

# Bayesian model selection on the structural equation model: an application to a longitudinal myopia trial

Yi-Fu Wang\* (王義富) and Tsai-Hung Fan  
Graduate Institute of Statistics, National Central University

## Abstract

Structural equation models (SEMs) have been extensively used in behavioral, social, and psychological research to model relations between latent variables and observations. This article introduces a Bayesian model selection problem to the SEMs. To put the reasonable mixture prior on the specific parameter which describes the doubting relationship in the SEMs, the model posterior probability can be computed via the MCMC iterations and viewed as a Bayesian model selection criterion. An advantage of the method using mixture priors is that it can automatically identify the predictors having non-zero fixed effect coefficients or non-zero random effects variance in the MCMC procedure. The proposed methodologies are illustrated through a simulation study. Specifically, we will focus on the multidimensional longitudinal myopia data to reduce the dimensionality of the parameter space and to select the simpler model.