PSYC 4301: Psychological Tests and Measurements

Tarleton State University | Homework 7 | Spring 2020

1. The following multitrait-multimethod matrix was constructed from data presented in Marx and Winne (1978). The authors of the article report that the correlations have been corrected for attenuation. (Note that in this study, the authors have considered subscales as traits and the different self-concept instruments as "methods" for measurement of these traits.)

	Method A				Method B			
A. Gordon's Self-Concept Inventory	1	2	3	4	1	2	3	4
1. Phys. Appear.	.70							
2. Social	.64	.64						
3. Interpersonal Adeq.	.97	.75	.73					
4. Academic Adeq.	.60	.88	.92	.66				
B. Piers-Harris Inventory								
1. Phys. Appear.	.78	.66	.63	.50	.80			
2. Popularity	.59	.59	.62	.42	.87	.79		
3. Anxiety	.53	.57	.55	.52	.72	.70	.73	
4. School Studies	.59	.81	.68	.80	.90	.86	.75	.80

   (a) What are the reliability estimates for each of the four subscales on each instrument?

   (b) What are the convergent validity coefficients?

   (c) Which two of the four "traits" appear to have the greatest convergent validity?

   (d) Which heterotrait-monomethod coefficients raise questions about the construct validity of the physical appearance trait? Explain.

   (e) Which heterotrait-heteromethod coefficients raise questions about the construct validity of the academic/school studies trait? Explain.

   (f) (Bonus) Suppose the researchers had instead chosen to report the validity coefficients without correcting for attenuation. What would these values have been for the convergent validity coefficients?

2. Perform "eyeball" factor analyses of the following correlation matrices. State how many factors are present, and determine which tests load on each factor.

(a)

	Test 1	Test 2	Test 3	Test 4
Test 1	1.0	.0	.9	.0
Test 2	.0	1.0	.0	.8
Test 3	.9	.0	1.0	.0
Test 4	.0	.8	.0	1.0

(b)

	Test 1	Test 2	Test 3	Test 4
Test 1	1.0	.8	.1	.9
Test 2	.8	1.0	.2	.9
Test 3	.1	.2	1.0	.1
Test 4	.9	.9	.1	1.0

(c)

	Test 1	Test 2	Test 3	Test 4	Test 5
Test 1	1.0	.8	.1	.2	.9
Test 2	.8	1.0	.2	.2	.9
Test 3	.1	.2	1.0	.9	.1
Test 4	.2	.2	.9	1.0	.1
Test 5	.9	.9	.1	.1	1.0