EDUCATIONAL MEASUREMENT (EPSY 6303) - Vinh Nguyen (vinh.nguyen@ttu.edu)

ASSIGNMENT 2

1. Please apply the basic equation underlying classical test theory to the following data in order to calculate the observed scores for each individual.

James: T= 108, random error= -10, systematic error= 5

Tyler: T= 103, random error= 7, systematic error= 5

Susan: T= 106, random error= 3, systematic error= 5

Melissa: T= 101, random error= 0, systematic error= 5

Answer:

	T	Random Error	System Error	X = T + R + S
James	108	-10	5	103
Tyler	103	7	5	115
Susan	106	3	5	114
Melissa	101	0	5	106

James: X = 108 -10 + 5 = 103

Tyler: X = 103 + 7 + 5 = 115

Susan: X = 106 + 3 + 5 = 114

Melissa: X = 101 + 0 + 5 = 106

2. Calculate the mean and standard deviation of the observed scores for this group

	T	Random Error	System Error	X = T + R + S	X = T+R
James	108	-10	5	103	98
Tyler	103	7	5	115	110
Susan	106	3	5	114	109
Melissa	101	0	5	106	101
Mean	104.5			109.5	104.5
Variance	9.667			35	35
Std	3.109			5.916	5.916

3. **Now apply the classical test theory equation to the 4 examinees above, but assume that systematic error is 0 for each**

James: X = 108 -10 = 98

Tyler: X = 103 + 7 = 110

Susan: X = 106 + 3 = 109

Melissa: X = 101 + 0 = 101

4. **Calculate the mean and standard deviation of the observed scores based on your results in number 3**

Mean = 104.5

Variance = 35

Standard Deviation: 5.9

5. **Based on the results above, what can you conclude is the impact of systematic error on the mean and standard deviation?**

The presence of systematic error yielded a **higher** mean, but **<u>no difference</u>** in the standard deviation

6. **When administering a classroom exam, what steps should a teacher take to reduce the impact of random error on the scores? What should she/he do to reduce the impact of systematic error on the scores?**

To reduce the impact of random error on the score, the teacher should minimize the factors that will affect student's performance such as time of day for the test (not too early or late because students may feel hungry, or sleepy, etc), environmental conditions such as lighting, atmosphere, noisy, etc leading to unfocus.

To reduce the impact of systematic error on the score, the teacher should carefully revise the questions to make sure that there is no bias, question covers materials, understandable.