Gabriel Wallin, PhD

Email: g.wallin@lancaster.ac.uk
https://www.lancaster.ac.uk/maths/people/gabriel-wallin
Personal website: http://gabrieltwallin.github.io
LinkedIn: linkedin.com/in/gabrielwallin/

School of Mathematical Sciences
Lancaster University, UK

Academic positions

Lancaster University
Lecturer in Statistics, School of Mathematical Sciences.
Lancaster, UK
2023–Current

The London School of Economics and Political Science
Postdoctoral researcher and Visiting Teacher, Department of Statistics.
London, UK
2021–2024

Université Côte d'Azur & Inria
Postdoctoral Researcher, Department of Mathematics.
Nice, France
2020–2021

Education

Umeå University
P.hD. in Statistics.
Umeå, Sweden
2015–2020

The London School of Economics and Political Science
Visiting Research Student in Statistics.
London, UK
2019

Umeå University
M.Sc. in Statistics.
Umeå, Sweden
2014–2015

Umeå University
B.Sc. in Statistics.
Umeå, Sweden
2011–2014

Research interests

- **Latent Variable Modeling**
  Latent trait models, exploratory factor analysis, latent class analysis.
- **Statistical machine learning algorithms in psychometrics**
  Proximal algorithms, statistical learning with sparsity for factor models.
- **Outlier detection**
  Change-point detection, anomaly detection, robust estimation.

Publications in peer-reviewed journals

1. **Wallin, G.**, & Wiberg, M. (2025). Propensity Score Methods for Local Test Score Equating: Stratification and Inverse Probability Weighting. Accepted for publication in *Journal of Educational and Beharioral Statistics*.

2. Laukaityte, I., **Wallin, G.**, & Wiberg, M. (2025). Combining Propensity Scores and Common Items for Test Score Equating. *Applied Psychological Measurement.* https://doi.org/10.1177/01466216251363240.

3. **Wallin, G**. Chen, Y., Lee, Y-H., & Li, X. (2025). A Latent Variable Model with Change Points and Its Application to Time Pressure Effects in Educational Assessment. *Annals of Applied Statistics*, 19(3), 2490–2516.

4. **Wallin, G**. & Wiberg, M. (2024). Smoothing of bivariate test score distributions - Model selection targeting test score equating. *Journal of Educational and Behavioral Statistics.* https://doi.org/10.3102/10769986241300

5. **Wallin, G**., Chen, Y., Moustaki, I. (2024). DIF Analysis with Unknown Groups and Anchor Items. *Psychometrika*, 89(1), 267-295.

6. **Wallin, G**. & Wiberg, M. (2023). Model Misspecification and Robustness of Observed-Score Test Equating Using Propensity Scores. *Journal of Educational and Behavioral Statistics*, 48(5), 603-635.

7. 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.

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

9. 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.

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

Peer-reviewed conference papers

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.

Edited volumes

1. Kim, J.-S., Wu, H., Sweet, T. M., Molenaar, D., Junker, B. W., Moustaki, I., Harring, J. R., Bulut, O., Tong, X. (C.), **Wallin, G.**, & Di Plinio, S. (Eds.). (2025). Proceedings of the International Meeting of the Psychometric Society: The 89th Annual Meeting, Prague, Czech Republic, 2024..

Book Reviews

1. **Wallin, G**. (2025). It's Up for Debate: A Review of *Seminal Ideas and Controversies in Statistics* by Roderick J. A. Little. Accepted for publication in *Journal of Educational and Behavioral Statistics*.

2. **Wallin, G**. (2024). Review of *An Introduction to R and Python for Data Analysis: A Side-By-Side Approach* by Taylor R. Brown. *The American Statistician.*

Submitted Manuscripts

1. Ma, Y*., Ushakova, A., Cain, K., & **Wallin, G**. A Statistical Framework for Dynamic Cognitive Diagnosis in Digital Learning Environments. Submitted to the *Journal of the Royal Statistical Society - Series A*. Major Revision.
*Student author under my supervision.

Work in Progress

1. **Wallin, G.** & Huang, Q. Measurement Non-Invariance Analysis in Ordinal Scales with Latent Comparison Groups. Submission planned for November 2025 to the *British Journal of Mathematical and Statistical Psychology.*

2. **Wallin, G.** & Huang, Q. DIF Analysis with Unknown Groups and Anchor Items for Asymmetric IRT Models. *British Journal of Mathematical and Statistical Psychology*, Special Issue on Asymmetric IRT.
Invited to submit a full manuscript after editorial review of 1,000-word proposals; full paper due April 2026.

3. **Wallin, G.** & Bhaktha, N. Change-Point Analysis for Response-Time Modelling. Planned submission to *Psychometrika* in the first quarter of 2026.

4. Yawen, M., Ishida, S., Cain, K. & **Wallin, G.** NLP-Informed Diagnostic Statistical Models. Proposal submitted for special issue in *Psychometrika*: Leveraging AI to Empower Development and Application of Diagnostic Statistical Models.

Grants and Scholarships

• Duolingo Competitive Research Grant. $60,000 USD.	2025
• Workshop funding from the STOR-i CDT. Lancaster University. £5,000	2025
• PhD studentship funding from the ESRC and NWSSDTP. (Awarded funds declined due to financial uncertainty in the NGO sector where external partner operates.)	2024
• Workshop funding from the Data Science Institute. Lancaster University. £5,000	2024
• LU ODA Early Career Fellowship. Lancaster University. £6,000	2024
• 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

Total amount awarded (in GBP, approx.): £322,600

Professional Activities

- **Co-Editor** 2025-
  Proceedings of the International Meeting of the Psychometric Society.

- **Associate Editor** 2025-
  Teaching Mathematics and Its Applications.

- **Consulting Editor & Editorial Board Member** 2024-
  British Journal of Mathematical and Statistical Psychology.

- **Executive Committee member** 2024-
  STOR-i Centre for Doctoral Training, Lancaster University:
  Responsibilities: Year-1 cohort, annual spring school, annual conference, associates scheme, workshop funding, international visitor's programme, seminar series.

- **Secretary** 2024-
  Young Statisticians Section, Royal Statistical Society.

- **Website & Awards committee member** 2023-
  Psychometric Society.

- **Journal Reviewer**
  Annals of Applied Statistics
  The American Statistician
  Psychometrika
  Computational Statistics and Data Analysis
  British Journal of Mathematical and Statistical Psychology
  Psychological Methods
  Applied Psychological Measurement
  Behavior Research Methods
  TEST
  Educational and Psychological Measurement
  Discover Education

- **Program Committee Member** 2024
  International Meeting of the Psychometric Society (IMPS). Prague, Czech Republic.

- **Student Mentor** 2024-2025
  International Meeting of the Psychometric Society (IMPS). Prague, Czech Republic.

- **Reviewer** 2023
  National Council on Measurement in Education, Annual Meeting. Chicago, United States.

- **Local Organizing Committee Member** 2022
  Institute of Mathematical Statistics (IMS), Annual Meeting. London, UK.

- **Reviewer for PhD travel award** 2022
  International Meeting of the Psychometric Society

- **Member of the jury for best poster presentation** 2022
  International Meeting of the Psychometric Society

- **Conference Chair** 2020–2025
  International Meeting of the Psychometric Society
  National Council on Measurement in Education

- **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

Supervision and Mentorship

- **PhD Main Supervisor**, Lancaster University   2025-
  Student: Jasmine Burgess
- **PhD Co-Supervisor**, Lancaster University   2024-
  Students: Fay Benedik, Yawen Ma
- **MSc Supervisor**, Lancaster University   2024-2025
  Student: Jasmine Burgess
  Jayven Bahia
  Junhao Guo
  Elizabeth Mwania (African Institute of Mathematical Sciences)
  Joe Rutherford
  Kristina Grolmusova
- **Mentor for early career reviewers**   2025–
  British Journal of Mathematical and Statistical Psychology
- **Supervisor for Summer Intern**, Lancaster University   2024
  Student: Anais La Chon
- **Academic Advisor, Lancaster University**   2023 –
  Advisor to around 15 MSc Data Science students per year.
- **Bachelor Thesis Supervisor, Umeå University**   2018
  Thesis topic: Kernel smoothing techniques with applications to educational testing.
  Students: Jonas Jonsson; Samuel Brändström
- **Master Thesis Supervisor, Umeå University**   2015 –2020
  Yearly quantitative advisor to business students writing their master's thesis.

Awards and nominations

- **Invitational Fellowship - Japan Society for the Promotion of Science**   2025
  Includes a 6-week research visit to the University of Tokyo.
- **Best Reviewer Award**   2025
  Psychometrika
- **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
- **Pedagogical Prize Nomination**   2017
  Umeå School of Business, Economics and Statistics

Organisation

- **Workshop: Innovations in Social Data Science - Tackling Inequality in Resource-Constrained Contexts with Novel Data and Methods.**
  Invited speakers from Oxford, Southampton, GRADE (Peru), Save the Children, and Lancaster University.   2025
  Lancaster University
- **STOR-i Spring School 2025.**
  A week-long event for Lancaster PhD students, in collaboration with NGO partner Nesta.   2025
  Lancaster University

- **STOR-i Annual Conference 2025.**
  A three-day conference for our CDT students, with a programme including external, international academics, alumni and collaborating partners.   2025
  Lancaster University

- **Data on the Shire 2024.**
  A week-long event for Lancaster PhD students together with an Irish CDT (¿100 participants), and in collaboration with the British Red Cross.   2024
  Lancaster University

Teaching and Examination

- **Internal Examiner, PhD thesis**   2025
  Owen Li, Lancaster University

- **Lecturer and Course Responsible** at Lancaster University   2023-
  MSc: Statistical Learning, Unsupervised Learning, Ethics and Communication. BSc: Project Skills.

- **Lecturer and Course Responsible** at African Institute for Mathematical Sciences, Cameroon   2024-2025
  Data mining and Unsupervised Learning.

- **Guest Lecturer** at the London School of Economics   2024
  MSc-level course on quantitative methods at the Dept. of Sociology.

- **Lecturer and Teaching Assistant** at The London School of Economics   2021-2024
  Multivariate Analysis and Measurement (Lecturer)
  Statistical Models and Data Analysis (TA)
  Sample Surveys and Experiments (TA)
  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

Conference Talks and Invited Presentations

Statistics Seminar Series	Umeå University, Sweden
Invited talk	2025

Statistics Seminar Series	Linköping University, Sweden
Invited talk	2025

15th Scientific Meeting of the Classification and Data Analysis Group	Naples, Italy
Contributed talk.	2025

International Meeting of the Psychometric Society	Minneapolis, US
Contributed talk.	2025

Statistics Seminar Series
Invited talk.

University of Edinburgh, UK
2025

UK Rasch and Psychometrics User Group Meeting 2025
Contributed talk.

Cambridge, UK
2025

International Meeting of the Psychometric Society
Contributed talk.

Prague, Czech Republic
2024

Data Science Seminar Series
Invited talk.

Lancaster University, UK
2024

Statistics Seminar Series
Invited talk.

Lancaster University, UK
2023

International Meeting of the Psychometric Society
Contributed talk.

Maryland, USA
2023

European Congress of Methodology
Contributed talk.

Ghent, Belgium
2023

Nordstat conference
Contributed talk.

Gothenburg, Sweden
2023

Annual Meeting of the National Council on Measurement in Education
Contributed talk.

Chicago, USA
2023

Social Statistics Research Seminar
Invited talk.

London, LSE
2022

Computational Psychometrics Research Seminar
Invited talk.

Prague, Czech Republic
2022

International Meeting of the Psychometric Society
Contributed talk.

Bologna, Italy
2022

Cramér Society Research Seminar
Invited talk.

Sweden (Virtual)
2022

Social Statistics Research Seminar
Invited talk.

London, LSE
2022

International Meeting of the Psychometric Society
Contributed talk.

Virtual
2021

Computational Psychometrics Research Seminar
Invited talk.

Prague, Czech Republic (Virtual)
2021

International Meeting of the Psychometric Society
Contributed talk.

Virtual
2020

MAASAI Research Seminar
Invited talk.

Nice, France
2020

International Meeting of the Psychometric Society
Invited talk.

Santiago, Chile
2019

Frontier Research in Educational Measurement	Oslo, Norway
Contributed talk.	2018

International Meeting of the Psychometric Society	Zürich, Switzerland
Contributed talk.	2017

Annual Meeting of the National Council on Measurement in Education	San Antonio, the US
Contributed talk.	2017

The Winter Conference in Statistics	Åre, Sweden
Contributed talk.	2017

International Meeting of the Psychometric Society	Asheville, the US
Contributed talk.	2016

Pedagogical Courses and Other Training

- **Postgraduate Certificate in Educational Practice (PGCEP)** at Lancaster University
  2-year programme. Finish in June 2026.

  ED&I Training, at Lancaster University. 2024.
- **Teaching in higher education** at Umeå University
  3 ECTS (2 weeks full-time)
- **Learning in higher education** at Umeå University
  4.5 ECTS (3 weeks full-time)
- **Didactics for university teachers** at Umeå University
  3 ECTS (2 weeks full-time)

Languages

- **Swedish**
  Native.
- **English**
  Fluent in speaking, reading, and writing.
- **Spanish**
  Basic in speaking, reading, and writing.