

Assignment 1

(Due: February 28, in lecture)

Consider the following set of items:

“How true is this of you ?”

1. I make friends easily.
2. I am always on the go.
3. I tend to cry easily.
4. I am easily frightened.
5. I like to be off and running as soon as I wake up in the morning.
6. I tend to be shy.
7. I like to keep busy all of the time.
8. I tend to be somewhat emotional.
9. I like to be with others.
10. I like to be independent of people.
11. I get upset easily.
12. I am very energetic and always like to take risky activities.
13. Compared to other students at the University of Illinois, I tend to be easily irritated.
14. I usually prefer to do things alone.
15. I prefer quiet, inactive pastimes to more active ones.

Five of the above items measure Activity Level, five measure Sociability, and five measure Emotionality.

Section 1 (Chapter 2)

1. Inspect the items and try to identify which items measure each attribute.
2. Consider the seven general guidelines for item writing (p.26 text). Make a general statement about how well these items conform to those guidelines. Are there specific items that seem to be violate any of the guidelines? If so, which ones, and how would you improve them?
3. Four of the items need to be “reversed” scored before subscale scores can be formed. What are they?
4. What is/are the advantage to including reverse-score items in a scale?
5. The response options for the 15 items are:

1 ----- 2 ----- 3 ----- 4 ----- 5
Hardly at all Always true

- What type of items are these?
- Give one advantage or disadvantage of using an odd number of response options for these items.
- Give one advantage or disadvantage of using a greater number (>5) of response options for these items.
- Give one advantage or disadvantage of using dichotomous response options for these items.
- Comment on the response option category labels. How can they be improved?

Section 2 (Chapter 3)

Unless specified, use n as divisor for the variance and covariance computation.

The following are six respondents to each of the five items from the Emotionality subscale:

Respondent	Item				
	1	2	3	4	5
1	5	2	5	5	3
2	4	3	3	3	2
3	3	3	4	2	3
4	2	2	2	2	2
5	1	5	5	5	1
6	1	1	1	3	4

6. Compute each respondent's subscale total and mean.
7. Refer back to the response option category labels and each respondent's mean item score for the subscale. Interpret or comment on each respondent's response pattern (e.g. Is the respondent emotionally stable? Is the response pattern consistent?)
8. Find the relative frequencies associated with the response options (1-5) for each item.
9. Compute sample item totals, means, variances and covariances.
10. Using results from (9), find sample mean and variance for the Emotionality subscale score.
11. Now the responses are dichotomized. All responses smaller than four are coded as zero while others are coded as 1.
 - a. Reconstruct the response table.
 - b. Compute the item difficulty estimates. Which item is "most difficult" ?
 - c. Find the variance and covariance for items 1 and 2.

Section 3 (Chapter 4)

12. What score in the above set of items (5 Emotionality subscale items) is equivalent to the scale (a) floor and (b) ceiling?
13. Would you say this survey uses an ordinal or an interval scale of measurement? Explain.
14. Would it be appropriate to say that someone with an Emotionality subscale score of 20 has twice the amount of the trait as someone who has a subscale score of 10. Why or why not?