Psychology 311
Review Questions
Session 2

1. The Hochberg sequential testing method is generally somewhat more powerful than the Holm method, which is generally more powerful than the Dunn-Bonferroni method. So why would one ever want to employ the Dunn-Bonferroni method instead of the Hochberg method?

2. You have a 1-Way ANOVA with 5 groups, and equal $n = 5$. You are considering comparing all pairs of means in pairwise contrasts, and you decide to use the standard Tukey test.

a) Is it possible that you will find a significiant pairwise difference if you did *not* reject the overall ANOVA F test of equal means?
b) If you believe it is possible, assume that $MS_{S/A} = 10$, and construct a numerical example by giving 5 group means that demonstrates your point.

3. Given the following data, perform a Dunnett test, indicating which of the 4 experimental groups is significantly different from the control. Control FWER at 0.05.

	A	*B*	*C*	*D*	*Control*
Mean	11.66	10.90	12.23	14.13	9.80
Variance	12.23	11.77	9.80	12.12	14.08
Sample Size (n)	25	25	25	25	25

4. *RDASA3 10.8.* We have five group means, each based on $n = 10$ scores, with $MS_{S/A} = 4.0$. The means are

A_1	A_2	A_3	A_4	A_5
8.6	9.5	9.2	8.0	10.4

a) We plan 5 contrasts with FWER = 0.05. Test the contrast that A_5 has a mean equal to the average of the other 4 groups. State the critical value for significance and whether the null hypothesis is rejected.
b) What would be the result of the significance test if we decided on the above contrast *after looking at the data*?
c) Find the confidence intervals for the contrast under the conditions of (a) and (b) above. Explain why the confidence interval widths are different.
d) Suppose that, instead of the above contrasts, we decided to do all possible pairwise tests using the Tukey test. Which means would be significantly different?
e) Suppose we planned in advance to do *only one* contrast, and it compared the average of the first two group means with the average of the last 3 group means. Do the calculations and report the results.

5. Given the data in the file *Trend.txt* available on the website, perform the following analyses.

   a) Do a 1-way, fixed-effects ANOVA on the data.
   b) Do a trend analysis on the data, and show the results of testing for linear and quadratic trend. Note that the levels of *Grade* are not evenly spaced.
   c) What are the orthogonal polynomial weights for testing for linear trend? For quadratic trend?