

Likelihood ratio test with metaSEM

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```
library(metaSEM)

## Random-effects model
## run=FALSE: return a mx model
model0 <- meta(y=cbind(lifesat, lifecon),
              v=cbind(lifesat_var, inter_cov, lifecon_var), data=wvs94a,
              model.name="Random effects model", run=FALSE)
fit0 <- mxRun(model0)
summary(fit0)

## Summary of Random effects model
##
## free parameters:
##      name matrix row col   Estimate  Std.Error A lbound ubound
## 1 Intercept1  Inter    1    1 0.001349855 0.013856283
## 2 Intercept2  Inter    2    1 0.068825753 0.016819620
## 3   Tau2_1_1   Tau     1    1 0.004727256 0.001761564      0!
## 4   Tau2_2_1   Tau     1    2 0.003934366 0.001687060
## 5   Tau2_2_2   Tau     2    2 0.008413607 0.002537273 !    0!
##
## Model Statistics:
##      | Parameters | Degrees of Freedom | Fit (-2lnL units)
##      Model:           5                79                -161.9216
##      Saturated:       5                79                 NA
##      Independence:    4                80                 NA
## Number of observations/statistics: 42/84
##
## Information Criteria:
##      | df Penalty | Parameters Penalty | Sample-Size Adjusted
##      AIC:      -319.9216          -151.9216          -150.2549
##      BIC:      -457.1975          -143.2332          -158.8909
##      CFI: NA
##      TLI: 1    (also known as NNFI)
##      RMSEA: 0  [95% CI (NA, NA)]
##      Prob(RMSEA <= 0.05): NA
## To get additional fit indices, see help(mxRefModels)
## timestamp: 2019-08-03 08:33:07
## Wall clock time: 0.3410313 secs
## optimizer: SLSQP
## OpenMx version number: 2.13.2
## Need help? See help(mxSummary)

## Constraint: Intercept1 == 0.5*Intercept2
model1 <- mxModel(model0, mxConstraint(Intercept1 == 0.5*Intercept2))
fit1 <- mxRun(model1)
summary(fit1)

## Summary of Random effects model
```

```

##
## free parameters:
##      name matrix row col   Estimate   Std.Error A lbound ubound
## 1 Intercept1 Inter   1   1 0.032313893 0.009081928 !
## 2 Intercept2 Inter   2   1 0.064627787 0.018163856 !
## 3   Tau2_1_1   Tau   1   1 0.005535326 0.002067081   0!
## 4   Tau2_2_1   Tau   1   2 0.003798942 0.001825741
## 5   Tau2_2_2   Tau   2   2 0.008400663 0.002539219   0!
##
## Model Statistics:
##      | Parameters | Degrees of Freedom | Fit (-2lnL units)
##      Model:           5                80                -154.4863
##      Saturated:       5                80                NA
##      Independence:    4                81                NA
## Number of observations/statistics: 42/85
##
## Constraint 'untitled1' contributes 1 observed statistic.
##
## Information Criteria:
##      | df Penalty | Parameters Penalty | Sample-Size Adjusted
## AIC:   -314.4863          -144.4863          -142.8196
## BIC:   -453.4999          -135.7980          -151.4556
## CFI: NA
## TLI: 1 (also known as NNFI)
## RMSEA: 0 [95% CI (NA, NA)]
## Prob(RMSEA <= 0.05): NA
## To get additional fit indices, see help(mxRefModels)
## timestamp: 2019-08-03 08:33:07
## Wall clock time: 0.2834625 secs
## optimizer: SLSQP
## OpenMx version number: 2.13.2
## Need help? See help(mxSummary)
## Likelihood ratio test
anova(fit0, fit1)

##      base      comparison ep  minus2LL df      AIC
## 1 Random effects model      <NA> 5 -161.9216 79 -319.9216
## 2 Random effects model Random effects model 5 -154.4863 80 -314.4863
##      diffLL diffdf      p
## 1      NA      NA      NA
## 2 7.435275      1 0.006395759

```