Generalized Causal Mediation and Path Analysis

**Abstract:** Causal mediation analysis seeks to decompose the effect of a treatment or exposure into causally interpretable indirect (through a mediator) and direct effects. Recent work has extended causal mediation (or path) analysis to allow multiple contemporaneous mediators or a sequence of mediators. This talk presents further extensions of the causal mediation and path analysis methodology that handle a sequence (two stages) of mediators with multiple mediators at each stage. The new methodology allows for multiple types of outcomes following generalized linear models as well as unsaturated models and clustered data. Specific methodological and computational issues involve: 1) the use of an extended mediation formula, 2) choice of decomposition, and 3) sensitivity analyses. We describe the implementation of the extended methods via our new R package, gmediation, and provide an example involving data from a dental caries cohort study. Finally, possible future extensions will be discussed.