

PSYCHOLOGY 240: Statistics in Psychology
ASSIGNMENT 7: FACTORIAL ANOVA

Purpose: When using a factorial Analysis of Variance, researchers wish to determine how multiple factors impact a dependent variable. This assignment is designed to give you practice in thinking about and determining the statistical significance in a factorial designs.

Short Essay Question (50 pts.): Please provide a typewritten answer to the following essay question:

- Describe the advantages of a factorial design. In other words, how does a factorial design improve upon separate single-factor designs? What additional information does a factorial design provide?

Problem-Based Question (50 pts.): Please show all work and clearly identify the final answer for each of the following questions.

Study 2 (One Experimental Factor and One Nonexperimental Factor). Suppose that you are conducting a study to determine the effect of alcohol and gender on movie preference. After giving 30 males and females either 0, .5, or 1 ounce of alcohol in their punch, you show them a violent film and ask them to rate how much they liked it on a scale ranging from 1 o 10. Below is a partially completed ANOVA summary table for this study:

Tests of Between-Subjects Effects

Dependent Variable: _____

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. | Partial Eta Squared |
|------------------|-------------------------|-------|-------------|--------|-------|---------------------|
| Corrected Model | XXXXXXX | XX | XXXXXXXXX | XXXXXX | XXXX | XXXXX |
| Intercept | XXXXXXX | XX | XXXXXXXXX | XXXXXX | XXXX | XXXXX |
| Gender | .833 | _____ | _____ | _____ | _____ | _____ |
| Alcohol | 157.067 | _____ | _____ | _____ | _____ | _____ |
| Gender * Alcohol | 9.867 | _____ | _____ | _____ | _____ | _____ |
| Error | 82.400 | _____ | _____ | _____ | _____ | _____ |
| Total | XXXXXXX | XX | _____ | _____ | _____ | _____ |
| Corrected Total | 250.167 | 29 | _____ | _____ | _____ | _____ |

- Which factors had a significant impact on the ratings of the move (using $\alpha = .05$)?
 - Calculate the remaining elements of the source tables using the data above.
 - Describe your findings in an appropriate APA-style Results section. Be sure to interpret the findings of the study. What do the analyses tell you about the difference between the groups?