Gabriel Wallin, PhD

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Academic positions

Lancaster University	Lancaster, UK
Lecturer (Assistant Professor), Department of Mathematics and Statistics.	2023–Current
The London School of Economics and Political Science	London, UK
Research Fellow, Department of Statistics.	2021–2023
Université Côte d'Azur & Inria	Nice, France
Postdoctoral Researcher, Department of Mathematics.	2020–2021

Education

Umeå University	Umeå, Sweden
P.hD. in Statistics.	2015–2020
The London School of Economics and Political Science	London, UK
Visiting Research Student in Statistics.	2019
Umeå University	Umeå, Sweden
M.Sc. in Statistics.	2014–2015
Umeå University	Umeå, Sweden
B.Sc. in Statistics	2011–2014

Research interests

- **Latent Variable Modeling**
  Item response theory, exploratory factor analysis, latent class analysis.
- **Statistical machine learning algorithms in psychometrics**
  Proximal algorithms, gradient-based algorithms, statistical learning with sparsity.
- **Assessment development and analysis**
  Test score equating, differential item functioning, outlier detection, causal modeling in education.

Publications in peer-reviewed journals

1. **Wallin, G**., Chen, Y., Moustaki, I. (2023). DIF Analysis with Unknown Groups and Anchor Items *Accepted for publication in Psychometrika,*

2. **Wallin, G**. & Wiberg, M. (2023). Model Misspecification and Robustness of Observed-Score Test Equating Using Propensity Scores. *Journal of Educational and Behavioral Statistics.* https://doi.org/10.3102/10769986231161575

3. Liu, X., **Wallin, G**., Chen, Y., Moustaki, I. (2023). Rotation to Sparse Loadings using L^p Losses and Related Inference Problems. *Psychometrika,* 88(2), 527-553.

4. **Wallin, G**. & Wiberg, M. (2021). How Important is the Choice of Bandwidth in Kernel Equating? *Applied Psychological Measurement,* 45, 518-535.

5. Altintaş, Ö. & **Wallin, G**. (2021). Equality of Admission Tests Using Kernel Equating Under the Non-Equivalent Groups With Covariates Design. (2021). *International Journal of Assessment Tools in Education,* 8, 729-743.

6. **Wallin, G**. & Wiberg, M. (2019). Kernel Equating Using Propensity Scores for Nonequivalent Groups. *Journal of Educational and Behavioral Statistics,* 44, 390-414.

Peer-reviewed book chapters

1. González, J. & **Wallin, G**. (2021). An Illustration on the Quantile-Based Calculation of the Standard Error of Equating in Kernel Equating. In Wiberg, M., Molenaar, D., González, J., Böckenholt, U. & Kim, J-S. (Eds.) (2021). *Quantitative Psychology: The 85th Annual Meeting of the Psychometric Society, virtual, 2021.* New York: Springer.

2. **Wallin, G**. & Wiberg, M. (2021). Equating Nonequivalent Groups using Propensity Scores – Model Misspecification and Sensitivity Analysis. In Wiberg, M., Molenaar, D., González, J., Böckenholt, U. & Kim, J-S. (Eds.) (2021). *Quantitative Psychology: The 85th Annual Meeting of the Psychometric Society, virtual, 2021.* New York: Springer.

3. **Wallin, G** (2020). Extensions of the Kernel Method of Test Score Equating. Statistical Studies, 55. *PhD thesis.* URL: https://umu.diva-portal.org/smash/get/diva2:1378833/FULLTEXT01.pdf.

4. **Wallin, G**. & Wiberg, M. (2020). Model Selection for Presmoothing of Bivariate Score Distributions in Kernel Equating. In Wiberg, M., Molenaar, D., González, J., Böckenholt, U. & Kim, J-S. (Eds.) (2020). *Quantitative Psychology: The 84th Annual Meeting of the Psychometric Society, Santiago, Chile, 2019.* New York: Springer.

5. **Wallin, G**., Häggström, J. & Wiberg, M. (2018). How to select the bandwidth in kernel equating - An evaluation of five different methods. In Wiberg, M., Culpepper, S., Janssen, R., González, J., & Molenaar, D. (Eds.) (2018). *Quantitative Psychology: The 82nd Annual Meeting of the Psychometric Society, Zurich, Switzerland, 2017.* New York: Springer.

6. **Wallin, G**,. & Wiberg, M. (2017). Non-equivalent groups with covariates design using propensity scores for kernel equating. In L. A. van der Ark, M. Wiberg, S. A. Culpepper, J. A. Douglas, & W.-C Wang (Eds.) (2017), *Quantitative psychology – 81st annual meeting of the psychometric society, Asheville, North Carolina, 2016.* New York: Springer.

Professional Activities

- **Journal Reviewer**
  Annals of Applied Statistics
  The American Statistician
  Psychometrika
  British Journal of Mathematical and Statistical Psychology
  Applied Psychological Measurement
  TEST
  Educational and Psychological Measurement
  Discover Education
- **Member of the Young Statisticians section** 2024–
  Royal Statistical Society.
- **Member of the planning committe** 2023–
  International Meeting of the Psychometric Society 2024. Prague, Czech Republic.
- **Member of the website committee** 2023–
  Psychometric Society.
- **Conference Reviewer** 2023
  National Council on Measurement in Education, Annual Meeting. Chicago, United States.
- **Travel Award Reviewer** 2022
  International Meeting of the Psychometric Society
- **Local Organizing Committee Member** 2022
  Institute of Mathematical Statistics (IMS), Annual Meeting. London, UK.
- **Member of the jury for best poster presentation** 2022
  International Meeting of the Psychometric Society
- **Conference Chair** 2020–2023
  International Meeting of the Psychometric Society
  National Council on Measurement in Education
  Institute of Mathematical Statistics (IMS), Annual Meeting
- **Board Member** 2018–2020
  Umeå School of Business, Economics and Statistics
  The Graduate Student Association at the Faculty of Social Sciences at Umeå University
- **Committee member** 2018–2019
  The Graduate Student Committee of the Psychometric Society

Grants and Scholarships

- Research Award. Umeå School of Business, Economics and Statistics. 10,000 SEK 2022
- International Postdoc. Swedish Research Council. 3,150,000 SEK 2021
- Research Scholarship. Faculty of Social Science, Umeå University. 40,000 SEK 2019
- Research Scholarship. Kempe Foundation. 25,000 SEK 2018
- Research Scholarship. Umeå School of Business, Economics and Statistics. 40,000 SEK 2018
- Travel Grant. Wallenberg Foundation. 4,200 SEK 2018
- Travel Grant. Kempe Foundation. 5,000 SEK 2017
- Research Scholarship. The Student union at Umeå University. 8,500 SEK 2017
- Travel Grant. Wallenberg Foundation. 8,000 SEK 2017
- Travel Grant. Faculty of Social Sciences at Umeå University. 8,000 SEK 2016
- Research Scholarship. The Student union at Umeå University. 10,000 SEK 2016

Awards and nominations

- **Recipient of the Umeå School of Business, Economics and Statistics Research Award** 2022
  Umeå University
- **Recipient of the LSE Class Teacher Award** 2022
  London School of Economics and Political Science

Conference Talks and Invited Presentations

Statistics Seminar Lancaster University
Invited talk: DIF Analysis with Unknown Groups and Anchor Items. 2023

International Meeting of the Psychometric Society Maryland, USA
Contributed talk: DIF Analysis with Unknown Groups and Anchor Items. 2023

European Congress of Methodology Ghent, Belgium
Contributed talk: Local Equating of Test Scores using Propensity Scores. 2023

Nordic Conference in Mathematical Statistics Gothenburg, Sweden
Contributed talk: Rotation to Sparse Loadings using L^p Losses and Related Inference Problems. 2023

Annual Meeting of the National Council on Measurement in Education Chicago, USA
Contributed talk: A General Item Response Theory Framework for Latent DIF Detection. 2023

Social Statistics Research Seminar London, LSE
Invited talk: Fairness and Interpretability in Educational Testing and Psychological Surveys. 2022

Computational Psychometrics Research Seminar Prague, Czech Republic
Invited talk: A Flexible IRT Framework For Latent DIF Detection. 2022

International Meeting of the Psychometric Society Bologna, Italy
Contributed talk: On Multivariate Outlier Detection. 2022

Cramér Society Research Seminar Sweden (Virtual)
Invited talk: Two-way outlier detection for item response data. 2022

Social Statistics Research Seminar London, LSE
Invited talk: Test score equating of nonequivalent groups using propensity scores. 2022

International Meeting of the Psychometric Society Virtual
Contributed talk: Simultaneous Clustering of Test-takers and Items for Item Response Data. 2021

Computational Psychometrics Research Seminar Prague, Czech Republic (Virtual)
Invited talk: Equating non-equivalent test groups using covariates. 2021

International Meeting of the Psychometric Society Virtual
Contributed talk: Equating non-equivalent groups using propensity scores. 2020

MAASAI Research Seminar Nice, France
Invited talk: Comparability of nonequivalent test groups in large-scale assessments. 2020

International Meeting of the Psychometric Society Santiago, Chile
Invited talk: Presmoothing method and model selection in kernel equating. 2019

Frontier Research in Educational Measurement Oslo, Norway
Contributed talk: Revisiting the Bahadur representation of sample quantiles for equating. 2018

International Meeting of the Psychometric Society Zürich, Switzerland
Contributed talk: Optimal bandwidth selection in kernel equating for different test types. 2017

Annual Meeting of the National Council on Measurement in Education San Antonio, USA
Contributed talk: Bandwidth selection in kernel equating. 2017

The Winter Conference in Statistics Åre, Sweden
Contributed talk: Selecting bandwidths in kernel equating with different tests and test distributions. 2017

International Meeting of the Psychometric Society Asheville, USA
Contributed talk: Propensity scores in kernel equating for non-equivalent groups. 2016

TEACHING

- **Lecturer** at Lancaster University 2023–
  MATH404: Statistical Learning

- **Lecturer and Teaching Assistant** at The London School of Economics and Political Science 2021-2024
  MY455/MY555: Multivariate Analysis and Measurement (Lecturer)
  ST201: Statistical Models and Data Analysis (TA)
  ST205: Sample Surveys and Experiments (TA)
  ST109: Elementary Statistical Theory I (TA)

- **Lecturer and Course Responsible** at Umeå University 2018
  Sampling: Design and Analysis

- **Lecturer** at Umeå University 2017–2019
  Probability and Statistical Inference

- **Lecturer** at Umeå University 2017–2019
  Basic Statistics

- **Teaching Assistant** at Umeå University 2017
  Statistics for Journalists

- **Teaching Assistant** at Umeå University 2014–2017
  Basic Statistics

PEDAGOGICAL COURSES

- **Teaching in higher education** at Umeå University
  3 ECTS (2 weeks)

- **Learning in higher education** at Umeå University
  4.5 ECTS (3 weeks)

- **Didactics for university teachers** at Umeå University
  3 ECTS (2 weeks)