

PSYC 4301: Psychological Tests and Measurements

Tarleton State University

Homework

Spring 2020

1. Given the assumptions of classical test theory, answer the following:
 - (a) If $X = 10$ and $E = 2$, what does T equal?
 - (b) If $\sigma_T^2 = 5$ and $\sigma_X^2 = 10$, what does σ_E^2 equal?
 - (c) If $\sigma_E^2 = 3$ and $\sigma_X^2 = 9$, what does ρ_{XT}^2 equal?
 - (d) If $\sigma_E^2 = 1$ and $\sigma_X^2 = 4$, what does ρ_{XT}^2 equal?
2. Suppose $\rho_{XX'} = 0.8$ and the observed test-score variance is 25.
 - (a) Compute and interpret the values of σ_T^2/σ_X^2 , σ_E^2/σ_X^2 , ρ_{XE}^2 , and ρ_{XT}^2
 - (b) Compute the true-score variance and the error variance.
3. If $\rho_{XX'} = 0.6$ and $\sigma_X^2 = 25$, what are the true-score variance, the error variance, and the standard error of measurement?