

Modeling Within-Person Associations in Longitudinal Data
 May 2018 3rd Annual Statistics Workshop at Oklahoma State University
 Presented by Dr. Lesa Hoffman: <http://www.LesaHoffman.com/>

Course Textbook: Hoffman, L. (2015). *Longitudinal Analysis: Modeling Within-Person Fluctuation and Change*. Routledge Taylor and Francis: <http://www.PilesOfVariance.com/>

This workshop is intended for social scientists who collect and analyze longitudinal data. It will be most useful for those who are well-acquainted with general linear models (regression, ANOVA), and have at least some familiarity with longitudinal data analysis through multilevel modeling or structural equation modeling. Examples will primarily utilize Mplus software, but univariate multilevel analyses will also use SAS, SPSS, and STATA. The workshop will build on chapters 1–7 of the *Longitudinal Analysis* textbook by presenting univariate and multivariate models for time-varying predictors of fluctuation and change (i.e., as covered in chapters 8–9, as well as in the sources listed below).

Day	Time	Activity
Monday May 14	8:30–10:00	Lecture 1: Review of Concepts and Terminology in Longitudinal Modeling
	10:00–10:20	Break
	10:20–11:50	Example 1: Time-Invariant Predictors in Polynomial Models for Change over Time
	11:50–1:10	Lunch (provided)
	1:10–2:40	Lecture 2: Univariate Multilevel Modeling of Time-Varying Predictors
	2:40–3:00	Break
	3:00–4:30	Example 2: Examining BP and WP Effects of Within-Person Fluctuation
Tuesday May 15	8:30–10:00	Lecture 3: Multivariate Multilevel Models for Longitudinal Data
	10:00–10:20	Break
	10:20–11:50	Example 3: Mediation of Within-Person Fluctuation Example 4: Three Ways of Estimating Multivariate Change
	11:50–1:10	Lunch (provided)
	1:10–2:40	Example 4 continued
	2:40–3:00	Break
	3:00–4:30	If time permits, Lecture 4: Generalized Multilevel Models for Non-Normal Longitudinal Data, and Example 5: Multivariate Multilevel Models for Non-Normal Outcomes

Suggested Readings:

- Bauer, D. J. (2003). Estimating multilevel linear models as structural equation models. *Journal of Educational and Behavioral Statistics*, 28(2), 135-167.
- Berry, D., & Willoughby, M. (2017). On the practical interpretability of cross-lagged panel models: Rethinking a developmental workhorse. *Child Development*, 88(4), 1186-1206.
- Curran, P. J., Howard, A. L., Bainter, S. A., Lane, S. T., & McGinley, J. S. (2014). The separation of between-person and within-person components of individual change over time: A latent curve model with structured residuals. *Journal of Consulting and Clinical Psychology*, 82(5), 879-894.
- Hamaker, E. L., Kuiper, R. M., & Grasman, R. P. P. P. (2015). A critique of the cross-lagged panel model. *Psychological Methods*, 20(1), 102-116.
- Lüdtke, O., Marsh, H. W., Robitzsch, A., Trautwein, U., Asparouhov, T., & Muthén, B. (2008). The multilevel latent covariate model: A new, more reliable approach to group-level effects in contextual studies. *Psychological Methods*, 13(3), 203-229.
- Preacher, K. J., Zhang, Z., & Zyphur, M. J. (2011). Alternative methods for assessing mediation in multilevel data: The advantages of multilevel SEM. *Structural Equation Modeling*, 18, 161-182.
- Preacher, K. J., Zyphur, M. J., & Zhang, Z. (2010). A general multilevel SEM framework for assessing multilevel mediation. *Psychological Methods*, 15(3), 209-233.