

NAME	Irini Moustaki
ADDRESS	Department of Statistics London School of Economics & Political Science Houghton Street London WC2A 2AE United Kingdom
PRESENT POSITION	Professor in Social Statistics London School of Economics and Political Science
Email	i.moustaki@lse.ac.uk
DEGREES	Ph.D in Statistics ( <i>London School of Economics</i> ), 1992-1996 M.Sc. in Statistics ( <i>London School of Economics</i> ), 1990/91 B.Sc. in Statistics and Computer Science ( <i>Athens University of Economics and Business</i> ), 1985-89
AWARDS/ HONORS	<b>Honorary Doctorate in Statistics</b> ( <i>University of Uppsala, Faculty of Social Sciences</i> ), January 2014. <b>Honorary Professor</b> , Department of Psychological Studies, The Education University of Hong Kong, July 2015-June 2018.  Elected a member of the Society of Multivariate Experimental Psychology (SMEP), March 2016. <b>Teaching Excellence Award</b> in 2016, and 2021, London School of Economics. <b>Best Reviewer Award</b> in 2014 and 2015, Journal of Educational and Behavioral Statistics, American Educational Research Association  Nominated for the Student Led Teaching Excellence Awards 2015 and 2016.
PROFESSIONAL EXPERIENCE	<b>Deputy Head of Department</b> (September 2016- August 2018 and September 2020-August 2021) Reader in Statistics, London School of Economics, 2007- August 2013 <b>Head of Department</b> , LSE, January 2010 – December 2012 Associate Professor, Athens University of Economics and Business, 2005-2009 Assistant Professor, Athens University of Economics and Business, 2002-2005 Lecturer in Statistics, London School of Economics, 1996-2002 (Tenure). Temporary Lecturer, London School of Economics, 1995-96.
FIELDS OF RESEARCH INTEREST	Latent variable models, categorical data, missing values, multivariate analysis, data analysis, detection of outliers, longitudinal data, composite likelihood, large scale educational assessment, psychometrics.
EDITORIAL WORK	<b>Current</b> <ul style="list-style-type: none"><li>• <i>Journal of the Royal Statistical Society, Series A</i>, Associate Editor, 2023-.</li><li>• <i>Psychometrika</i>, Associate Editor, 2019-.</li><li>• <i>Metrika</i>, International Journal for Theoretical and Applied Statistics, 2021-.</li></ul>

- **Methodology: European Journal of Research Methods for the Behavioral and Social Sciences**, *Editorial Board Member*, since 2005.
- **Structural Equation Modelling Journal**, *Editorial Board Member*, since 2001.
- **Journal of Educational and Psychological Measurement**, *Editorial Board Member*, since 2014.

#### Past

- **Psychometrika**, **Chief -Editor**, November 2014-December 2018
- *Psychometrika*, *Associate Editor*, 2013-2014.
- *Journal of Educational and Behavioral Statistics*, *Editorial Board Member*, since January 2011.
- *Statistical Methods and Applications*, *Associate Editor*, November 2011-September 2014.
- *Computational Statistics and Data Analysis*, *Associate Editor*, 2004-2013
- *Journal of the Royal Statistical Society: Series C (Applied Statistics)*, Special Issue with theme in
- *Social Statistics*, *Guest editors: Jouni Kuha and Irini Moustaki*, (2014) Volume 62, Issue 2, Pages 191-360.

#### EXTERNAL ACTIVITIES

##### ***Evaluated and refereed research proposals for:***

- Economic and Social Research Council, UK
- Engineering and Physical Sciences Research Council, UK
- National Science Foundation Sociology Program, USA
- National Science Foundation: Methodology, Measurement, and Statistics Program, USA
- Superior Council of the National Fund for Scientific & Technological Development (FONDECYT), Chile.

***Evaluator*** for the Italian Research Assessment VQR 2011-2014, June-July 2016.

***Evaluator*** for the Italian Research Assessment VQR 2004-2010, February 2013.

***External Examiner*** for the MSc in Applied Statistics, Lancaster University, 9/2010-10/2013.

***External Reviewer*** for the MSc Programmes in Social Statistics and Demography, Southampton University, January 2018.

##### ***External/ Internal Examiner for PhD thesis***

- Stephen Matsson (1998) *Essays on Structural Equation Modelling (SEM) with Applications of the Basic Univariate Twin Model (BUTM)*, Department of Statistics, University of Uppsala.
- Silvia Cagnone (2003), Department of Statistics, University of Bologna.
- Michalis Linardakis (2005) *Extensions on Latent Variables Models with Applications on Econometric and Educational Models*, Department of Statistics, Athens University of Economics and Business.
- Aristidis Nikoloulopoulos (2007) *Applications of Copula Functions in Statistics*, Department of Statistics, Athens University of Economics and Business.
- Irina Irincheeva (2011) *Generalized linear latent variable models with flexible distribution of latent variables*, Department of Economics, University of Geneva
- Noha Youssef (2011) *Optimal Experimental Design for Computer Experiments*, Department of Statistics, LSE.
- Simon Harden (2013) *Weighted Composite Likelihoods*. Department of Statistics, University College London.

- Helen Elizabeth Ogden (2013) *Inference for Generalised Linear Mixed Models with Sparse Structure*. Department of Statistics, University of Warwick.
- Sharples, Stuart (2014) *Predicting the Delinquent Behaviour of Young People in Edinburgh: A joint transition modelling approach using incomplete observations*. Department of Statistics, Lancaster University
- Yi Dai Chiu (2014) *Exploratory Studies for Gaussian Process Structural Equation Models*. Department of Statistical Science, University College London.
- Huiping Wu (2015) *Bayesian Goodness-of-fit and Model Selection for Dichotomous Latent Trait Models*, Faculty of Education, University of Macau.
- Stella Hadjiantoni (2015) *Numerical Methods for the Recursive Estimation of Large-Scale Linear Econometric Models*, School of Economics and Finance, Queen Mary University.
- Yew Y Ding (2016), *Pathways to Frailty and its Adverse Outcomes: Evidence from the English Longitudinal Study of Ageing*, Department of Methodology, LSE.
- Tayfun Terzi (2017) *Detecting Semi-Plausible Response Patterns*, Department of Statistics, LSE.
- Derya Evran (2017) *Assessment of Turkey's standing in large-scale international surveys: a cross-national analysis of measurement invariance, students' cognitive abilities and trends in mathematics*, University College London.
- Rebecca Paterisson (2017) *Measurement Models for Understanding the Social Challenges of Caring for the Elderly in Brazil and England*, Lancaster University.
- Panagiota Filippou (2017). *Penalized likelihood estimation of trivariate additive binary models*, Department of Statistics, University College London.
- Sophia Kyriakou (2018). *Reduced-bias estimation and inference for mixed-effects models*, Department of Statistics, University College London.
- Anyi Zou (2018). *An Extended Bradley-Terry Model: Opponent Reference Model*, Department of Statistics, University of Warwick.
- Javier Espinoza Brito (2020) Using monotonicity constraints for the treatment of ordinal data in regression analysis, Department of Statistics, University College London.
- Guillaume Blanc (2022) Indirect Estimators and Computational Methods for Models with Unobserved Variables in High Dimensions, University of Geneva.
- Sydne McCluskey (2022) Using Bayesian Generalized Structural Equation Modeling to Analyze Latent Agreement. Graduate Faculty in Educational Psychology, The City University of New York.
- Yiliu Wang (2022) Relational learning for set value functions. Department of Statistics, LSE,

### **Professional Services**

**President** of the Psychometric Society (2021/22)

**Psychometric Society Board of Trustees** for the period 2006-2010 and 2011-2014.

**Member of the Executive Committee of the Psychometric Society**, 2022/23.

### **Advisory role member**

Technical Advisory Group of the PIAAC project I and II (Program for the International Assessment of Adult competencies) of the OECD. [www.oecd.org/els/employment/piaac](http://www.oecd.org/els/employment/piaac).

Advisory Board of ACTNext (since 2017).

International Association for the Evaluation of Educational Achievement (IEA) Technical Executive Group (since January 2020).

European Centre for Soft Computing working group, COST Action ICO702 under the auspices of the European Cooperation in Science and Technology since January 2010.

## TEACHING

Categorical data analysis, Multivariate analysis, Structural Equation Models, Regression analysis, Advanced Sampling theory and Methods, Market Research Methods, Model estimation and statistical inference, Multilevel and Longitudinal Data Analysis, Sample Survey Methods.

## BOOKS

- 2023 *Trends and Challenges in Categorical Data Analysis*. Edited by M. Kateri and I. Moustaki. Springer.
- 2011 *Latent Variable Models and Factor Analysis: a Unified Approach*. (3<sup>rd</sup> ed.) with D.J. Bartholomew and M. Knott. John Wiley.
- 2008 *Analysis of Multivariate Social Science Data* (2nd ed.), with D.J Bartholomew, F. Steele, J. Galbraith. Chapman and Hall/CRC.
- 2002 *Analysis and Interpretation of Multivariate Data for Social Scientists*, with D.J Bartholomew, F. Steele, J. Galbraith. Chapman and Hall/CRC.
- 2002 *Latent Variable and Latent Structure Models*. Edited by G. Marcoulides and I. Moustaki. Lawrence Erlbaum Associates, Inc.

## PUBLISHED ARTICLES

1. Moustaki, I. (1996) A latent trait and a latent class model for mixed observed variables. *British Journal of Mathematical and Statistical Psychology*, 49, 313-334.
2. O'Muircheartaigh, O. and Moustaki, I. (1999). Symmetric pattern models: a latent variable approach to item non-response in attitude scales. *Journal of the Royal Statistical Society, Series A*, Vol. 162, 177-194.
3. Moustaki, I. and Knott, M. (2000) Generalised Latent Trait Models. *Psychometrika*, Vol. 65 (3), 391-411.
4. Moustaki, I. (2000). A Latent Variable Model for Ordinal Variables. *Applied Psychological Measurement*, Vol. 24(3), 211-223.
5. Moustaki, I. and O'Muircheartaigh, C. (2000). A one dimensional latent trait model to infer attitude from nonresponse for nominal data, *STATISTICA*, 259-276.
6. Moustaki, I. and Knott, M. (2000). Weighting for Item Non-Response in Attitude Scales Using Latent Variable Models with Covariates. *Journal of the Royal Statistical Society, Series A*, Vol. 163(3), 445-459.
7. Joreskog, K. and Moustaki, I. (2001). Factor Analysis for Ordinal Variables: a Comparison of three approaches. *Multivariate Behavioural Research*, Vol. 36, 347-387.
8. Moustaki, I. (2003). A general class of latent variable models for ordinal manifest variables with covariate effects on the manifest and latent variables. *British Journal of Mathematical and Statistical Psychology*, Vol. 56, 337-357.
9. Moustaki, I. and Papageorgiou, I. (2004) Latent class models for mixed outcomes with applications in Archaeometry. *Computational Statistics and Data Analysis*, Vol. 48(3), 659-675.
10. Moustaki, I. and Joreskog, K. and Mavridis, D. (2004) Factor models for ordinal variables with covariate effects on the manifest and latent variables: A comparison of LISREL and IRT approaches. *Structural Equation Modeling*, Vol. 11(4), 487-513.
11. Moustaki, I. and Steele, F. (2005) Latent Variable Models for Mixed Categorical and Survival Responses, with an Application to Fertility Preferences and Family Planning in Bangladesh. *Statistical Modeling*, 5(4), 327-342.
12. Moustaki, I. and Victoria-Feser, M.-P. (2006) Bounded-influence robust estimation in generalized linear latent variable models. *Journal of the American Statistical Association* Vol. 101, No. 474, 644-653.

13. Tsonaka, R. and Moustaki, I. (2007) Parameter constraints in generalized linear latent variable models. *Computational Statistics and Data Analysis*. Vol. 51, 4164-4177.
14. Rizopoulos, D. and Moustaki, I. (2008) Generalized latent variable models with non-linear effects. *British Journal of Mathematical and Statistical Psychology*. Vol. 61, 415-438.
15. Mavridis, D. and Moustaki, I. (2008) Detecting outliers in factor analysis using the forward search algorithm. *Multivariate Behavioral Research*. Vol. 43 (3), 453-475.
16. Cagnone, S. and Moustaki, I. and Vasdekis, V. (2009) Latent variable models for multivariate longitudinal ordinal responses. *British Journal of Mathematical and Statistical Psychology*. Vol. 62, 401-415.
17. Mavridis, D. and Moustaki, I. (2009) The forward search algorithm for detecting aberrant response patterns in factor analysis for binary data. *Journal of Computational and Graphical Statistics*. 18(4): 1016-1034.
18. Vasdekis, V. and Cagnone, S. and Moustaki, I. (2012) A Composite likelihood inference in latent variable models for ordinal longitudinal responses. *Psychometrika*. Vol. 77(3) 425-441.
19. Ibironke, O., Koukounari, A., Asaolu, S., Moustaki, I. and Shiff, C. Validation of a new test for *Schistosoma haematobium* by detection of Dra1 DNA fragment in urine: evaluation through latent class analysis (2012). *PLoS Neglected Tropical Diseases*, Vol. 6(1).
20. Katsikatsou, M., Moustaki, I., Yang-Wallentin, F. and Jöreskog, K. (2012) Pairwise Likelihood Estimation for factor analysis models with ordinal data. *Computational Statistics and Data Analysis*, 56, 4243-4258.
21. Koukounari, A., Moustaki, I., Grassly, N.C., Blake, I.M., Basáñez, M-G. Gambhir, M., C. W. Mabey, D, C. W., Bailey, R. L., Burton, M.J., Solomon, A.W. and Donnelly, C.A. (2013) Using a Nonparametric Multilevel Latent Markov Model to Evaluate Diagnostics for Trachoma. *American Journal of Epidemiology*, 177(9): 913-922.
22. Vitoratou, V., Ntzoufras, Y. and Moustaki, I. (2013) Marginal Likelihood Estimation from the Metropolis Output: Tips and Tricks for Efficient Implementation in Generalised Linear Latent Variable Models. *Journal of Statistical Computation and Simulation*.
23. Anagnostopoulos, F.G., Yfantopoulos, Y., Moustaki, I. and Niakas, D. (2013) Psychometric and factor analytic evaluation of the 15D health-related quality of life instrument: The case of Greece. *Quality of Life Research*, Vol. 22, 1973-1986.
24. Koukounari, A., Donnelly, C.A., Moustaki, I., Tukahebwa, E.M., Kabatereine, N.B., Wilson, S., Webster, J.P., Deelder, A.M., Vennervald, B.J., J van Dam, G.J.. (2013). A Latent Markov Modelling Approach to the Evaluation of Circulating Cathodic Antigen Strips for Schistosomiasis Diagnosis pre- and post- Praziquantel Treatment in Uganda. *PLOS Computational Biology*.
25. Moustaki, I. and Knott, M. (2014) Latent variable models that account for atypical responses. *Journal of the Royal Statistical Society, Series C*, Vol. 63(2), 343-360.
26. Vasdekis, V. Rizopoulos, D. and Moustaki, I. (2014) Weighted pairwise likelihood estimation for a general class of random effects models. *Biostatistics*, Vol. 15(4), 677-689.
27. Hafez, M. and Moustaki, I. and Kuha, J. (2015) Multivariate longitudinal data subject to dropout: a latent variable approach. *Structural Equation Modelling*, Vol. 22(2) 193-201.
28. Wall, M, Park, J.-Y. and Moustaki, I. (2015) IRT modeling in the presence of zero-inflation with application to psychiatric disorder severity. *Applied Psychological Measurement*, Vol. 39(8), 583-597.
29. Kuha, J. and Moustaki, I. (2015). Non-equivalence of measurement in latent variable modelling of multigroup data: A sensitivity analysis. *Psychological Methods*, Vol. 20(4) 523-536.
30. Florios, K. Moustaki, I., Rizopoulos, D. and Vasdekis, V. (2015) A modified weighted pairwise likelihood estimator for a class of random effects models. *METRON*, 73 (2), 217-228.
31. Vitoratou, S., Ntzoufras, I. and Moustaki, I. (2016). Explaining the behavior of joint and marginal Monte Carlo estimators in latent variable models with independence assumptions. *Statistics and Computing*, 26, 333-348.
32. Katsikatsou, M. and Moustaki, I. (2016) Pairwise likelihood ratio tests and model selection criteria for structural equation model with ordinal variables. *Psychometrika*, 81(4), 1046-1068.

33. Mavridis, D., Moustaki, I., Wall, M. and Salanti, G. (2017) Detecting outlying studies in meta-regression models using the forward search algorithm. *Research Synthesis Methods*, 8 (2), 199-211.
34. Vaidakis, D., Moustaki, I. Zervas, I., Barbouni, A. Merakou, K., Chrysi, M., Creatsa, G., Panoskaltsis, T. (2017) Knowledge of Greek adolescents on Human Papilloma Virus (HPV) and vaccination: A national epidemiological study. *Medicine*, 96(1).
35. Zhu, Y., Steele, F.S. and Moustaki, I. (2017) A general 3-step maximum likelihood approach to estimate the effects of multiple latent categorical variables on a distal outcome. *Structural Equation Modelling*, (24), 643-656.
36. Kuha, J., Katsikatsou, M. and Moustaki, I. (2018) Latent variable modelling with non-ignorable item nonresponse: Multigroup response propensity models for cross-national analysis. *Journal of the Royal Statistical Society, Series A*, 181 (4), 1169-1192.
37. Jin, S., Moustaki, I. and Wallentin, F. (2018) Exploratory factor analysis via approximate penalised maximum likelihood. *Psychometrika*, Vol. 83, 628-649.
38. Papageorgiou, I. and Moustaki, I. (2019) Sampling of pairs in pairwise likelihood estimation for latent variable models with categorical observed variables. *Statistics and Computing*, Vol. 29(2), 351-365.
39. Zhu, Y., Steele, F. and Moustaki, I. (2020) A multilevel SEM for the interrelationships between multiple latent dimensions of childhood socioeconomic circumstances, partnership transitions and midlife health. *Journal of the Royal Statistical Society, Series A*, Vol. 183(3), 1029-1050.
40. Liu, D., Li, S., Yu, Y. and Moustaki, I. (2021) Assessing partial association between ordinal variables: quantification, visualization, and hypothesis testing. *Journal of the American Statistical Association*, Vol. 116, 955-968.
41. Chen, Y., Moustaki, I. and Zhang, H., (2021). A Note on Likelihood Ratio Tests for Models with Latent Variables. *Psychometrika*, 85 (4), 996-1012.
42. Koukounari, A., Moustaki, I., Jamil, H., Erosheva, E. and Shiff, C. (2021) Latent Class Analysis: Insights about design and analysis of schistosomiasis diagnostic studies. *PLOS Neglected Tropical Diseases*, Vol. 15(2).
43. Geminiani, E., Marra, G. and Moustaki, I. (2021) Single and multiple-group penalized factor analysis: a trust-region algorithm approach with integrated automatic multiple tuning parameter selection. *Psychometrika*, 86 (1), 65-95.
44. Katsikatsou, M., Moustaki, I. and Jamil, H. (2021) Pairwise likelihood estimation for confirmatory factor analysis models with categorical variables and data that are missing at random. *British Journal of Mathematical and Statistical Psychology*, 75(1), 23-45.
45. Guastadisegni, L., Cagnone, S., Moustaki, I. and Vasdekis, V. (2021) Use of the Lagrange multiplier test for assessing measurement invariance under model misspecification. *Educational and Psychological Measurement*, 82(2), 254 - 280.
46. Petropoulou, M., Salanti, G., Rücker, G., Schwarzer, G., Moustaki, I. and Mavridis, D. (2021) A forward search algorithm for detecting extreme study effects in network meta-analysis. *Statistics in Medicine*, 40, 5642–5656.
47. Sofia Tsokani, Stavros A. Antoniou; Irini Moustaki; Manuel López-Cano; George A. Antoniou; Ivan D. Flórez; Gianfranco Silecchia; Sheraz Markar; Dimitrios Stefanidis; Giovanni Zanninotto; Nader K. Francis; George H. Hanna; Salvador Morales-Conde; Hendrik Jaap Bonjer; Melissa C. Brouwers; Dimitrios Mavridis (2021) Guideline Assessment Project II: Statistical Calibration Informed the Development of an AGREE II Extension for Surgical Guidelines. *Surgical Endoscopy*, 35 (8), 4061 – 4068.
48. Burchardt T, Steele F, Grundy E, Karagiannaki E, Kuha J, Moustaki I, Skinner C, Zhang N and Zhang S. Welfare within Families beyond Households: Intergenerational Exchanges of Practical and Financial Support in the UK. LSE Public Policy Review. 2021; 2(1): 4, pp. 1–11. DOI: <https://doi.org/10.31389/lsepr.41>

49. Park, J.-Y., Wall, M., Moustaki, I. and Grossman, A.H. (2022) A Joint Modeling Approach for Longitudinal Outcomes and Non-ignorable Drop-out under Population Heterogeneity in Mental Health Studies. *Journal of Applied Statistics*, 49(13), 3361–3376.
50. Chen, Y., Lu, Y. and Moustaki, I. (2022) Detection of two-way outliers in multivariate data and application to cheating detection in educational tests. *Annals of Applied Statistics*, 16(3), 1718-1746.
51. Christensen, W., Wall, M. and Moustaki, I. (2022) Assessing dimensionality in dichotomous items when many subjects have all zero responses: An example from psychiatry and a solution using mixture models. *Applied Psychological Measurement*, 46(3), 167-184.
52. Mavridis, D., Nikolakopoulou, A., Moustaki, I., Chaimani, A., Porcher, R., Boutron, I. and Ravaud, P. (2023) Considering multiple outcomes with different weights informed the hierarchy of interventions in network meta-analysis. *Journal of Clinical Epidemiology*, 154, 188-196.
53. Vamvourellis, K., Kalogeropoulos, K. and Moustaki, I. (2023) Assessment of generalised Bayesian structural equation models for continuous and binary data. *British Journal of Mathematical and Statistical Psychology*.
54. Liu, X., Wallin, G., Chen, Y. and Moustaki, I. (2023) Rotation to sparse loadings using  $L^p$  losses and related inference problems. *Psychometrika*, 88, 527-553.
55. Wallin G., Chen, Y. and Moustaki, I. (To appear) DIF Analysis with Unknown Groups and Anchor Items. *Psychometrika*.

#### CHAPTERS IN BOOKS

1. Moustaki (2000) A Review of Exploratory Factor Analysis for Ordinal Categorical Data, in *Structural Equation Models: Present and Future* edited by R. Cudeck, S. du Toit and D. Sorbom. Scientific Software International, 461-480.
2. Moustaki, I. and O’Muircheartaigh, C. (2002) Locating ‘don’t know’, ‘no answer’ and middle alternatives on an attitude scale: a latent variable approach, in *Latent Variable and Latent Structure Models* edited by G. Marcoulides and I. Moustaki, Lawrence Erlbaum, 15-41.
3. Moustaki, I. (2003) Latent variable models with covariates, in *Statistical Musings* edited by J. Panaretos. Lawrence Erlbaum.
4. Moustaki, I. and Knott, M. (2004) Computational aspects of the E-M and Bayesian estimation in latent variable models, in *New Developments in Categorical Data Analysis for the Social and Behavioral Sciences* edited by A. van der Ark, M. Croon and K., Sijtsma, Lawrence Erlbaum, 103-124.
5. Bock, D. and Moustaki, I. (2007). Item response theory in a general Framework in *Handbook of Statistics on Psychometrics*, Vol. 26, edited by C. R. Rao and S. Sinharay. Elsevier.
6. Moustaki, I. (2007) Factor Analysis and Latent Structure of Categorical and Metric Data in *Factor analysis at 100: Historical developments and future directions*. Cudeck, R., and MacCallum, R. C. (Eds.). Mahwah, NJ: Erlbaum.
7. Mavridis, D., Moustaki, I. and Knott, M. (2007) Goodness-of-Fit measures for Latent Variable Models for Binary data in *Handbook for of Latent Variable and Related Methods* edited by S-Y Lee. Holland: Elsevier.
8. Moustaki, I. (2008) New developments in latent variable models: non-linear and dynamic models, in *Proceedings in Computational Statistics*, Brito Paula (Ed.). 18<sup>th</sup> Symposium, Porto, Portugal.
9. Cagnone, S., Mignani, S. and Moustaki, I. (2009) Latent variable models for ordinal data in *Statistical Methods for the Evaluation of Educational Services and Quality of Product*. Monari, P. Bini, M., Piccolo, D. and Salmaso, L. (Eds.). Physica-Verlag Heidelberg.
10. Moustaki, I. (2012) A review of estimation methods for latent variable models. In M. C. Edwards & R. C. MacCallum (Eds.) *Current issues in the theory and application of latent variable models*. New York: Taylor & Francis.
11. Moustaki, I., Knott, M. and Bartholomew, D.J. (2015) *Latent-Variable Modeling*. Wiley StatsRef: Statistics Reference Online, 1-10.

12. Cai, L. and Moustaki, I. (2017) A review of estimation methods for latent variable models. In P. Irwing and (Eds.). *The Handbook of Psychometric Testing*. Wiley.
13. Guastadisegni, L., Cagnone, S., Moustaki, I. and Vasdekis, V. (2021) The asymptotic power of the Lagrange Multiplier tests for mis-specified IRT models. 85th Annual Meeting of the Psychometric Society, 2020. Wiberg, M., Molenaar, D., González, J., Böckenholt, U., Kim, J.-S. (Eds.) *Quantitative Psychology. Springer Proceedings in Mathematics and Statistics*.
14. Chen, Y., Moustaki, I. and Zhang, S. (2023) On the estimation of structural equation models with latent variables. In R. Hoyle (ed). *Handbook of Structural Equation Modeling (2<sup>nd</sup> edition)*. Guilford Press.
15. Anderson, C.J. and Kateri, M. and Moustaki, I. (2023) Log-Linear and Log-Multiplicative Association Models for Categorical Data, in *Trends and Challenges in Categorical Data Analysis*. Edited by M. Kateri and I. Moustaki, Springer, 1-42.

### CONFERENCES with a paper presentation

- |      |   |
|------|---|
| 1994 | Fourth International Meeting Dissertation Research in Psychometrics and Sociometrics, December 12-13, Tilburg University, The Netherlands.  |
| 1996 | 'Young' Researchers Conference, ALCD, March 24-25, Southampton University.  |
| 1996 | 20 <sup>th</sup> Biennial Conference of the Society for Multivariate Analysis in the Behavioural Sciences, July 8-10, Spain.  |
| 1997 | 13 <sup>th</sup> Workshop on Item Response Theory, October 29-30, University of Twente, The Netherlands. <b>(Invited Speaker)</b>   |
| 1997 | 10 <sup>th</sup> European Meeting of the Psychometric Society, July 15-18, Spain.   |
| 1998 | 21st Biennial Conference of the Society of Multivariate Analysis in Behavioural Sciences, July 13-15, Leuven, Belgium.  |
| 1999 | 11 <sup>th</sup> European Meeting of the Psychometric Society, July 19-22, Lueneburg, Germany.  |
| 2000 | International Symposium, Factor Analysis and Structural Equation Modelling Perspectives and Visions. Honouring the Research of Karl Joreskog, 31 March-1 April, University of Uppsala, Sweden. <b>(Invited Speaker)</b> |
| 2000 | International Conference on Measurement and Multivariate Analysis, May 11-14, Banff Canada. <b>(Invited Speaker)</b> .  |
| 2000 | 22 <sup>nd</sup> Biennial Conference of the Society of Multivariate Analysis in Behavioural Sciences, July 17-19, London.   |
| 2000 | 15 <sup>th</sup> Workshop on Item Response Theory, September 26-28, University of Twente, The Netherlands.  |
| 2000 | International Symposium on Structural Equation Modelling, December 13-15, St Charles Illinois. <b>(Invited Speaker)</b> .   |
| 2001 | Two papers presented at the 1 <sup>st</sup> International meeting of the Psychometric Society, Osaka, 15-19, July.  |
| 2001 | 32 <sup>nd</sup> European Mathematical Psychology Meeting, Lisbon, 26-29 September.   |
| 2002 | 23 <sup>rd</sup> Biennial Conference of the Society of Multivariate Analysis in Behavioural Sciences, July 1-3, Tilburg, The Netherlands.   |
| 2003 | 13 <sup>rd</sup> International meeting and 68 <sup>th</sup> Annual American Meeting of the Psychometric Society, July 7-10, Cagliari, Italy.  |
| 2003 | Join Statistical meetings, August 3-7, San Francisco, California, USA.  |
| 2004 | Computational Management Science Conference and workshop on Computational Econometrics and Statistics, April, 2-5, Neuchatel, Switzerland. (Invited Session, Chairman).   |



- 2004 Factor Analysis at 100, May 13-15, University of North Carolina at Chapel Hill. **(Invited Speaker)**.
- 2004 17<sup>th</sup> Greek Statisticians Meeting, April, 14-17, Lefkada, Greece.
- 2004 Symposium in the honour of Paul Lazarsfeld, organized by the University of Leuven in, June 4-5, Brussels. **(Invited Speaker)**.
- 2004 Three papers presented at the 20<sup>th</sup> Workshop on Item Response Theory, October 12-14, University of Twente **(Keynote Speaker)**.
- 2005 The 14<sup>th</sup> International meeting and the 70<sup>th</sup> Annual meeting of the Psychometric Society, July 5-8, Tilburg, The Netherlands **(Keynote Speaker)**.
- 2005 International Association for Statistical Computing, 3<sup>rd</sup> world conference on Computational Statistics and Data Analysis, October, 28-31, Limassol, Cyprus.
- 2006 International meeting of the Psychometric society, 71<sup>st</sup> Annual Meeting, June 14-17, Montreal Canada.
- 2006 12<sup>th</sup> International Conference on Computing in Economics and Finance, June 22-24, Limassol, Cyprus.
- 2006 25<sup>th</sup> Biennial meeting of the Society of Multivariate Analysis in the Behavioral Sciences jointly with the 2<sup>nd</sup> Conference of the European Association of Methodology, July 1-5, Budapest, Hungary.
- 2006 International Conference on "Statistical Latent Variable Models in the Health Sciences", July 2-8, Perugia Italy. A satellite meeting of COMPSTAT 2006. **(Invited Speaker)**
- 2007 Statistical Models for Student Evaluation in the University Educational Processes. February 6, Bologna, Italy. **(Invited Speaker)**
- 2007 56<sup>th</sup> session of the International Statistical Institute Meeting, August 22-29, Lisbon.
- 2008 First Joint meeting of the Societe Francophone de Classification and the Classification and Data Analysis Group of the Italian Statistical Society, Caserta, Italy, June 11-13. **(Keynote Speaker)**
- 2008 International Conference on Multivariate Statistical Modelling & High Dimensional Data Mining 19-23 June 2008, Kayseri, Turkey (Invited session).
- 2008 International Meeting of the Psychometric Society, June 29 - July 2, New Hampshire, USA. (Invited Session).
- 2008 International Conference on Computational Statistics, August 24-29, Porto Portugal. **(Invited Speaker)**
- 2009 International Conference on Robust Statistics, June 15 - June 19, Parma, Italy **(Invited Speaker)**
- 2009 International Conference on Psychometrics, July 20 - July 24, Cambridge, UK.
- 2009 25<sup>th</sup> Workshop on Item Response Theory, October, University of Twente, Netherlands, **(Invited Speaker)**.
- 2010 Conference on Latent Variable Models; Honoring Michael W. Browne. September 9-10, The Ohio State University in Columbus, OH. **(Invited Speaker)**
- 2011 SIS 2011 Statistical Conference, University of Bologna, June 8-10. **(Invited Speaker)**.
- 2011 Symposium on Recent Advances in Methods for the Analysis of Panel Data, June 15-16. ISCTE-IUL University of Lisbon. **(Invited Speaker)**.
- 2012 Composite Likelihood Methods Workshop, April 22-27. Banff Canada. **(Invited Speaker)**
- 2012 77<sup>th</sup> Annual Meeting of the Psychometric Society, July 3-5, Lincoln, Nebraska, USA.
- 2012 V European Congress of Methodology, July 17-20, Santiago de Compostela, Spain **(Invited Session)**.
- 2012 Day on Multivariate Data Analysis. The Royal Statistical Society General Applications Section, 4th October. **(Invited Speaker)**.
- 2013 13o Escola de Modelos de Regressao, Brazilian Association of Statistics, February 24-27, Maresias, Brazil **(Invited Speaker)**.

- 2013 78<sup>th</sup> Annual Meeting of the Psychometric Society, July 22-26, Arnhem, The Netherlands. **(State of the Art lecture).**
- 2014 National Council on Measurement in Education, April 2-6, Philadelphia (Invited session).
- 2014 79<sup>th</sup> Annual Meeting of the Psychometric Society, July 21-25, Madison Wisconsin, USA.
- 2014 Joint Statistical Meetings, August 3-7, Boston, USA. (Invited session).
- 2014 One-day conference on Cross-national surveys: methods of design and analysis, London School of Economics, December 15, London, UK.
- 2014 Education as a Life Long Process Conference, SPP1646 Final Conference, December, 16, Bamberg, Germany. (Discussant)
- 2015 FIRB Research project: "Mixture and latent variable models for causal inference and analysis of socio-economic data", January, 23-24, Rome, Italy. **(Invited speaker).**
- 2015 Eastern North American Region, International Biometric Society meeting, ENAR, March 15-18, Miami, FL.
- 2015 ICQQMEAS Meeting, May 21-22, Athens, Technological Institute of Education. **(Keynote speaker).**
- 2015 80<sup>th</sup> Annual Meeting of the Psychometric Society, July 12-16, Normal University of Beijing, China.
- 2015 Tagung der Fachgruppe Methoden & Evaluation [FGME 2015] der Deutschen Gesellschaft für Psychologie, September, 16 – 18, University of Jena. **(Keynote speaker).**
- 2016 RSS Computational Statistics Section, "How do you SEM? Pros and Cons of Software Packages for Structural Equation Modelling", 28th January. **(Invited speaker).**
- 2016 Challenges for Categorical Data Analysis, February 10<sup>th</sup>, RWTH Aachen University, Germany, **(invited speaker).**
- 2016 81<sup>st</sup> Annual Meeting of the Psychometric Society, July 12-15, Asheville, NC, USA.
- 2016 Fourth Conference on the Statistical Methods in Psychometrics, August 31- September 1, Department of Statistics, Columbia University, New York, USA **(Invited speaker).**
- 2016 Society of Multivariate Experimental Psychology Meeting, October 19–22, Richmond, VA **(Invited speaker).**
- 2017 A conference in honor of Paola Monari, February 3, University of Bologna. **(Keynote speaker)**
- 2017 6<sup>th</sup> Annual Thomas Ten Have Symposium on Statistics in Mental health, May 12, Department of Child and Adolescent Psychiatry, New York University. **(Keynote speaker)**
- 2017 82nd Annual Meeting of the Psychometric Society, July 17-21, Zurich, Switzerland, NC, USA.
- 2017 Conference of the International Federation of Classification Societies, August, 8-10, Tokyo, Japan. **(Keynote speaker).**
- 2017 Fifth Conference on the Statistical Methods in Psychometrics, Columbia University, November, 17-18, NYC. **(Invited speaker).**
- 2018 CroNos workshop of Multivariate Data Analysis and Software, April 3-5, Lemessos, Cyprus **(Keynote speaker).**
- 2018 International Test Commission Conference, July, 2-5, Montreal, Canada, **(Keynote speaker)**
- 2018 2<sup>nd</sup> Workshop on Categorical Data Analysis. October 22-23, Aachen, Germany **(Co-Organiser).**
- 2019 PIACC Methodological Seminar, The use of test scores in secondary analysis, June 14, OECD, France. (Discussant)
- 2019 International Meeting of the Psychometric Society, July, 15-19, Santiago, Chile.
- 2019 Education Technologies and Computational Psychometrics, October 9-10, Iowa City, **(Keynote Speaker)**
- 2019 Society of Multivariate Experimental Psychology, October 10-12, Baltimore.
- 2022 International Meeting of the Psychometric Society, July, Bologna, Italy, **(Presidential Keynote).**

- 2023 Statistical Data Science Conference, September 6-8, Aigina, Greece.
- 2023 14<sup>th</sup> Scientific Meeting of Classification and Data Analysis Group (CLADAG). September 11-13, Salerno. Italy. **(Invited session).**
- 2023 Psychometrics Workshop, September 22-23, Columbia University, New York. **(Invited speaker).**

### Research Grants

- Item nonresponse and measurement error in cross-national surveys: Methods of data collection and analysis. Funded by: NCRM Call for Methodological Innovation Projects, Amount: £192,247. PI: J. Kuha, Co-investigators: C. Skinner, J. Jackson, I. Moustaki (Co-I). 1<sup>st</sup> of April 2013 – 31<sup>st</sup> of November 2014.
- Latent variable modelling of categorical data: Tools of analysis for cross-national surveys, ESRC, RES-239-25-0022 (1/4/2010-30/9/2012) with J. Kuha (PI), I. Moustaki (Co-I), S. Stares, G. Gaskell and J. Jackson, £215,000.
- Evaluation of interventions and diagnostics of neglected tropical diseases in sub-Saharan Africa, MRC fellowship awarded to Dr A. Koukounaris, C. A. Donnelly (PI), I. Moustaki (Co-I) (10/1/2011-31/8/2013). Award to LSE £11,226.
- Fairness and equal burden sharing in EU asylum, British Academy Award, 1/6/2010 – 31/5/2011 with L. Bovens (LSE Department of Philosophy) and I. Moustaki, £7,500.
- Methods of analysis and inference for social survey data within the framework of latent variable modeling and pairwise likelihood, ESRC Award, 1/10/2014-1/10-2017, ESRC fellowship awarded to Dr M. Katsikatsou, I. Moustaki (Mentor). Grant Reference: ES/L009838/1.
- F. Steele (PI), J. Kuha, I. Moustaki (Co-I) and C. Skinner. ES/P000118/1. Methods for the Analysis of Longitudinal Dyadic Data with an Application to Intergenerational Exchanges of Family Support. ESRC Research

### PhD Students

1. Dimitris Mavridis, (completed) “Goodness-of-Fit Measures and Outlier Detection in Latent Variable Models with Categorical and Mixed data”.
2. James Abdey, (completed) “To p, or not to p? Quantifying Inferential Decision Errors to Assess Whether Significance Truly is Significant”.
3. Myrsini Katsikatsou, (completed) “Composite Likelihood Estimation for Structural Equation Models with Continuous/ Categorical or Ranking data” (co-Supervisor, Department of Statistics, University of Uppsala)
4. Silia Vitoratou (completed), “Efficient Bayesian Marginal Likelihood Estimation for Generalized Latent Trait Models”. Co-supervisor, Department of Statistics, Athens University of Economics and Business.
5. Evgenia Tsompanaki, (completed) “Using Hybrid Latent Variable Models for Modelling Missing Data”. (Department of Statistics, Athens University of Economics and Business).
6. Mai Hafez, (completed) “Modelling Drop-out and Item Non-response in Multivariate Longitudinal Data Modelling”.
7. Elena Geminiani (completed) “A penalized likelihood-based framework for single and multiple-group factor analysis models”. (co-supervisor, Department of Statistics, Bologna University).
8. Ellie Suh (completed) Young British adults’ retirement saving and wealth accumulation patterns, a quantitative investigation. (2<sup>nd</sup> supervisor, Social Policy Department, LSE).
9. Yan Lu (2022, completed) Multivariate Outlier Detection in Latent Variable Models (LSE).
10. Lucia Guastadisegni (2022, completed) Assessing the fit of unidimensional IRT models for binary data under model misspecification. (co-supervisor, Department of Statistics, University of Bologna).
11. Camilo Cardenas-Hurtado (2023, completed) Generalised Latent Variable Models for Location, Shape, and Scale parameters.

**OTHER TEACHING ACTIVITY INCLUDES:**

- Taught the Introductory Statistics for Economist course for the Economics Summer School, London School of Economics from 1997 to 2006.
- Taught a regression analysis course offered to employees' of Goldman Sachs, London, May 1998.
- Taught a one-day course on the methodology and application of latent variable models in social sciences, Dublin Business School, University of Dublin, November 1998.
- Taught a one-day course on the methodology and application of latent trait and latent class models to Government Social Researchers, London, September 1999 (with D. J. Bartholomew).
- Taught a short course on the methodology and application of latent trait and latent class models in Social Sciences to the PhD students of the Statistics Department of the University of Bologna, Italy, 11-14 April 2000.
- Taught at the Management Business Administration postgraduate course at the University of ESADE, Barcelona, September 2001 – 2005.
- Taught a short course on the methodology and application of latent variable models to the PhD students of the Statistics Department of the University of Bologna, Italy, 16-20 May 2002.
- Taught at the Management Business Administration postgraduate course at the University of ESCM, Poitiers France, January 2003.
- Taught at the 17<sup>th</sup> Greek Statisticians Meeting, workshop on Latent Variable Models with Applications in Social Sciences, Lefkada, 17 April 2004.
- Taught Market Research Methodology, Blocked Seminar, Centre of European Management Schools (CEMS), Prague Economics School, September 12-16, 2005.
- Taught a short course on the methodology and application of latent variable models to the PhD students of the Statistics Department of the University of Bologna, Italy, October 2006.
- Taught a short course on the methodology and application of latent variable models to the PhD students of the Statistics Department of the University of Florence, Italy, February 2007.
- Taught a short course on structural equation modelling as part of the European Courses in Advanced Statistics, 24-28<sup>th</sup> of September 2007, Grenoble, France.
- Taught a short course on Categorical Data Analysis, Faculty of Psychology, University of Barcelona, Spain. 25-28<sup>th</sup> of May, 2010.
- Taught a short course on structural equation modelling. Aristoteleio University, Thessaloniki, 23<sup>rd</sup> of May 2011.
- LCAT Training workshop on Latent Trait and Latent Class models for cross-national surveys, hosted by Cathie Marsh Centre for Census and Survey Research, Manchester, 3-4 May 2012.
- LCAT Training workshop on Latent Trait and Latent Class models for cross-national surveys, hosted by the Applied Quantitative Analysis Methods Network (AQMeN), Edinburgh, 28-29 May 2012.
- International Scientific Workshop - Structural Equation Modeling and Latent Variable Models. 12-14 September 2012, Department of Statistical Sciences, University of Bologna.
- LCAT Training workshop on Latent Trait and Latent Class models for cross-national surveys, Royal Statistical Society, London, 11-12 February 2013.
- LCAT Training workshop on Latent Trait and Latent Class models for cross-national surveys, University of Tucuman, Argentina, 5-6 March 2013.
- LCAT Training workshop on Latent Trait and Latent Class models for cross-national surveys, Department of Mathematics and Statistics, University of Sao Paulo, Brazil, 15<sup>th</sup> March 2013.
- LCAT Training workshop on Latent Trait and Latent Class models for cross-national surveys, Royal Statistical Society, London, September 2014.

- Methods Summer School, ME115 Latent Variable Modelling and Structural Equation Modelling for Social Sciences Research, 17-12 August 2015, London School of Economics.
- Barcelona Summer School in Survey Methodology, Latent Trait and Latent Class models for cross-national surveys, University of Pompeu Fabra, 27 June -1 July 2016 and June 2017.
- Methods Summer School, ME115 Latent Variable Modelling and Structural Equation Modelling for Social Sciences Research, 15-19 August 2016, and 14-18 August 2017, London School of Economics.
- 30th APS Annual Convention, May 24-27, 2018, San Francisco, USA. Invited Workshop on Latent Variables and Mixture Models for Analyzing Social Science and Behavioral Data.
- 31st APS Annual Convention, May 23-26, 2019, Washington DC, USA. Invited Workshop on Regression, Classification and Clustering in Social Sciences.
- Methods Summer School, ME303 Statistical Methods for Multivariate Data in Social Data Research, July 2019, London School of Economics.