

SOURCEBOOK

JASP

DATA ANALYSIS

Abstract: This chapter provides step-by-step instructions on how to obtain basic statistical output using JASP, both visually with screenshots and via written instructions. Simple examples for most undergraduate-level between-subjects and within-subjects research designs are provided.

Keywords: JASP, screenshots, directions for use

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This document is part of an online statistics sourcebook.

A browser-friendly viewing platform for the sourcebook is available:

<https://cwendorf.github.io/Sourcebook>

All data, syntax, and output files are available:

<https://github.com/cwendorf/Sourcebook>

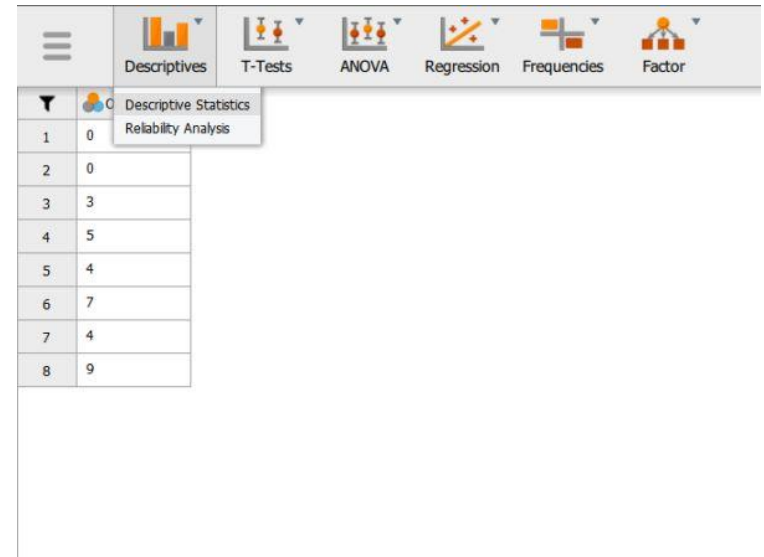
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Frequencies and Descriptives

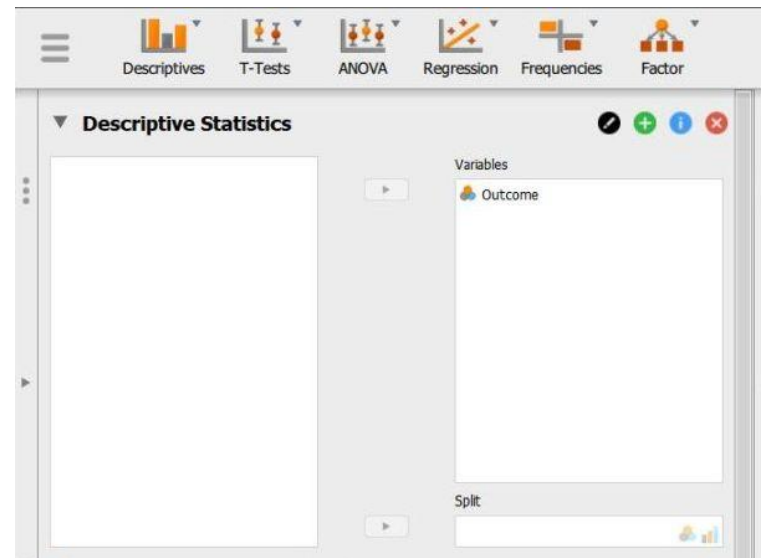
Selecting the Analysis

1. First, load the data file previously created (described elsewhere). Be sure that the data file looks as you intended.
2. Select the “Descriptives → Descriptive Statistics” option.



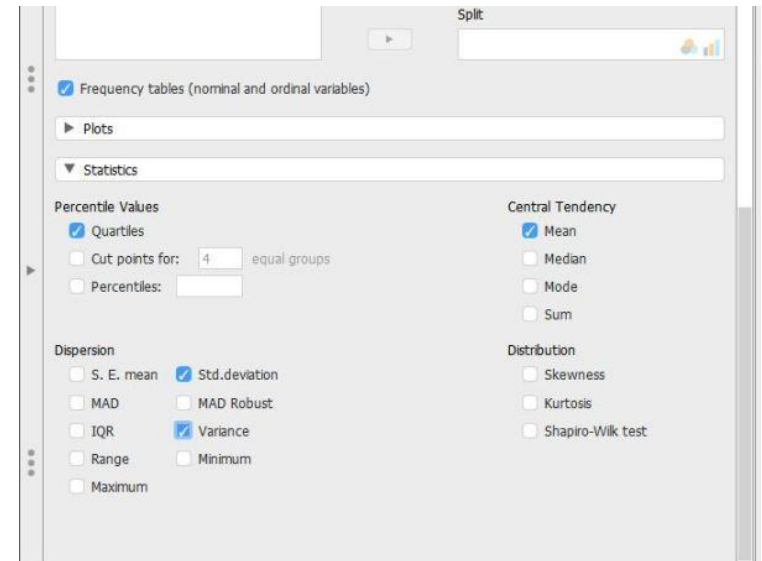
Obtaining Frequencies

3. A set of options will then appear for you to choose the variables and statistics of interest.
4. Select the variables you wish to analyze by clicking on them in the left-hand box and then the arrow to move them into the right-hand box.
5. Be sure that “Display frequency tables” is checked. Without this checked, you will not get a frequency distribution.
6. Output will automatically appear on the right side of the window.



Obtaining Descriptive Statistics

7. Though some basic summary statistics are displayed by default, you can make changes by expanding the “Statistics” drop-down menu.
8. As you select the desired statistics, the output on the right side of the window will be automatically updated.
9. Individual tables (or even the whole section of Output) can be copied using the drop-down arrow options in the output. These can be pasted into other word processing software for printing purposes.

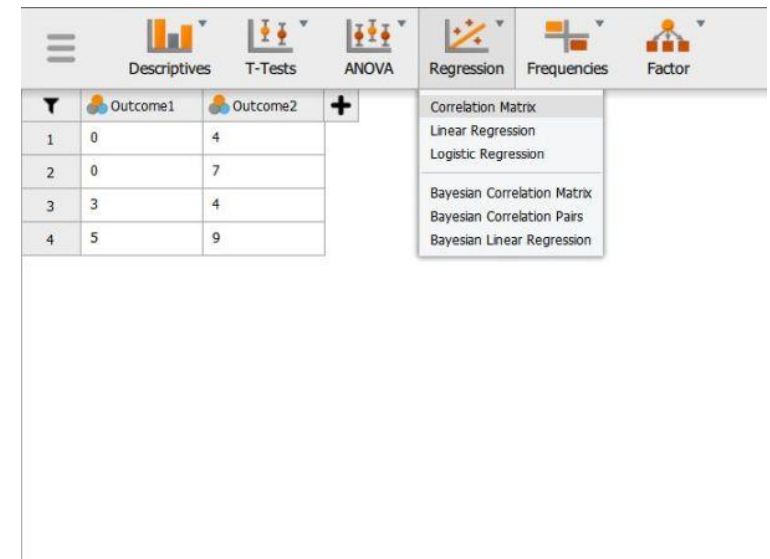


Your data have now been analyzed!

Correlations

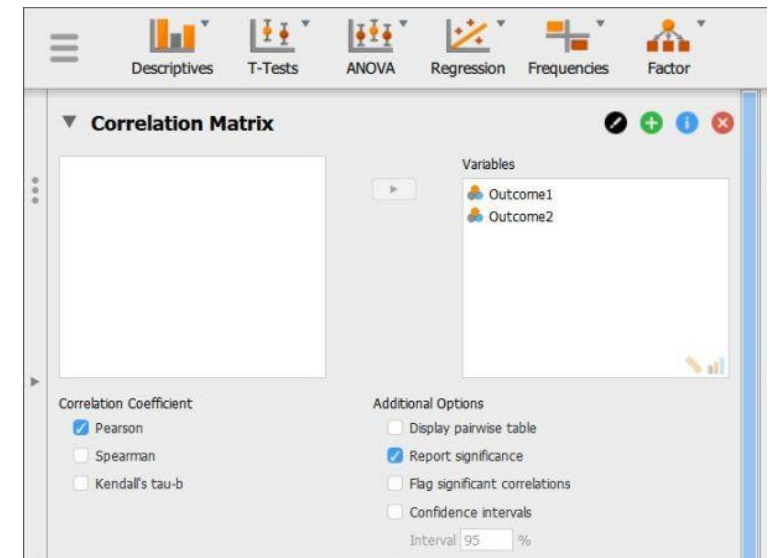
Selecting the Analysis

1. First, load the data file containing multiple variables that you previously created (described elsewhere). Be sure that the data file looks as you intended.
2. Select the “Regression → Correlation Matrix” option.



Obtaining Inferential Statistics

3. A set of options will then appear for you to choose the variables and statistics of interest.
4. Select the variables you wish to analyze by clicking on them in the left-hand box and then the arrow to move them into the right-hand box.
5. Output (with no descriptive statistics) will automatically appear on the right side of the window. Output can be copied and pasted into other documents for printing.
6. If you wish descriptive statistics associated with each variable, follow the “Descriptives” procedures described earlier in this manual.

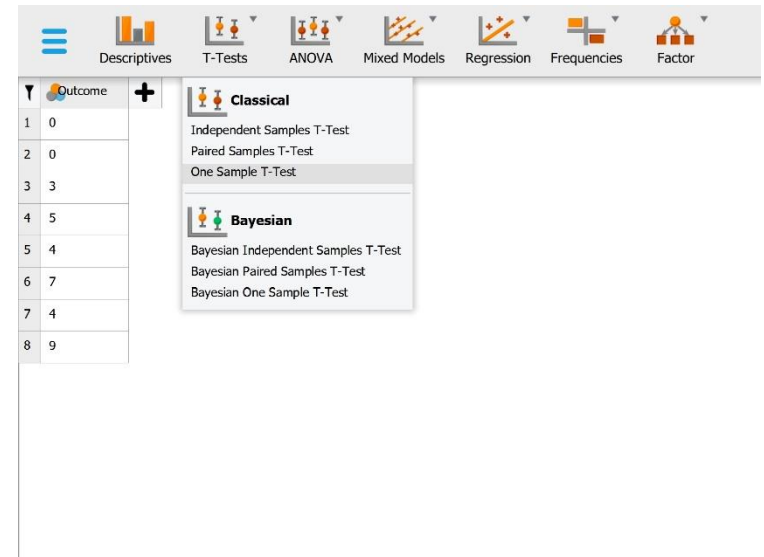


Your data have now been analyzed!

Confidence Interval for a Mean

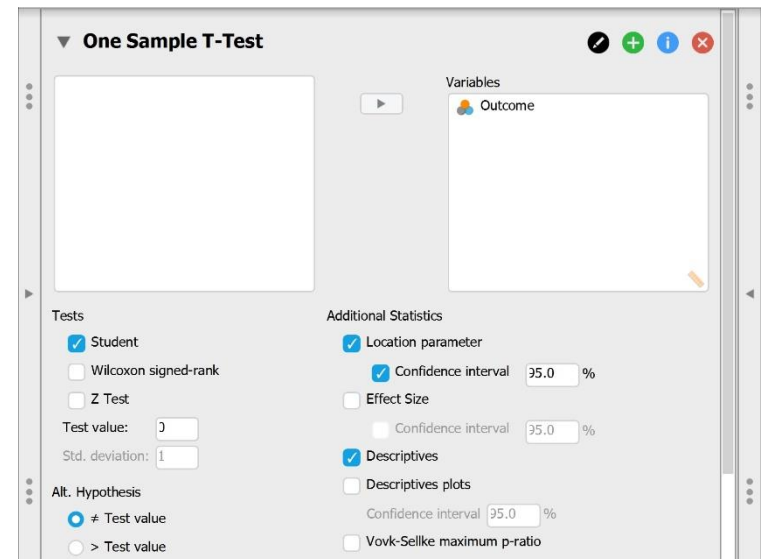
Obtaining One-Sample Inferential Statistics

1. First, load the data file that you previously created (described elsewhere). Be sure that the data file looks as you intended.
2. Select the “T-Tests → One Sample T-Test” option.



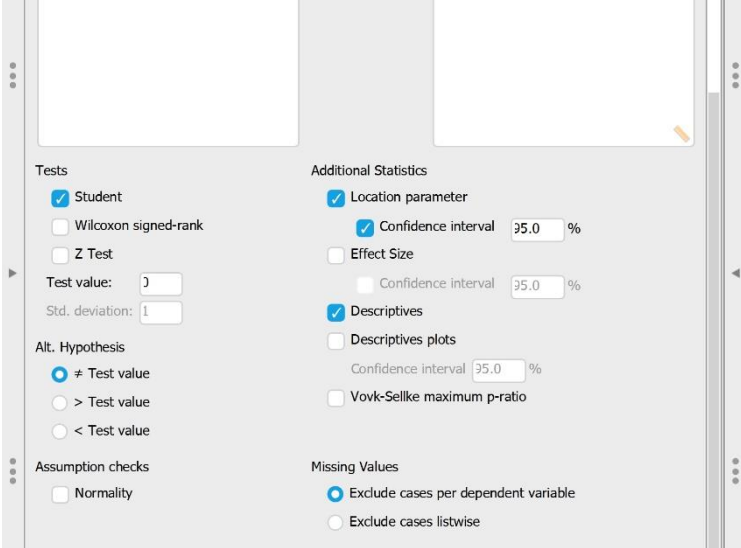
Choosing Variables

3. A set of options will then appear for you to choose the variables and statistics of interest.
4. Select the variable you wish to analyze by clicking on it in the left-hand box and then the arrow to move it into the right-hand box.
5. Output will automatically appear on the right side of the window. Output can be copied and pasted into other documents for printing.



Obtaining Inferential Statistics

6. To get the confidence interval for the mean, make sure the “Test Value” is set to zero.
7. Check the “Confidence Interval” box (and alter the width of the interval if desired).
8. Similarly, select other options that are important for you: “Descriptives” will offer a mean and standard deviation for the variable; and “Descriptives plots” will provide a graph of the confidence interval.
9. Updated output will automatically appear on the right side of the window. Output can be copied and pasted into other documents for printing.



The image shows a screenshot of the SPSS 'Tests' dialog box. The 'Tests' section on the left has 'Student' checked, with 'Test value' set to 0 and 'Std. deviation' set to 1. 'Alt. Hypothesis' is set to '≠ Test value'. 'Assumption checks' has 'Normality' checked. The 'Additional Statistics' section on the right has 'Location parameter' checked, 'Confidence interval' checked with a value of 95.0%, 'Effect Size' unchecked, 'Descriptives' checked, 'Descriptives plots' unchecked, and 'Vovk-Selike maximum p-ratio' unchecked. The 'Missing Values' section at the bottom has 'Exclude cases per dependent variable' checked and 'Exclude cases listwise' unchecked.

Tests

- ☒ Student
- ☐ Wilcoxon signed-rank
- ☐ Z Test
- Test value: 0
- Std. deviation: 1
- Alt. Hypothesis
 - ☒ ≠ Test value
 - ☐ > Test value
 - ☐ < Test value
- Assumption checks
 - ☒ Normality

Additional Statistics

- ☒ Location parameter
- ☒ Confidence interval 95.0 %
- ☐ Effect Size
- ☐ Confidence interval 95.0 %
- ☒ Descriptives
- ☐ Descriptives plots
- Confidence interval 95.0 %
- ☐ Vovk-Selike maximum p-ratio

Missing Values

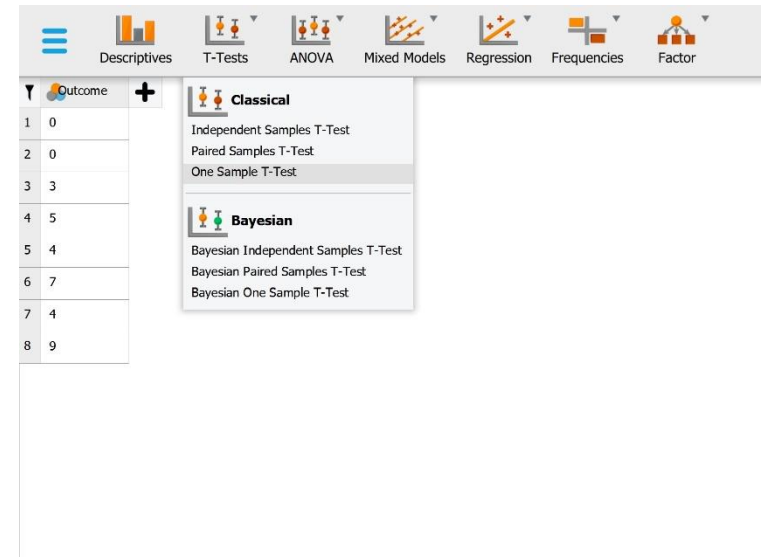
- ☒ Exclude cases per dependent variable
- ☐ Exclude cases listwise

Your data have now been analyzed!

One Sample t Test

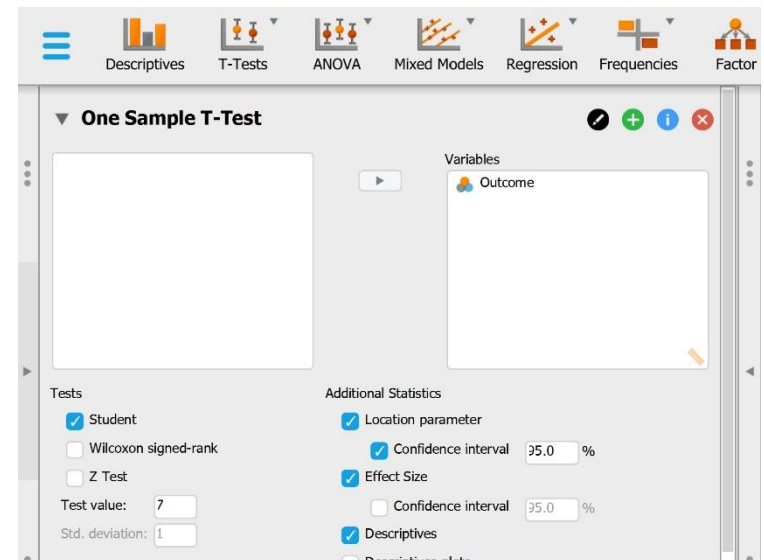
Selecting the Analysis

1. First, load the data file that you previously created (described elsewhere). Be sure that the data file looks as you intended.
2. Select the “T-Tests → One Sample T-Test” option.



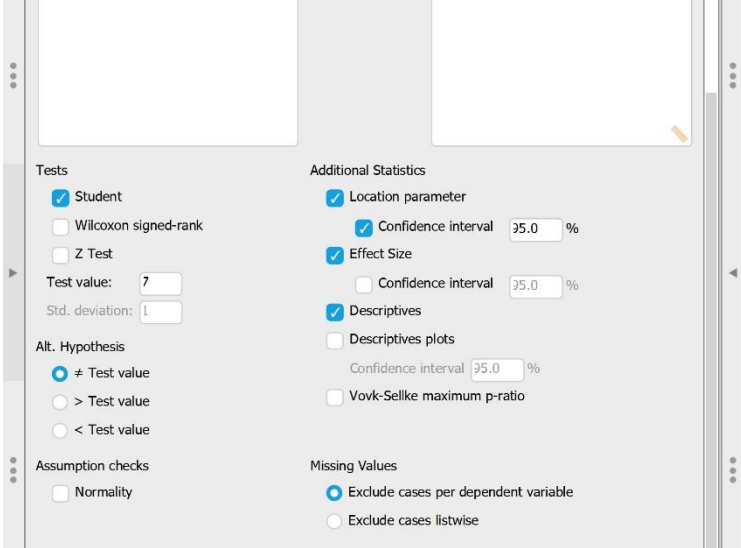
Obtaining Inferential Statistics

3. A set of options will then appear for you to choose the variables and statistics of interest.
4. Select the variable you wish to analyze by clicking on it in the left-hand box and then the arrow to move it into the right-hand box.
5. Be sure to enter a known or hypothesized mean into the “Test Value” field. If you do not enter a value here, JASP will automatically use zero as the comparison mean.
6. Output will automatically appear on the right side of the window. Output can be copied and pasted into other documents for printing.



Obtaining Additional Statistics

7. Select the options that are important for you: “Location parameter” will display the size of the difference between the two means; “Effect size” will display Cohen’s d; and “Descriptives” will offer a mean and standard deviation for the group.
8. If you wish to view (and alter) the widths of the confidence intervals, check the relevant “Confidence Interval” boxes.
9. Updated output will automatically appear on the right side of the window. Output can be copied and pasted into other documents for printing.



The image shows the 'Additional Statistics' dialog box in SPSS. The 'Tests' section on the left has 'Student' checked, with 'Test value' set to 7 and 'Std. deviation' set to 1. The 'Alt. Hypothesis' section has '≠ Test value' selected. The 'Assumption checks' section has 'Normality' unchecked. The 'Additional Statistics' section on the right has 'Location parameter', 'Confidence interval' (95.0%), 'Effect Size', 'Descriptives', and 'Confidence interval' (95.0%) checked. The 'Missing Values' section at the bottom has 'Exclude cases per dependent variable' selected.

Tests

- ☒ Student
- ☐ Wilcoxon signed-rank
- ☐ Z Test

Test value: 7

Std. deviation: 1

Alt. Hypothesis

- ☒ ≠ Test value
- ☐ > Test value
- ☐ < Test value

Assumption checks

- ☐ Normality

Additional Statistics

- ☒ Location parameter
- ☒ Confidence interval 95.0 %
- ☒ Effect Size
- ☐ Confidence interval 95.0 %
- ☒ Descriptives
- ☐ Descriptives plots
- Confidence interval 95.0 %
- ☐ Vovk-Sellke maximum p-ratio

Missing Values

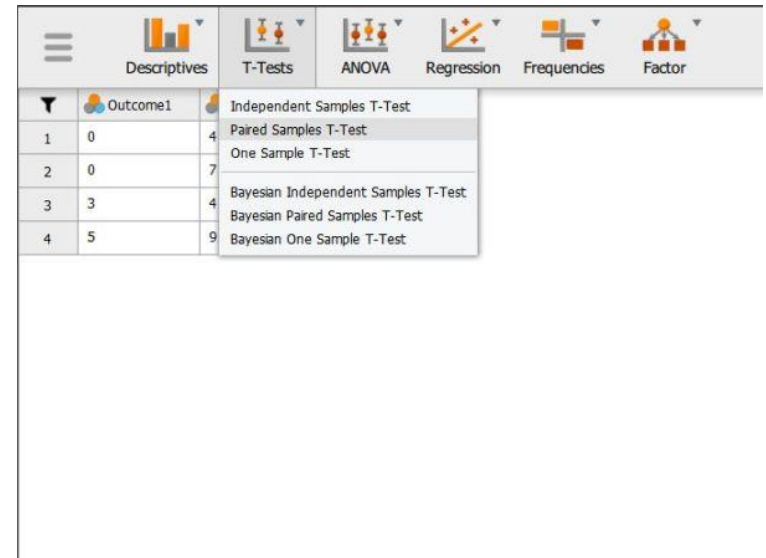
- ☒ Exclude cases per dependent variable
- ☐ Exclude cases listwise

Your data have now been analyzed!

Paired Samples t Test

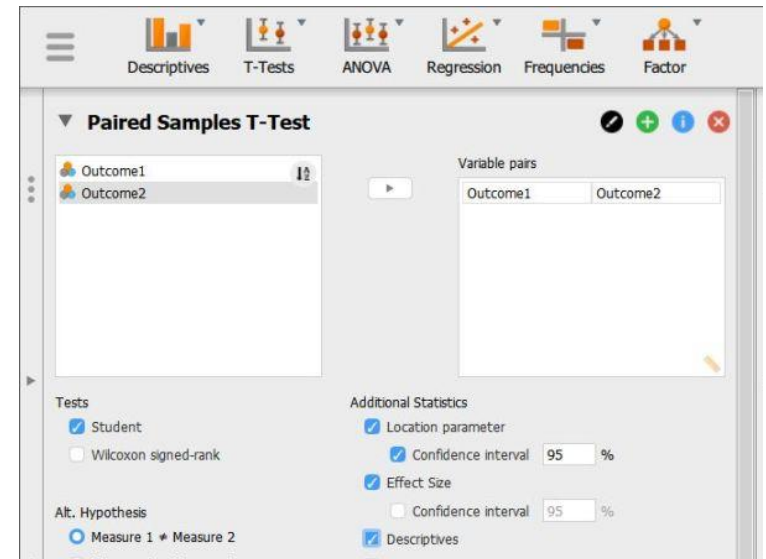
Selecting the Analysis

1. First, load the paired samples or repeated measures data file that you previously created (described elsewhere). Be sure that the data file looks as you intended.
2. Select the “T-Tests → Paired Samples T-Test” option.



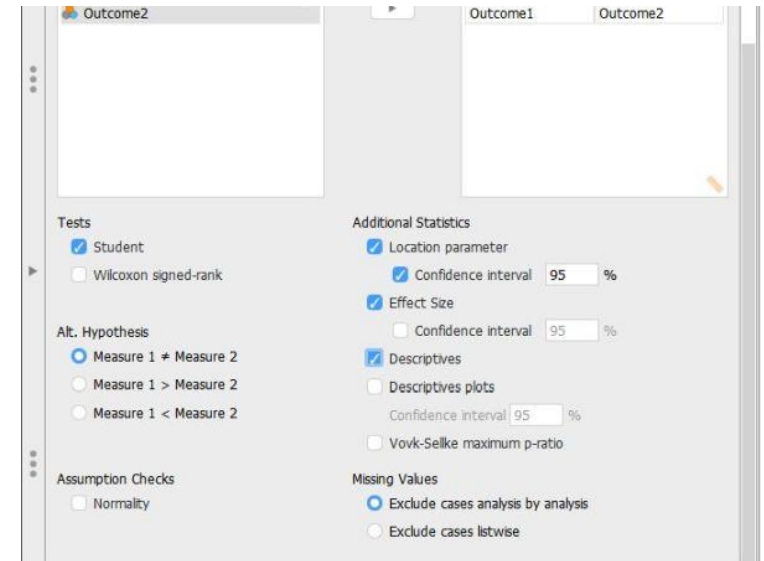
Obtaining Inferential Statistics

3. A set of options will then appear for you to choose the variables and statistics of interest.
4. Select the variables you wish to analyze by clicking on both of them while holding down the “CTRL” key. Then click on the arrow to move the pair of variables to the right-hand box.
5. Output will automatically appear on the right side of the window. Output can be copied and pasted into other documents for printing.



Obtaining Additional Statistics

6. Select the options that are important for you: “Location parameter” will display the size of the difference between the two means; “Effect size” will display Cohen’s d; and “Descriptives” will offer means and standard deviations for each variable.
7. If you wish to view (and alter) the widths of the confidence intervals, check the “Confidence Interval” boxes.
8. Updated output will automatically appear on the right side of the window. Output can be copied and pasted into other documents for printing.

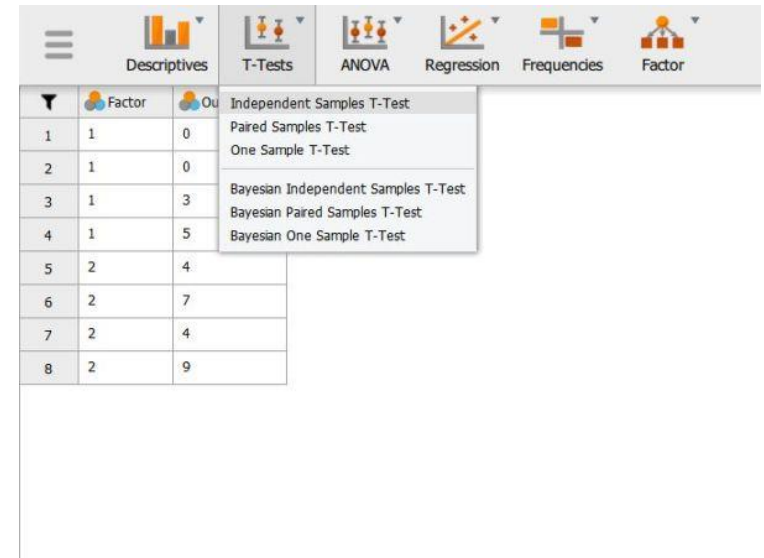


Your data have now been analyzed!

Independent Samples t Test

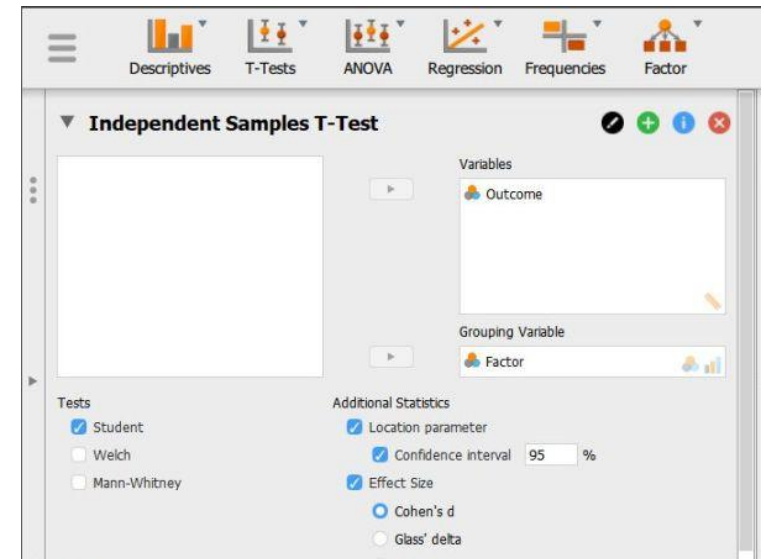
Selecting the Analysis

1. First, load the two sample data file that you previously created (described elsewhere). Be sure that the data file looks as you intended.
2. Select the “T-Tests → Independent Samples T-Test” option.



Obtaining Inferential Statistics

3. A set of options will then appear for you to choose the variables and statistics of interest.
4. Select the outcome variable and click the arrow to move it into the “Dependent Variables” box.
5. Move the Independent Variable to the “Grouping Variable” box.
6. Output will automatically appear on the right side of the window. Output can be copied and pasted into other documents for printing.



Obtaining Additional Statistics

7. Select the options that are important for you: “Location parameter” will display the size of the difference between the two group’s means; “Effect size” will display Cohen’s d; and “Descriptives” will offer means and standard deviations for each group.
8. If you wish to view (and alter) the widths of the confidence intervals, check the “Confidence Interval” boxes.
9. Updated output will automatically appear on the right side of the window. Output can be copied and pasted into other documents for printing.

The screenshot shows the 'Additional Statistics' dialog box in SPSS. At the top, the 'Grouping Variable' is set to 'Factor'. The dialog is divided into several sections:

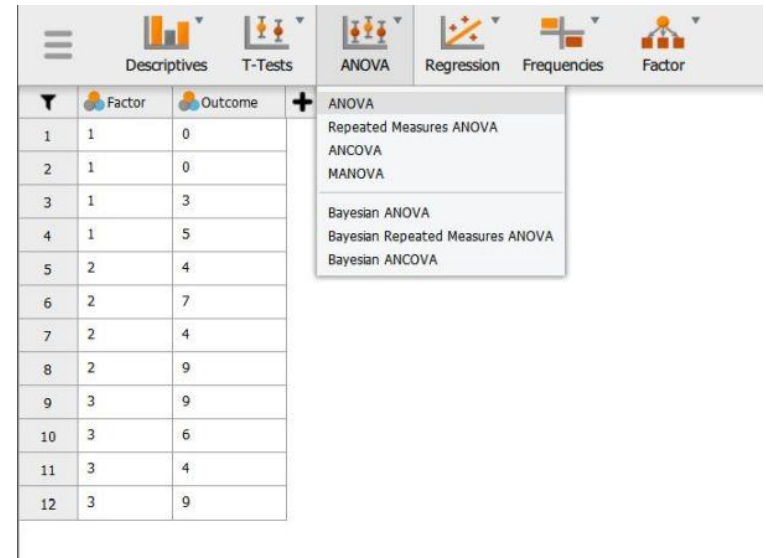
- Tests:** ☒ Student, ☐ Welch, ☐ Mann-Whitney.
- Alt. Hypothesis:** ☒ Group 1 ≠ Group 2, ☐ Group 1 > Group 2, ☐ Group 1 < Group 2.
- Assumption Checks:** ☐ Normality, ☐ Equality of variances.
- Additional Statistics:** ☒ Location parameter, ☒ Confidence interval (95 %), ☒ Effect Size. Under Effect Size, ☒ Cohen's d, ☐ Glass' delta, ☐ Hedges' g. ☐ Confidence interval (95 %).
- ☒ Descriptives, ☐ Descriptives plots. Under Descriptives plots, ☐ Confidence interval (95 %), ☐ Vovk-Sellke maximum p-ratio.
- Missing Values:** ☒ Exclude cases analysis by analysis, ☐ Exclude cases listwise.

Your data have now been analyzed!

OneWay ANOVA

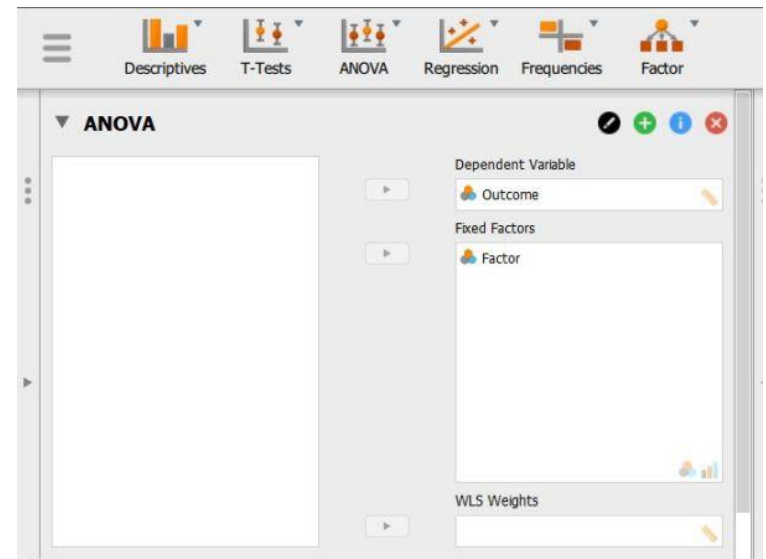
Selecting the Analysis

1. First, load the two sample data file that you previously created (described elsewhere). Be sure that the data file looks as you intended.
2. Select the “ANOVA → ANOVA” option.



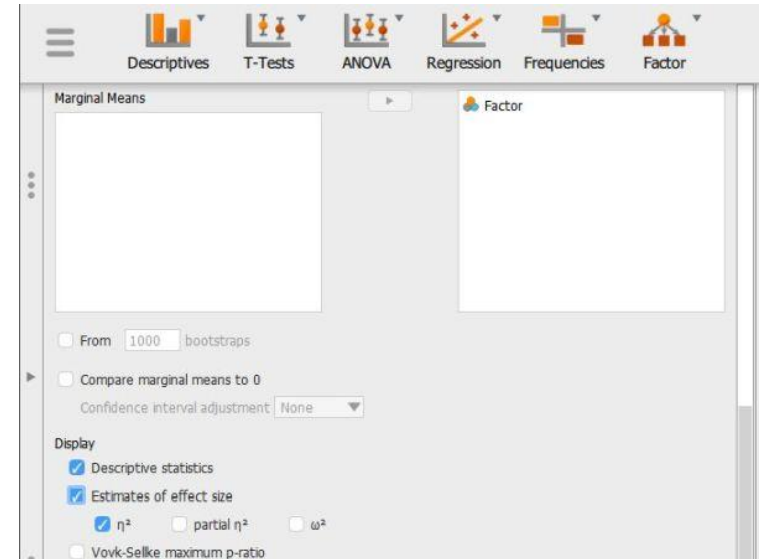
Obtaining Inferential Statistics

3. A set of options will then appear for you to choose the variables and statistics of interest.
4. Select the outcome variable and click the arrow to move it into the “Dependent Variable” box.
5. Move the Factor (Independent Variable) to the “Fixed Factors” box.
6. Output will automatically appear on the right side of the window. Output can be copied and pasted into other documents for printing.



Obtaining Additional Statistics

7. Though some basic summary statistics are displayed by default, you can make changes by expanding the “Additional Options” drop-down menu.
8. Move the factor (Independent Variable) name from the left-hand box for “Marginal means” to the right-hand box.
9. Select options that are important for you: “Estimates of effect size” will display the chosen statistics; and “Descriptive statistics” will offer means and standard deviations for each group.
10. Updated output will automatically appear on the right side of the window. Output can be copied and pasted into other documents for printing.

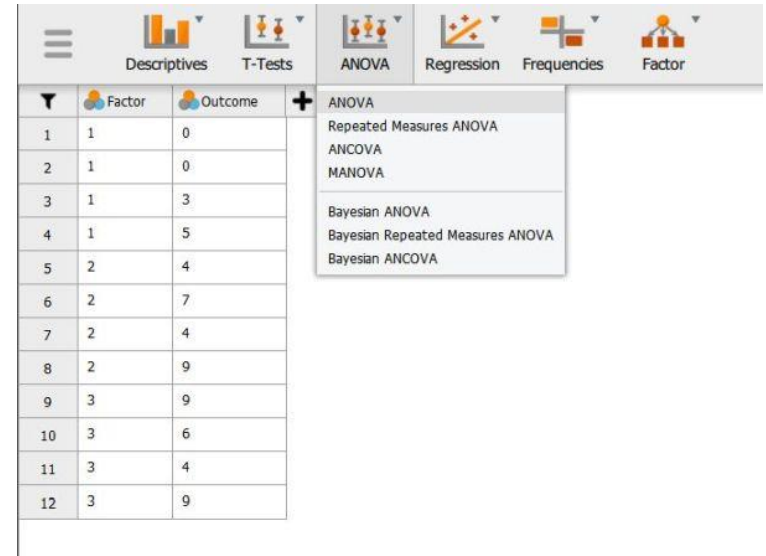


Your data have now been analyzed!

Post Hoc Comparisons

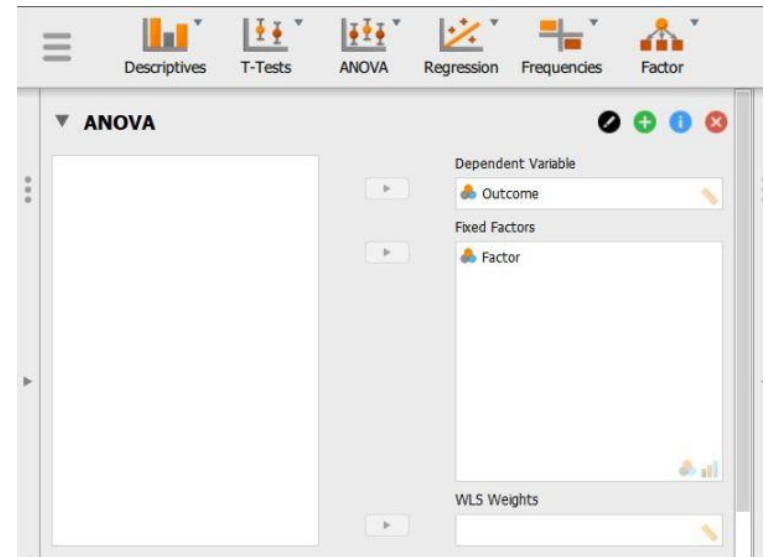
Selecting the Analysis

11. First, load the two sample data file that you previously created (described elsewhere). Be sure that the data file looks as you intended.
12. Select the “ANOVA → ANOVA” option.



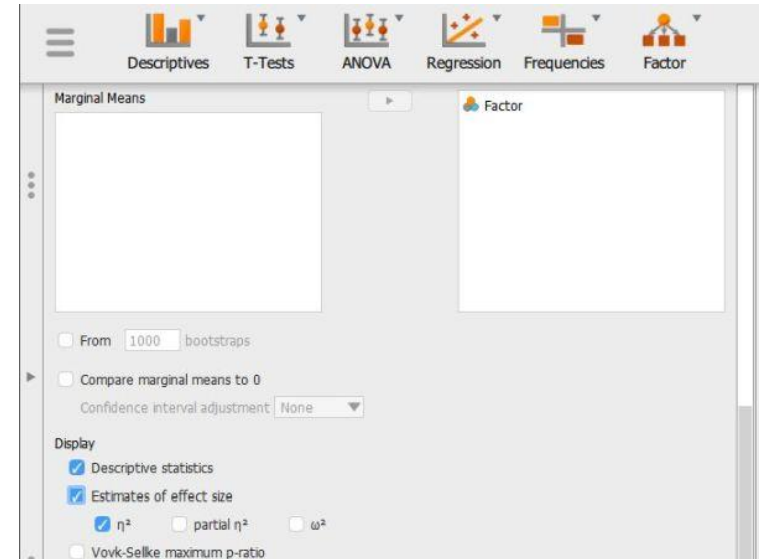
Obtaining Inferential Statistics

13. A set of options will then appear for you to choose the variables and statistics of interest.
14. Select the outcome variable and click the arrow to move it into the “Dependent Variable” box.
15. Move the Factor (Independent Variable) to the “Fixed Factors” box.
16. Output will automatically appear on the right side of the window. Output can be copied and pasted into other documents for printing.



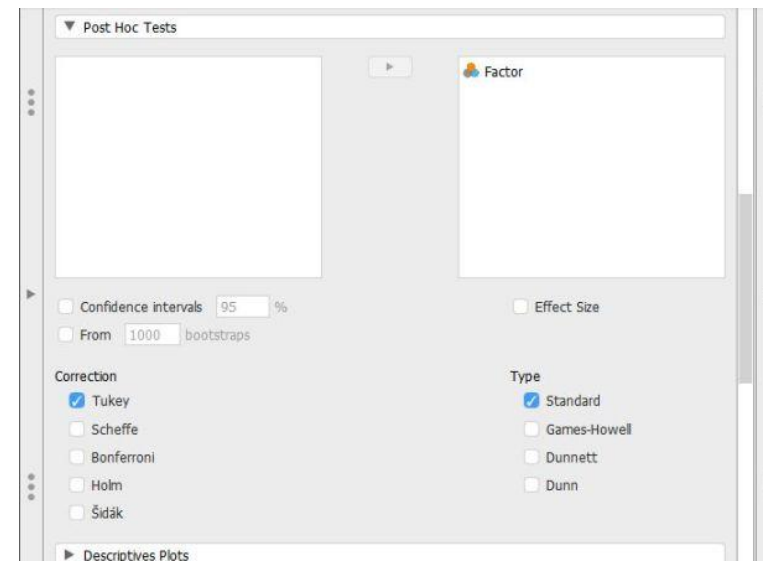
Obtaining Additional Statistics

17. Though some basic summary statistics are displayed by default, you can make changes by expanding the “Additional Options” drop-down menu.
18. Move the factor (Independent Variable) name from the left-hand box for “Marginal means” to the right-hand box.
19. Select options that are important for you: “Estimates of effect size” will display the chosen statistics; and “Descriptive statistics” will offer means and standard deviations for each group.
20. Updated output will automatically appear on the right side of the window. Output can be copied and pasted into other documents for printing.



Steps for Obtaining Post Hoc Tests

21. If you wish to obtain post hoc tests for the purpose of making comparisons between groups, click the “Post Hoc Tests” drop-down button.
22. Move the factor (Independent Variable) name from the left-hand box to the right-hand box.
23. Select “Tukey” to get Tukey HSD post hoc tests (or whatever option you prefer).
24. Updated output will automatically appear on the right side of the window. Output can be copied and pasted into other documents for printing.

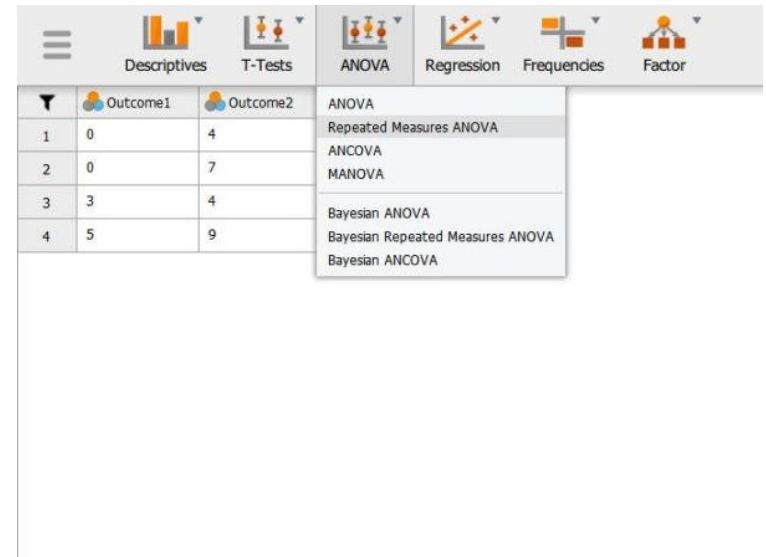


Your data have now been analyzed!

Repeated Measures ANOVA

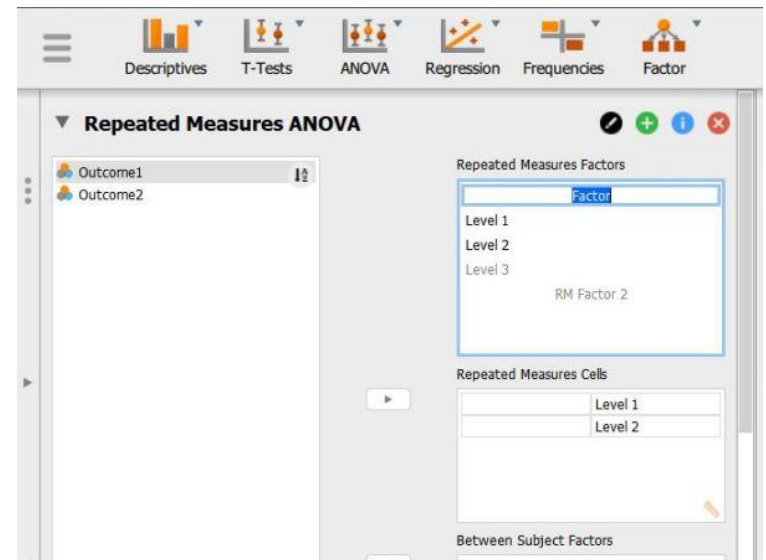
Selecting the Analysis

1. First, load the repeated measures data file that you previously created (described elsewhere). Be sure that the data file looks as you intended.
2. Select the “ANOVA → Repeated Measures ANOVA”.



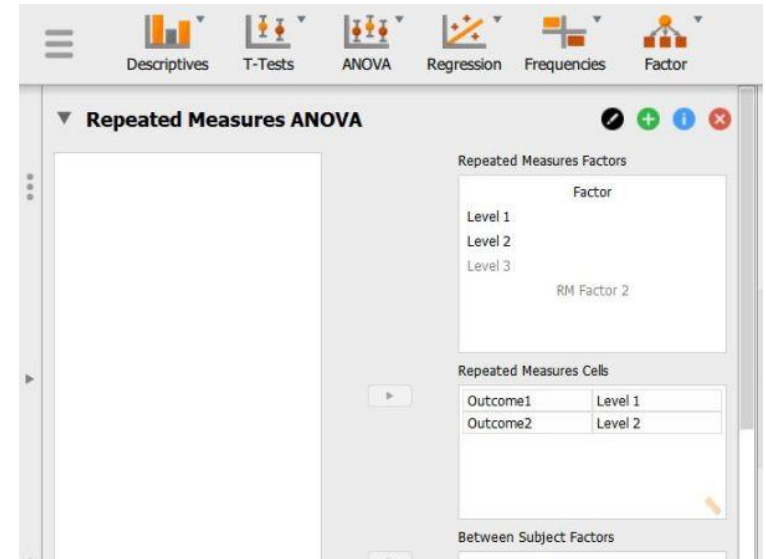
Labeling the Within-Subjects Variable/Factor

3. A set of options will then appear for you to choose the variables and statistics of interest.
4. In the “Repeated Measures Factors” box, you will define the repeated measures factor. This box is necessary for labeling the repeated measurements of the same underlying factor.
5. Click on “RM Factor 1” and type in the name you wish to give to the repeated measures factor. In this example, the measurements/columns reflect quizzes at two different times so “Time” is used as the name.
6. Below that, click on “Level 1” to type the name of the individual level of the repeated measures factor. You may do the same for each level. In this example, the quiz was given twice, so there were only 2 levels of the factor.



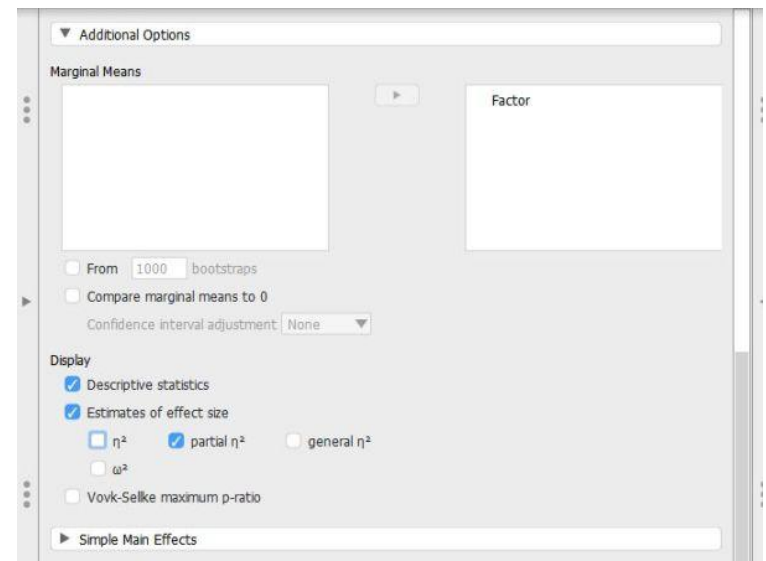
Obtaining Inferential Statistics

7. In the “Repeated Measures Cells” box, you will indicate which measurements/columns in the data set reflect the instances of the repeated measurements.
8. Select the instances you wish to associate with the factor by clicking on them and then arrow to move them. In this example, “t1score” reflects the first level of the factor and “t2score” reflects the second level of the factor.
9. Note that this factor only exists in the computer’s memory. For examples, nowhere in the data set will you see a variable called “Time.”
10. Output will automatically appear on the right side of the window. Output can be copied and pasted into other documents for printing.



Obtaining Additional Statistics

11. Though some basic summary statistics are displayed by default, you can make changes by expanding the “Additional Options” drop-down menu.
12. Select options that are important for you: “Estimates of effect size” will display the chosen statistics; and “Descriptive statistics” will offer means and standard deviations for each group.
13. Updated output will automatically appear on the right side of the window. Output can be copied and pasted into other documents for printing.

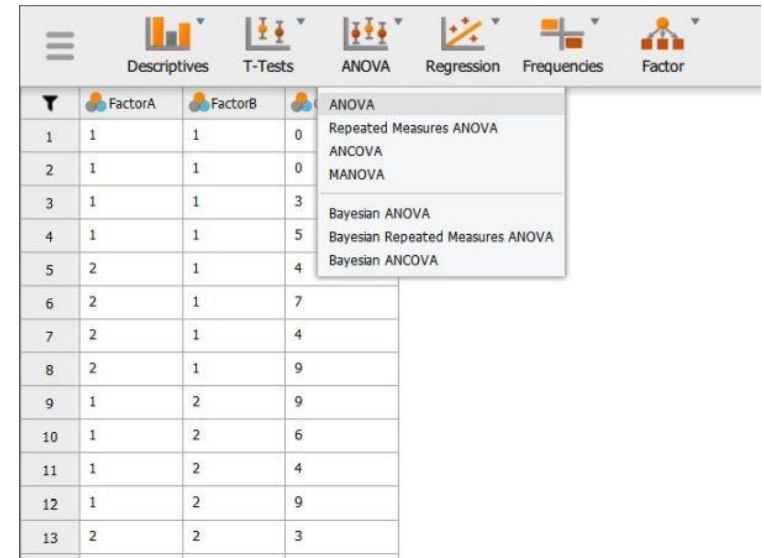


Your data have now been analyzed!

Factorial ANOVA

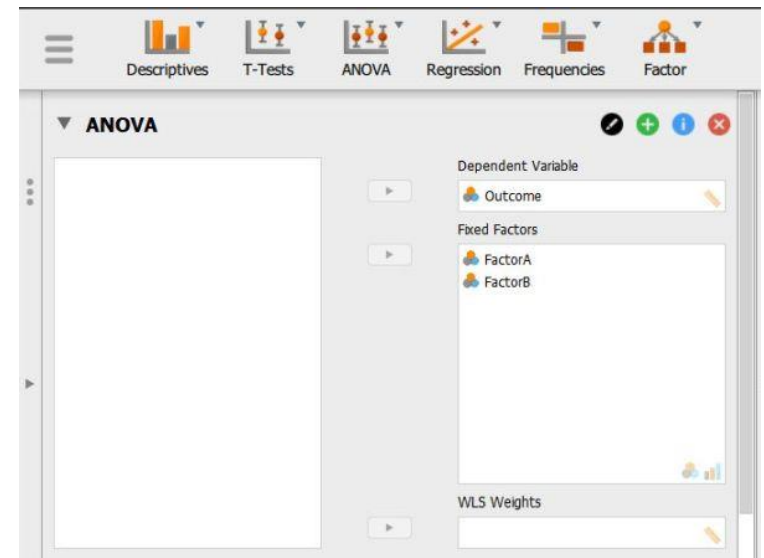
Selecting the Analysis

1. First, load the factorial data file that you previously created (described elsewhere). Be sure that the data file looks as you intended.
2. Select the “ANOVA → ANOVA” option.



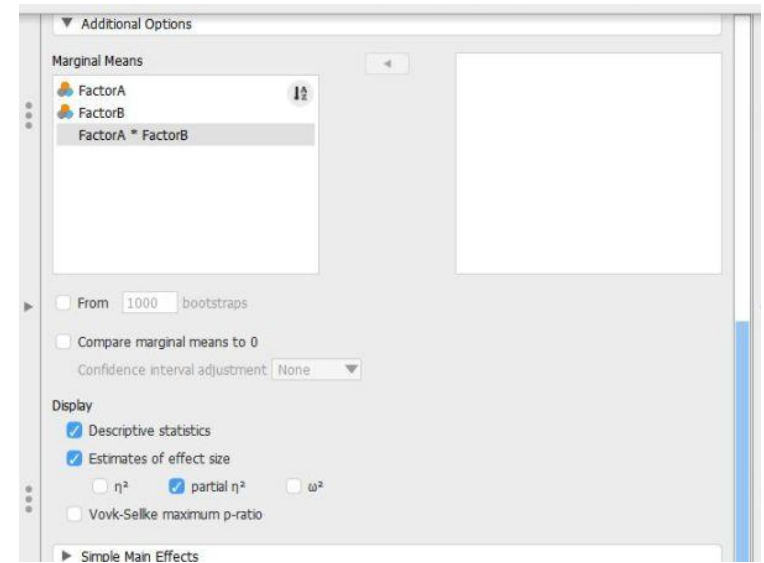
Obtaining Inferential Statistics

3. A set of options will then appear for you to choose the variables and statistics of interest.
4. Select the outcome variable and click the arrow to move it into the “Dependent Variable” box.
5. Move the multiple Factors (Independent Variables) to the “Fixed Factors” box. (The interaction term will be automatically generated in the output.)
6. Output will automatically appear on the right side of the window. Output can be copied and pasted into other documents for printing.



Obtaining Additional Statistics

7. Though some basic summary statistics are displayed by default, you can make changes by expanding the “Additional Options” drop-down menu.
8. Move the factors (Independent Variable) name from the left-hand box for “Marginal means” to the right-hand box. (If you wish cell means for the factorial design, be sure to move the interaction term as well.)
9. Select options that are important for you: “Estimates of effect size” will display the chosen statistics; and “Descriptive statistics” will offer means and standard deviations for each group.
10. Updated output will automatically appear on the right side of the window. Output can be copied and pasted into other documents for printing.



Your data have now been analyzed!