

# MODEL SELECTION IN MIXTURE MODELING

Emilie Shireman

Dr. Douglas Steinley, Dissertation Supervisor

## ABSTRACT

In the psychological sciences, mixture modeling (also referred to as latent class or latent profile analysis) is very commonly used to find sub-populations within a sample. However, the process by which researchers select a model (i.e., how many sub-populations and how many covariance parameters) is not standardized. Furthermore, many techniques that researchers use to select a model are ad hoc and have varied statistical theoretical support. This dissertation systematically examines three commonly used but not formally tested model selection heuristics for mixture modeling: (1) using several fit indices to collectively select a model, (2) using the difference in fit to differentiate “weak” versus “strong” evidence of one solution over another, and (3) examining the difficulty in convergence to indicate that a model is over-specified.