

Reliability Homework
(20 pts) Due 3/9/06

The data bellow represent the pool of responses obtained by giving the same test to a group of participants with a 3 month delay between presentations.

Time 1

Subject #	Question 1	Question 2	Question 3	Question 4	Question 5	Subject Mean (X_1)
1	2	2	1	1	3	1.8
2	5	5	4	3	1	3.6
3	6	3	1	5	2	3.4

Time 2

Subject #	Question 1	Question 2	Question 3	Question 4	Question 5	Subject Mean (X_2)
1	2	2	1	1	3	1.8
2	1	1	1	3	1	1.4
3	3	7	4	5	2	4.2

- Calculate the test-retest reliability between X_1 and X_2 .
- What % of the variance is attributable to True Score and what % is attributable to error?
- Calculate the Split-Half reliability between Odd and Even items at time 1. Ignore the fact that there are more odd items than there are even items
- Use the Spearman-Brown Prophecy formula to estimate the reliability for the whole test.
- Calculate the Split-Half reliability between the End Items (1 and 5) and the Middle Items (2, 3, and 4) for Time 2. Why are these values different?

The data bellow represent the pool of responses obtained by giving an measure of South Park Knowledge to a group of participants. Each item is scored as correct or incorrect and it is assumed that each item is of equal difficulty. Items are as follows:

- Who Invented Cheezy Poofs? (A: Edward H. Cheezy)
- What is Chef's real name? (A: Lavar Burton)
- Why shouldn't you do drugs? (A: Because if you do drugs, you're a hippy. And, Hippies suck)
- Will a Pig and Elephant's DNA splice? (A: Pig and Elephant DNA just won't splice)
- Who Shot Mr. Burns (A: Maggie Simpson)

	Quest 1	Quest 2	Quest 3	Quest 4	Quest 5	Subject Total (X)
Kyle	1	0	1	1	1	4
Stan	0	1	1	0	1	3
Kenny	1	0	1	0	1	3
Eric	0	1	0	1	0	2
Butters (aka: Prof. Chaos)	0	0	1	0	1	2

5. Estimate the Reliability of this Exam using KR21.

6. Estimate the Reliability of this Exam using KR20.

7. Using the Standard Deviation calculated in Problem 5, and the Reliability Coefficient calculated in Problem 5, calculate the Standard Error of the Measure for the 68% Confidence Level, 95% Confident Level, and the 99% Confidence Level.

8. Two raters have coded 51 participant's behavior using a 4 point rating system. Use Cohen's Kappa to estimate the inter-rater reliability. (The data appear below)

	Rater 1 1	Rater 1 2	Rater 1 3	Rater 1 4
Rater 2 1	n = 8	n = 2	n = 1	n = 2
Rater 2 2	n = 3	n = 6	n = 0	n = 1
Rater 2 3	n = 2	n = 1	n = 8	n = 4
Rater 2 4	n = 2	n = 1	n = 1	n = 9