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Fitting two-level structural equation models to meta-analytic data

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In a recent paper we presented a way of incorporating mean structures in meta-analytic structural equation modeling (MASEM). MASEM with means is applicable when the studies included in the meta-analysis used the same indicators, measured on the same scales. The meta-analytic data consist of the studies'covariance matrices and mean vectors. The MASEM then restricts the vector of meta-analyzed means and covariances to the structure of the hypothesized SEM, and quantifies the heterogeneity of the model-implied covariances and means across studies. In this presentation we explain how the heterogeneity matrix of the model implied means can be interpreted as what is often referred to as ΣBETWEEN in two-level SEM, while the model-implied pooled covariance matrix can be interpreted as ΣWITHIN. We illustrate how to fit SEM models to the heterogeneity matrix of the model implied means in the R-package OpenMx, and compare the results with those obtained from fitting two-level models directly on raw data in lavaan. These new modeling options have implications for meta-analytic research (e.g., extending the range of models that can be evaluated) as well as for two-level SEM (e.g., fitting models on summary statistics, flexibility in adding random effects)

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