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> ## Confirmatory Factor Analysis - USA - Robust Diagonally Weighted Least Squares Estimation ##

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>

> # Define two factor model

> Model\_1 <- 'IF =~ PANDEMIC\_FATIGUE\_1\_IF + PANDEMIC\_FATIGUE\_2\_IF + PANDEMIC\_FATIGUE\_3\_IF

+ BF =~ PANDEMIC\_FATIGUE\_4\_BF + PANDEMIC\_FATIGUE\_5\_BF + PANDEMIC\_FATIGUE\_6\_BF'

>

> # Fit two factor model - USA

> Fit\_1\_USA <- cfa(Model\_1, data = E, std.lv = TRUE, ordered = c("PANDEMIC\_FATIGUE\_1\_IF", "PANDEMIC\_FATIGUE\_2\_IF",

+ "PANDEMIC\_FATIGUE\_3\_IF", "PANDEMIC\_FATIGUE\_4\_BF",

+ "PANDEMIC\_FATIGUE\_5\_BF", "PANDEMIC\_FATIGUE\_6\_BF"))

> summary(Fit\_1\_USA, fit.measures=TRUE, standardized=TRUE)

lavaan 0.6-19 ended normally after 20 iterations

Estimator DWLS

Optimization method NLMINB

Number of model parameters 43

Number of observations 1584

Model Test User Model:

Standard Scaled

Test Statistic 56.225 133.719

Degrees of freedom 8 8

P-value (Chi-square) 0.000 0.000

Scaling correction factor 0.424

Shift parameter 0.988

simple second-order correction

Model Test Baseline Model:

Test statistic 26993.883 15445.563

Degrees of freedom 15 15

P-value 0.000 0.000

Scaling correction factor 1.748

User Model versus Baseline Model:

Comparative Fit Index (CFI) 0.998 0.992

Tucker-Lewis Index (TLI) 0.997 0.985

Robust Comparative Fit Index (CFI) 0.980

Robust Tucker-Lewis Index (TLI) 0.963

Root Mean Square Error of Approximation:

RMSEA 0.062 0.100

90 Percent confidence interval - lower 0.047 0.085

90 Percent confidence interval - upper 0.077 0.115

P-value H\_0: RMSEA <= 0.050 0.091 0.000

P-value H\_0: RMSEA >= 0.080 0.027 0.987

Robust RMSEA 0.090

90 Percent confidence interval - lower 0.075

90 Percent confidence interval - upper 0.107

P-value H\_0: Robust RMSEA <= 0.050 0.000

P-value H\_0: Robust RMSEA >= 0.080 0.867

Standardized Root Mean Square Residual:

SRMR 0.030 0.030

Parameter Estimates:

Parameterization Delta

Standard errors Robust.sem

Information Expected

Information saturated (h1) model Unstructured

Latent Variables:

Estimate Std.Err z-value P(>|z|) Std.lv Std.all

IF =~

PANDEMIC\_FATIG 0.921 0.007 125.030 0.000 0.921 0.921

PANDEMIC\_FATIG 0.894 0.008 113.303 0.000 0.894 0.894

PANDEMIC\_FATIG 0.765 0.012 64.435 0.000 0.765 0.765

BF =~

PANDEMIC\_FATIG 0.767 0.014 53.788 0.000 0.767 0.767

PANDEMIC\_FATIG 0.740 0.016 45.511 0.000 0.740 0.740

PANDEMIC\_FATIG 0.758 0.015 50.126 0.000 0.758 0.758

Covariances:

Estimate Std.Err z-value P(>|z|) Std.lv Std.all

IF ~~

BF 0.734 0.016 46.323 0.000 0.734 0.734

Thresholds:

Estimate Std.Err z-value P(>|z|) Std.lv Std.all

PANDEMIC\_FATIG -1.046 0.039 -27.075 0.000 -1.046 -1.046

PANDEMIC\_FATIG -0.478 0.033 -14.557 0.000 -0.478 -0.478

PANDEMIC\_FATIG -0.146 0.032 -4.620 0.000 -0.146 -0.146

PANDEMIC\_FATIG 0.206 0.032 6.476 0.000 0.206 0.206

PANDEMIC\_FATIG 0.608 0.034 18.046 0.000 0.608 0.608

PANDEMIC\_FATIG 1.014 0.038 26.575 0.000 1.014 1.014

PANDEMIC\_FATIG -1.126 0.040 -28.187 0.000 -1.126 -1.126

PANDEMIC\_FATIG -0.586 0.034 -17.460 0.000 -0.586 -0.586

PANDEMIC\_FATIG -0.230 0.032 -7.228 0.000 -0.230 -0.230

PANDEMIC\_FATIG 0.169 0.032 5.323 0.000 0.169 0.169

PANDEMIC\_FATIG 0.582 0.034 17.362 0.000 0.582 0.582

PANDEMIC\_FATIG 1.011 0.038 26.533 0.000 1.011 1.011

PANDEMIC\_FATIG -0.593 0.034 -17.655 0.000 -0.593 -0.593

PANDEMIC\_FATIG -0.006 0.032 -0.201 0.841 -0.006 -0.006

PANDEMIC\_FATIG 0.391 0.032 12.075 0.000 0.391 0.391

PANDEMIC\_FATIG 0.775 0.035 22.030 0.000 0.775 0.775

PANDEMIC\_FATIG 1.166 0.041 28.672 0.000 1.166 1.166

PANDEMIC\_FATIG 1.550 0.050 31.026 0.000 1.550 1.550

PANDEMIC\_FATIG -0.828 0.036 -23.150 0.000 -0.828 -0.828

PANDEMIC\_FATIG -0.320 0.032 -9.980 0.000 -0.320 -0.320

PANDEMIC\_FATIG 0.052 0.032 1.658 0.097 0.052 0.052

PANDEMIC\_FATIG 0.395 0.032 12.174 0.000 0.395 0.395

PANDEMIC\_FATIG 0.925 0.037 25.058 0.000 0.925 0.925

PANDEMIC\_FATIG 1.359 0.045 30.384 0.000 1.359 1.359

PANDEMIC\_FATIG -0.215 0.032 -6.777 0.000 -0.215 -0.215

PANDEMIC\_FATIG 0.355 0.032 11.028 0.000 0.355 0.355

PANDEMIC\_FATIG 0.717 0.035 20.702 0.000 0.717 0.717

PANDEMIC\_FATIG 1.057 0.039 27.239 0.000 1.057 1.057

PANDEMIC\_FATIG 1.395 0.046 30.588 0.000 1.395 1.395

PANDEMIC\_FATIG 1.761 0.058 30.584 0.000 1.761 1.761

PANDEMIC\_FATIG -0.516 0.033 -15.594 0.000 -0.516 -0.516

PANDEMIC\_FATIG 0.035 0.032 1.105 0.269 0.035 0.035

PANDEMIC\_FATIG 0.417 0.033 12.821 0.000 0.417 0.417

PANDEMIC\_FATIG 0.817 0.036 22.919 0.000 0.817 0.817

PANDEMIC\_FATIG 1.298 0.043 29.958 0.000 1.298 1.298

PANDEMIC\_FATIG 1.691 0.055 30.857 0.000 1.691 1.691

Variances:

Estimate Std.Err z-value P(>|z|) Std.lv Std.all

.PANDEMIC\_FATIG 0.151 0.151 0.151

.PANDEMIC\_FATIG 0.200 0.200 0.200

.PANDEMIC\_FATIG 0.415 0.415 0.415

.PANDEMIC\_FATIG 0.412 0.412 0.412

.PANDEMIC\_FATIG 0.453 0.453 0.453

.PANDEMIC\_FATIG 0.426 0.426 0.426

IF 1.000 1.000 1.000

BF 1.000 1.000 1.000

> semPaths(Fit\_1\_USA, intercepts = FALSE, thresholds = FALSE, what="std",edge.label.cex=1,edge.color="black",sizeMan=8,sizeLat=12,fade=FALSE,esize=1,asize=2, label.cex = 1.2,

+ nodeLabels = (c("Item 1", "Item 2", "Item 3", "Item 4", "Item 5", "Item 6", "Information\nfatigue", "Behavioral\nfatigue")),

+ color = list(lat = rgb(255,250,205, maxColorValue = 255), man = rgb(224,255,255, maxColorValue = 255)), mar=c(7, 7, 7,7))

>

> # Define higher order model

> Model\_2 <- 'IF =~ PANDEMIC\_FATIGUE\_1\_IF + PANDEMIC\_FATIGUE\_2\_IF + PANDEMIC\_FATIGUE\_3\_IF

+ BF =~ PANDEMIC\_FATIGUE\_4\_BF + PANDEMIC\_FATIGUE\_5\_BF + PANDEMIC\_FATIGUE\_6\_BF

+ PF =~ a\*IF + a\*BF'

>

> # Fit higher order model

> Fit\_2\_USA <- cfa(Model\_2, data = E, std.lv = TRUE, ordered = c("PANDEMIC\_FATIGUE\_1\_IF", "PANDEMIC\_FATIGUE\_2\_IF",

+ "PANDEMIC\_FATIGUE\_3\_IF", "PANDEMIC\_FATIGUE\_4\_BF",

+ "PANDEMIC\_FATIGUE\_5\_BF", "PANDEMIC\_FATIGUE\_6\_BF"))

> summary(Fit\_2\_USA, fit.measures=TRUE, standardized=TRUE)

lavaan 0.6-19 ended normally after 27 iterations

Estimator DWLS

Optimization method NLMINB

Number of model parameters 44

Number of equality constraints 1

Number of observations 1584

Model Test User Model:

Standard Scaled

Test Statistic 56.225 133.719

Degrees of freedom 8 8

P-value (Chi-square) 0.000 0.000

Scaling correction factor 0.424

Shift parameter 0.988

simple second-order correction

Model Test Baseline Model:

Test statistic 26993.883 15445.563

Degrees of freedom 15 15

P-value 0.000 0.000

Scaling correction factor 1.748

User Model versus Baseline Model:

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Robust Tucker-Lewis Index (TLI) 0.963

Root Mean Square Error of Approximation:

RMSEA 0.062 0.100

90 Percent confidence interval - lower 0.047 0.085

90 Percent confidence interval - upper 0.077 0.115

P-value H\_0: RMSEA <= 0.050 0.091 0.000

P-value H\_0: RMSEA >= 0.080 0.027 0.987

Robust RMSEA 0.090

90 Percent confidence interval - lower 0.075

90 Percent confidence interval - upper 0.107

P-value H\_0: Robust RMSEA <= 0.050 0.000

P-value H\_0: Robust RMSEA >= 0.080 0.867

Standardized Root Mean Square Residual:

SRMR 0.030 0.030

Parameter Estimates:

Parameterization Delta

Standard errors Robust.sem

Information Expected

Information saturated (h1) model Unstructured

Latent Variables:

Estimate Std.Err z-value P(>|z|) Std.lv Std.all

IF =~

PANDEMIC\_F 0.475 0.014 33.105 0.000 0.921 0.921

PANDEMIC\_F 0.461 0.014 33.724 0.000 0.894 0.894

PANDEMIC\_F 0.394 0.012 32.144 0.000 0.765 0.765

BF =~

PANDEMIC\_F 0.395 0.014 28.873 0.000 0.767 0.767

PANDEMIC\_F 0.381 0.013 28.820 0.000 0.740 0.740

PANDEMIC\_F 0.391 0.014 28.760 0.000 0.758 0.758

PF =~

IF (a) 1.663 0.068 24.609 0.000 0.857 0.857

BF (a) 1.663 0.068 24.609 0.000 0.857 0.857

Thresholds:

Estimate Std.Err z-value P(>|z|) Std.lv Std.all

PANDEMIC\_FATIG -1.046 0.039 -27.075 0.000 -1.046 -1.046

PANDEMIC\_FATIG -0.478 0.033 -14.557 0.000 -0.478 -0.478

PANDEMIC\_FATIG -0.146 0.032 -4.620 0.000 -0.146 -0.146

PANDEMIC\_FATIG 0.206 0.032 6.476 0.000 0.206 0.206

PANDEMIC\_FATIG 0.608 0.034 18.046 0.000 0.608 0.608

PANDEMIC\_FATIG 1.014 0.038 26.575 0.000 1.014 1.014

PANDEMIC\_FATIG -1.126 0.040 -28.187 0.000 -1.126 -1.126

PANDEMIC\_FATIG -0.586 0.034 -17.460 0.000 -0.586 -0.586

PANDEMIC\_FATIG -0.230 0.032 -7.228 0.000 -0.230 -0.230

PANDEMIC\_FATIG 0.169 0.032 5.323 0.000 0.169 0.169

PANDEMIC\_FATIG 0.582 0.034 17.362 0.000 0.582 0.582

PANDEMIC\_FATIG 1.011 0.038 26.533 0.000 1.011 1.011

PANDEMIC\_FATIG -0.593 0.034 -17.655 0.000 -0.593 -0.593

PANDEMIC\_FATIG -0.006 0.032 -0.201 0.841 -0.006 -0.006

PANDEMIC\_FATIG 0.391 0.032 12.075 0.000 0.391 0.391

PANDEMIC\_FATIG 0.775 0.035 22.030 0.000 0.775 0.775

PANDEMIC\_FATIG 1.166 0.041 28.672 0.000 1.166 1.166

PANDEMIC\_FATIG 1.550 0.050 31.026 0.000 1.550 1.550

PANDEMIC\_FATIG -0.828 0.036 -23.150 0.000 -0.828 -0.828

PANDEMIC\_FATIG -0.320 0.032 -9.980 0.000 -0.320 -0.320

PANDEMIC\_FATIG 0.052 0.032 1.658 0.097 0.052 0.052

PANDEMIC\_FATIG 0.395 0.032 12.174 0.000 0.395 0.395

PANDEMIC\_FATIG 0.925 0.037 25.058 0.000 0.925 0.925

PANDEMIC\_FATIG 1.359 0.045 30.384 0.000 1.359 1.359

PANDEMIC\_FATIG -0.215 0.032 -6.777 0.000 -0.215 -0.215

PANDEMIC\_FATIG 0.355 0.032 11.028 0.000 0.355 0.355

PANDEMIC\_FATIG 0.717 0.035 20.702 0.000 0.717 0.717

PANDEMIC\_FATIG 1.057 0.039 27.239 0.000 1.057 1.057

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PANDEMIC\_FATIG 1.761 0.058 30.584 0.000 1.761 1.761

PANDEMIC\_FATIG -0.516 0.033 -15.594 0.000 -0.516 -0.516

PANDEMIC\_FATIG 0.035 0.032 1.105 0.269 0.035 0.035

PANDEMIC\_FATIG 0.417 0.033 12.821 0.000 0.417 0.417

PANDEMIC\_FATIG 0.817 0.036 22.919 0.000 0.817 0.817

PANDEMIC\_FATIG 1.298 0.043 29.958 0.000 1.298 1.298

PANDEMIC\_FATIG 1.691 0.055 30.857 0.000 1.691 1.691

Variances:

Estimate Std.Err z-value P(>|z|) Std.lv Std.all

.PANDEMIC\_FATIG 0.151 0.151 0.151

.PANDEMIC\_FATIG 0.200 0.200 0.200

.PANDEMIC\_FATIG 0.415 0.415 0.415

.PANDEMIC\_FATIG 0.412 0.412 0.412

.PANDEMIC\_FATIG 0.453 0.453 0.453

.PANDEMIC\_FATIG 0.426 0.426 0.426

.IF 1.000 0.266 0.266

.BF 1.000 0.266 0.266

PF 1.000 1.000 1.000