**ANOVA Practice**

1. **1. Practice Understanding the Source Table:**
2. A psychologist would like to know whether the change in seasons has any consistent effect on people's mood. In the middle of each of the four seasons the psychologist selects a random sample of n = 10 students. Each individual in these four separate samples is given a standardized mood/depression questionnaire. The data from this study are examined using an analysis of variance and the results are shown in the summary table below. Fill in all missing values in the table.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Source | SS | df | MS |  |
|  | Between Treatments | \_\_\_\_ | \_\_\_\_ | \_\_\_ | F = |
|  | Within Treatments | \_\_\_\_ | \_\_\_\_ | 2 |  |
|  | Total | 132 | \_\_\_\_ |  |  |

**2. Practice calculations, graphing, and reporting (by hand and in R)**

How first born children develop language skills in comparing to younger siblings. The theory is that first borns will learn better then their siblings because parents will pay more attention to them. To test this the development skills of single children, twins and triplets will be compared

|  |  |  |
| --- | --- | --- |
| **Single** | **Twin** | **Triplet** |
| 8 | 4 | 4 |
| 7 | 6 | 4 |
| 10 | 7 | 7 |
| 6 | 4 | 2 |
| 9 | 9 | 3 |

**Fill the ANOVA source Table by doing the calculations *by hand*.** Show all work!

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Source | SS | df | MS | F | Eta-squared |
| Between |  |  |  |  |  |
| Within |  |  |  |  |  |
| Total |  |  |  |  |  |

1. **3. Reproduce the analysis in R, make a ggplot, and report results in APA format.**

**Note: Second Nerdy dataset if you are ahead:**

5 therapists were asked to rate how psychopathic 3 super-villains are. Is there a difference in between them? [Run in R].

|  |  |  |
| --- | --- | --- |
| Magneto | Dr. Doom | Thanos |
| 7 | 8 | 10 |
| 6 | 8 | 9 |
| 4 | 4 | 8 |
| 5 | 6 | 8 |
| 3 | 4 | 10 |