Latent Trajectory/Growth Curve Analysis: A Structural Equation Modeling Approach

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Latent Curve Models (LCMs) are the subject of intense interest. Though these models go by many names (e.g., growth curve modeling, latent growth models, latent trajectory models), they all refer to statistical models for longitudinal data that allow each individual in the sample to have distinct over-time trajectories of change. These patterns of change are summarized in relatively few parameters. The parameters in turn are modeled as functions of other variables.

With the growing availability of longitudinal or panel data, social science applications of and interests in LCM have increased. The formulations and estimation of these models have proceeded in diverse ways. In our short course we will analyze the LCMs from the perspective of structural equation modeling with latent variables. Although we will present simple regression based procedures that are helpful in the early stages of LCM, most of our discussion will make use of Structural Equation Models.

As per the course description, we assume that participants have some background in SEMs prior to the course. The Odum Institute computer lab in which we will work has most major SEM software packages. Participants are free to use any SEM software. The major topics of the course are: an overview of trajectory models & a review of SEMs, unconditional latent curve models (LCMs), nonlinear LCMs, conditional LCMs, the analysis of groups, multivariate LCMs, and latent variable LCMs. Readings for each topic are listed below.

Prerequisites: Experience with structural equation models
Knowledge and experience with longitudinal data


Daily Schedules:

9:00 am – 12:00 pm   Lecture in Manning Hall 14
12:00 pm – 1:30 pm   Lunch Break
1:30 pm - 3:30 pm   Computer Lab in Manning Hall 01
3:30 pm – 4:30 pm   Question & Answer Session in Manning Hall 01

Note: On some days the lecture, lab, or Q&A session might run over the allotted time.
I. OVERVIEW & SEM REVIEW

   Pages 10-39.


II. UNCONDITIONAL LATENT CURVE MODELS (LCMs)

Bollen, K. A. and P. J. Curran. 2006. *Latent Curve Models: A Structural Equation Perspective*. Ch. 2 (all), Ch. 3 (all) Ch. 7 (208-14).

III. NONLINEARITY


IV. CONDITIONAL LATENT CURVE MODELS


V. ANALYSIS OF GROUPS


VI. MULTIVARIATE LCMs


VII. LATENT VARIABLE LCMs