Modelling method effects as individual treatment effects
The method effect model - A new model for analyzing MTMM data
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Abstract
A new model for the analysis of multitrait-multimethod data is presented. Method effects are here not seen as residuals, but as effects of a treatment. They are defined as the differences in the true scores of two variables measuring the same trait with different methods. The new model allows the estimation of a) the mean method effect, b) the covariance of the method effect with the trait and c) the regression of the method effects on explanatory variables. Furthermore the model is invariant to the choice of the reference method. The new model is compared to the Correlated Trait Correlated Method minus one model (Eid, 2000; Eid et al., 2003).

The models

**ME model**
Method effect model
Pohl & Steyer (2005)

**CTC(M-1) model**
Correlated Trait Correlated Method minus one
Eid (2000) and Eid et al. (2003)

Application of the models

Comparison of the models

Advantages
Clear definition of latent variables
No convergence problems

Mean method effect
Covariation of method effect with the trait

Disadvantages
No additive decomposition of variance due to trait, method and error

Conclusion
The main idea of the ME model, that is different to all former models, is the idea of a method as a treatment. Method effects are therefore regarded as treatment effects. The ME model has the main advantage, that neither the model fit nor the variance and mean of the method effect changes with the choice of the reference method. As shown in the application, it is reasonable to assume mean method effects as well as covariation of the method effects with the trait. This can only be accounted for in the ME model.

References