

Applied Multilevel Models for Longitudinal Data

ICPSR Summer Workshop in Boulder, Colorado
7/21/2014 – 7/25/2014

Presented by:

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(*moving to the University of Kansas as of August 18, 2014*)

ICPSR Materials will be available for download at:

<http://psych.unl.edu/hoffman/Sheets/ICPSR.htm>

For further resources and online course materials, please visit:

<http://psych.unl.edu/hoffman/HomePage.htm>

COURSE OVERVIEW

Multilevel models are known by many synonyms (i.e., hierarchical linear models, general linear mixed models). The defining feature of these models is their capacity to provide quantification and prediction of random variance due to multiple sampling dimensions (across occasions, persons, or groups). Multilevel models offer many advantages for analyzing longitudinal data, such as flexible strategies for modeling change and individual differences in change, the examination of time-invariant or time-varying predictor effects, and the use of all available complete observations. This workshop will serve as an applied introduction to multilevel models for longitudinal data, including studies of individual change (i.e., growth curve models), individual fluctuation (i.e., daily diary designs), and multiple dimensions of within-person time (i.e., measurement burst designs).

The primary software package utilized for instruction will be SAS, but some reference examples using SPSS and STATA may also be provided. The course will also include daily opportunities for hands-on practice and individual consultation. Participants should be familiar with the general linear model (e.g., ANOVA and regression), but no prior experience with multilevel models or knowledge of advanced mathematics (e.g., matrix algebra) is assumed.

TENTATIVE SCHEDULE OF EVENTS*

Day	Time	Topic
Monday	9:00–10:15	Lecture 1: Introduction to Multilevel Models
	10:30–11:30	Example 1: General Linear Models and Repeated Measures ANOVA
	11:30–1:15	Individual Lab Time and Lunch Time
	1:15–2:30	Lecture 2: Describing Within-Person Fluctuation over Time
	2:45–4:00	Example 2: Alternative Covariance Structure Models for Fluctuation
	4:00–5:00	Lab Time 1: Getting Data Ready for Longitudinal Models
Tuesday	9:00–10:15	Lecture 3: Describing Within-Person Change over Time
	10:30–11:30	Example 3: Random Effects Models for Change
	11:30–1:15	Individual Lab Time and Lunch Time
	1:15–2:30	Lecture 3, continued
	2:45–4:00	Example 3, continued
	4:00–5:00	Lab Time 2: Fitting Unconditional Longitudinal Models
Wednesday	9:00–10:15	Lecture 4: Time-Invariant Predictors in Longitudinal Models
	10:30–11:30	Example 4: Time-Invariant Predictors of Change
	11:30–1:15	Individual Lab Time and Lunch Time
	1:15–2:30	Lecture 5: Generalized Models for Non-Normal Longitudinal Data
	2:45–4:00	Example 5: Generalized Models for Binary Longitudinal Data
	4:00–5:00	Lab Time 3: Fitting Conditional Models with Level-2 Predictors
Thursday	9:00–10:15	Lecture 6: Time-Varying Predictors for Fluctuation
	10:30–11:45	Example 6: Time-Varying Predictors for Fluctuation
	11:30–1:15	Individual Lab Time and Lunch Time
	1:15–2:30	Lecture 6 and Example 6, continued
	2:45–4:00	Lecture 7: Multivariate Models for Change
	4:00–5:00	Lab Time 4: Fitting Conditional Models with Level-1 Predictors
Friday	9:00–10:15	Example 7: Multivariate Models for Change
	10:30–11:45	Lecture 8: Three-Level Longitudinal Models
	11:30–1:15	Individual Lab Time and Lunch Time
	1:15–2:30	Example 8: Three-Level Longitudinal Models
	2:45–5:00	Individual Lab Time
