PSYC 4301: Psychological Tests and Measurements

Tarleton State University — Homework 6

1. Suppose we want to compare two tests that could potentially be used to measure mathematics anxiety: Test A, which has an estimated reliability of 0.90, and Test B, which has an estimated reliability of 0.72. To estimate their validity, we are using a standardized math assessment (which has reliability 0.81) as the criterion variable. We find that the correlation of Test A with the math assessment is 0.45, and the correlation of Test B with the math assessment is 0.54.

   - Correct the two validity coefficients for attenuation – that is, compute the correlations between the true scores of Tests A and B with the true score of the math assessment.
   - Which of the two tests (Tests A and B) would be better to use for predicting the criterion variable? Explain.

2. Test score X has a reliability of 0.75. Criterion Y has a reliability of 0.80. The observed validity coefficient is 0.60. If you could increase the reliability of your measurements, how big could your validity coefficient be?

3. A predictor and a criterion have a correlation of 0.62. If the reliabilities of the predictor and criterion are 0.73 and 0.82, respectively, what is the estimated correlation between the predictor observed score and the criterion true score?

4. For the data in the following table:

Score	Successful	Unsuccessful
10	8	0
9	7	1
8	12	2
7	9	3
6	4	2
5	8	4
4	2	3
3	1	6
2	0	8
1	0	19

   (a) What is the base rate?

   (b) What cut score yields the best hit rate? What is the best hit rate?