

Comparing raw data and covariance matrix as inputs

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Contents

```
library(OpenMx)

set.seed(12345)

## Prepare some data
df <- MASS::mvrnorm(n=100, mu=c(0,0),
                    Sigma=matrix(c(1,.5,.5,1), ncol=2, nrow=2))
colnames(df) <- c("x", "y")
df <- data.frame(df)

## mxModel using the parameter estimates as starting values
matrA <- mxMatrix(type="Full", nrow=2, ncol=2,
                  free=c(F,F,T,F), values=0,
                  labels=c(NA,NA,"beta1",NA), byrow=TRUE, name="A")
matrS <- mxMatrix(type="Symm", nrow=2, ncol=2,
                  free=c(T,F,F,T), values=0,
                  labels=c("varx",NA,NA,"sigma2"), byrow=TRUE, name="S")
matrF <- mxMatrix(type="Iden", nrow=2, ncol=2, name="F")
matrM <- mxMatrix(type="Full", nrow=1, ncol=2,
                  free=c(T,T), values=0,
                  labels=c("meanx","beta0"), name="M")
expRAM <- mxExpectationRAM("A","S","F","M", dimnames=c("x","y"))
funML <- mxFitFunctionML()

## Raw data as inputs
uniModel1 <- mxModel("Simple Regression with raw data",
                    mxData(observed=df, type="raw"),
                    matrA, matrS, matrF, matrM, expRAM, funML)
fit1 <- mxRun(uniModel1)
summary(fit1, refModels=mxRefModels(uniModel1, run=TRUE))

## Summary of Simple Regression with raw data
##
## free parameters:
##   name matrix row col Estimate Std.Error A
## 1 beta1     A   2   1 0.6228242 0.08941293
## 2 varx      S   1   1 1.0750283 0.15203261
## 3 sigma2    S   2   2 0.8594463 0.12154510
## 4 meanx     M   1   x 0.1897309 0.10368377
## 5 beta0     M   1   y 0.1167947 0.09424580
```

```

##
## Model Statistics:
##           | Parameters | Degrees of Freedom | Fit (-2lnL units)
##   Model:           5                195                559.6634
##   Saturated:       5                195                559.6634
## Independence:     4                196                599.2192
## Number of observations/statistics: 100/200
##
## chi-square:   $\chi^2$  ( df=0 ) = 2.103206e-11,  p = 1
## Information Criteria:
##           | df Penalty | Parameters Penalty | Sample-Size Adjusted
## AIC:      169.6634                569.6634                570.3017
## BIC:      -338.3448                582.6893                566.8980
## CFI: 1
## TLI: 1 (also known as NNFI)
## RMSEA: 0 [95% CI (NA, NA)]
## Prob(RMSEA <= 0.05): NA
## timestamp: 2021-07-09 12:11:45
## Wall clock time: 0.06352687 secs
## optimizer: SLSQP
## OpenMx version number: 2.19.6
## Need help? See help(mxSummary)

```

```
## Covariance matrix as inputs
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```

uniModel2 <- mxModel("Simple Regression with covariance matrix",
                    mxData(observed=cov(df), type="cov",
                          means=apply(df, 2, mean),
                          numObs=nrow(df)),
                    matrA, matrS, matrF, matrM, expRAM, funML)
fit2 <- mxRun(uniModel2)
summary(fit2)

```

```
## Summary of Simple Regression with covariance matrix
```

```

##
## free parameters:
##   name matrix row col Estimate Std.Error A
## 1 beta1     A   2   1 0.6228242 0.08941250
## 2 varx      S   1   1 1.0750283 0.15203267
## 3 sigma2    S   2   2 0.8594463 0.12154419
## 4 meanx     M   1   x 0.1897309 0.10368348
## 5 beta0     M   1   y 0.1167947 0.09424551
##
## Model Statistics:
##           | Parameters | Degrees of Freedom | Fit (-2lnL units)
##   Model:           5                0                192.0880
##   Saturated:       5                0                192.0981
## Independence:     4                1                231.6539
## Number of observations/statistics: 100/5
##
## chi-square:   $\chi^2$  ( df=0 ) = -0.01006717,  p = 1
## Information Criteria:
##           | df Penalty | Parameters Penalty | Sample-Size Adjusted
## AIC:      -0.01006717                9.989933                10.628231
## BIC:      -0.01006717                23.015784                7.224528
## CFI: 1.000261

```

```
## TLI: 1 (also known as NNFI)
## RMSEA: 0 [95% CI (NA, NA)]
## Prob(RMSEA <= 0.05): NA
## timestamp: 2021-07-09 12:11:45
## Wall clock time: 0.04116583 secs
## optimizer: SLSQP
## OpenMx version number: 2.19.6
## Need help? See help(mxSummary)
```