

Psychometrics - Hw7 Solutions

#1

a) Gordon's Self-Concept Inventory: 0.70, 0.64, 0.73, 0.66
Piers-Harris Inventory: 0.80, 0.79, 0.73, 0.80

b) 0.78, 0.59, 0.55, 0.80

c) Physical appearance & Academic adequacy / School studies

d/e) most of them are above 0.5, which is relatively large. HM & HH coefficients should be small, indicating good discriminant validity. Thus, these traits' construct validity is questionable.

f) Recall that

$$r_{T_x T_y} = \frac{r_{xy}}{\sqrt{r_{xx}} \sqrt{r_{yy}}}$$

So:

(1) phys appearance: $0.78 = \frac{r_{xy}}{\sqrt{0.70} \sqrt{0.80}} \rightarrow r_{xy} = 0.58$

(2) social / popularity: $0.59 = \frac{r_{xy}}{\sqrt{0.64} \sqrt{0.79}} \rightarrow r_{xy} = 0.42$

(3) Interp / anxiety: $0.55 = \frac{r_{xy}}{\sqrt{0.73} \sqrt{0.73}} \rightarrow r_{xy} = 0.40$

(4) Acad / school: $0.80 = \frac{r_{xy}}{\sqrt{0.66} \sqrt{0.80}} \rightarrow r_{xy} = 0.58$

#2

(a)

\hat{T}_1

0.9

\hat{T}_3

\hat{T}_2

0.8

\hat{T}_4

Two factors

Tests 1 & 3 load onto
Factor 1

Tests 2 & 4 load onto
Factor 2

(b)

\hat{T}_1

0.8

\hat{T}_2

0.9

\hat{T}_3

0.9

\hat{T}_4

Two factors

Tests 1, 2, 4 load onto
Factor 1

Test 3 loads onto Factor 2

(c)

\hat{T}_1

0.8

\hat{T}_2

0.9

\hat{T}_3

0.9

\hat{T}_4

0.9

\hat{T}_5

Two factors

Tests 1, 2, 5 load onto
Factor 1

Tests 3, 4 load onto
Factor 2