Introduction to latent variable mixture modeling

SPPAC 2018 Preconference Workshop (2.5 CEs)

Overall summary and relevance to conference theme:
Mixture modeling has become more prevalent in the pediatric psychology literature, and includes Latent Class, Latent Profile, and Growth Mixture Models. Building on last year's PRISM sponsored workshop, this year's workshop will focus on an in depth exploration of latent variable mixture models. Content covered will include types of research questions that can be addressed; assumptions and challenges; requirements for sample size and missing data; and hands-on examples during the workshop. Additional cautions regarding the use of mixture models will be addressed with an introduction to up-and-coming data science alternatives.

The overarching goal of this workshop is to familiarize participants with mixture modeling to guide the development of appropriate research questions, critically review research and gain a brief introduction to using these techniques with Mplus software. The workshop will provide an overview of relevant strategies and examples with small breakout sessions throughout for participants to complete a hands on demonstrations. Participants are encouraged to bring a laptop with Mplus installed (Demo version 8 is available free on https://www.statmodel.com/demo.html). Simple runs will be conducted in the workshop to familiarize participants with reading and interpreting output. Additionally, the workshop will conclude with a consultation period, during which attendees can trouble-shoot models, clarify output specific question and ask remaining questions of our experts. The aim of the workshop is to provide a conceptual overview of mixture modeling concepts along with a basic brief introduction using software specific walk-though. Additionally, a resource bank including sample data, syntax, example publications, and an annotated bibliography of resources will be made available for download by all workshop attendees. The target audience for this workshop would be those considering conducting mixture models in their own research who have not already conducted mixture modeling in their own research, consumers of research, journal reviewers, and students who are interested in the potential uses of mixture modeling. Some familiarity with SEM concepts is recommended. Experience with Mplus is helpful, but not required. To allow for greater attention to individual participants during the break-out and consultation sessions, an ideal maximum attendance would be 30 participants.

Based on the content of this talk, participants will be able to:

1. **Create hypotheses that are testable with mixture models**
2. **Describe which techniques are most appropriate for specific mixture models**
3. **Run a basic mixture model using sample data in Mplus and interpret output**
4. **Apply limitations of mixture modeling techniques to critical review of research**

Target Learner Level: Intermediate
Registration cap: 30 participants

Presenters: *Kristoffer Berlin, PhD, Betty Lai, PhD, David Barker, PhD, Christopher C. Cushing, PhD and Bridget Armstrong, PhD*

Dr. Armstrong is the chair elect of the PRISM SIG. Her expertise stems from advanced coursework in latent methods and training in intensive longitudinal methods. *Dr. Barker* is the chair of the PRISM SIG and has worked as a clinician, researcher, and statistician on multiple cross-disciplinary teams addressing a variety of mental health and medical outcomes. He has particular expertise in longitudinal modeling, psychometrics, and missing data approaches. *Dr. Berlin* (founding PRISM co-chair) has expertise in using latent variable modeling to inform and refine pediatric health interventions and assessments. *Dr. Cushing* is the past PRISM co-chair and has

experience fitting mixture models to both cross-sectional and intensive longitudinal data in his research program focused on adolescent health behavior. *Dr. Lai* is a biostatistician and child psychologist who teaches structural equation modeling. She has applied growth mixture modeling in her research on children's responses to disasters, and is a member of the PRISM SIG.

COI Statement: The speakers have no conflicts of interest to declare.

Session Date/Time: Thursday, April 5th, 2018; 12:30-3:00 PM