

SOURCEBOOK

jamovi

DATA ANALYSIS

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

Keywords: jamovi, 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>

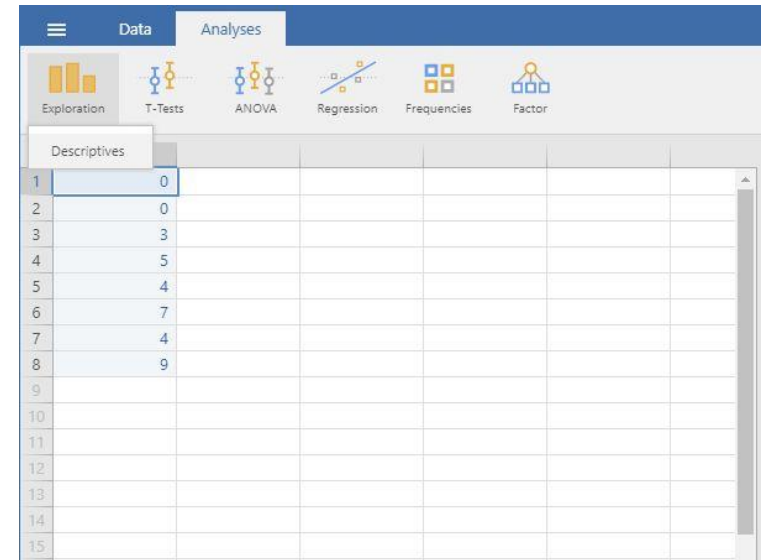
TABLE OF CONTENTS FOR THIS CHAPTER

Frequencies and Descriptives.....	3
Transformations and Standardized Scores	5
Correlations	8
Regression	9
Confidence Interval for a Mean	11
One Sample t Test.....	13
Paired Samples t Test.....	15
Independent Samples t Test	17
OneWay ANOVA.....	19
Post Hoc Comparisons	21
Repeated Measures ANOVA	23
Factorial ANOVA.....	25

Frequencies and Descriptives

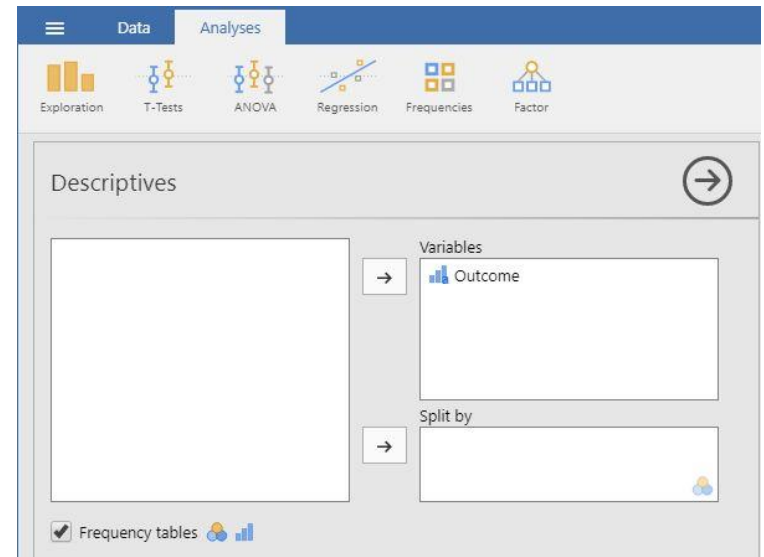
Selecting the Analysis

1. First, enter the data (described elsewhere).
2. On the “Analyses” tab, select the “Exploration → Descriptives” option.



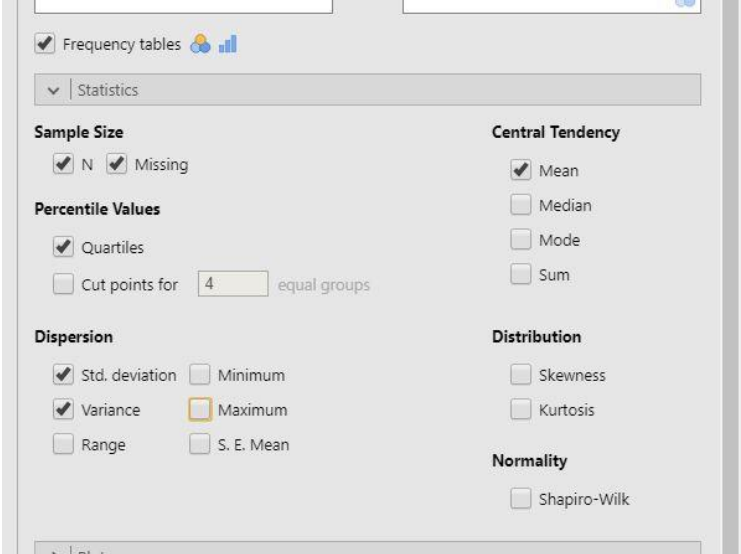
Obtaining Frequencies

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 “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.



The screenshot shows the 'Statistics' dialog box in SPSS. At the top, there is a checked box for 'Frequency tables' and a small bar chart icon. Below this is a dropdown menu labeled 'Statistics'. The main area is divided into several sections with checkboxes:

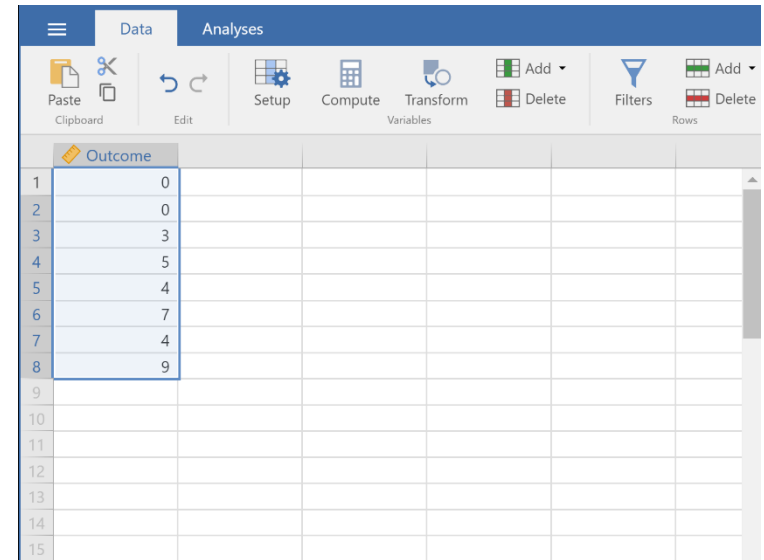
- Sample Size:** ☒ N, ☒ Missing
- Percentile Values:** ☒ Quartiles, ☐ Cut points for equal groups
- Dispersion:** ☒ Std. deviation, ☐ Minimum, ☒ Variance, ☐ Range, ☐ S. E. Mean, ☐ Maximum
- Central Tendency:** ☒ Mean, ☐ Median, ☐ Mode, ☐ Sum
- Distribution:** ☐ Skewness, ☐ Kurtosis
- Normality:** ☐ Shapiro-Wilk

Your data have now been analyzed!

Transformations and Standardized Scores

Selecting the Analysis

1. First, enter the data (described elsewhere).
2. After the data are entered, click on the column representing the data you wish to transform.
3. Select the “Compute” option from the menu. This will bring up a new set of options.

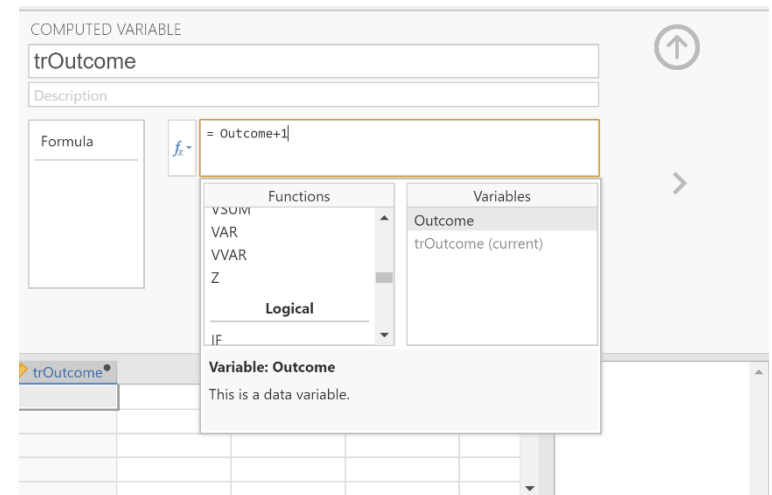


The screenshot shows the SPSS Data menu with the 'Compute' option highlighted. The 'Outcome' column is selected in the data view below the menu.

	Outcome					
1	0					
2	0					
3	3					
4	5					
5	4					
6	7					
7	4					
8	9					
9						
10						
11						
12						
13						
14						
15						

Computing Transformations

4. Type in the new you wish to give the new variable (here it is “trOutcome”).
5. Click on the “fx” button to obtain the dropdown menu.
6. Click on the variable you wish to transform (“Outcome”). This will place it in the formula editor. Then add, subtract, multiply, or divide as needed to get the transformation you want.
7. Hit “Enter” on your keyboard to perform the data transformation.
8. To hide the setup menu, click on the large UP arrow button to the right of the variable name.



The screenshot shows the 'COMPUTED VARIABLE' dialog box. The variable name 'trOutcome' is entered. The formula editor shows '= Outcome+1'. The 'Outcome' variable is selected in the 'Variables' list. The 'UP' arrow button is visible on the right.

COMPUTED VARIABLE

trOutcome

Description

Formula

$$= Outcome+1$$

Functions

VAR

VVAR

Z

Logical

IF

Variables

Outcome

trOutcome (current)

Variable: Outcome

This is a data variable.

Viewing Transformed Scores

9. Note that transformed variables are not included in the output. Rather, they are saved as new variables in the data view window.
10. These variables can be used in subsequent analyses. You can follow the previous tutorials to get descriptive statistics for these variables.

	Outcome	trOutcome
1	0	1
2	0	1
3	3	4
4	5	6
5	4	5
6	7	8
7	4	5
8	9	10
9		
10		
11		
12		
13		
14		
15		

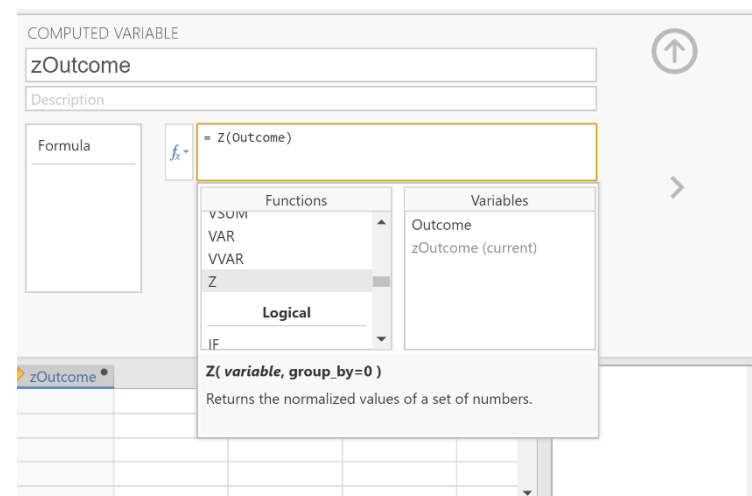
Obtaining Standardized Scores

11. In addition, you can obtain standardized scores. First, enter the data (described elsewhere).
12. After the data are entered, click on the column representing the data you wish to transform.
13. Select the “Compute” option from the menu. This will bring up a new set of options.

	Outcome
1	0
2	0
3	3
4	5
5	4
6	7
7	4
8	9
9	
10	
11	
12	
13	
14	
15	

Computing Standardized Scores

14. Type in the new you wish to give the new variable (here it is "zOutcome").
15. Click on the "fx" button to obtain the dropdown menu. On the left side under functions, click on "z" to place it in the formula editor.
16. Click on the variable you wish to transform ("Outcome"). This will place it in the formula editor.
17. Hit "Enter" on your keyboard to perform the data transformation.
18. To hide the setup menu, click on the large UP arrow button to the right of the variable name.



Viewing Standardized Scores

19. Note that standardized variables are not included in the output. Rather, they are saved as new variables in the data view window.
20. These variables can be used in subsequent analyses. You can follow the previous tutorials to get descriptive statistics for these variables.

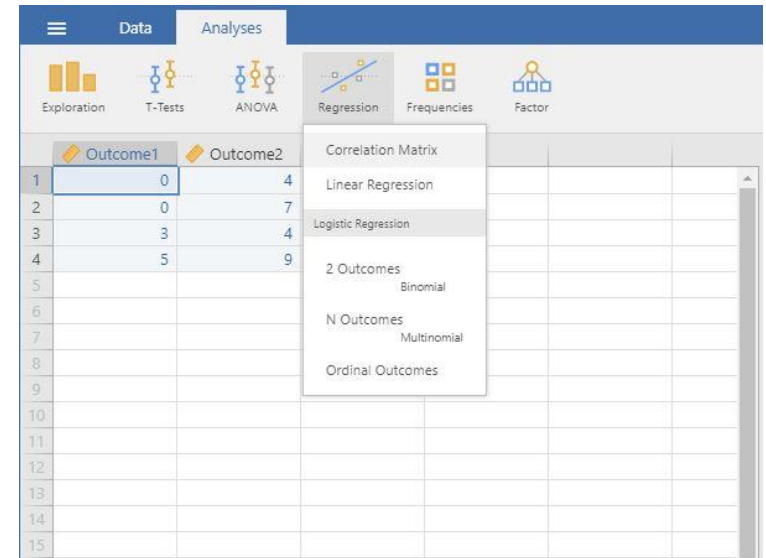
	Outcome	zOutcome
1	0	-1.283
2	0	-1.283
3	3	-0.321
4	5	0.321
5	4	0.000
6	7	0.963
7	4	0.000
8	9	1.604
9		
10		
11		
12		
13		
14		
15		

Your data have now been analyzed!

Correlations

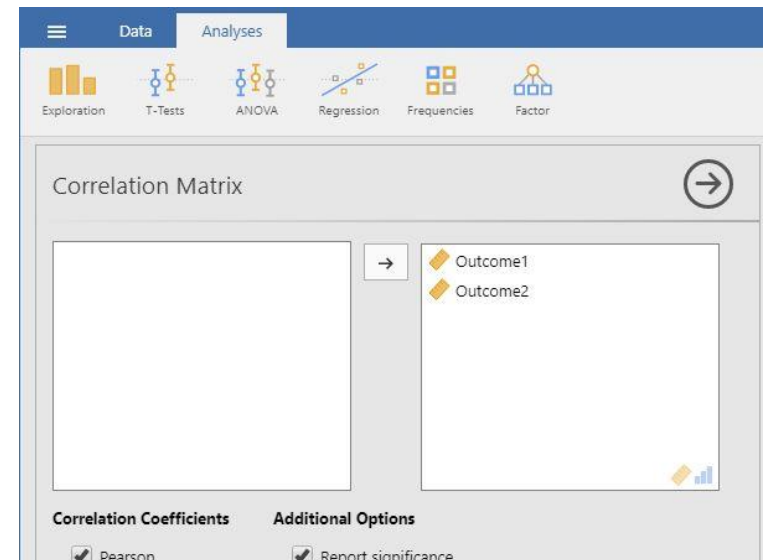
Selecting the Analysis

1. First, enter data involving multiple variables (described elsewhere).
2. On the “Analyses” tab, 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.
6. If you wish descriptive statistics associated with each variable, follow the “Descriptives” procedures described earlier in this manual.

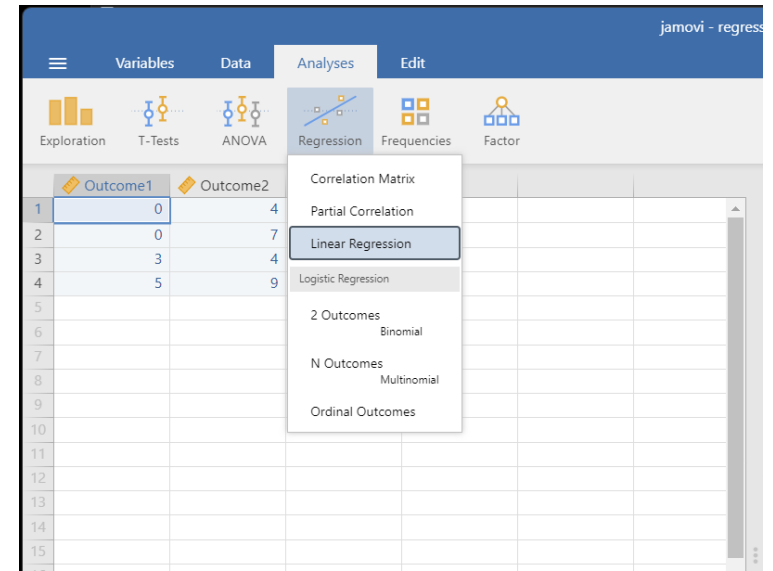


Your data have now been analyzed!

Regression

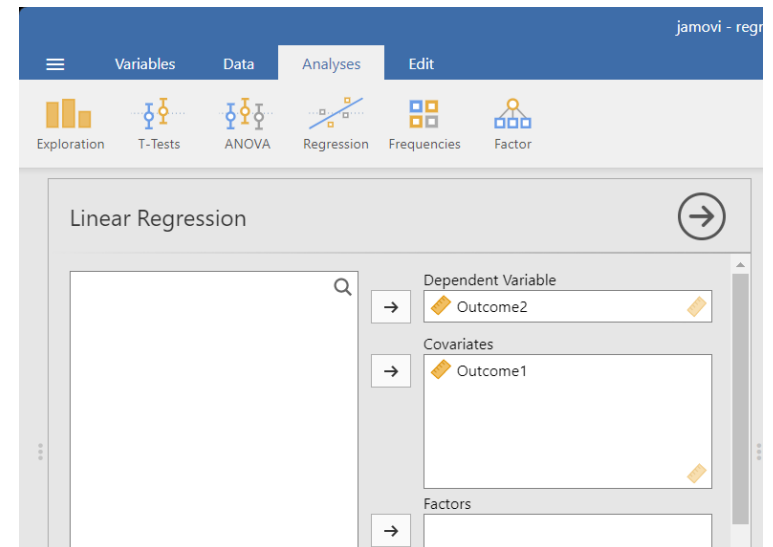
Selecting the Analysis

1. First, enter data involving multiple variables (described elsewhere).
2. On the “Analyses” tab, select the “Regression → Linear Regression” option.



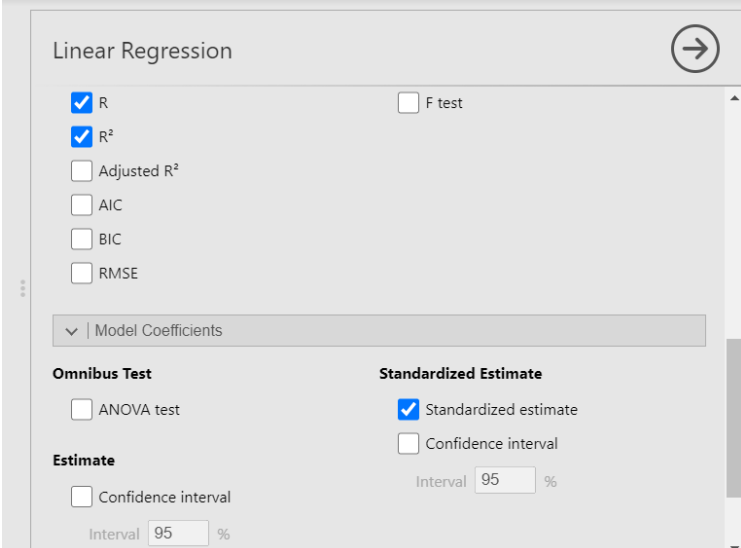
Obtaining Inferential Statistics

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 boxes. Your Predictor (here “Outcome1”) should go under “Covariates” and your Outcome (here “Outcome2”) should go in as the “Dependent Variable”.
5. Output (with no descriptive statistics) will automatically appear on the right side of the window.



Obtaining Additional Statistics

6. Scroll down to the section on “Model Fit” and check both “R” and “R²”.
7. In the section on “Model Coefficients”, check “Standardized Estimate”.
8. Updated output will automatically appear on the right side of the window.
9. If you wish descriptive statistics associated with each variable, follow the “Descriptives” procedures described earlier in this manual.



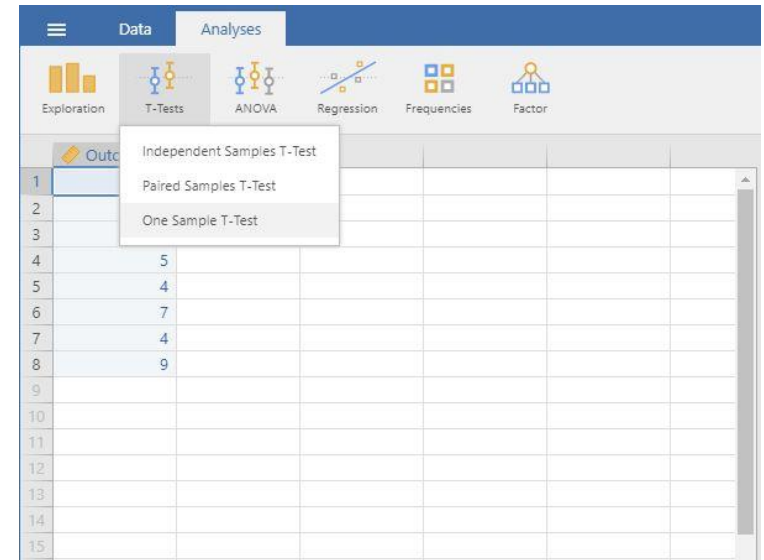
The screenshot shows the 'Linear Regression' dialog box in SPSS. The 'Model Fit' section is expanded, showing checkboxes for 'R' (checked), 'R²' (checked), 'Adjusted R²', 'AIC', 'BIC', 'RMSE', and 'F test'. The 'Model Coefficients' section is also expanded, showing checkboxes for 'ANOVA test', 'Standardized estimate' (checked), and 'Confidence interval'. Below these, there are input fields for 'Interval' (95 %) for both the 'Estimate' and 'Standardized Estimate' sections.

Your data have now been analyzed!

Confidence Interval for a Mean

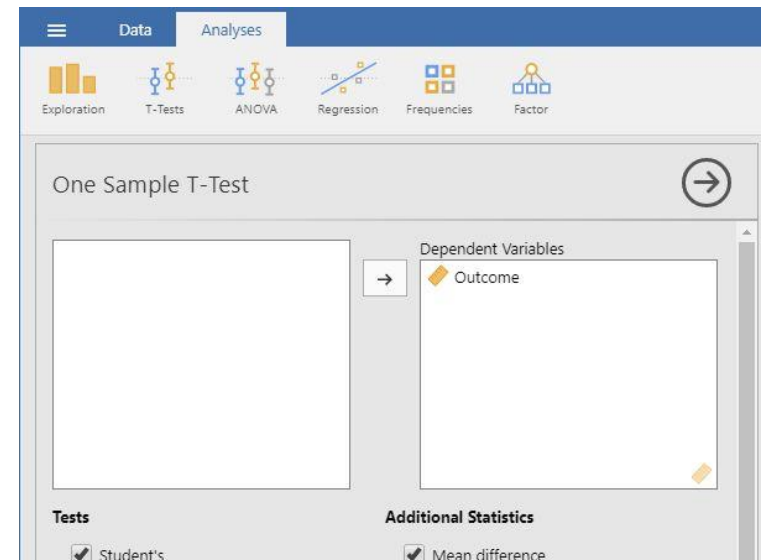
Selecting the Analysis

1. First, enter the data (described elsewhere).
2. On the “Analysis” tab, select the “T-Tests → One Sample T-Test” option.



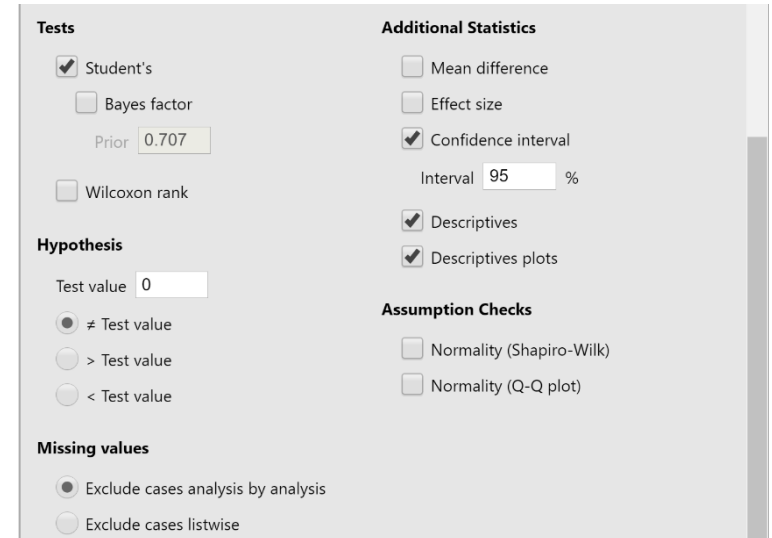
Choosing Variables

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.



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.



The image shows a screenshot of the 'Tests' dialog box in SPSS. The 'Tests' section on the left has 'Student's' checked, 'Bayes factor' unchecked with a 'Prior' of 0.707, and 'Wilcoxon rank' unchecked. The 'Hypothesis' section has 'Test value' set to 0, with radio buttons for '≠ Test value' (selected), '> Test value', and '< Test value'. The 'Missing values' section has 'Exclude cases analysis by analysis' selected. The 'Additional Statistics' section on the right has 'Mean difference' and 'Effect size' unchecked, 'Confidence interval' checked with an 'Interval' of 95%, 'Descriptives' checked, and 'Descriptives plots' checked. The 'Assumption Checks' section has 'Normality (Shapiro-Wilk)' and 'Normality (Q-Q plot)' both unchecked.

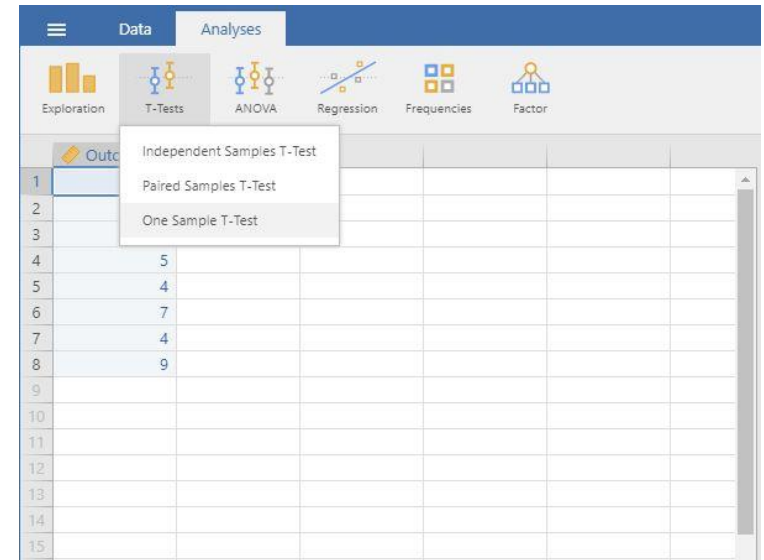
Section	Option	Status
Tests	Student's	Checked
	Bayes factor	Unchecked
	Prior	0.707
	Wilcoxon rank	Unchecked
Hypothesis	Test value	0
	≠ Test value	Selected
	> Test value	Unselected
Missing values	Exclude cases analysis by analysis	Selected
	Exclude cases listwise	Unselected
Additional Statistics	Mean difference	Unchecked
	Effect size	Unchecked
	Confidence interval	Checked
	Interval	95 %
	Descriptives	Checked
Assumption Checks	Descriptives plots	Checked
	Normality (Shapiro-Wilk)	Unchecked
	Normality (Q-Q plot)	Unchecked

Your data have now been analyzed!

One Sample t Test

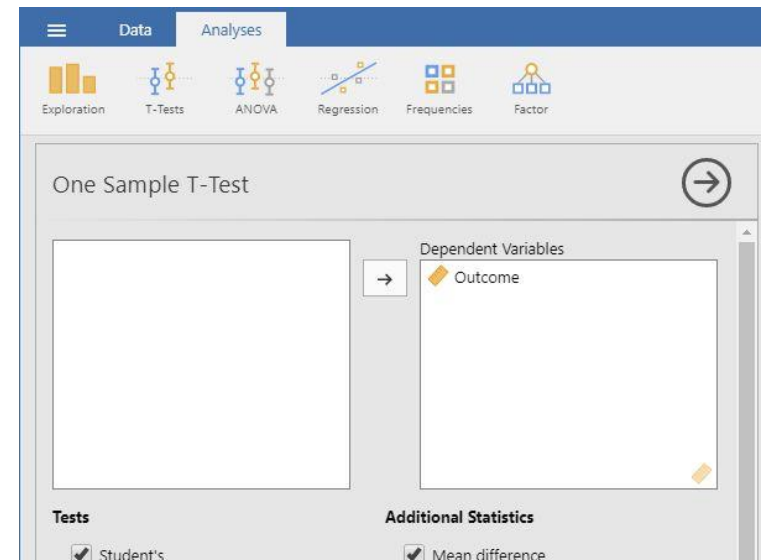
Selecting the Analysis

1. First, enter the data (described elsewhere).
2. On the “Analysis” tab, 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. Output will automatically appear on the right side of the window.



Obtaining Additional Statistics

6. Be sure to enter a known or hypothesized mean into the “Test Value” field. If you do not enter a value here, jamovi will automatically use zero as the comparison mean.
7. If you wish to view (and alter) the width of the confidence interval, check the “Confidence Interval” box.
8. Similarly, select other options that are important for you: “Mean Difference” 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 variable.
9. Updated output will automatically appear on the right side of the window.

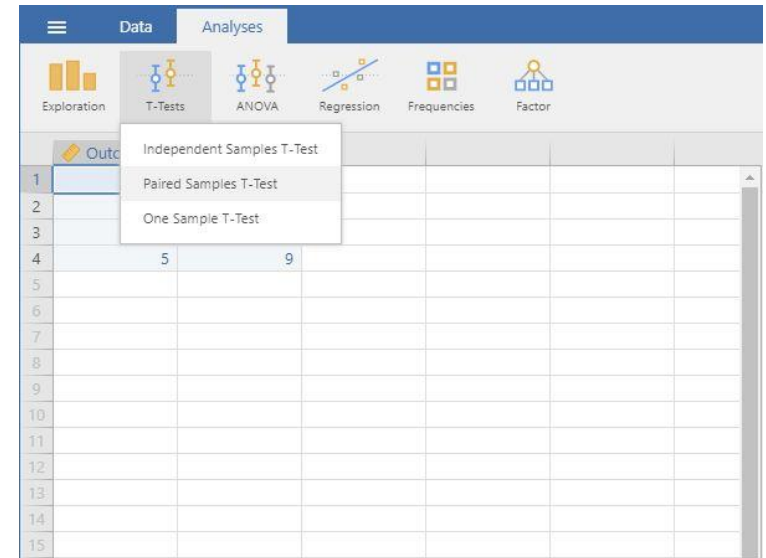
The screenshot shows the 'Tests' and 'Additional Statistics' panels in the Jamovi software interface. The 'Tests' panel on the left includes options for 'Student's' (checked), 'Bayes factor' (unchecked), and 'Wilcoxon rank' (unchecked). A 'Prior' value of 0.707 is entered. Under 'Hypothesis', 'Test value' is set to 1. The 'Missing values' section has 'Exclude cases analysis by analysis' selected. The 'Additional Statistics' panel on the right includes 'Mean difference' (checked), 'Effect size' (checked), 'Confidence interval' (checked) with a 95% interval, 'Descriptives' (checked), and 'Descriptives plots' (unchecked). Under 'Assumption Checks', both 'Normality (Shapiro-Wilk)' and 'Normality (Q-Q plot)' are unchecked.

Your data have now been analyzed!

Paired Samples t Test

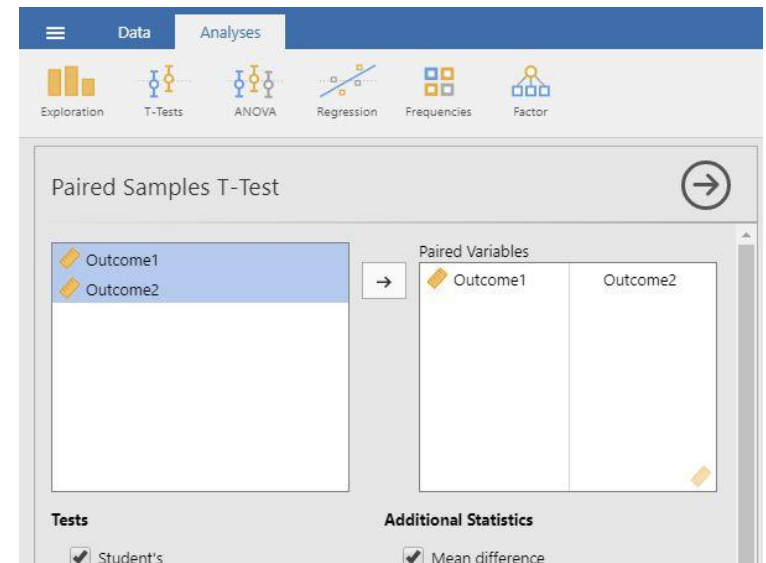
Selecting the Analysis

1. First, enter paired samples data (described elsewhere).
2. On the “Analysis” tab, Select the “T-Tests → Paired Samples T-Test” option.



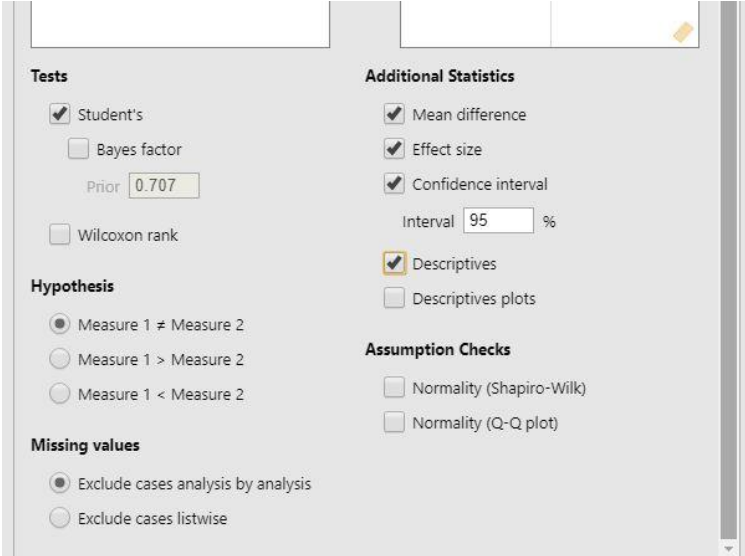
Obtaining Inferential Statistics

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.



Obtaining Additional Statistics

6. If you wish to view (and alter) the width of the confidence interval, check the “Confidence Interval” box.
7. Similarly, select other options that are important for you: “Mean Difference” 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.
8. Updated output will automatically appear on the right side of the window.



The screenshot shows the 'Additional Statistics' dialog box in SPSS. It is divided into several sections:

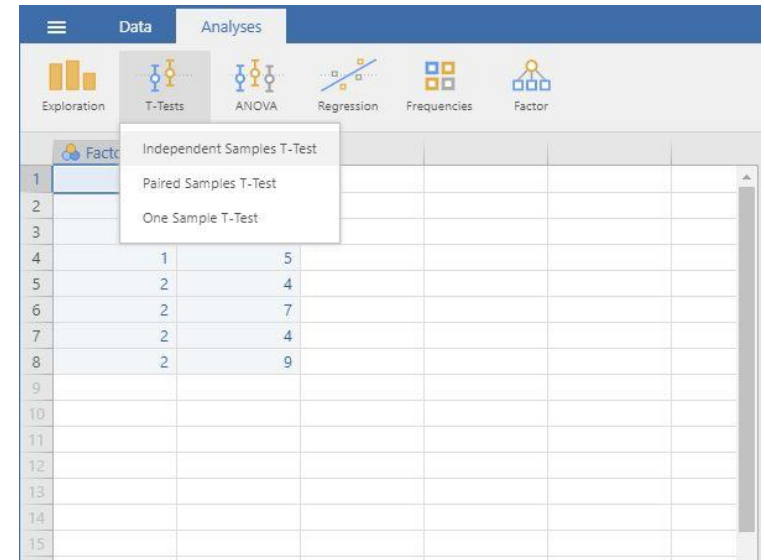
- Tests:** Includes checkboxes for 'Student's' (checked), 'Bayes factor' (unchecked), and 'Wilcoxon rank' (unchecked). A 'Prior' value of 0.707 is entered next to the Bayes factor option.
- Hypothesis:** Includes three radio button options: 'Measure 1 ≠ Measure 2' (selected), 'Measure 1 > Measure 2' (unchecked), and 'Measure 1 < Measure 2' (unchecked).
- Missing values:** Includes two radio button options: 'Exclude cases analysis by analysis' (selected) and 'Exclude cases listwise' (unchecked).
- Additional Statistics:** Includes checkboxes for 'Mean difference' (checked), 'Effect size' (checked), 'Confidence interval' (checked), 'Descriptives' (checked), and 'Descriptives plots' (unchecked). The 'Confidence interval' section shows an 'Interval' of 95 %.
- Assumption Checks:** Includes checkboxes for 'Normality (Shapiro-Wilk)' (unchecked) and 'Normality (Q-Q plot)' (unchecked).

Your data have now been analyzed!

Independent Samples t Test

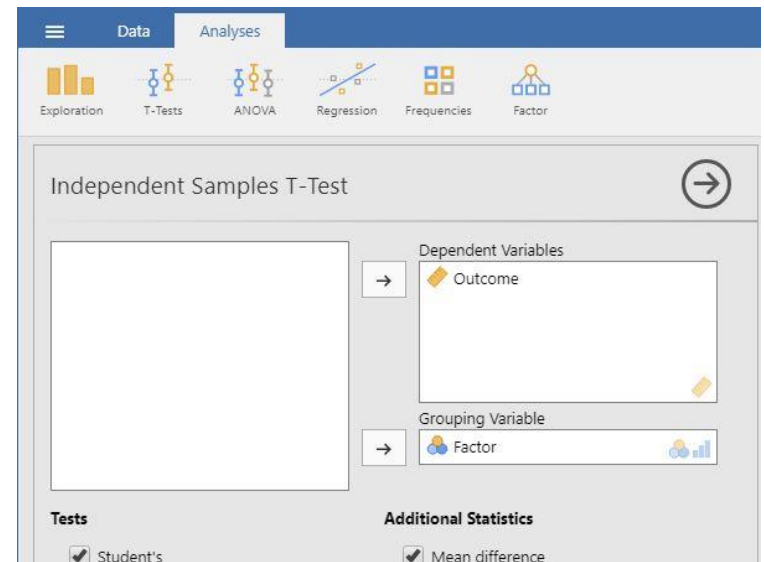
Selecting the Analysis

1. First, enter two sample data (described elsewhere).
2. On the “Analysis” tab, 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.



Obtaining Additional Statistics

7. If you wish to view (and alter) the width of the confidence interval, check the “Confidence Interval” box.
8. Similarly, select other options that are important for you: “Mean Difference” 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.
9. Updated output will automatically appear on the right side of the window.

The screenshot shows the 'Additional Statistics' dialog box in SPSS. It is divided into several sections:

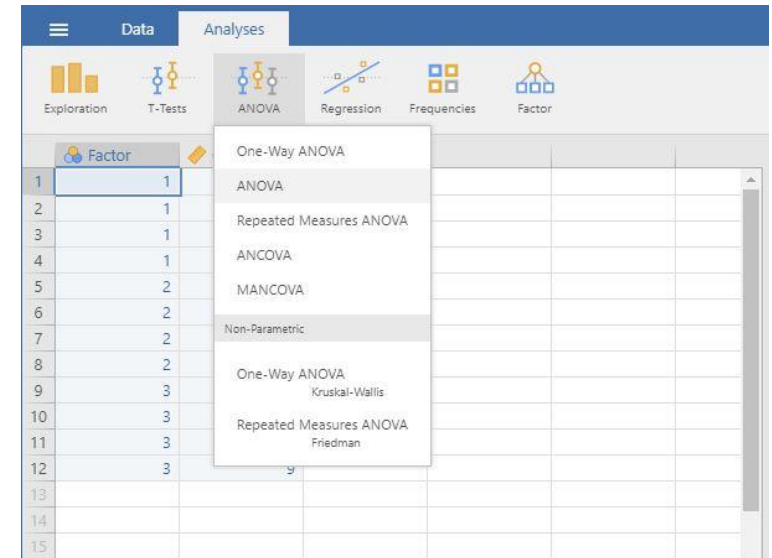
- Tests:** Includes checkboxes for 'Student's' (checked), 'Bayes factor', 'Welch's', and 'Mann-Whitney U'. A 'Prior' field is set to 0.707.
- Hypothesis:** Includes radio buttons for 'Group 1 ≠ Group 2' (selected), 'Group 1 > Group 2', and 'Group 1 < Group 2'.
- Missing values:** Includes radio buttons for 'Exclude cases analysis by analysis' (selected) and 'Exclude cases listwise'.
- Additional Statistics:** Includes checkboxes for 'Mean difference' (checked), 'Effect size' (checked), 'Confidence interval' (checked), 'Descriptives' (checked), and 'Descriptives plots' (unchecked). An 'Interval' field is set to 95 %.
- Assumption Checks:** Includes checkboxes for 'Normality (Shapiro-Wilk)', 'Normality (Q-Q plot)', and 'Equality of variances', all of which are unchecked.

Your data have now been analyzed!

OneWay ANOVA

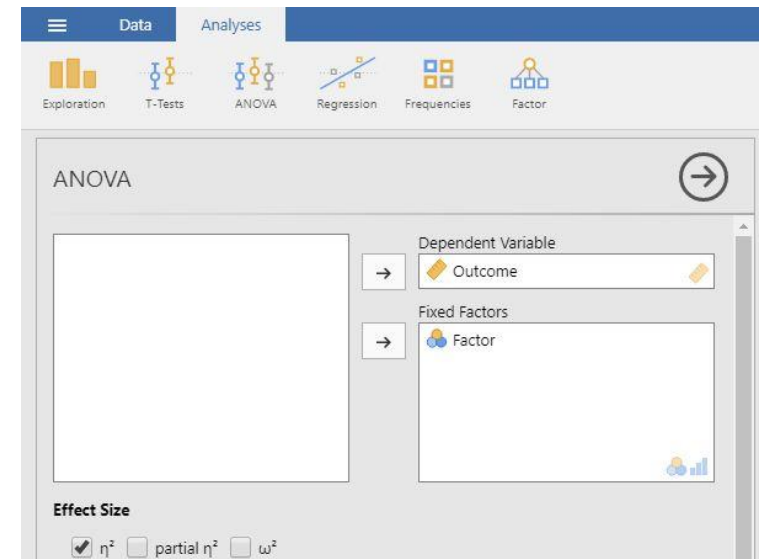
Selecting the Analysis

1. First, enter multiple group data (described elsewhere).
2. On the “Analysis” tab, select the “ANOVA → ANOVA” option.



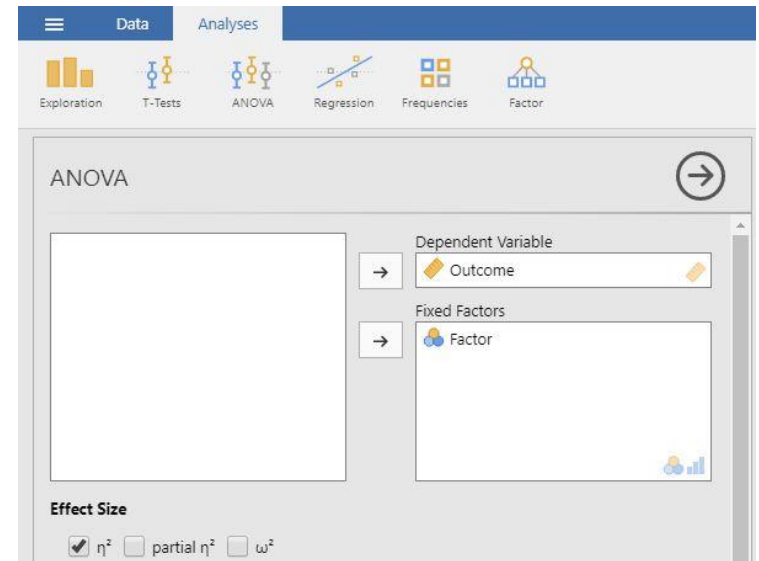
Obtaining Inferential Statistics

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.



Obtaining Additional Statistics

7. Choose an effect size measure from the “Effect Size” list.
8. If you wish descriptive statistics for each group, use the “Descriptives” command described earlier in the sourcebook.
9. Updated output will automatically appear on the right side of the window.

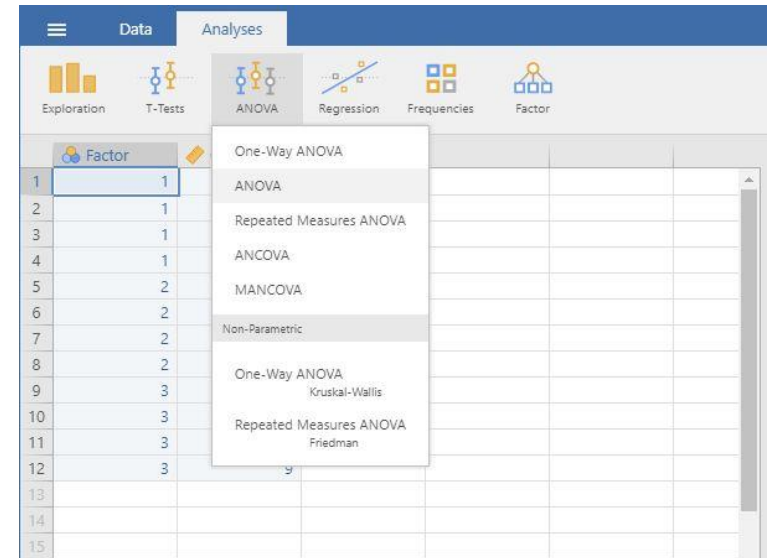


Your data have now been analyzed!

Post Hoc Comparisons

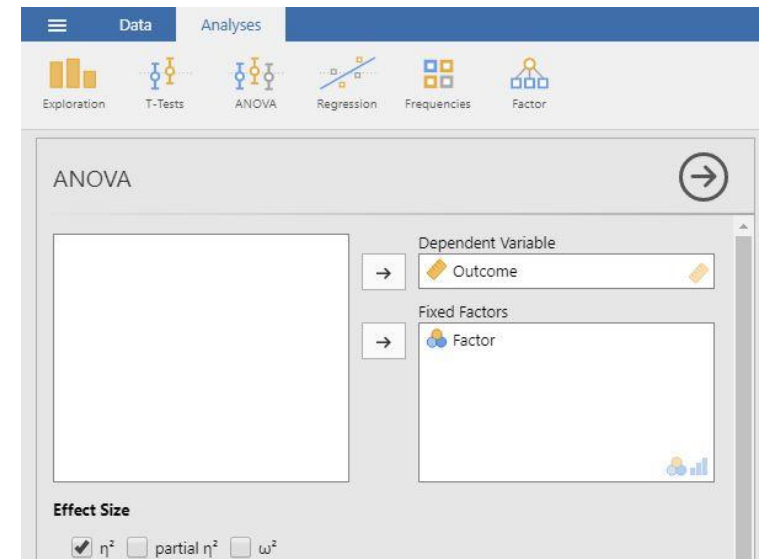
Selecting the Analysis

1. First, enter multiple group data (described elsewhere).
2. On the “Analysis” tab, select the “ANOVA → ANOVA” option.



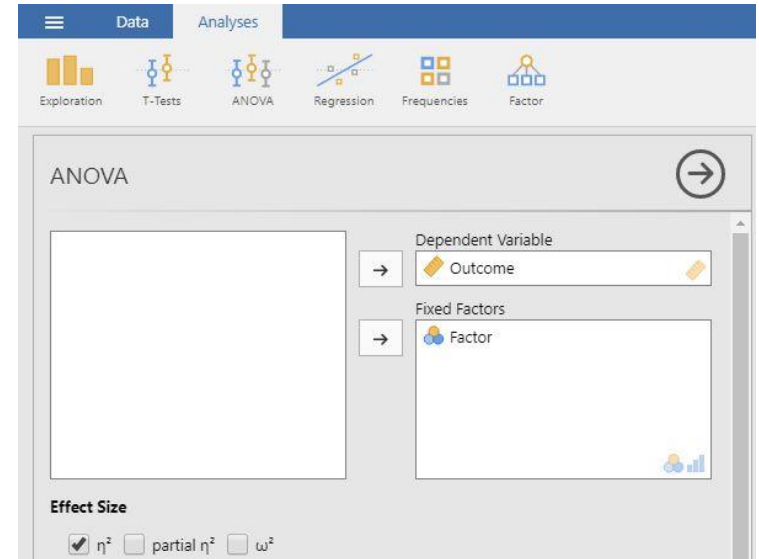
Obtaining Inferential Statistics

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.



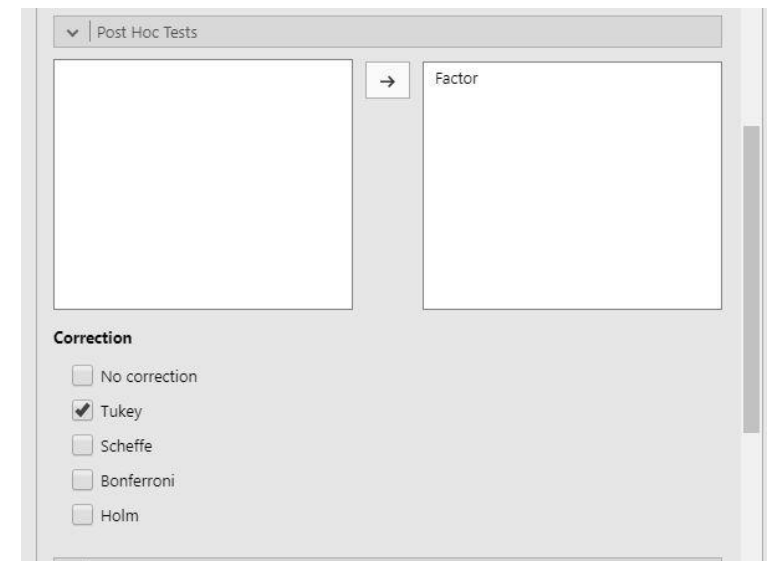
Obtaining Additional Statistics

7. Choose an effect size measure from the “Effect Size” list.
8. If you wish descriptive statistics for each group, use the “Descriptives” command described earlier in the sourcebook.
9. Updated output will automatically appear on the right side of the window.



Obtaining Post Hoc Tests

10. If you wish to obtain post hoc tests for the purpose of making comparisons between groups, click the “Post Hoc Tests” drop-down button.
11. Move the factor (Independent Variable) name from the left-hand box to the right-hand box.
12. Select “Tukey” to get Tukey HSD post hoc tests (or whatever option you prefer).
13. Updated output will automatically appear on the right side of the window.

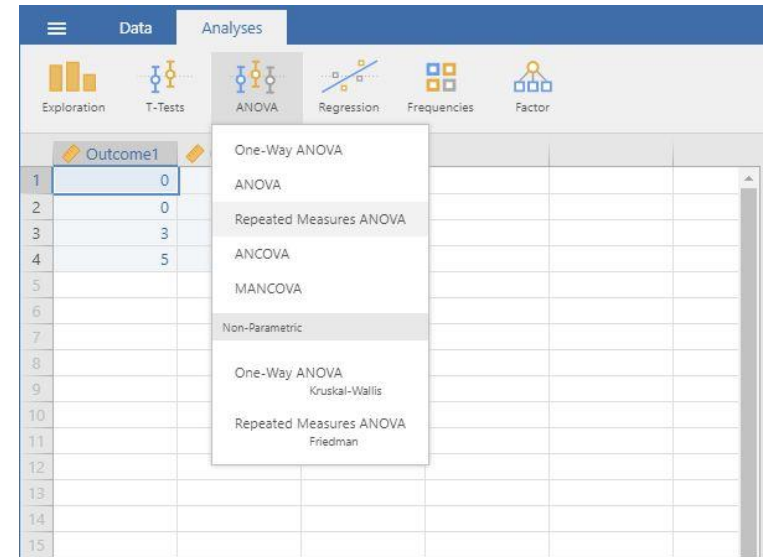


Your data have now been analyzed!

Repeated Measures ANOVA

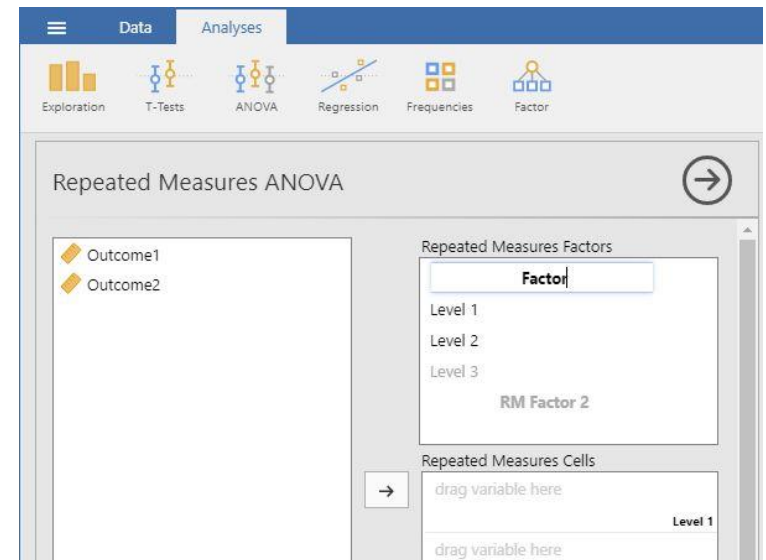
Selecting the Analysis

1. First, enter repeated measures data (described elsewhere).
2. On the “Analysis” tab, select the “ANOVA → Repeated Measures ANOVA” option.



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, “Factor” 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, 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, “Outcome1” reflects the first level of the factor and “Outcome2” 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.

Obtaining Additional Statistics

11. Choose an effect size measure from the “Effect Size” list.
12. If you wish descriptive statistics associated with each variable, follow the “Descriptives” procedures described earlier in this sourcebook.
13. Updated output will automatically appear on the right side of the window.

Exploration T-Tests ANOVA Regression Frequencies Factor

Repeated Measures ANOVA

Repeated Measures Factors

Factor

Level 1
Level 2
Level 3

RM Factor 2

Repeated Measures Cells

→ Outcome1 Level 1
Outcome2 Level 2

Between Subject Factors

→

Covariates

→

Effect Size

☐ Generalised η^2 ☐ η^2 ☒ Partial η^2

Dependent Variable Label

Dependent

> | Model

> | Assumption Checks

> | Post Hoc Tests

> | Estimated Marginal Means

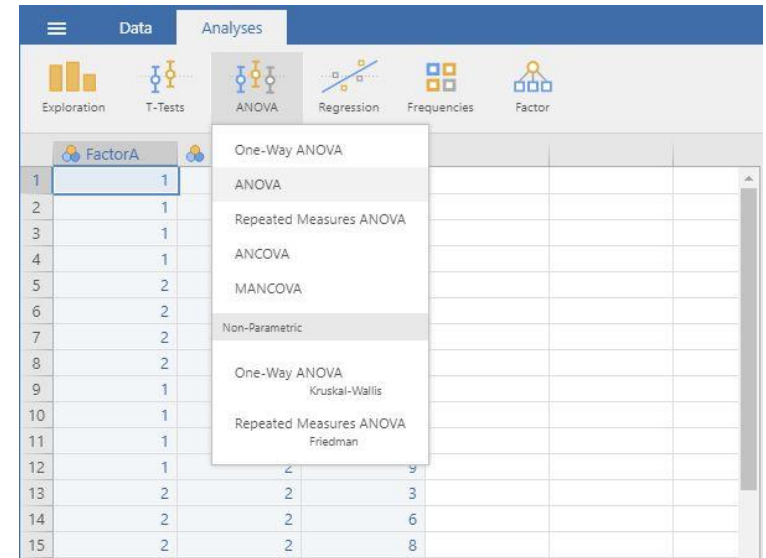
> | Options

Your data have now been analyzed!

Factorial ANOVA

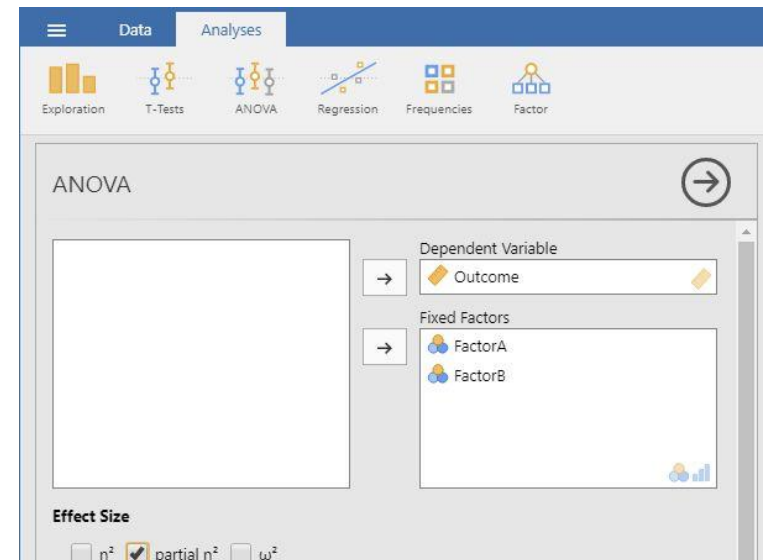
Selecting the Analysis

1. First, enter factorial data (described elsewhere).
2. On the “Analysis” tab, 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.



Obtaining Additional Statistics

7. Choose an effect size measure from the “Effect Size” list.
8. If you wish descriptive statistics associated with each variable, follow the “Descriptives” procedures described earlier in this sourcebook.
9. Updated output will automatically appear on the right side of the window.

Dependent variable
→ Outcome

Fixed Factors
→ FactorA
FactorB

Effect Size
☐ η^2 ☒ partial η^2 ☐ ω^2

> Model

> Assumption Checks

> Contrasts

> Post Hoc Tests

> Estimated Marginal Means

Your data have now been analyzed!