

***Modeling Heterogeneous Patterns and Pathways in Development:
What Have We Learned?***

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Theme:

The cornerstone of Developmental Science, and much of science in general, is the study of individual differences. A major challenge, however, is how to conceptualize the underlying structure of individual differences. Although in some cases individuals may simply differ by degrees along a continuum, in others cases there may exist hidden subgroups characterized by different patterns of behavior within a given developmental period and/or distinct developmental pathways over the long term. This emphasis on more qualitative differences can be found in a variety of areas of research but has been particularly prominent in the study of developmental psychopathology and health risk behaviors. To empirically study this type of population heterogeneity, researchers have increasingly turned to statistical models such as latent class/profile analysis, latent transition analysis, and mixture models, particularly growth mixture models. The use of these models has not gone without controversy, however, as evidenced by heated exchanges within the literature. The purpose of the current consortium series is to explore this topic further from an expressly pragmatic point of view. Specifically, the overarching question that we seek to address is, *What novel insights have we gained, or can we gain, about development from the application of these models of population heterogeneity?* Invited speakers will include scientists working at the intersection of theory and methods who have implemented or focused on these models in their research and who can therefore offer unique and diverse perspectives on their merits. The goal of the presentations is to foster an interactive discussion of the role of statistical models for population heterogeneity in Developmental Science.

Guiding Questions:

- What have you learned through the application of models for population heterogeneity that you would not have learned otherwise?
- How have applications of models for population heterogeneity advanced Developmental Science?
- How would you advise a colleague considering whether and how to use models for population heterogeneity in his or her research?
- To what extent do you think the groups identified with these techniques can be viewed as natural groups (e.g., like male and female) versus groups of convenience (e.g., like “short” and “tall”)?
- Do you think there is a good match between existing approaches for modeling population heterogeneity and theoretical models of development? If not, what are the discrepancies and how might we improve this match?