

Example Midterm #2 (Psy 465 - Marelich - 5/15/06)

1. The following one-way ANOVA summary table needs to be completed. You have a main effect (A), and a dependent variable (DV). Effect A has 5 levels. Assume equal cell-size. Is your F-value sig? What is your critical value at a .05 alpha level? What is the eta-square value in this table? How would you interpret it?

| Source | SS | df | MS | F | CV | Eta-square |
|--------|--------|-----|-------|------|-----|------------|
| A | 100.00 | ___ | _____ | 8.00 | ___ | _____ |
| Error | 300.00 | 96 | 3.125 | | | |
| Total | 400.00 | 100 | | | | |

*p < .05

2. Let's say you had a factorial design, a 2 x 2 design with "A" as one IV, and "B" as another IV. Your DV name is "DV." Further, let's say you note a significant interaction term. You must now conduct a simple effects test. Please write SAS syntax for simple effects testing below. Your goal is to investigate group (mean) differences in Effect B within levels of Effect A.

Proc GLM;

3. When would you use a post-hoc Scheffe test AFTER a simple effects test?

4. Assume you are going to do a One-way ANOVA with 4 levels of your IV. A friend of yours swears he did the right calculations and came up with a family-wise error rate of .50. Did your friend make the correct calculations assuming an alpha level of .05? Why/Why not?

5. Let's say you have an IV with 3 levels -- hence you have 3 means (A, B, C). Please write a complete set of orthogonal contrasts, comparing first Means A/B with C, and then finishing the comparisons with A vs. B. Make sure you assign appropriate values for the contrasts.

6. You are interested in comparing groups on scores of romantic jealousy. You have two groups (men and women), and jealousy is rated on a scale of 1-9 (9 indicates great jealousy). The mean for your sample men is 6.5 ($n = 100$, variance of 3), and your mean for women is 6.0 ($n = 100$, variance of 2). Your hypothesis is that men and women differ in their romantic jealousy. What statistical test would you use to test this hypothesis? What would be your critical value (the CV) to evaluate a two-tailed test at a .05 level of significance?

Key:

| 1. | Source | SS | df | MS | F | CV | Eta-square |
|----|--------|--------|-----|-------|-------|------|------------|
| | A | 100.00 | 4 | 25.00 | *8.00 | 2.53 | .25 |
| | Error | 300.00 | 96 | 3.125 | | | |
| | Total | 400.00 | 100 | | | | |

*p < .05 - **note the CV was found at (4,60) DF – although you could get a closer CV by averaging the values from our text between 2.53 (60) and 2.45 (120) to get about 2.49. With 2.53 we are being very conservative with our alpha level.**

2. Proc GLM;
classes A B;
model dv=A B A*B; [you can also use the shortcut approach]
lsmeans A*B /slice=A;
run;

3. You would use the Scheffe post-hoc test AFTER a simple effects test when you had three or more mean differences to investigate.

4. $FW = 1 - (1 - \alpha)^{\text{number total mean comparisons}}$

Assuming a .05 alpha level and 6 total comparisons:

$1 - (1 - .05)^6 = .26$ is the FW error rate...So, the value of .50 calculated was incorrect. The correct value is .26.

5. Contrasts

| | Contrasts | Contrasts |
|-----------------|---------------|-----------|
| First Contrast | (A,B) vs. (C) | (1 1 -2) |
| Second Contrast | (A) vs. (B) | (1 -1 0) |

6. This is a t-test
Df = 198, CV = 1.96