

Using *Mplus* to fit and test measurement and structural equation models

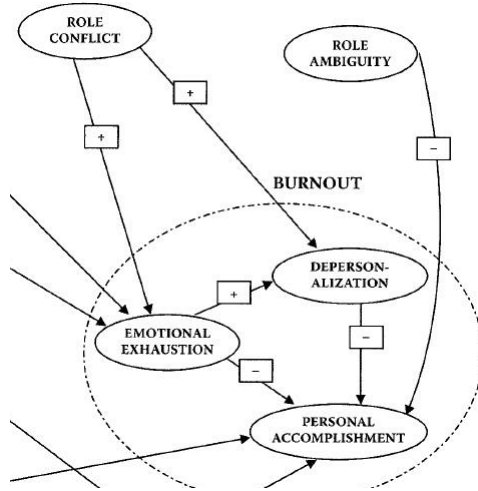
Video 6 A confirmatory factor analysis – measurement model

Department of Psychology, Faculty of Human Sciences, Macquarie University 2015

Topics

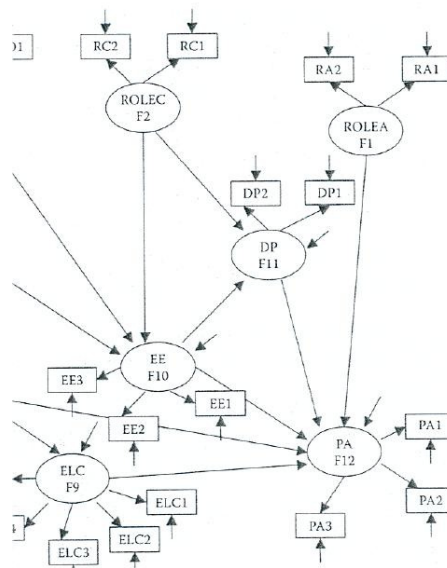
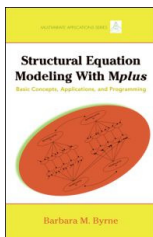
- Using *by* to specify latent variables
- Testing the measurement model
- Asking for modification indices
- Adding a covariance

Part of Byrne's path model



Part of Byrne's path model with latent variables

- RC Role Conflict
- RA Role Ambiguity
- DP Depersonalisation
- EE Emotional Exhaustion
- PA Personal Achievement



Modification Indices

MODINDICES

The MODINDICES option is used to request the following indices: modification indices, expected parameter change indices, and two types of standardized expected parameter change indices for all parameters in the model that are fixed or constrained to be equal to other parameters. Model modification indices are available for most models when observed dependent variables are continuous, binary, and ordered categorical (ordinal). The MODINDICES option is used with EFA to request modification indices and expected parameter change indices for the residual correlations. The MODINDICES option is not available for the `MODEL CONSTRAINT` command, `ALGORITHM=INTEGRATION`, `TYPE=TWOLEVEL` using the MUML estimator, the `BOOTSTRAP` option of the `ANALYSIS` command, and for models with more than one categorical latent variable.

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Modification Indices 2

As a statistician, I am deeply suspicious of modification indices. As a data analyst, however, I find they are really great.



Dag Sorböm, one of the authors of LISREL, quoted in Wolfle, 2003, p. 32, quoted by Keith, 2006, p. 321.

The Insidious Effects of Failing to Include Design-Driven Correlated Residuals in Latent-Variable Covariance Structure Analysis

David A. Cole, Jeffrey A. Ciesla, and James H. Steiger
Vanderbilt University

In practice, the inclusion of correlated residuals in latent-variable models is often regarded as a statistical sleight of hand, if not an outright form of cheating. Consequently, researchers have tended to allow only as many correlated residuals in their models as are needed to obtain a good fit to the data. The current article demonstrates that this strategy leads to the underinclusion of residual correlations that are completely justified on the basis of measurement theory and research design. In many designs, the absence of such correlations will not substantially harm the fit of the model; however, failure to include them can change the meaning of the extracted latent variables and generate potentially misleading results. Recommendations include (a) returning to the full multitrait–multimethod design when measurement theory implies the existence of shared method variance and (b) abandoning the evil-but-necessary attitude toward correlated residuals when they reflect intended features of the research design.