

## Introduction to Multilevel Modelling using MLwiN

**Tuesday 24 to Thursday 26 November 2009**  
**9:00am - 5:00pm**

Presented by Dr Sandy Muspratt

### Course Information

Multilevel or hierarchical data structures are common in many applications relevant to the social and behavioural sciences. Multilevel modelling is a technique that takes account of the clustering of individuals within organisational or social contexts (for instance, students within classrooms, individuals within households, patients within clinics, employees within organisations). It allows individuals' outcomes to be related to the characteristics of the individuals themselves and to the organisations or social settings to which they belong. Multilevel analysis was once applied only by specialists, but during the last 10 to 15 years, it has enjoyed increasing popularity so that by now it is almost commonplace in published research in the social and behavioural sciences. Thus, knowledge of the concepts and principles of multilevel modelling and the application of multilevel modelling techniques are important additions to the applied researcher's repertoire of analytic techniques. During the workshop, participants will work with two-level models for continuous outcomes, and deal with issues that arise from such models, including: assessment of model fit, checking model assumptions, hypothesis testing, calculating effect sizes, consideration of alternative methods of estimation, the design of multilevel studies, and the reporting of multilevel studies. The workshop provides participants with hands-on experience using the MLwiN software package.

A basic statistical knowledge is assumed; a knowledge of multiple regression will be helpful; but no prior knowledge of multilevel modelling nor of MLwiN is assumed.

	Day 1	Day 2	Day 3
8:30 - 9:00	Registration	-	-
9:00 - 10:30	Welcome & Introduction Review. Review of regression. Why multilevel.	Explanatory variables. Contextual effects. Interactions.	Estimation: MCMC. Overview. Diagnostics.
10:30 - 11:00	Morning Tea		
11:00 - 12:30	Variance components. Notation. VPC (or ICC).	Residuals. Exploring the model.	Estimation: MCMC Derived quantities.
12:30 - 1:30	Lunch		
1:30 - 3:00	Random intercepts and random slopes. Centring.	Variance explained. Effect sizes.	Missing data. Getting your data into MLwiN. Reporting a multilevel study.
3:00 - 3:30	Afternoon Tea		
3:30 - 5:00	Estimation: ML Model. Model adequacy. Hypothesis testing.	Designing a multilevel study.	Where to from here.

## Key Centre for Ethics, Law, Justice and Governance

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#### About the Presenter

**Dr Sandy Muspratt** has worked on a range of commissioned research and evaluation projects, including projects commissioned by Education Queensland, AusAID, Commonwealth Department of Education, Science and Training, The Le@rning Federation, and Queensland Studies Authority. Dr Muspratt has expertise in quantitative methods. He has applied a range of multivariate and multilevel techniques to these and other projects. He has taught quantitative methods courses, and has conducted workshops and delivered lectures on topics ranging from introductory considerations to week-long workshops on advanced techniques for academics and RHD students. He holds an honorary position in the School of Education at The University of Queensland. Previously, he was a Research Fellow in the Faculty of Education, Griffith University; he has worked at the Papua New Guinea Education Institute; and he has held various contract positions for specific projects at Griffith University, Deakin University, and James Cook University.

#### Requirements

Participants must bring a laptop with the software already installed. If participants from Griffith University cannot obtain a Griffith University licence, or if participants from other universities cannot obtain the software, then download and install the free teaching version from: <http://www.cmm.bris.ac.uk/MLwiN/download/upgrades.shtml> Note: MLwiN operates on the Windows platform only.

#### Recommended text

Hox, J. (2002). *Multilevel analysis: Techniques and applications*. Mahwah, N.J.: Lawrence Erlbaum Associates. The text is available from The Co-Op Bookshop at Mt Gravatt campus for \$81.00.

In addition, participants should obtain the MLwiN manuals:

- Rasbash, J., Steele, F., Browne, W. & Goldstein, H.. (2009). *A user's guide to MLwiN (Version 2.10)*. Centre for Multilevel Modelling, University of Bristol.
- Rasbash, J., Charlton, C., Jones, K. & Pillinger, R. (2009). *Manual supplement for MLwiN (Version 2.14)*. Centre for Multilevel Modelling, University of Bristol.
- Browne, W. (2009). *MCMC estimation in MLwiN (Version 2.13)*. Centre for Multilevel Modelling, University of Bristol.

The manuals are available in PDF format from: [www.cmm.bristol.ac.uk/MLwiN/download/manuals.shtml](http://www.cmm.bristol.ac.uk/MLwiN/download/manuals.shtml)

#### Cost

KCELJAG and Institute for Social and Behavioural Research members and students (and affiliated) - Free

PhD students (Griffith and other Universities) - \$100.00pp

University staff (Griffith and other Universities) - \$300.00pp

Full catering provided each day.

**24 - 26 November 2009**

**9:00am - 5:00pm** (Registration from 8:30am on Day 1)

**Mt Gravatt campus, M24 Psychology Building, Level 3, Room 3.11A**

**TO BOOK:** please email [kceljag-events@griffith.edu.au](mailto:kceljag-events@griffith.edu.au) or phone 3735 5997  
by Monday 9 November 2009.