

Abstract: Lag as Moderator Models for Longitudinal Data

James P. Selig

University of New Mexico

Kristopher J. Preacher and Todd D. Little

University of Kansas

The magnitude of a relationship between constructs measured at different occasions will often depend upon the amount of time that passes between measurement occasions, or lag. One way to address this issue is to abandon the traditional approach of choosing a single lag and instead use many lags. Under this new approach, all effects are potentially moderated by lag. In contrast to traditional approaches in which the lag between measurements is the same for all individuals, the data collection procedures for lag as moderator (LAM) models require that lags vary across individuals.

The following equation is a multiple regression example of a LAM model.

$$\hat{Y}_i = b_0 + b_1 X_i + b_2 \text{Lag}_i + b_3 X_i \times \text{Lag}_i$$

In this model, X_i is the focal predictor or predictor of interest, Y is the outcome of interest, and Lag_i is the amount of time that elapses between the measurements of X_i and Y_i for individual i . The regression coefficient b_3 now describes the expected change in the *relationship* between X and Y for a one-unit change of Lag . The LAM approach offers more information regarding the way effects change with time and permits generalizing results to more than a single lag.

The present study examined the use of LAM models using two waves of data from the Early Head Start Research and Evaluation Study. This study was designed to have fixed lags, but due to the difficulty of measuring all individuals on the same lag, actual lags varied across individuals. Results from several analyses show that lag does in fact moderate several relationships between parent and child variables. These findings collectively support the utility of the LAM model as a way to limit the necessity of choosing a single lag and invite researchers to deepen their understanding of relationships by exploring the ways in which effects evolve over time.