

THE DEPARTMENT OF EDUCATIONAL PSYCHOLOGY'S RESEARCH METHODS,
MEASUREMENT, & EVALUATION (RMME) PROGRAMS AND THE DEPARTMENT OF
STATISTICS AT THE UNIVERSITY OF CONNECTICUT PRESENT:

BAYESIAN LONGITUDINAL (NON)LINEAR MEDIATION MODELS

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This study develops Bayesian (non)linear random effects mediation models (B(N)REMM) to directly estimate both linear and nonlinear longitudinal mediation effects, overcoming limitations in existing structural equation modeling (SEM) approaches. We propose two models: a linear trend model (L-BREMM) and a segmented trend model using linear-linear piecewise functions with random changepoints (P-BREMM). We also examine the impact of omitting confounders in (non)linear mediation models using data from the Early Childhood Longitudinal Study-Kindergarten Cohort (ECLS-K). Furthermore, we extend this framework to develop Bayesian (nonlinear) growth mixture mediation models (B(N)GMMM), which assess heterogeneous treatment effects (HTE) of the intervention variable X on the longitudinal dependent variable Y , mediated by longitudinal variable M . To evaluate the robustness of these methods, we conducted a comprehensive Monte Carlo simulation study for all the models.



Dr. Nidhi Kohli is the Royal and Virginia Anderson Professor of Quantitative Methods in Education in the Department of Educational Psychology at the University of Minnesota. She is also the Director of the Longitudinal Methods Development (LMD) Lab, where she and her students develop innovative statistical methodologies to analyze complex, nonlinear longitudinal data structures and assess model fit. Dr. Kohli's research has been supported by the National Institutes of Health (NIH), the National Science Foundation (NSF), and the Institute of Education Sciences (IES). She serves as the Editor for the Application and Case Studies section of *Psychometrika* and is a member of the editorial boards of *Journal of Educational and Behavioral Statistics*, *Multivariate Behavioral Research*, *Psychological Methods*, and *Educational and Psychological Measurement*.

Colloquium Access Information:

Friday, 05/02/25, 11am, ET

In Person: AUST 105

<https://tinyurl.com/rmme-Kohli>

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