Week of January 23

1. Detailed analysis of an interaction: Two approaches
2. Evaluating simple effects, interaction contrasts, and simple comparisons: How SPSS can help

Detailed Analysis of an Interaction: Two Approaches

- Simple effect: The effect of one IV on the DV, holding the other IV constant
- Interaction contrast: Reduces a more complex design to a 2 x 2 factorial

Choosing an Approach

- There is no technical reason to prefer one approach over the other
- Both approaches can be followed up with simple comparisons—single df contrasts that hold one of the IVs constant
- Use whichever approach makes more sense to you, both conceptually and considering the pattern of cell means

Detailed Analysis of an Interaction: Step by Step

First, conduct the omnibus analysis. Is the interaction significant?	
If not…	If so…
1. Analyze the main effects. 2. Follow up significant results with main comparisons (pp. 215-218).	1. Analyze simple effects (pp. 218-222 for ANOVA; pp. 223-227 for MRC) or interaction contrasts (pp. 245-248 for ANOVA; pp. 251-253 for MRC). 2. Follow up significant results with simple comparisons (pp. 222-223 for simple effects with ANOVA; p. 227 for simple effects with MRC; pp. 248-251 for interaction contrasts with ANOVA; pp. 254-257 for interaction contrasts with MRC).

A Final Note

- It's not always necessary to go all the way to the level of simple comparisons. Stop at the level of specificity that is appropriate for your research question.
  - Example: Long-term age trends in personality traits

How SPSS Can Help: ANOVA

- Simple effects
  1. Get *SS*, *df*, and *MS* for the error term from the omnibus GLM—Univariate analysis
  2. To get *SS*, *df*, and *MS* for the simple effect of Factor A at b_1 (for example), use Data—Select Cases to select only cases at level b_1, then use GLM—Univariate to conduct an ANOVA with Factor A as a fixed factor
  3. Compute the *F* ratio(s) by hand
- Interaction contrasts and simple comparisons
  - Can get *SS*, *df*, and *MS* for the error term, as well as cell means (using the Descriptives option), from the omnibus GLM—Univariate analysis
  - Other than that, you will need to do things by hand

How SPSS Can Help: MRC

- Simple effects, interaction contrasts, and simple comparisons
  - Can get the R^2 and *df* associated with any of these effects by using Regression—Linear
  - **BUT** you have to know how to create the proper coding vector(s) for the effect, as well as which vectors to include as Independents in the regression analysis

An Example Experiment

http://psych205.50webs.com/presentations/data_060123.sav

- 30 middle-school students randomly assigned to a small-, medium-, or large-sized class led by either an experienced or an inexperienced teacher
- DV is the students' posttest scores on a test of academic achievement