Advanced Methodology and Statistics Seminars

The AMASS program is a special series of offerings for applied researchers, presented by nationally renowned research scientists.

AMASS 1

Introduction to Structural Equation Modeling

Scott A. Baldwin, Brigham Young University

Structural equation modeling (SEM) is a general modeling framework that can incorporate both path models as well as measurement models (i.e., latent variables as both covariates and outcomes). It is particularly well-suited for examining theoretical models for relationships among psychological constructs, and is thus an important statistical tool for clinical researchers. This AMASS seminar will focus on introductory topics in SEM. Topics covered will include (a) the relationship between SEM and common statistical methods (e.g., least-squares regression, *t*-test); (b) using SEM to conduct a confirmatory factor analysis; and (c) using SEM to examine the relationship between latent variables. Throughout the presentation I will address additional key issues related to SEM, including model identification, model fit, data setup, missing data, and common pitfalls. All analyses will be illustrated using Mplus, and both Mplus syntax and example data will be made available. It is assumed that participants have a basic working knowledge of regression, ANOVA, and factor analysis.

You will learn:

- Common uses of structural equation modeling
- The issue of model identification and model fit
- To interpret the results of common structural equation models

Recommended Readings:

Brown, T. A. (2006). *Confirmatory factor analysis for applied research.* New York: Guilford Press.

Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York: Guilford Press.

AMASS 2
Advanced Topics in Structural Equation Modeling
Scott A. Baldwin, Brigham Young University

Structural equation modeling (SEM), a general modeling framework capable of fitting a wide range of models relevant to clinical research questions, has become a standard analytic tool for clinical researchers. This AMASS will cover advanced topics in SEM, including (a) evaluating measurement invariance across groups; (b) mediational models; and (c) computing power and sample sizes in SEM. During the discussion of these topics I will address other key issues related to these advanced SEM methods, including comparing the fit of nested models, multiple group analysis, and bootstrapping. All analyses will be illustrated using Mplus, and both Mplus syntax and example data will be made available. This seminar assumes participants either attended the introductory SEM AMASS or are familiar with that content, including basics of SEM, confirmatory factor analysis, and statistical power generally.

You will learn:

- The steps for evaluating measurement invariance
- To interpret a mediational model
- The process of using simulation to compute power

Recommended Readings:
Brown, T. A. (2006). *Confirmatory factor analysis for applied research.* New York: Guilford Press.
Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York: Guilford Press.