

STATISTICS FOR SOCIAL SCIENCE

VOLUME: JAMOVİ

CHAPTER: USING THE SOFTWARE

Abstract: This section 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>

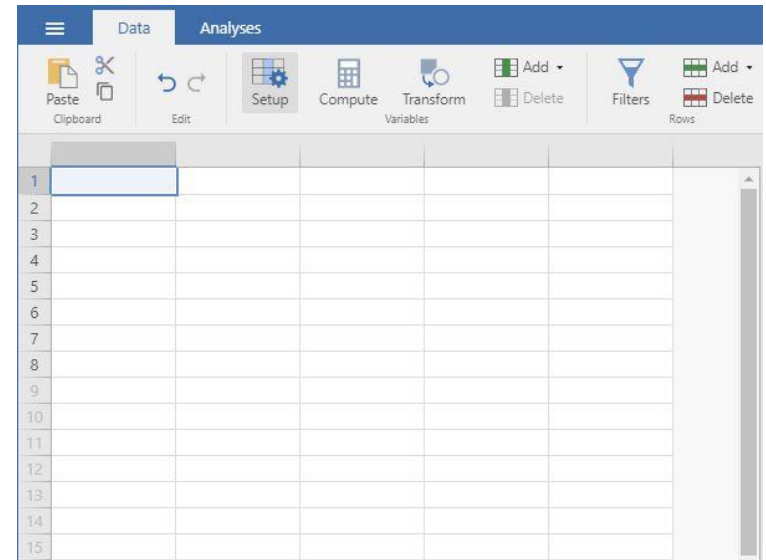
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Entering One Sample Data

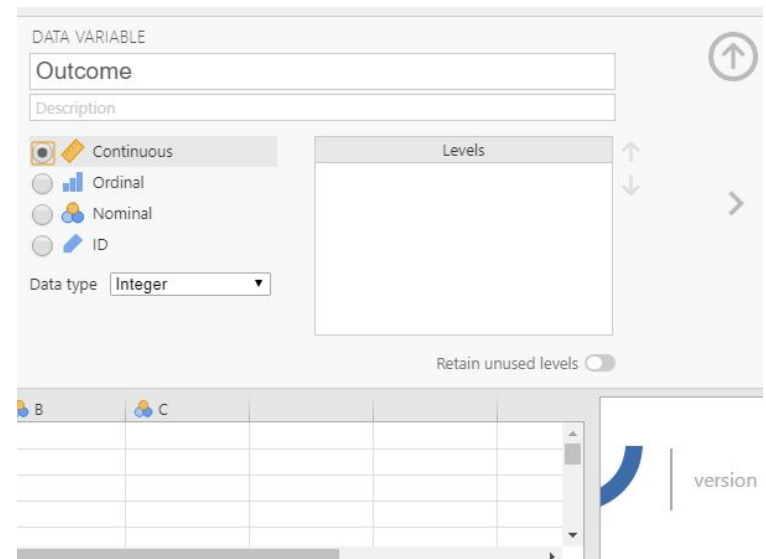
Steps for Defining Variables

1. First, click on the “Data” tab on the top of the window. Generally speaking, this is where you will enter the data for all of the variables in the data set.
2. Click on a cell in the column (i.e., variable) that you wish to define. Click on “Setup” from the menu. This will bring up a new set of options.



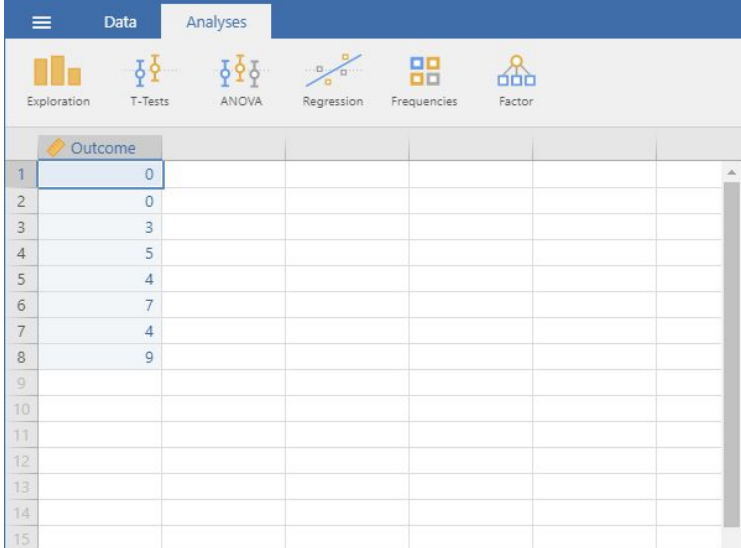
Steps for Setting Variable Properties

3. Type in the name of the variable in the top box (previously labeled “A”).
4. Define the level of measurement for the variables by choosing the appropriate option. In this example, “Outcome” (an outcome variable) is continuous.
5. To hide the setup menu, click on the large UP arrow button to the right of the variable name.



Steps for Entering Data

6. Enter the data in the individual cells of the column for the variable.
Note that each cell should contain a single score for an individual person. There will be as many rows as people.



The screenshot shows a software interface with a blue header bar containing a menu icon, 'Data', and 'Analyses' tabs. Below the header is a row of icons for various statistical tests: Exploration (bar chart), T-Tests (t-distribution), ANOVA (ANOVA diagram), Regression (line graph), Frequencies (bar chart), and Factor (hierarchy diagram). The main area is a data table with a column labeled 'Outcome' and 15 rows. The data values for the 'Outcome' column are: 0, 0, 3, 5, 4, 7, 4, 9, and then empty cells for rows 9 through 15.

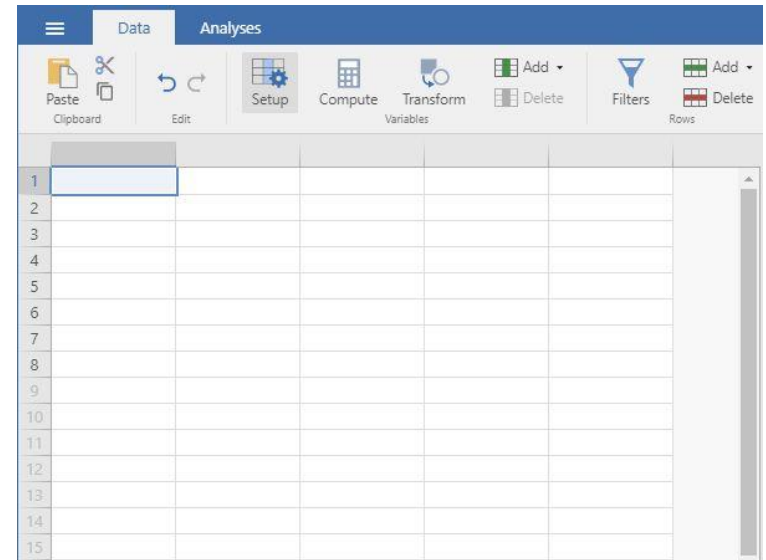
	Outcome					
1	0					
2	0					
3	3					
4	5					
5	4					
6	7					
7	4					
8	9					
9						
10						
11						
12						
13						
14						
15						

Your data are now ready to be analyzed!

Entering Repeated Measures Data

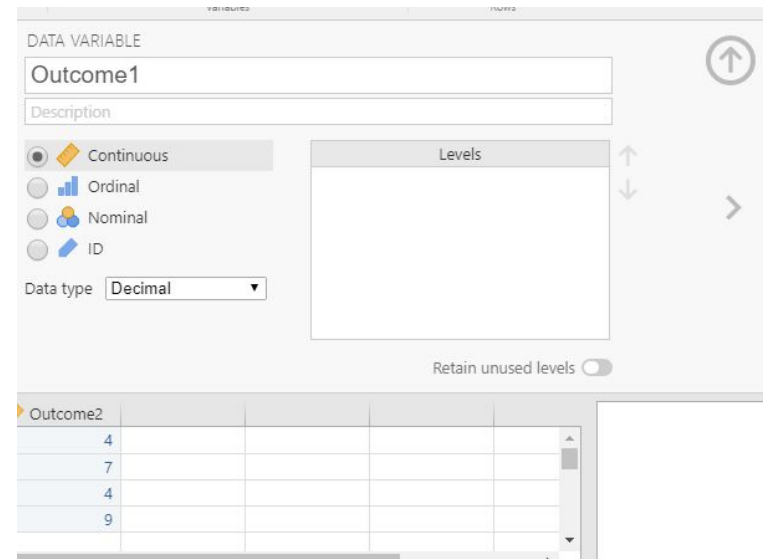
Steps for Defining Variables

1. First, click on the “Data” tab on the top of the window. Generally speaking, this is where you will enter the data for all of the variables in the data set.
2. Click on a cell in the column (i.e., variable) that you wish to define. Click on “Setup” from the menu. This will bring up a new set of options.



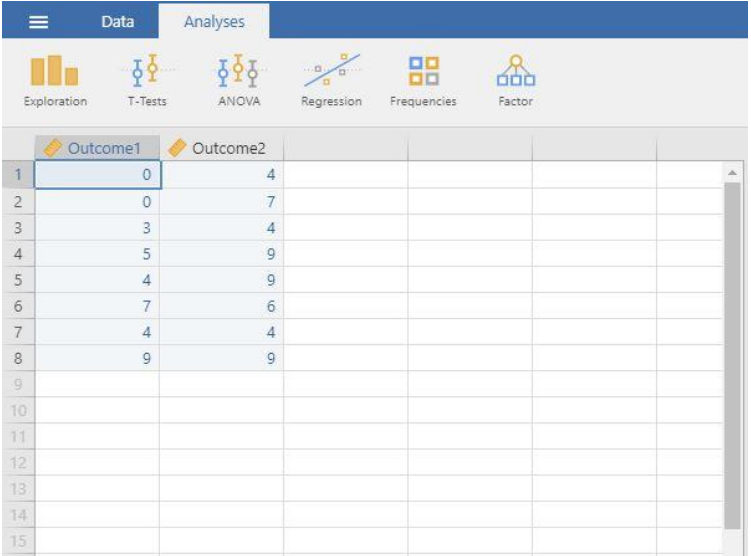
Steps for Setting Variable Properties

3. Type in the name of the variable in the top box (previously labeled “A”).
4. Define the level of measurement for the variables by choosing the appropriate option. In this example, “Outcome1” (an instance of the outcome variable) is continuous.
5. To hide the setup menu, click on the large UP arrow button to the right of the variable name.



Steps for Entering Data

6. Enter the data in the individual cells of the column for the variable. Note that each cell should contain a single score for an individual person. There will be as many rows as people.
7. Notice that each individual (i.e., the rows) have values for each instance of the within-subjects variable (i.e., the columns).



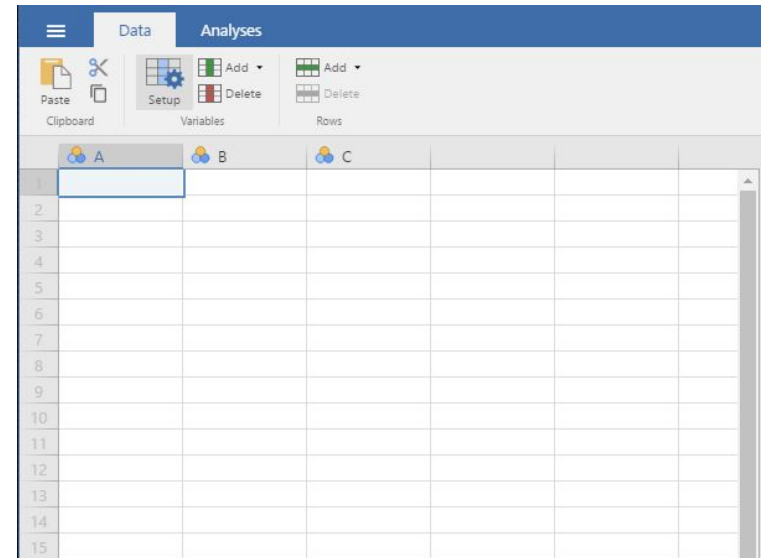
	Outcome1	Outcome2				
1	0	4				
2	0	7				
3	3	4				
4	5	9				
5	4	9				
6	7	6				
7	4	4				
8	9	9				
9						
10						
11						
12						
13						
14						
15						

Your data are now ready to be analyzed!

Entering Multiple Sample Data

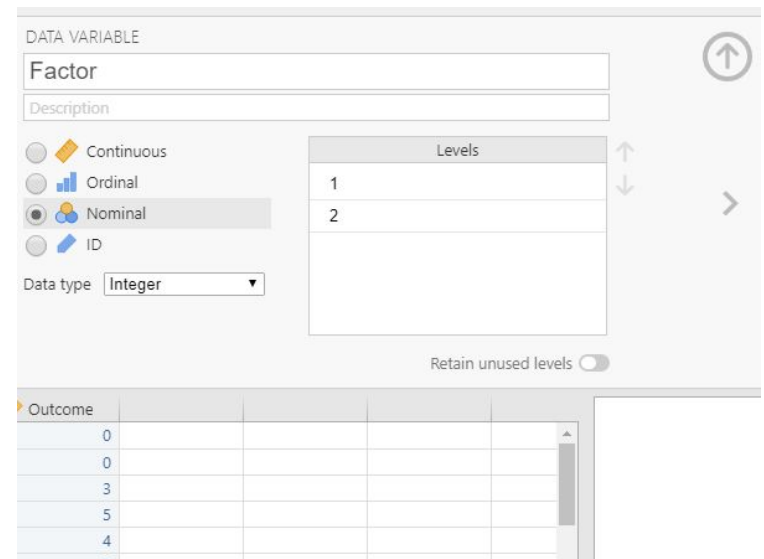
Steps for Defining Variables

1. First, click on the “Data” tab on the top of the window. Generally speaking, this is where you will enter the data for all of the variables in the data set.
2. Click on a cell in the column (i.e., variable) that you wish to define. Click on “Setup” from the menu. This will bring up a new set of options.



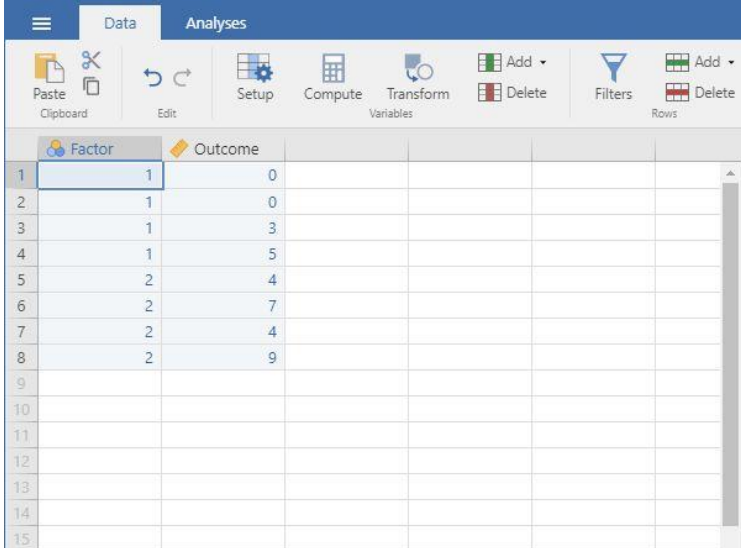
Steps for Setting Variable Properties

3. You will need to define multiple variables. One variable will represent the Factor (Independent Variable) and the other will represent the Outcome (Dependent) Variable.
4. Provide a name and define the level of measurement for the variables by choosing the appropriate options. In this example, “Factor” (Independent Variable) is nominal. The “Outcome” (Dependent) variable is continuous.
5. To hide the setup menu, click on the large UP arrow button next to the variable name.



Steps for Entering Data

6. Enter the data for all of the participants. Notice that each participant has scores on both the Factor and Outcome Variables. There will be as many rows as people.
7. On the categorical “Factor”, you will use numbers to represent the two categories (or “levels”) of the variable.
8. If your data set has more than two groups, simply be sure to add a group indicator (a value on the “Factor” variable) and a “Outcome” for each additional person.



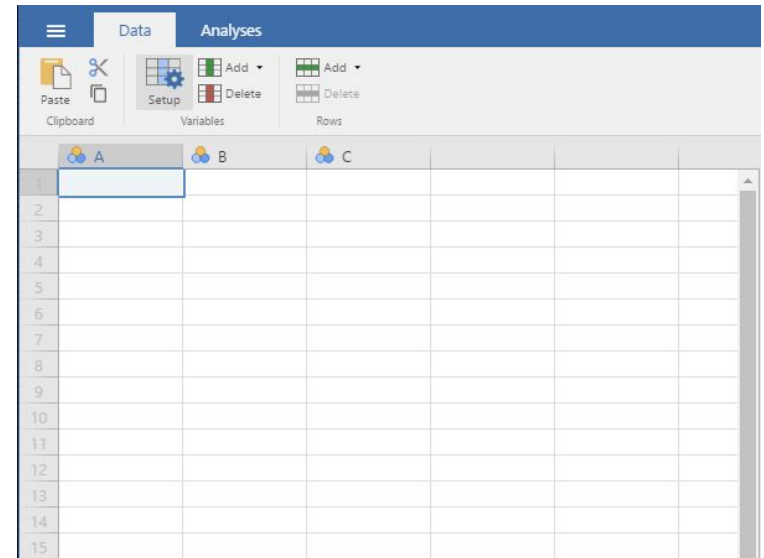
	Factor	Outcome				
1	1	0				
2	1	0				
3	1	3				
4	1	5				
5	2	4				
6	2	7				
7	2	4				
8	2	9				
9						
10						
11						
12						
13						
14						
15						

Your data are now ready to be analyzed!

Entering Factorial Data

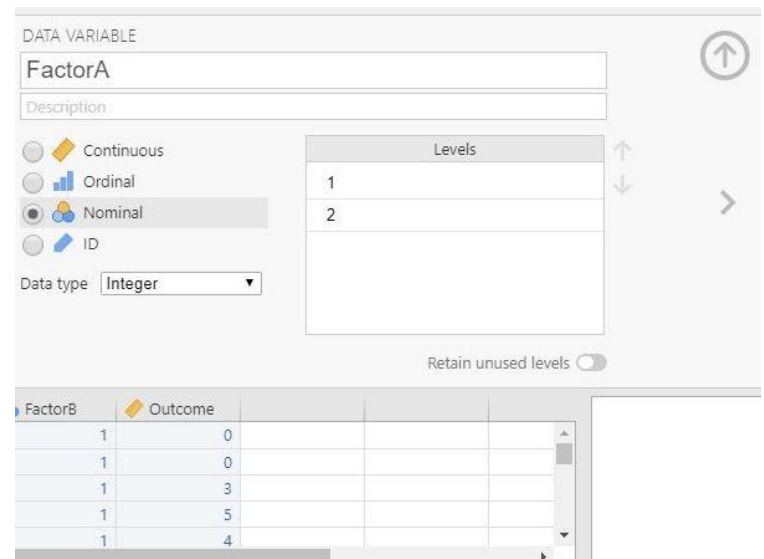
Steps for Defining Variables

1. First, click on the “Data” tab on the top of the window. Generally speaking, this is where you will enter the data for all of the variables in the data set.
2. Click on a cell in the column (i.e., variable) that you wish to define. Click on “Setup” from the menu. This will bring up a new set of options.



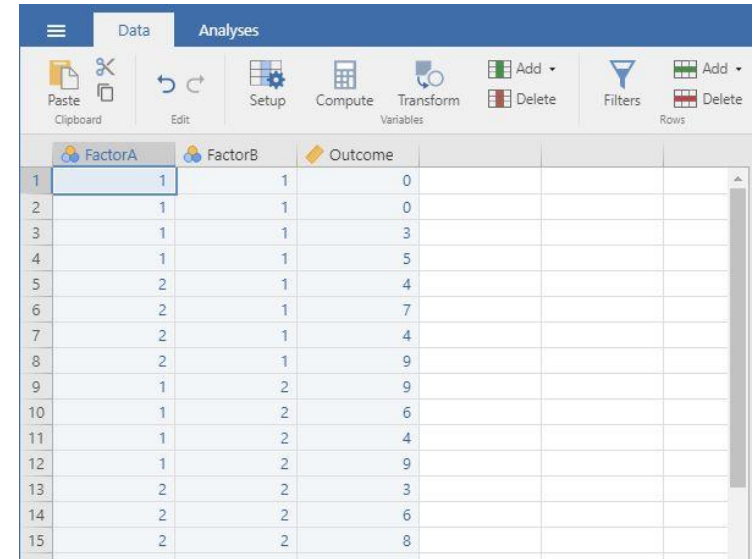
Steps for Setting Variable Properties

3. You will need to define multiple variables. Two variables will represent the Factors (Independent Variables) and the other will represent the Outcome (Dependent) Variable.
4. Provide a name and define the level of measurement for the variables by choosing the appropriate options. In this example, “FactorA” and “FactorB” nominal. The “Outcome” (Dependent) variable is continuous.
5. To hide the setup menu, click on the large UP arrow button next to the variable name.



Steps for Entering Data

6. Enter the data for all of the participants. Notice that each participant has scores on both of the Factors and on the Outcome Variable. There will be as many rows as people.
7. On the categorical Factors, use the values that you indicated when defining the variables earlier. Note that the combination of values in the Factors will define the multiple groups of the factorial design.
8. If your data set has more than two levels for either (or both) of the Factors, simply be sure to add an indicator and an outcome value for each additional person.



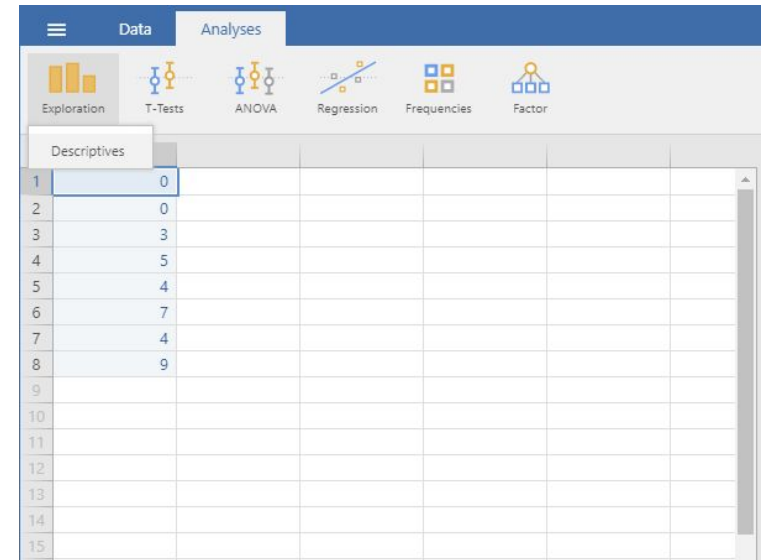
	FactorA	FactorB	Outcome			
1	1	1	0			
2	1	1	0			
3	1	1	3			
4	1	1	5			
5	2	1	4			
6	2	1	7			
7	2	1	4			
8	2	1	9			
9	1	2	9			
10	1	2	6			
11	1	2	4			
12	1	2	9			
13	2	2	3			
14	2	2	6			
15	2	2	8			

Your data are now ready to be analyzed!

Descriptives (Frequencies and Descriptives)

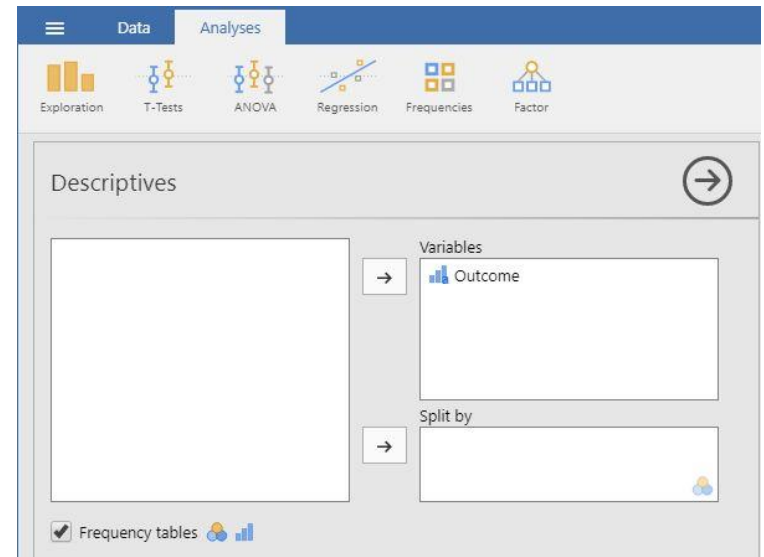
Steps for Obtaining Frequency-Related Statistics

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



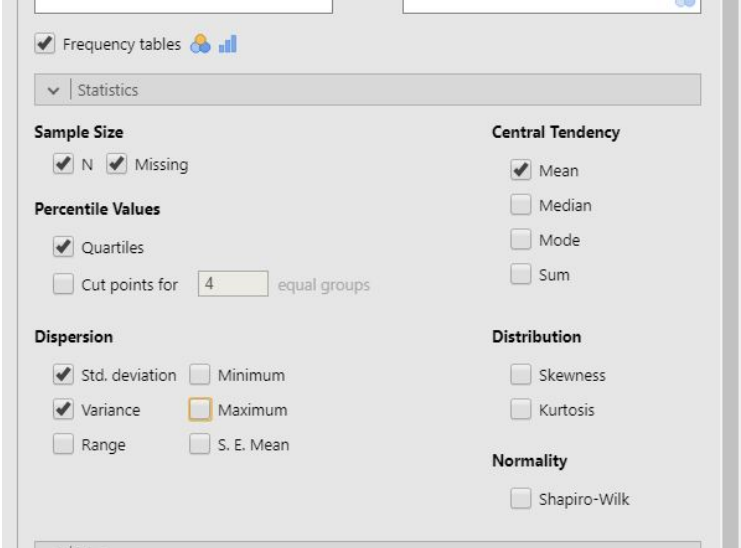
Steps for Obtaining a Frequency Distribution

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.



Steps for Obtaining Summary 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.



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

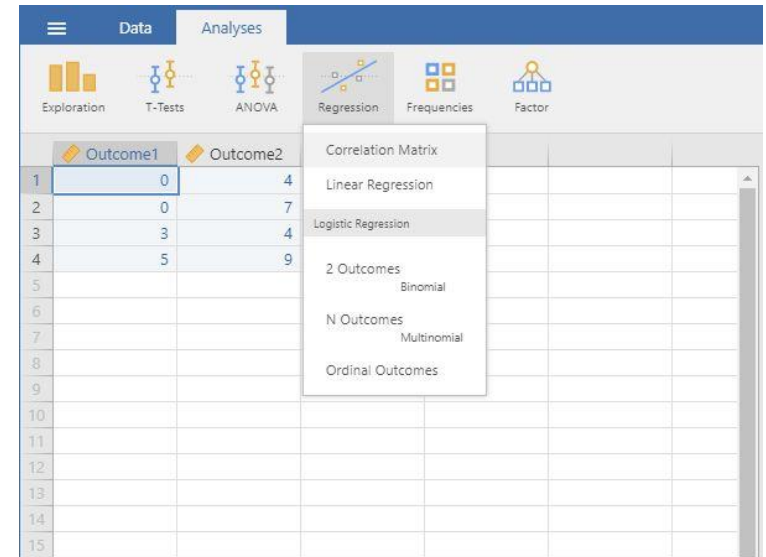
- Sample Size:** ☒ N, ☒ Missing
- Percentile Values:** ☒ Quartiles, ☐ Cut points for equal groups
- Dispersion:** ☒ Std. deviation, ☐ Minimum, ☒ Variance, ☐ Range, ☐ S. E. Mean, ☐ Maximum
- Central Tendency:** ☒ Mean, ☐ Median, ☐ Mode, ☐ Sum
- Distribution:** ☐ Skewness, ☐ Kurtosis
- Normality:** ☐ Shapiro-Wilk

Your data have now been analyzed!

Correlations (Bivariate)

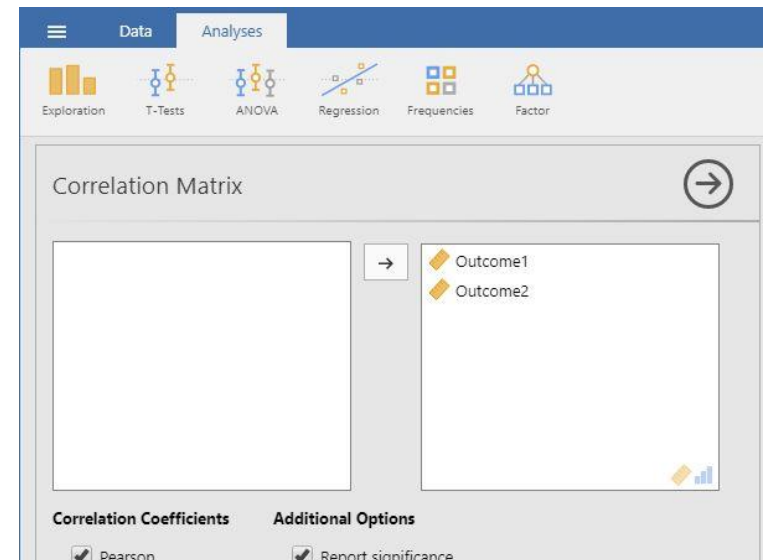
Steps for Obtaining Correlational Statistics

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



Steps for Obtaining the Correlations (and Significance Tests)

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.

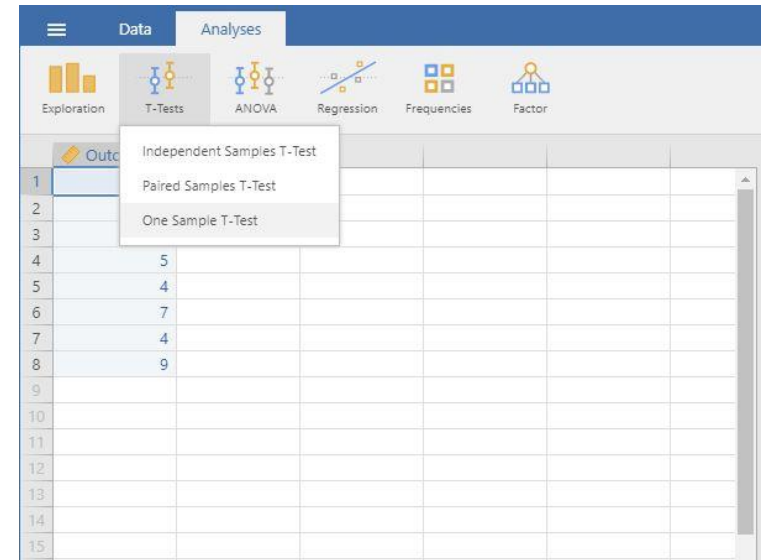


Your data have now been analyzed!

T Test (One Sample)

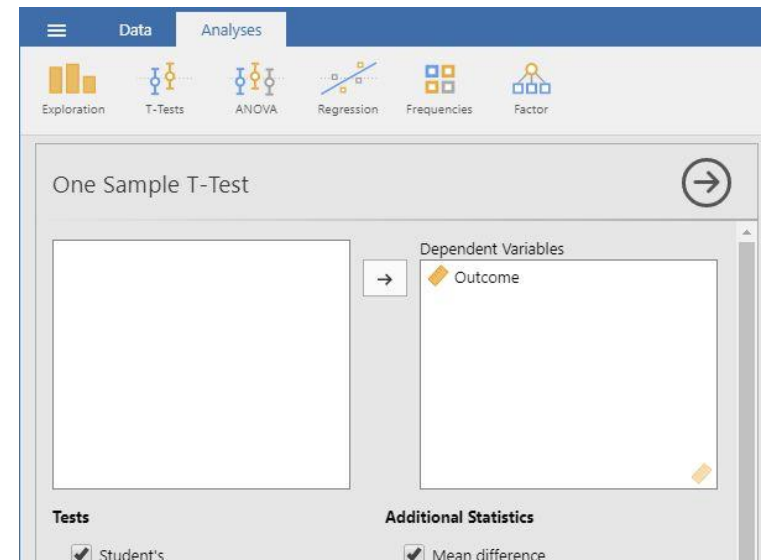
Steps for Obtaining One-Sample Inferential Statistics

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



Steps for Obtaining the Significance Test

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.



Steps for 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 group.
9. Updated output will automatically appear on the right side of the window. Output can be copied and pasted into other documents for printing.

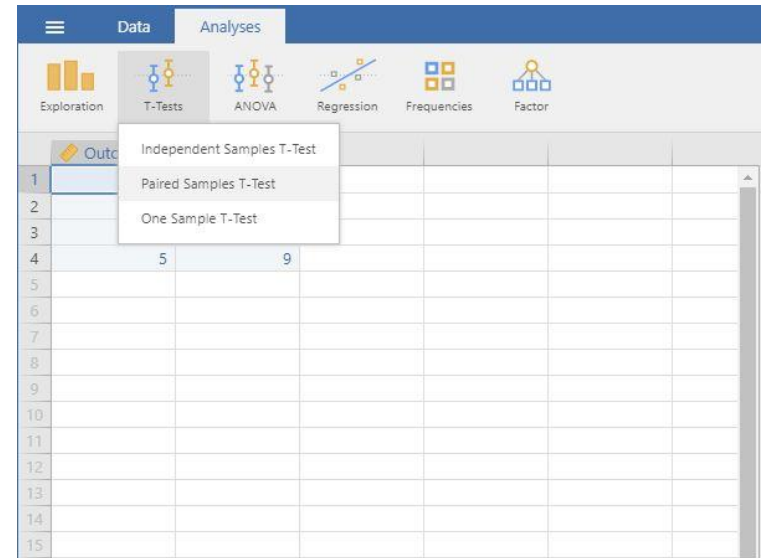
The screenshot shows the Jamovi software interface with the 'Tests' and 'Additional Statistics' panels. The 'Tests' panel on the left includes options for 'Student's' (checked), 'Bayes factor' (unchecked), and 'Wilcoxon rank' (unchecked). The 'Prior' field is set to 0.707. The 'Hypothesis' section has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

Your data have now been analyzed!

T Test (Paired Samples)

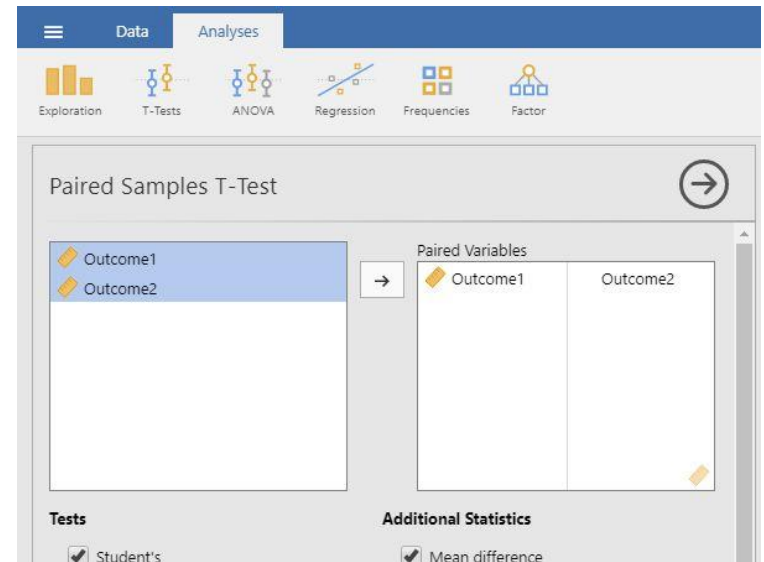
Steps for Obtaining Paired-Sample Inferential Statistics

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



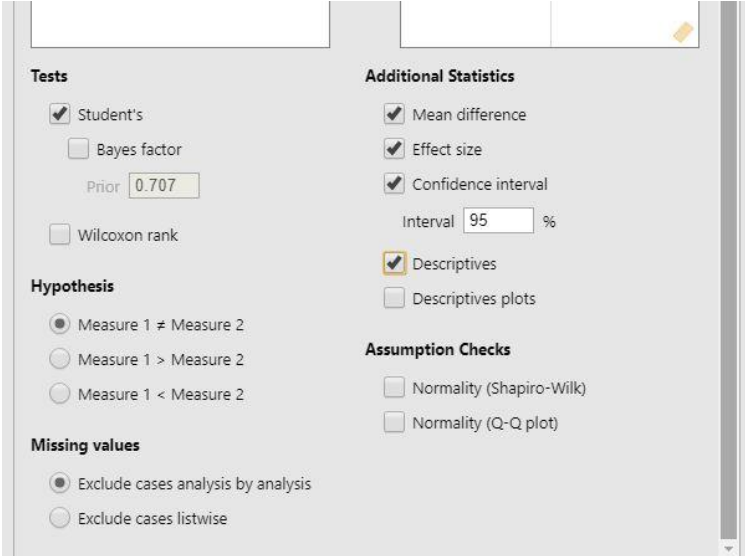
Steps for Obtaining the Significance Test

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.



Steps for 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. Output can be copied and pasted into other documents for printing.



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

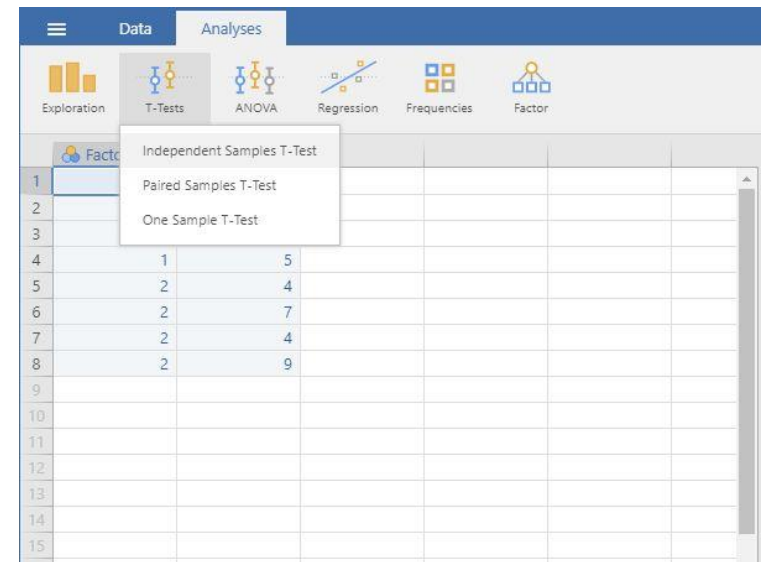
- Tests:** Includes checkboxes for 'Student's' (checked), 'Bayes factor' (unchecked), and 'Wilcoxon rank' (unchecked). A 'Prior' field is set to 0.707.
- Hypothesis:** Includes radio buttons for 'Measure 1 ≠ Measure 2' (selected), 'Measure 1 > Measure 2', and 'Measure 1 < Measure 2'.
- Missing values:** 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). The 'Confidence interval' section has a sub-section for 'Interval' set to 95%.
- Assumption Checks:** Includes checkboxes for 'Normality (Shapiro-Wilk)' (unchecked) and 'Normality (Q-Q plot)' (unchecked).

Your data have now been analyzed!

T Test (Independent Samples)

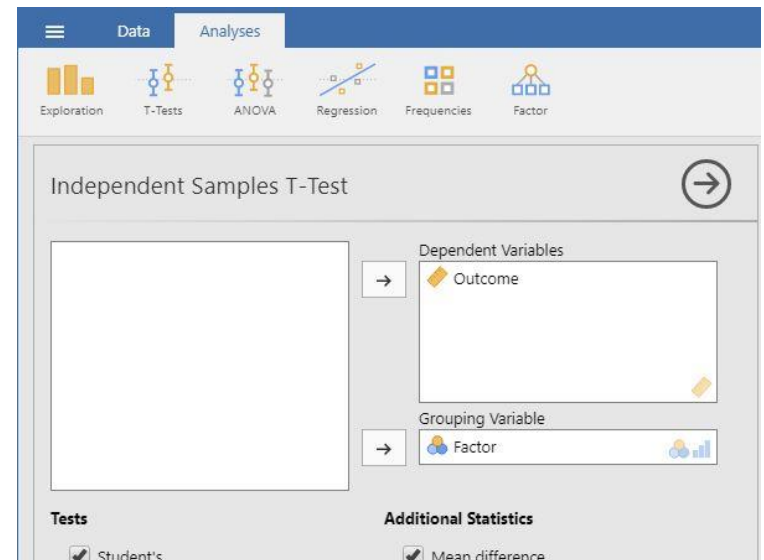
Steps for Obtaining Two-Sample Inferential Statistics

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



Steps for Obtaining the Significance Test

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.



Steps for 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. Output can be copied and pasted into other documents for printing.

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

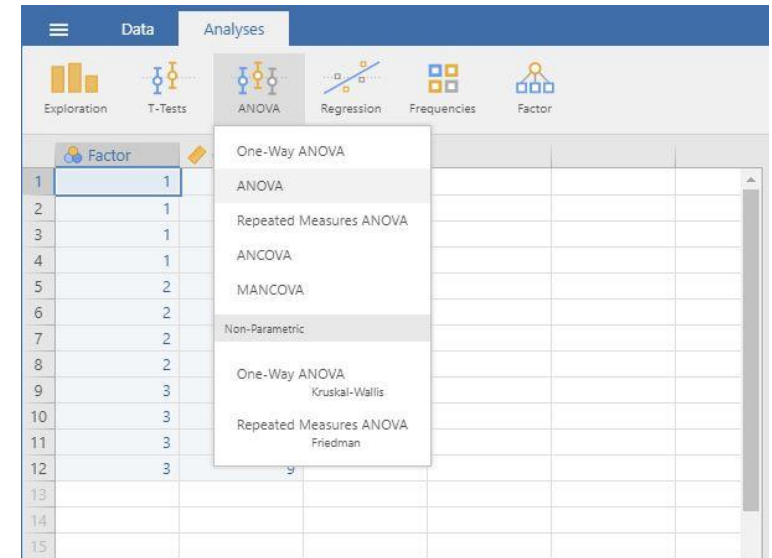
- Tests:** Includes checkboxes for 'Student's' (checked), 'Bayes factor', 'Welch's', and 'Mann-Whitney U'. A 'Prior' box contains the value '0.707'.
- Hypothesis:** Includes radio buttons for 'Group 1 ≠ Group 2' (selected), 'Group 1 > Group 2', and 'Group 1 < Group 2'.
- Missing values:** Includes radio 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' box contains the value '95' followed by a '%' sign.
- Assumption Checks:** Includes checkboxes for 'Normality (Shapiro-Wilk)', 'Normality (Q-Q plot)', and 'Equality of variances', all of which are currently unchecked.

Your data have now been analyzed!

ANOVA (OneWay ANOVA)

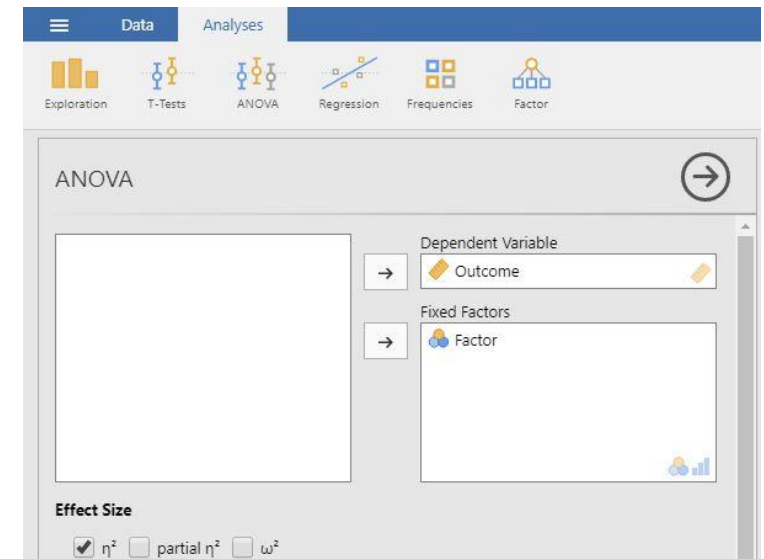
Steps for Obtaining Multiple-Sample Inferential Statistics

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



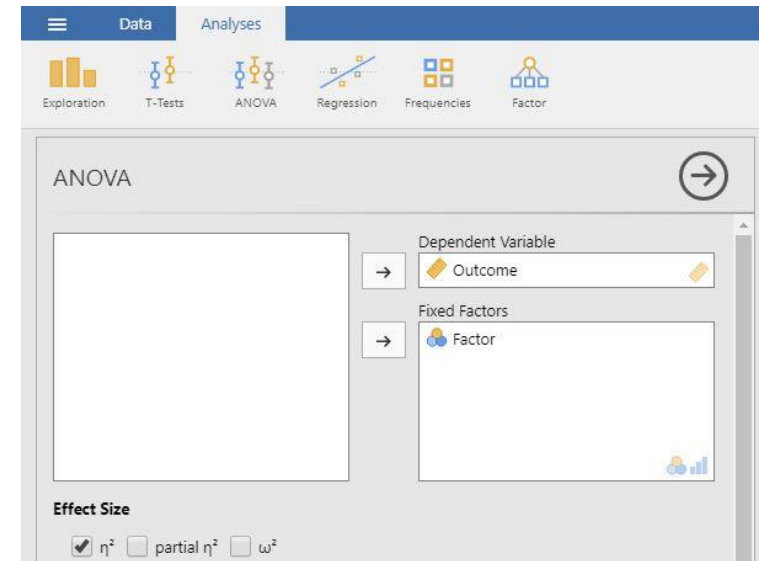
Steps for Obtaining the Significance Test

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.



Steps for 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. Output can be copied and pasted into other documents for printing.

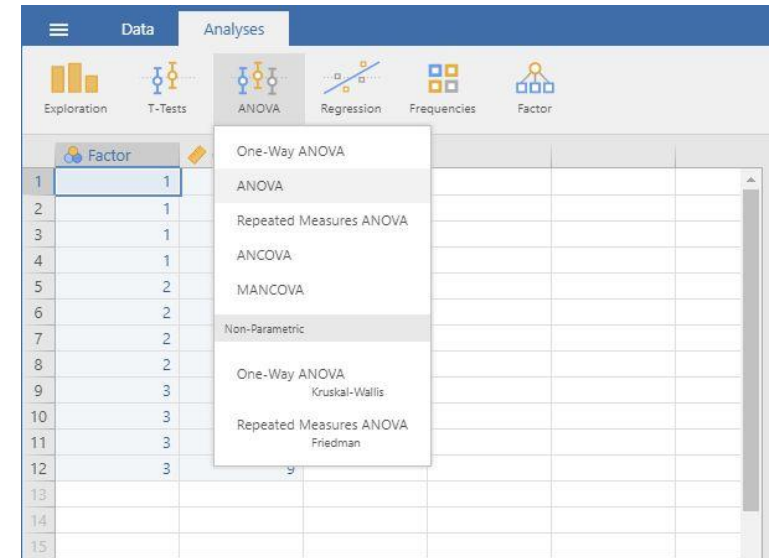


Your data have now been analyzed!

Post Hoc Tests (OneWay ANOVA)

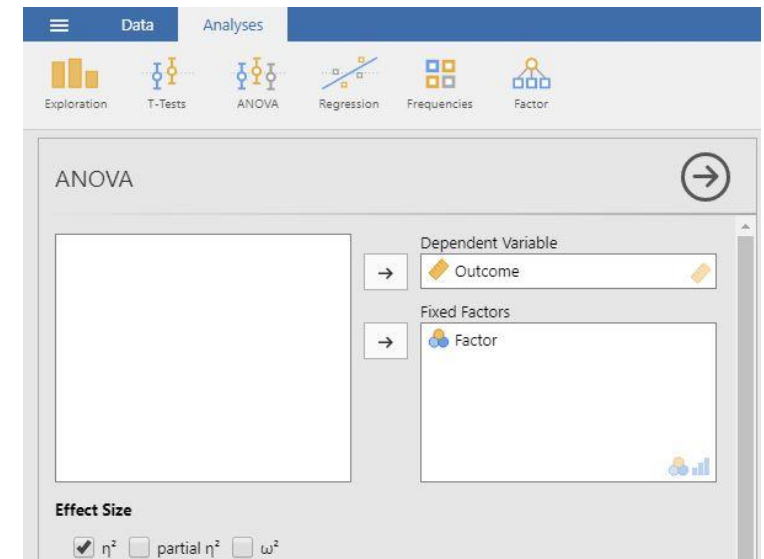
Steps for Obtaining Multiple-Sample Inferential Statistics

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



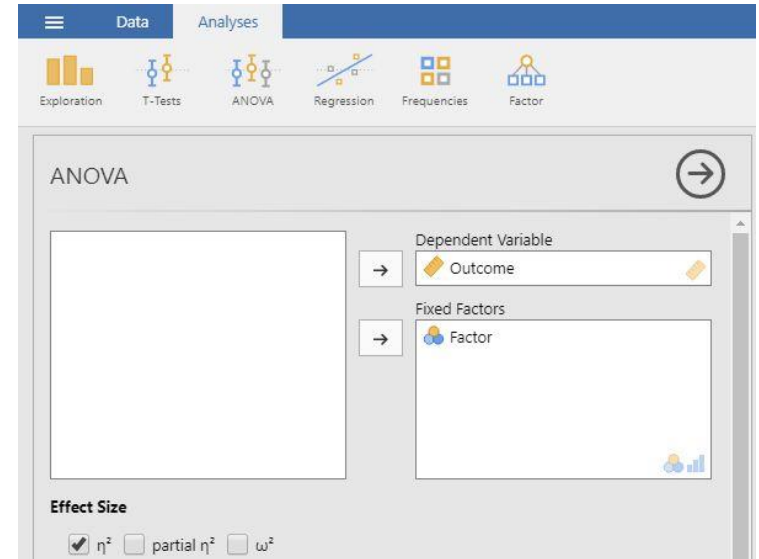
Steps for Obtaining the Significance Test

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



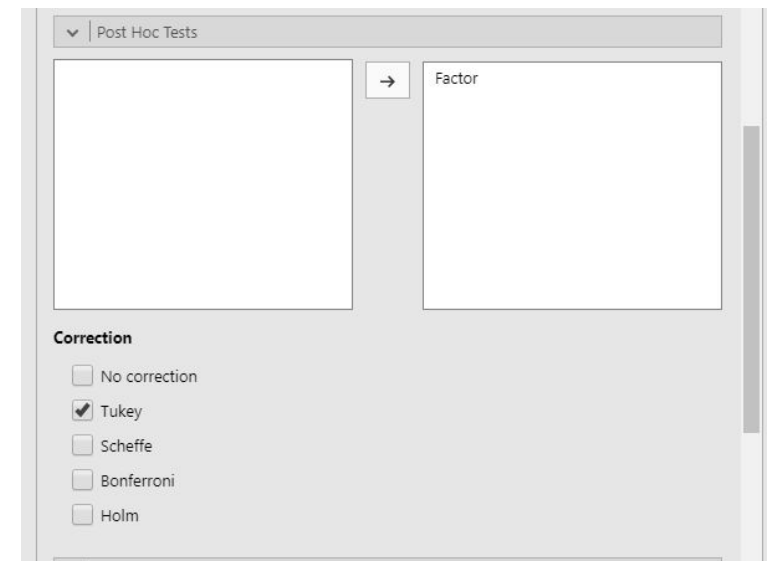
Steps for Obtaining Additional Statistics

16. Choose an effect size measure from the “Effect Size” list.
17. If you wish descriptive statistics for each group, use the “Descriptives” command described earlier in the sourcebook.
18. 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

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

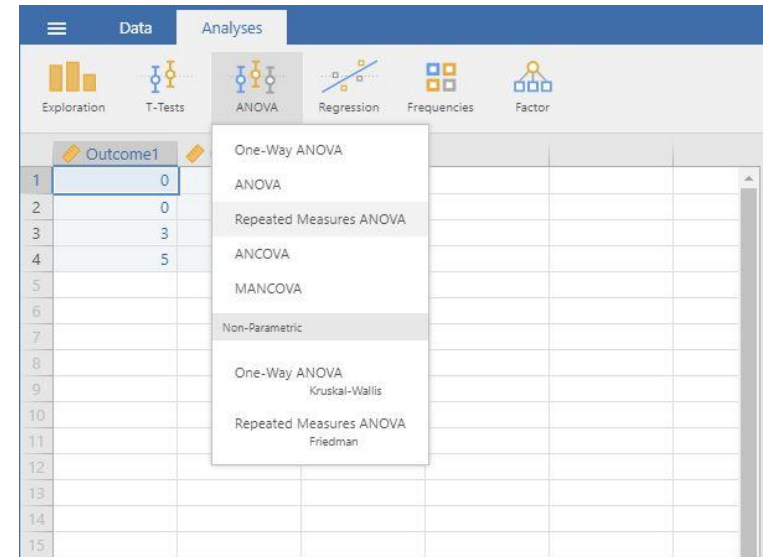


Your data have now been analyzed!

Repeated Measures ANOVA

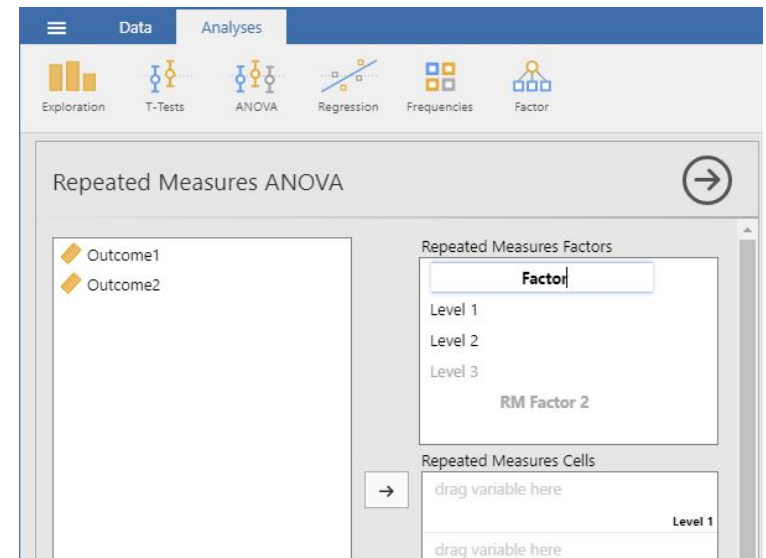
Steps for Obtaining Repeated Measures Inferential Statistics

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



Steps for 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.



Steps for Obtaining the Significance Test

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. Output can be copied and pasted into other documents for printing.

Steps for 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. Output can be copied and pasted into other documents for printing.

The screenshot shows the "Repeated Measures ANOVA" dialog box in SPSS. The top toolbar includes icons for Exploration, T-Tests, ANOVA, Regression, Frequencies, and Factor. The dialog box is titled "Repeated Measures ANOVA" and features a large empty box on the left for the dependent variable. On the right, there are two main sections: "Repeated Measures Factors" and "Repeated Measures Cells".

Repeated Measures Factors: This section contains a list of factors. "Level 1", "Level 2", and "Level 3" are listed under the heading "Factor". Below them, "RM Factor 2" is listed.

Repeated Measures Cells: This section contains a list of cells. "Outcome1" is listed under "Level 1" and "Outcome2" is listed under "Level 2".

Below these sections, there are two more sections: "Between Subject Factors" and "Covariates". Both sections have an arrow button to the left of an empty box.

At the bottom, there is an "Effect Size" section with three radio buttons: "Generalised η^2 ", " η^2 ", and "Partial η^2 ". The "Partial η^2 " option is selected. To the right of these radio buttons is a "Dependent Variable Label" section with a text box containing the word "Dependent".

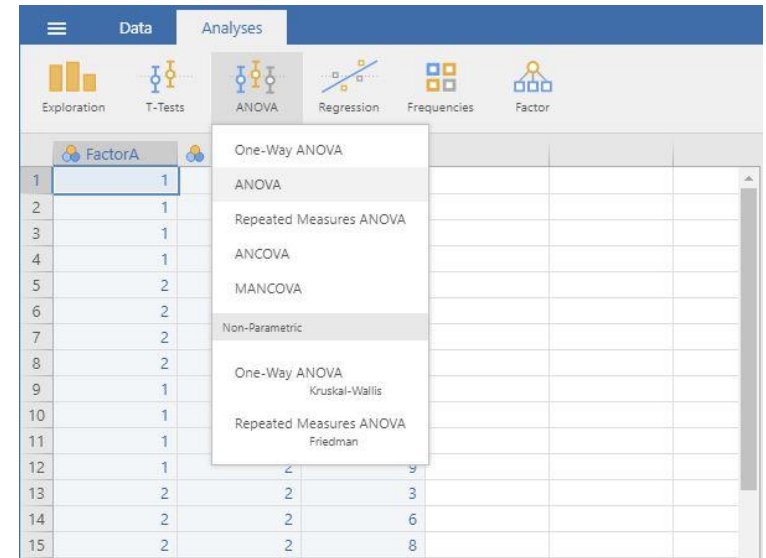
At the very bottom, there is a list of options with expandable arrows: "Model", "Assumption Checks", "Post Hoc Tests", "Estimated Marginal Means", and "Options".

Your data have now been analyzed!

ANOVA (Factorial ANOVA)

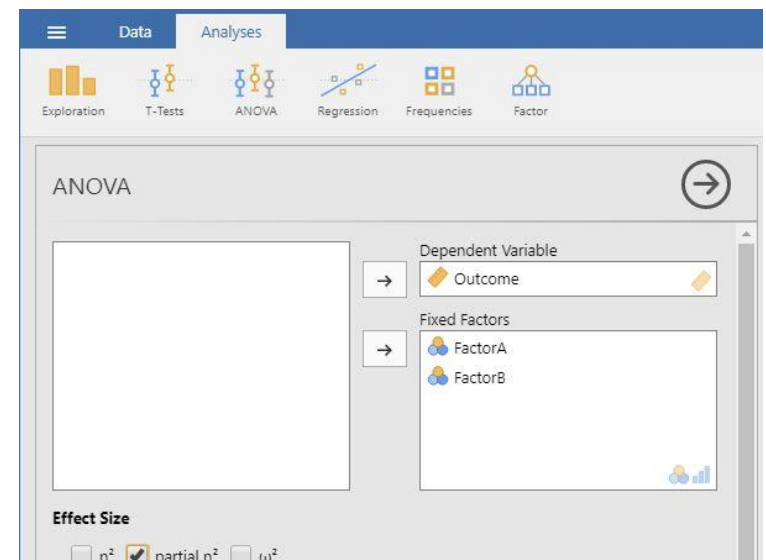
Steps for Obtaining Factorial Inferential Statistics

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



Steps for Obtaining the Significance Test

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.



Steps for 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. Output can be copied and pasted into other documents for printing.

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!