Molenaar, D., Gonzalez, J., Kim, J.-S., & Hwang, H. (Editors) *Quantitative Psychology: The 86th Annual Meeting of the Psychometric Society.*

3. **Wheeler, J. M.,** Cohen, A. S., Xiong, J., Lee, J., & Choi, H.-J. (2021). Sample Size for Latent Dirichlet Allocation of Constructed-Response Items. In Wiberg, M., Böckenholt, U., Gonzalez, J., Molenaar, D. & Kim, J.-S. (Editors) *Quantitative Psychology: The 85th Annual Meeting of the Psychometric Society.*

2. Xiong, J., **Wheeler, J. M.,** Lee, J., Choi, H.-J., & Cohen, A. S (2021). An Empirical Study of Developing Automated Scoring Engine using supervised Latent Dirichlet Allocation. In Wiberg, M., Böckenholt, U., Gonzalez, J., Molenaar, D. & Kim, J.-S. (Editors) *Quantitative Psychology: The 85th Annual Meeting of the Psychometric Society.*

1. Kim, S.-H., Duong, E., Mardones, C., Schellman, M., **Wheeler, J. M.,** Xiong, J., Zheng, G., Zor, S., & Cohen, A. S. (2021). Priors in Bayesian Estimation Under the Two- Parameter Logistic Model. In Wiberg, M., Böckenholt, U., Gonzalez, J., Molenaar, D. & Kim, J.-S. (Editors) *Quantitative Psychology: The 85th Annual Meeting of the Psychometric Society.*

Book Chapters

2. **Wheeler, J. M.,** Wang, S & Cohen, A. S. (under review) Essay Evaluation using Statistical Topic Models to Understand Student Writing. In Shermis, M. & Wilson, J. (Editors) *The Routledge International Handbook of Automated Essay Evaluation* (2nd edition).

1. Shermis, M. D., Cohen, A. S., & **Wheeler, J. M.** (in press) Test Administration and Scoring. In Cook, L. & Pitoniak, M. (Editors) *Educational Measurement* (5th edition).

Manuscripts Currently Submitted to Journals

1. **Wheeler, J. M.,** Wang, S., Tan, Y., & Cohen, A. S. (under first round revision) Textual Data as Process Data: A New Scoring Procedure for Mixed-Format Assessments. *Journal of Educational Measurement.*

Manuscripts in Preparation

5. Bradshaw, L., Schellman, M., & **Wheeler, J. M.** (in preparation) A Caution in the Quest for Diagnostic Test-based Inferences.

4. **Wheeler, J. M.,** Wang, S., Cohen, A. S., & Hodges, G. (in preparation) Computerized Adapative Testing for

Mixed-Format Assessments.

3. **Wheeler, J. M.,** Wang, S., Xiong, J., Choi, H.-J., & Cohen, A. S. (in preparation) A Semi-Confirmatory Latent Dirichlet Allocation Topic Model.

2. **Wheeler, J. M.,** Engelhard, G., Wind, S. A. (in preparation) Revisiting the Rasch Model using Generalized Linear Mixed Models: An Extension to Model Evaluation and Fit Statistics.

1. Xiong, J., Liu, Q., Wang, S., **Wheeler, J. M.,** & Cohen, A. S. (in preparation) Machine Learning - Assisted Psychometrics: Principles, Challenges, and Applications.

Grants

Statistical Consultant Diagnostic Inventories of Cognition in Education (2017-2023), Institute of Educational Sciences, Cognition and Student Learning: Goal 5 Measurement. PI, Laine P. Bradshaw

Presentations

Invited Presentations

5. **Wheeler, J. M.** (2023, October) *Leveraging Process Data in Mixed-Format Assessments to Improve Ability Estimates: A Scoring Procedure using Topic Models.* CanAm Online Symposium, Virtual.

4. **Wheeler, J. M.** (2023, January) *A Scoring Procedure for Mixed-Format Assessments using Topic Models.* Department of Educational Psychology, University of Nebraska - Lincoln, Lincoln, NE.

3. **Wheeler, J. M.** (2021, November) *Structural Tradition: Explanatory Item Response Model.* Theories of Educational Measurement, Department of Educational Psychology, University of Georgia, Athens, GA.

2. **Wheeler, J. M.** (2021, October) *Introduction of Reliability for Assessments.* Classroom Assessments, Department of Educational Psychology, University of Georgia, Athens, GA.

1. Cohen, A. S., & **Wheeler, J. M.** (2021, February) *Topic Modeling of Answers to Constructed Response Tests.* Department of Psychology, University of Notre Dame, South Bend, IN.

Conference Papers and Presentations

22. **Wheeler, J. M.,** Bradshaw, L., & Schellman, M. (2023, April) *A Method for Annual Summative Determination Classification Consistency and Accuracy using a Diagnostic Assessment System.* Paper presented at the Annual Meeting of the National Council on Measurement in Education. Chicago, IL.

21. **Wheeler, J. M.,** Wang, S., Tan, Y., & Cohen, A. S. (2022, April) *Textual Data as Process Data: A New Scoring Procedure for Mixed-Format Assessments.* Paper presented at the Annual Meeting of the National Council on Measurement in Education. San Diego, CA.

20. Mardones, C., Choi, H.-J., **Wheeler, J. M.,** & Cohen, A. S. (2022, April) *Model Selection for Latent Dirichlet Allocation in Assessment Data: New Advances.* Paper presented at the Annual Meeting of the National Council on Measurement in Education. San Diego, CA.

19. Xiong, J., **Wheeler, J. M.,** & Cohen, A. S. (2022, April) *Multi-task classification for constructed responses with the topic model and deep neural network.* Paper presented at the Annual Conference of the American Educational Research Association. San Diego, CA.

18. Englehard, G., Wind, S., & **Wheeler, J. M.** (2021, December) *Revisiting and Extending the Family of Rasch Models.* Paper presented at the Pacific Rim Objective Measurement Society Conference. Nanjing, China (Virtual).

17. **Wheeler, J. M.,** Xiong, J., Mardones, C., Choi, H.-J., & Cohen, A. S. (2021, July) *Impact of priors on parameter recovery for latent Dirichlet allocation.* Paper presented at the International Meeting of the Psychometric Society (IMPS). College Park, MD (Virtual).

16. Xiong, J., **Wheeler, J. M.,** Choi, H.-J., & Cohen, A. S. (2021, July) *Individualized test preparation recommendation systems based on latent Dirichlet allocation.* Paper presented at the International Meeting of the Psychometric Society (IMPS). College Park, MD (Virtual).

15. Xiong, J., **Wheeler, J. M.,** & Cohen, A. S. (2021, July) *Applications of machine learning in educational and psychological measurement.* Paper presented at the International Meeting of the Psychometric Society (IMPS). College Park, MD (Virtual).

14. Mardones, C., Choi, H.-J., Hong, M., **Wheeler, J. M.,** & Cohen, A. S. (2021, July) *Comparison of estimation algorithms for latent Dirichlet allocation.* Paper presented at the International Meeting of the Psychometric Society (IMPS). College Park, MD (Virtual).

13. **Wheeler, J. M.,** Wang, S., & Cohen, A. S. (2021, June) *Comparison of Latent Semantic Analysis and Latent Dirichlet Allocation.* Paper presented at the Annual Meeting of the National Council on Measurement in Education (Virtual).

12. **Wheeler, J. M.,** Choi, H.-J., Cohen, A. S., Xiong, J., & Lee, J. (2021, June) *A Semi-Confirmatory Latent Dirichlet Allocation Topic Model.* Paper presented at the Annual Meeting of the National Council on Measurement in Education (Virtual).

11. Raczynski, K., Choi, H.-J., **Wheeler, J. M.,** Shermis, M., Lottridge, S., Cohen, Y., & Cohen, A.S. (2021, June) *Using Artificial Intelligence for Constructed-Response Scoring: Some Practical Considerations.* Symposium presented at the Annual Meeting of the National Council on Measurement in Education (Virtual).

10. Mardones, C., **Wheeler, J. M.,** Choi, H.-J., & Cohen, A. S. (2021, June) *Model Selection for Latent Dirichlet Allocation with Small Number of Topics.* Paper presented at the Annual Meeting of the National Council on Measurement in Education (Virtual).

9. Lee, J., Xiong, J., **Wheeler, J. M.,** Choi H.-J., & Cohen, A. S. (2021, June) *Application of Multidimensional Mixture IRT and supervised-LDA for DIF in Mixed-Format Test.* Paper presented at the Annual Meeting of the National Council on Measurement in Education (Virtual).

8. **Wheeler, J. M.,** Engelhard, G. Jr., & Wang, J. (2021, April) *Exploring Rater Accuracy Using Unfolding Models Combined with Topic Models Incorporating Supervised Latent Dirichlet Allocation.* Paper presented at the Annual Conference of the American Educational Research Association (Virtual).

7. **Wheeler, J. M.,** Cohen, A. S., Xiong, J., Lee, J., & Choi, H.-J. (2020, July) *A Simulation Guide for Topic Models of Constructed-Response Items.* Paper presented at the International Meeting of the Psychometric Society (IMPS). College Park, MD (Virtual).

6. Xiong, J., **Wheeler, J. M.,** Lee, J., Choi, H.-J., & Cohen, A. S (2020, July) *An Empirical Study of Developing Automated Scoring Engine using supervised Latent Dirichlet Allocation.* Paper presented at the International Meeting of the Psychometric Society (IMPS). College Park, MD (Virtual).

5. Kim, S.-H., Duong, E., Mardones, C., Schellman, M., **Wheeler, J. M.,** Xiong, J., Zheng, G., Zor, S., & Cohen, A. S. (2020, July) *Priors in Bayesian Estimation for the Two- and Three-Parameter Logistic Models* Paper presented at the International Meeting of the Psychometric Society (IMPS). College Park, MD (Virtual).

4. **Wheeler, J. M.,** & Cohen, A. S. (2020, April) *Comparison of Latent Semantic Analysis and Latent Dirichlet Allocation.* Paper accepted at the Annual Meeting of the National Council on Measurement in Education. San Francisco, CA (Conference Canceled).

3. **Wheeler, J. M.,** Cohen, A. S., Choi, H.-J., Lee, J., & Xiong, J. (2020, February) *Ninth Grade English Language Arts Constructed-Response Item: A Topic Model Analysis.* Poster presented at the College of Education Graduate Student Research Conference. Athens, GA.

2. Xiong, J., **Wheeler, J. M.,** Lee, J., Choi, H.-J., & Cohen, A. S (2020, February) *An Empirical Study of Constructing Topic Structures Using Latent Dirichlet Allocation.* Poster presented at the College of Education Graduate Student Research Conference. Athens, GA.

1. Choi, H.-J., Xiong, J., Lai, S., Raczynski, K., **Wheeler, J. M.,** & Lee, J. (2019, October) *A New Method for Analyzing Students' Answers for Constructed Response Items: An Application of a Topic Model.* Paper presented at the Georgia Educational Research Association Annual Conference. Macon, GA.

TECHNICAL REPORTS

3. Bradshaw, L., Madison, M., Schellman, M., & **Wheeler, J. M.** (2022) *Navvy Education Assessment System Technical Manual.* Technical Report. Pearson Education.

2. Bradshaw, L., Madison, M., Schellman, M., & **Wheeler, J. M.** (2022) *Innovative Assessment Demonstration Authority Comparability Analysis for Navvy Education Assessment System.* Technical Report. Pearson Education.

1. Kwak, M., Xiong, J., Kim, S., **Wheeler, J. M.,** Lee, J., Choi, H.-J., & Cohen, A. S. (2019) *Georgia Center for Assessment Writing Assessment Analysis Summary Report.* Technical Report. Georgia Center for Assessment.

TEACHING EXPERIENCE

Instructor of Record
University of Nebraska-Lincoln, Department of Educational Psychology
 EDPS 900D: Survey Methods in Educational Research   Fall 2023

Graduate Teaching Assistant
University of Georgia, Department of Educational Psychology
 ERSH 6600E: Applied Educational Assessment   Spring 2022
 ERSH 8610: Theories of Educational Measurement   Fall 2021

RELEVANT WORK EXPERIENCE

Research Scientist and Psychometrician   May 2022 - August 2023
 Pearson Education
 School Assessment Solutions Division - Navvy Assessment System

Graduate Research Assistant   August 2019 - June 2022
 University of Georgia
 Department of Educational Psychology

Data Science Consultant   January 2018 - May 2022
 CATCH Intelligence
 Business Analytics and Data Science

SERVICE ACTIVITIES AND LEADERSHIP POSITIONS

JOURNAL REVIEWER

 Educational Measurement: Issues and Practices   2021 - Present
 Applied Measurement in Education   2023 - Present

LEADERSHIP

Graduate Researchers in Educational Psychology
University of Georgia
Department of Educational Psychology
Executive Board - Vice President   June 2021 - June 2022
Executive Board - Secretary   June 2020 - June 2021

PROFESSIONAL AFFILIATIONS

Psychometric Society   2020 - Present
National Council on Measurement in Education   2020 - Present
American Educational Research Association   2020 - Present
Rasch Measurement SIG   2022 - Present

HONORS AND AWARDS

Owen Scott Emerging Scholar Award   May 2023
University of Georgia, Department of Educational Psychology

Outstanding Scholarship in Quantitative Methodology   May 2023
University of Georgia, Department of Educational Psychology

College of Education's Research Scholar Award (Fellowship)   August 2019 - May 2022
University of Georgia, College of Education

Outstanding Scholarship in Quantitative Methodology   May 2021
University of Georgia, Department of Educational Psychology

MISCELLANEOUS

APPLICATION DEVELOPMENT

Wheeler, J. M. (2020) Item Response Theory's Item Characteristic Curve Generator. *Shiny Application.* Retrieve: http://159.65.226.102/shiny/SingleItemCharacteristicCurve/

Wheeler, J. M. (2019) NYSE Automated Generalized Autoregressive Conditional Heteroskedasticity Forecasting. *Shiny Application.* Retrieve: http://159.65.226.102/shiny/ForecastingApplication/

SOFTWARE AND PROGRAMMING SKILLS

R, Python, and SAS
Git, SQL, Microsoft Office, and LaTeX
JAGS, Stan, Mplus, OpenBUGS, WinBUGS, Facets, and BILOG-MG