Visualizing Heterogeneity and Stability of Structural Equation Model Trees for Longitudinal Data

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Keywords: structural equation models, recursive partitioning, heterogeneity, longitudinal data

Structural equation model (SEM) trees combine the strengths of SEMs as a confirmatory multivariate analysis technique and recursive partitioning as a data-driven method to identify homogeneous groups of individuals. SEM trees find covariates and covariate interactions that predict group differences in SEM parameters by forming a tree structure that recursively separates a data set into subsets. While SEM trees are relatively easy to interpret, modifying a SEM based on a given tree can be challenging. Typically, SEM trees split the data by allowing all SEM parameters to vary between groups, making it hard to identify which parameters are affected by the covariate and which parameters are not. In this talk, we will demonstrate how SEM trees can be used to identify parameter heterogeneity in contemporary models for longitudinal data using the R package semtree. Furthermore, we will show novel graphical representations of parameter heterogeneity that may guide model modification. In addition, we present further descriptive measures and plots to assess the stability of covariate and cutpoint selection.