MGCFA Class Assignment

Program a multigroup model and calculate latent means.

DASS – Depression, Anxiety, and Stress Scale

* Depression: Questions 3, 5, 10, 13, 16, 17, 21
* Anxiety: Questions 2, 4, 7, 9, 15, 19, 20
* Stress: 1, 6, 8, 11, 12, 14, 18

Test gender as the grouping variable:

* 1 = female
* 2 = male

Add partial invariance to your table when necessary.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Model | X2 (df) | RMSEA | SRMR | CFI | Change CFI | Different? |
| All Groups | (186)  547.099 | .069 | .051 | 0.896 | n/a | n/a |
| Female | (186)  485.486 | .081 | .062 | .834 | n/a | n/a |
| Male | (186)  474.099 | .097 | .066 | .849 | n/a | n/a |
| Configural  Invariance | (372)  959.585 | .088 | .063 | .842 | n/a | n/a |
| Metric Invariance | (390)  995.807 | .087 | .073 | .837 | .005 | NO |
| Scalar Invariance | (408)  1043.341 | .087 | .076 | .829 | .008 | NO |
| Strict Invariance | (429)  1112.158 | .088 | .080 | .816 | .013 | YES |
| Q11 | (428)  1097.951 | .087 | .080 | .819 | .009 | NO |

Fit measures:

cfi rmsea cfi.delta rmsea.delta

fit.configural 0.842 0.088 NA NA

fit.loadings 0.837 0.087 0.005 0.001

fit.intercepts 0.829 0.087 0.008 0.000

fit.residuals 0.816 0.088 0.013 0.001

fit.means 0.810 0.089 0.006 0.001

cfi rmsea cfi.delta rmsea.delta

fit.configural 0.842 0.088 NA NA

fit.loadings 0.837 0.087 0.005 0.001

fit.intercepts 0.829 0.087 0.008 0.000

fit.residuals 0.819 0.087 0.009 0.000

fit.means 0.814 0.088 0.006 0.001

What pieces would you freely estimate to get to partial invariance?

Q11 residuals

Interpret your findings – are the groups invariant? Did you see a break down between groups anywhere? What does that break down imply?

Pretty much yes

Strict

Q11 residuals

Male .256

Female .491

Include the latent means and standard deviations for your groups.

Depression:

Two Sample t-test

data: menlatentD and womenlatentD

t = 2.7642, df = 409, p-value = 0.005964

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

0.04221245 0.25007268

sample estimates:

mean of x mean of y

1.567754 1.421611

Anxiety

Two Sample t-test

data: menlatentA and womenlatentA

t = 0.37504, df = 409, p-value = 0.7078

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-0.09747976 0.14344385

sample estimates:

mean of x mean of y

1.808062 1.785080

Two Sample t-test

data: menlatentS and womenlatentS

t = -1.1457, df = 409, p-value = 0.2526

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-0.21465329 0.05657296

sample estimates:

mean of x mean of y

2.027127 2.106167

> sd(menlatentD)

[1] 0.6266967

> sd(womenlatentD)

[1] 0.4448993

> sd(menlatentA)

[1] 0.6092565

> sd(womenlatentA)

[1] 0.6087944

> sd(menlatentS)

[1] 0.7273082

> sd(womenlatentS)

[1] 0.6561585

Use a t-test to determine if they are significantly different. Include Cohen’s d for your test.

See above.

Depression

Cohen's d

d estimate: 0.2781518 (small)

95 percent confidence interval:

inf sup

0.07893555 0.47736802

Anxiety

Cohen's d

d estimate: 0.0377386 (negligible)

95 percent confidence interval:

inf sup

-0.1605707 0.2360479

Stress

Cohen's d

d estimate: -0.1152903 (negligible)

95 percent confidence interval:

inf sup

-0.31374158 0.08316105