

SPSS Test Practice Problem 2

2 way Mixed ANOVA

A professor wonders whether students' attitudes in her statistics class change as the semester progresses, and if attitudes might also depend on whether they plan to be a clinical psychologist, a research psychologist, or something other than a psychologist. To find out, she asks her 30 students (10 in each of the career paths) to indicate their attitude toward stats from -10 (extremely negative) to +10 (extremely positive) at the end of week 1 and then at the end of week 15.

The data is in the table below and in the excel file. Enter the data into SPSS. Conduct the ANOVA "ask" SPSS to construct a bar chart to plot the interaction effect with career path on the x-axis and week as the separate bars. Include error bars using the 95% confidence interval.

| | week 1 | week 15 |
|---------------------|--------|---------|
| Clinical | 0 | 5 |
| | -2 | 8 |
| | -3 | 1 |
| | 4 | 3 |
| | 2 | 4 |
| | 1 | 8 |
| | 5 | 4 |
| | 2 | 3 |
| | -5 | 7 |
| | -8 | 8 |
| Research | 2 | 8 |
| | 4 | 7 |
| | 3 | 4 |
| | 0 | 3 |
| | 0 | 8 |
| | -1 | 7 |
| | 6 | 10 |
| | -3 | 4 |
| | -1 | 2 |
| | 2 | 7 |
| Anything but psych! | 3 | -1 |
| | 1 | 0 |
| | 0 | 3 |
| | 0 | -1 |
| | -4 | 2 |
| | 2 | 2 |
| | -3 | 1 |
| | -2 | 0 |
| | -1 | 3 |
| | 5 | -4 |

Which factor is within subjects? _____

Which factor is between subjects? _____

PART A Assumptions

Explain why Mauchly's test of sphericity was not tested in this example.

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To test for HOV, look at the Levene's test results:

| | F value | prob | signif (y/n) | assumption holds true (y/n) |
|---------|---------|------|--------------|-----------------------------|
| Week 1 | | | | |
| Week 15 | | | | |

PART B Inferential Statistics i.e. The ANOVA

| Effect tested | df , df | F value | Sig value | Partial eta sq | Signif? y/n |
|----------------------------|---------|---------|-----------|----------------|-------------|
| main effect week | | | | | |
| main effect of career path | | | | | |
| week x career path | | | | | |

Write down all 3 effects using correct APA statistical notation format.

| | |
|----------------------------|--|
| main effect of week | |
| main effect of career path | |
| week X career path | |

PART C Post hoc tests

Was a post hoc test on the between-subjects factor necessary? Explain why or why not.

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Was a post hoc test necessary for the within-subjects factor? Explain why or why not.

PART D Understanding the Interaction Effect

Look at your graph to help answer the questions below. Use the “refined” overlapping non-overlapping error bar rule you learned about to see which mean is probably different from which.

Describe the effect of week in the **clinical path** and specify the direction of the differences, if any.

Describe the effect of week in the **research path** and specify the direction of the differences, if any.

Describe the effect of week in the **not psych path** and specify the direction of the differences, if any.

Describe the effect of career path for **week 1** and specify the direction of the differences, if any.

Describe the effect of career path for **week 15** and specify the direction of the differences, if any.