Gabriel Wallin, PhD

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LSE website: http://lse.ac.uk/Statistics/People/Gabriel-Wallin
Personal website: http://gabrieltwallin.github.io
LinkedIn: linkedin.com/in/gabrielwallin/

The London School of Economics and Political Science
London, Uk

Education

Umeå University — Umeå, Sweden
P.hD. in Statistics. Thesis: Extensions of the kernel method of test score equating. — 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

Academic positions

The London School of Economics and Political Science — London, UK
Visiting Research Fellow and Visiting Teacher, Department of Statistics. — 2021–Current

Umeå University — Umeå, Sweden
Postdoctoral Researcher, Department of Statistics. — 2021–Current

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

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**. & Wiberg, M. (2022). Model Misspecification and Robustness of Observed-Score Test Equating Using Propensity Scores. Conditionally accepted for publication to *Journal of Educational and Behavioral Statistics*.

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

3. Altıntaş, 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.

4. **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.

WORKING PAPERS

1. Liu, X., **Wallin, G**., Chen, Y., Moustaki, I. (2022). Rotation to Sparse Loadings using L^p Functions. Major revision. *Psychometrika.*

2. **Wallin, G**., Chen, Y., Moustaki, I. (2022). A Flexible Latent Variable Model for Latent DIF Detection. Working paper. Planned submission to *Psychometrika.*

GRANTS AND SCHOLARSHIPS

- Research Award. Umeå School of Business, Economics and Statistics. 10,000 SEK (Approximately 925 USD)   2022
- International Postdoc. Swedish Research Council. 3,150,000 SEK (Approximately 291,578 USD)   2021
- Research Scholarship. Faculty of Social Science, Umeå University. 40,000 SEK (approx. 3,700 USD)   2019
- Research Scholarship. Kempe Foundation. 25,000 SEK (approx. 2,314 USD)   2018
- Research Scholarship. Umeå School of Business, Economics and Statistics. 40,000 SEK (approx. 3,700 USD)   2018
- Travel Grant. Wallenberg Foundation. 4,200 SEK (approx. 388 USD)   2018
- Travel Grant. Kempe Foundation. 5,000 SEK (approx. 463 USD)   2017
- Research Scholarship. The Student union at Umeå University. 8,500 SEK (approx. 787 USD)   2017

- Travel Grant. Wallenberg Foundation. 8,000 SEK (approx. 740 USD)   2017
- Travel Grant. Faculty of Social Sciences at Umeå University. 8,000 SEK (approx. 740 USD)   2016
- Research Scholarship. The Student union at Umeå University. 10,000 SEK (approx. 925 USD)   2016

PROFESSIONAL ACTIVITIES

- **Journal Reviewer**
  Annals of Applied Statistics
  British Journal of Mathematical and Statistical Psychology
  Applied Psychological Measurement
  TEST
  Educational and Psychological Measurement
- **Reviewer**   2022
  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, 2021, 2022
  International Meeting of the Psychometric Society
- **Board Member**   2018–2020
   Umeå School of Business, Economics and Statistics and *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

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
- **Pedagogical Prize Nomination**   2017
  Umeå School of Business, Economics and Statistics

CONFERENCE TALKS AND INVITED PRESENTATIONS

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

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, the US
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, the US
Contributed talk: Propensity scores in kernel equating for non-equivalent groups.   2016

TEACHING

- **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

Supervision

- **Bachelor Thesis Supervisor**   Spring 2018
  Thesis topic: Kernel smoothing techniques with applications to educational testing.
- **Master Thesis Supervisor**   2015 –2020
  Yearly quantitative advisor to business students writing their master's thesis.

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)

References

Irini Moustaki   London, UK

Professor of Statistics, London School of Economics and Political Science

Yunxiao Chen   London, UK

Assistant Professor of Statistics, London School of Economics and Political Science

Marie Wiberg   Umeå, Sweden

Professor of Statistics, Umeå University