

Continuous-time SEM trees and forests: A score-based approach

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Purpose. Model-based recursive partitioning has been gaining traction in psychological research. The technique finds similar individuals in heterogeneous data sets and identifies the most important predictors of group differences in the process. In the past decade, structural equation models (SEM) have been almost entirely partitioned using the *semtree* software package, leading to so-called SEM trees and forests. Recently, score-based covariate testing has been implemented into *semtree*, drastically improving runtime and making the partitioning of more complex models possible. This talk shows how *semtree* can be leveraged to analyze between-individual heterogeneity in dynamic panel models, focusing on continuous-time (CT) models. Unlike discrete-time (DT) models, CT models adapt effortlessly to longitudinal data observed with different time intervals between measurements. Thus, our resulting approach, which we call score-based CTSEM trees, is well suited to deal with heterogeneity between individuals and measurement occasions and can be computed quickly.

Method. We linked *semtree* to the *ctsem* package, used to estimate CT models. Through a Monte Carlo study, we examined the performance of CT-SEM trees and forests under a broad set of empirically relevant conditions.

Results and discussion. We discuss the most relevant findings, elaborate on the strengths and limitations of the proposed algorithm, and comment on current challenges and future lines of research in the context of between-individual differences in change.