

# Assignment 2

Due: Friday, February 22, 2008

## Dataset

The data for this assignment is provided for you in “assignment2a.sav” and “assignment2b.sav”. In the former file, each participant used a different visualization. In the latter, each participant used all three.

## SPSS Hints

- The factorial between-participants ANOVA is found in SPSS under:
  - “Analyze → General Linear Model → Univariate...”
- The factorial within-participants or mixed ANOVA is found in SPSS under:
  - “Analyze → General Linear Model → Repeated Measures...”
- There are two ways to show post-hoc analysis for a main effect:
  1. Choose the “Options...” button and, in the dialog, select (using the arrow button) the variables you wish to post-analyse and check the “Compare main effects” checkbox.
  2. Choose the “Post-hoc...” button and move the factors over that you wish to post-analyse (selecting one of the options below, e.g. LSD, Bonferroni).
- There is only one way (that I know of) to show a post-hoc for an interaction:
  - Perform step 1 above for the interaction
  - Choose the “Paste” button to paste the syntax
  - You should see a line in the syntax like this:

```
/EMMEANS = TABLES (Factor1*Factor2)
```
  - Add the instruction to perform a post-hoc analysis at the end of this line so it reads:

```
/EMMEANS = TABLES (Factor1*Factor2) COMPARE (Factor1) ADJ (LSD)
```
  - You can choose to add either ‘Factor1’ or ‘Factor2’ inside the COMPARE command to reverse which factor is held constant.
  - You can then run this test on your dataset by clicking the run button (looks like a play button on a VCR) or selecting “Run → Current”

## Questions

Note: the data in both files is slightly modified from the data from Assignment 1. The dependent and independent variables remain the same.

1. What design was used for the data in “assignment2a.sav”?
2. What design was used for the data in “assignment2b.sav”?
3. Perform the appropriate factorial ANOVA for each set of data. Be sure to select all of the options that will allow you to look at descriptive statistics, as well as to perform post-hoc analysis on each of the main effects and interactions.
4. Note: you should be able to complete this question by copying the values from the output of SPSS.
  - a. Create a two-dimensional table where the rows represent the levels of the ‘Gender’ factor and the columns represent the levels of the ‘Visualization’ factor. Fill in each cell in the table with the mean for that combination of levels for both factors.
  - b. Add an extra column and row to the table and fill each cell with the mean for the level of each factor.
  - c. Add the grand mean in the cell that remains empty.
5. For the data in “assignment2a.sav”:
  - a. Which main effects were significant?
  - b. Write a sentence to describe the main effects (significant or not) that you would publish in a paper. If post-hoc analysis is necessary, report that separately (you may use up to 3 extra sentences).
  - c. Was there a significant interaction?
  - d. Write a sentence to describe the interaction (significant or not).
  - e. What does a post-hoc analysis reveal about the interaction?
6. For the data in “assignment2b.sav”:
  - a. Which main effects were significant?
  - b. Write a sentence to describe each of the main effects (significant or not). If post-hoc analysis is necessary, report that separately (you may use up to 3 extra sentences)
  - c. Was there a significant interaction?
  - d. Write a sentence to describe the interaction (significant or not).
  - e. What does a post-hoc analysis reveal about the interaction?
  - f. Describe this interaction as you would report it in a paper (up to a paragraph long).