STATISTICS FOR SOCIAL SCIENCE

VOLUME: JAMOVI

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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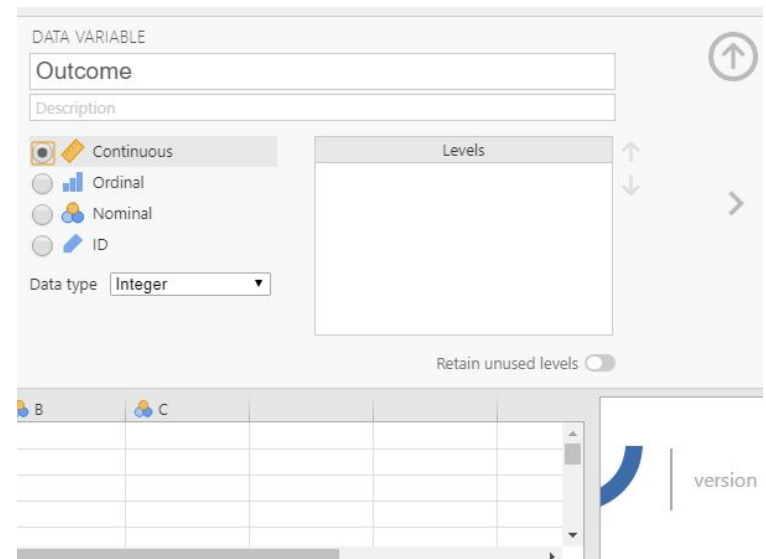
Entering One Sample Data

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.
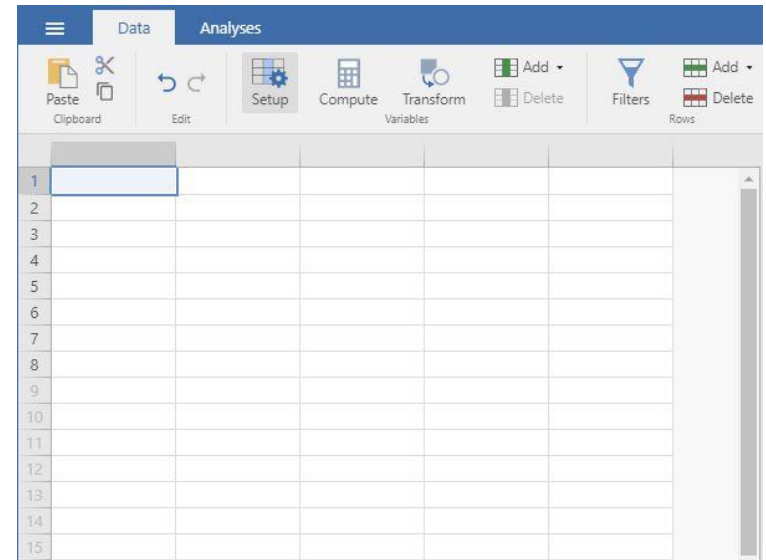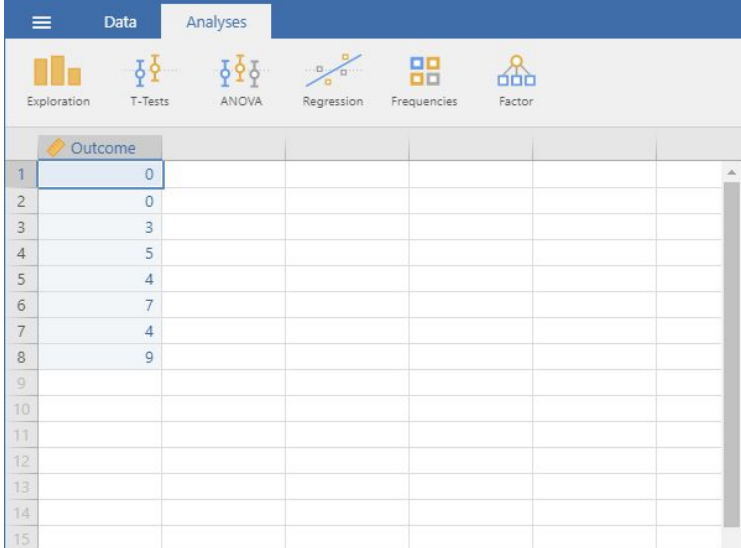
Steps for Setting Variable Properties

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.

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.
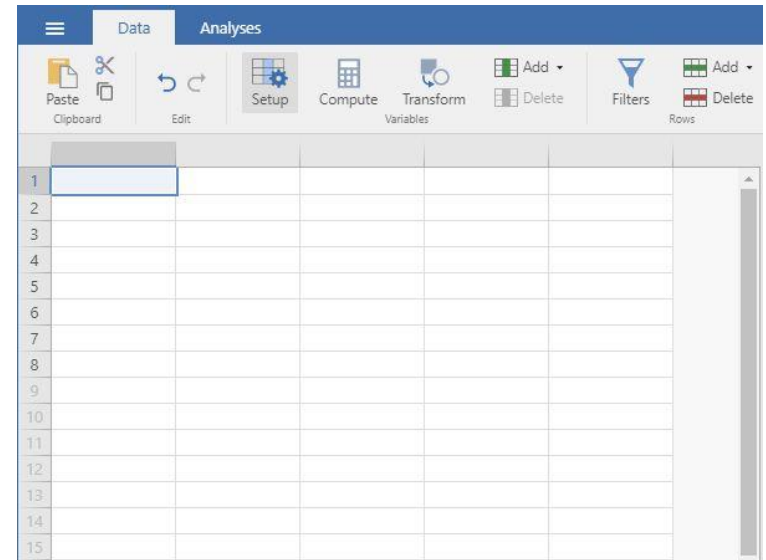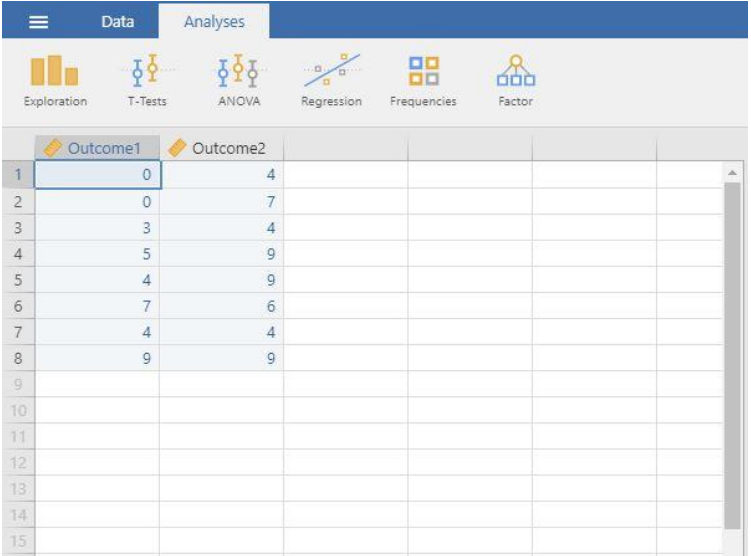
Steps for Setting Variable Properties

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.
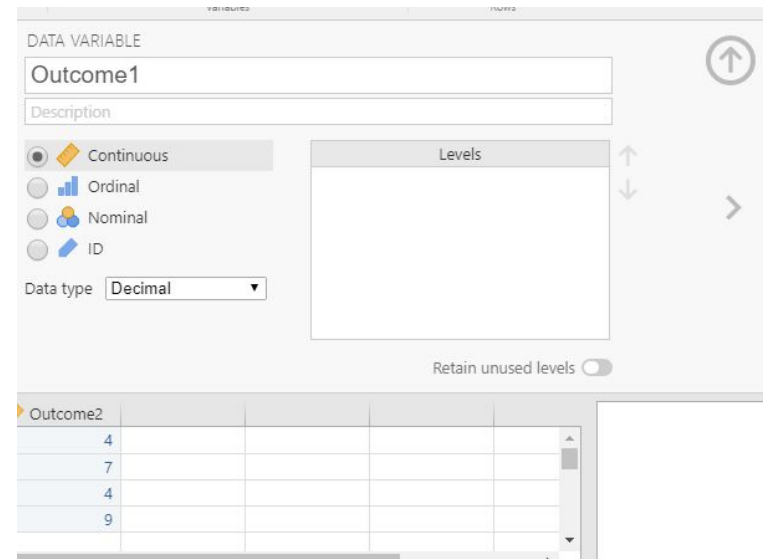
Steps for Entering Data

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).

	Data	Analyses				
	Exploration	T-Tests	ANOVA	Regression	Frequencies	Factor

	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.
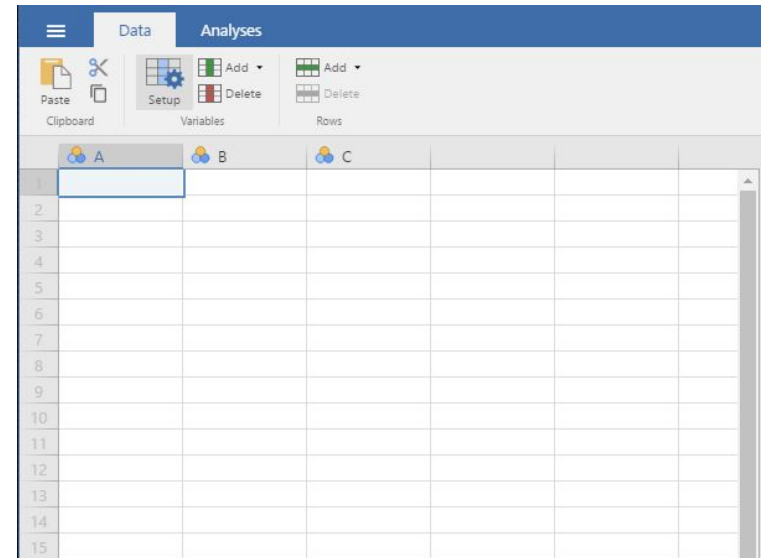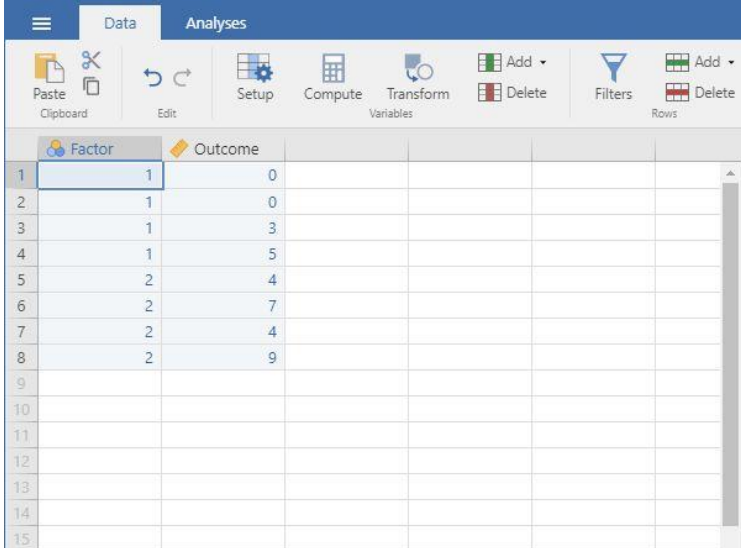
Steps for Setting Variable Properties

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.
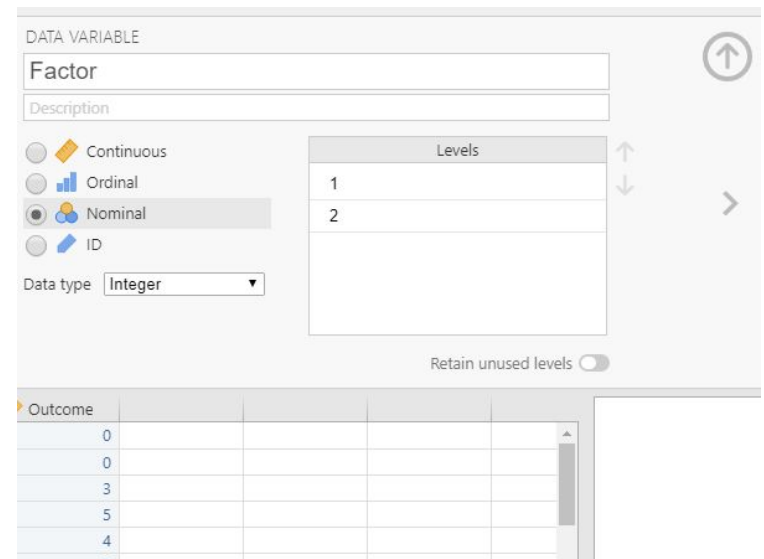
Steps for Entering Data

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.

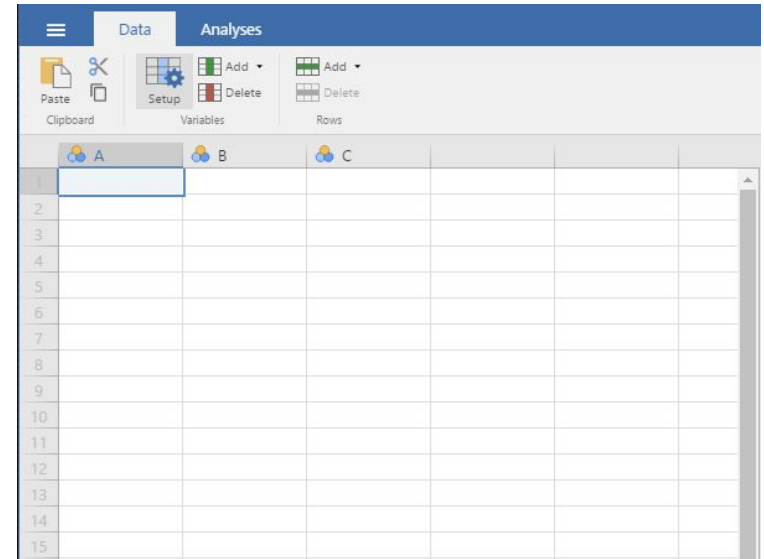|	Factor	Outcome
1	1	0
2	1	0
3	1	3
4	1	5
5	2	4
6	2	7
7	2	4
8	2	9
9		
10		
11		
12		
13		
14		
15		

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.
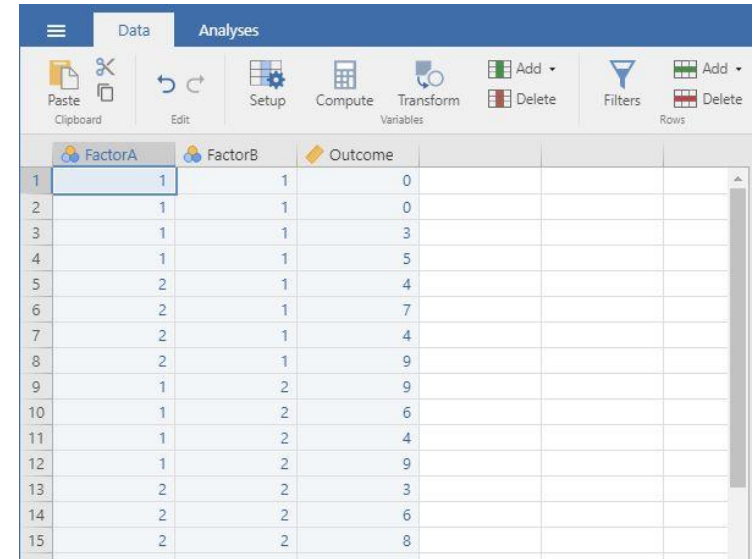
Steps for Setting Variable Properties

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.
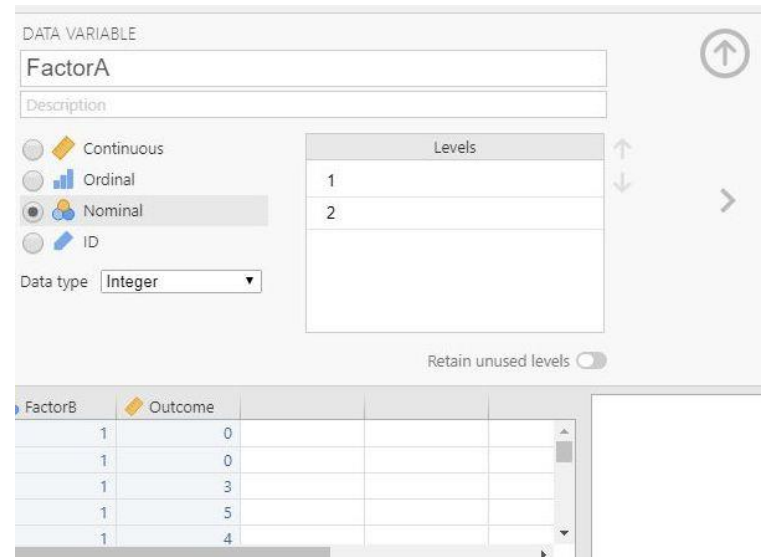
Steps for Entering Data

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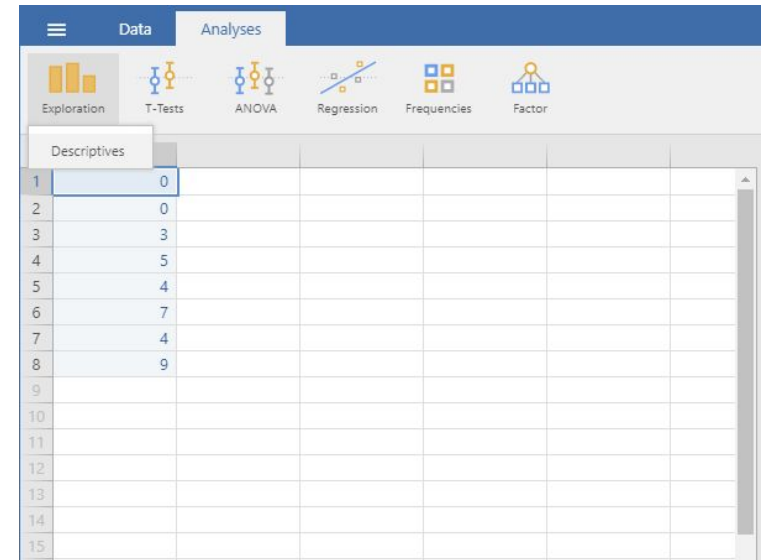
	FactorA	FactorB	Outcome
1	1	1	0
2	1	1	0
3	1	1	3
4	1	1	5
5	2	1	4
6	2	1	7
7	2	1	4
8	2	1	9
9	1	2	9
10	1	2	6
11	1	2	4
12	1	2	9
13	2	2	3
14	2	2	6
15	2	2	8

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).

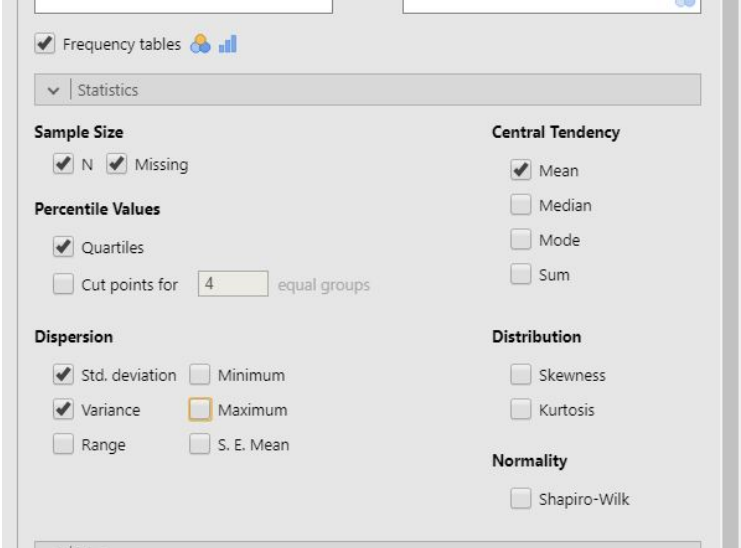2. On the "Analyses" tab, select the "Exploration → Descriptives" option.

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.
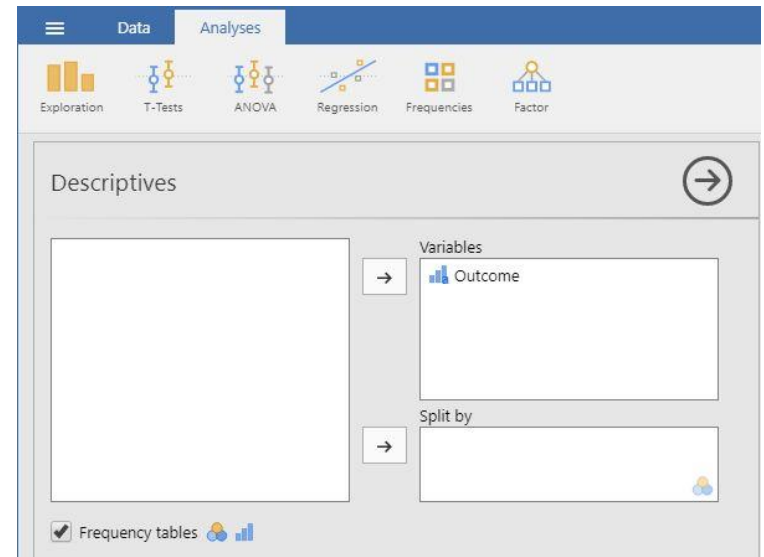
Steps for Obtaining Summary Statistics

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.

Your data have now been analyzed!

Compute (Transformations and Standardized Scores)

Steps for Obtaining the Compute Menu

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.
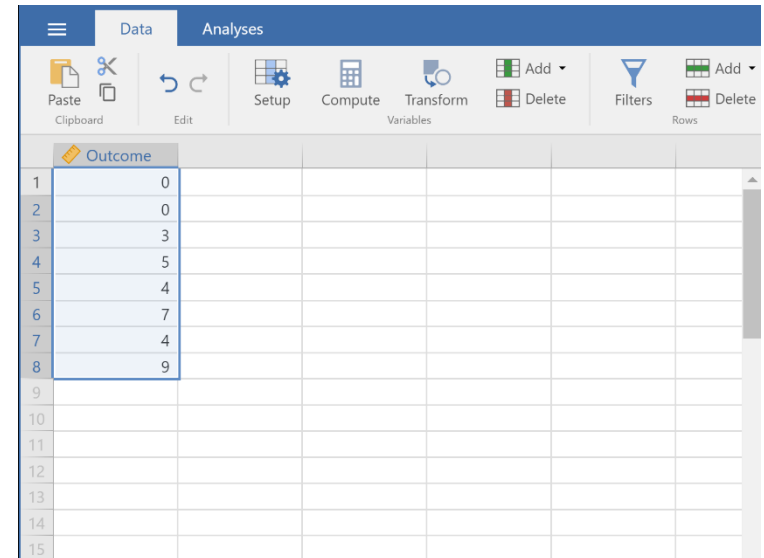
Steps for Computing Transformations

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.
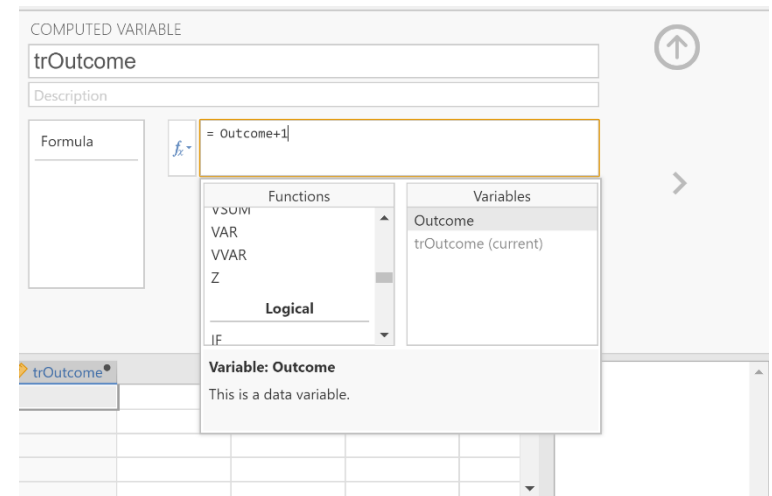
Steps for Viewing the Transformed Scores

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.
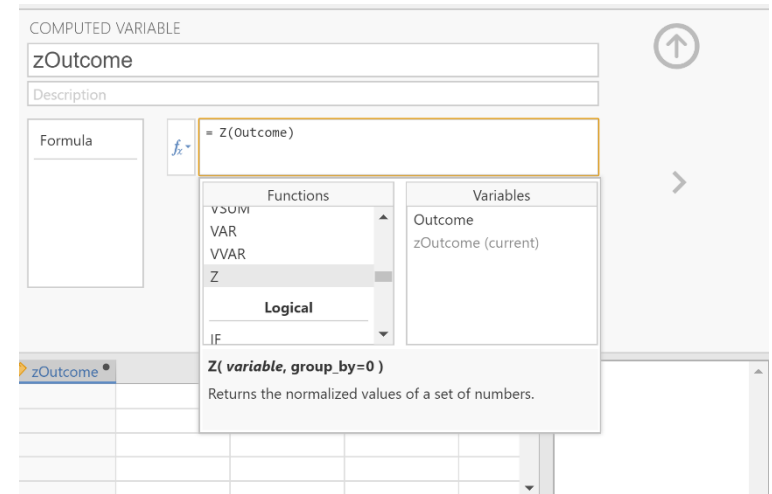
Steps for Obtaining Standardized Scores

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.

Steps for 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.

Steps for Viewing the Standardized Scores

19. Note that transformed 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.
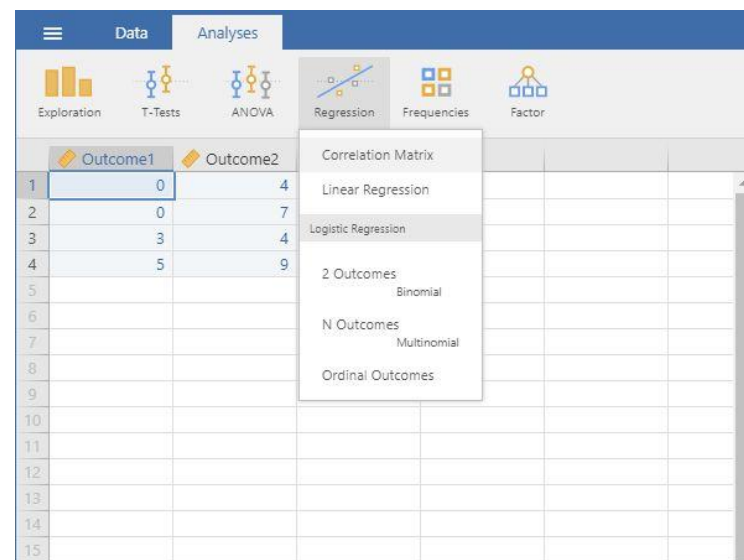
Your data have now been analyzed!

Correlations (Bivariate)

Steps for Obtaining Correlational Statistics

1. First, enter data involving multiple variables (described elsewhere).

2. On the "Analyses" tab, select the "Regression $\rightarrow$ 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.
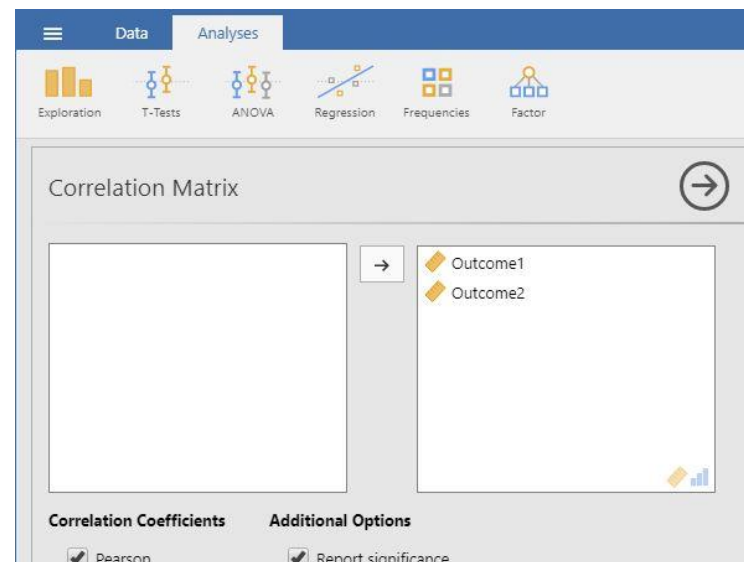
Your data have now been analyzed!
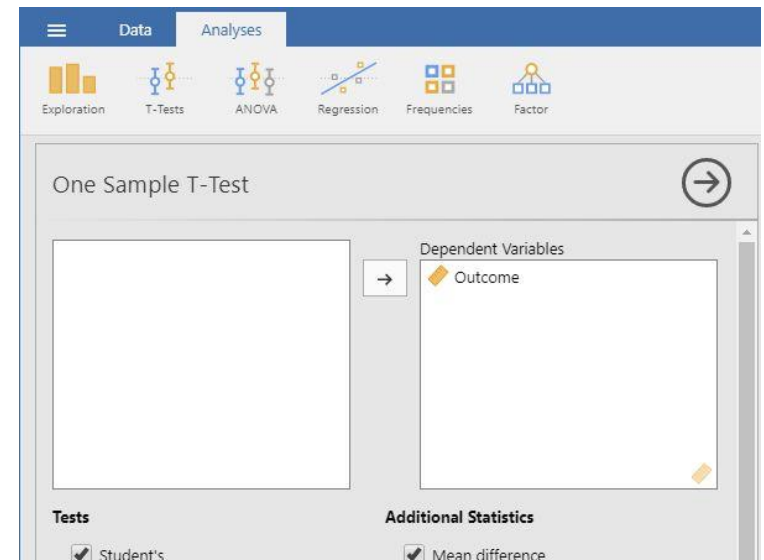
T Test (Confidence Intervals)

Steps for Obtaining One-Sample Inferential Statistics

1. First, enter the data (described elsewhere).

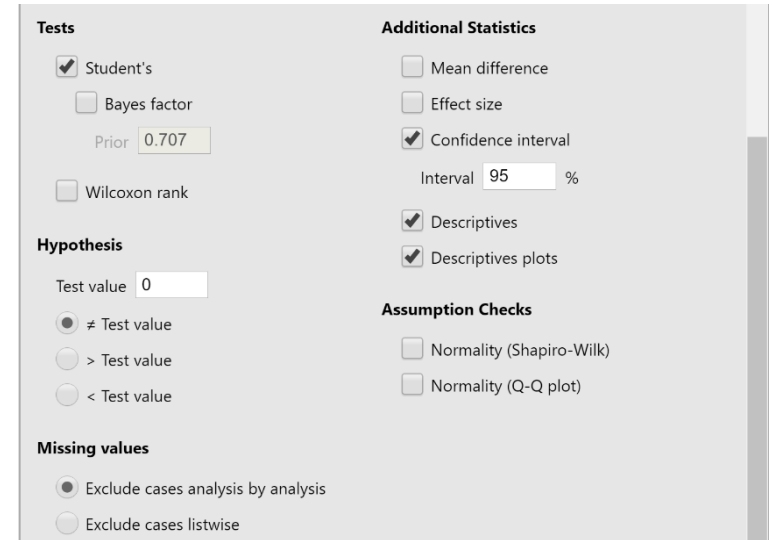2. On the "Analysis" tab, select the "T-Tests → One Sample T-Test" option.
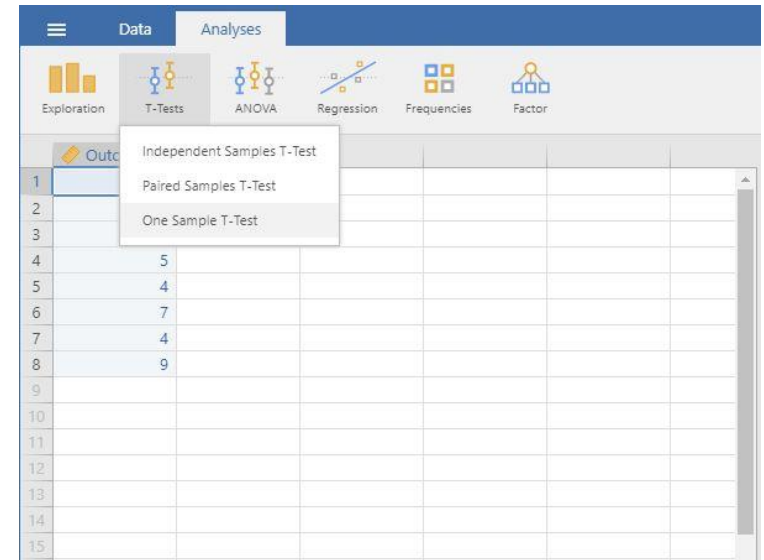
Steps for Choosing the Variable

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.
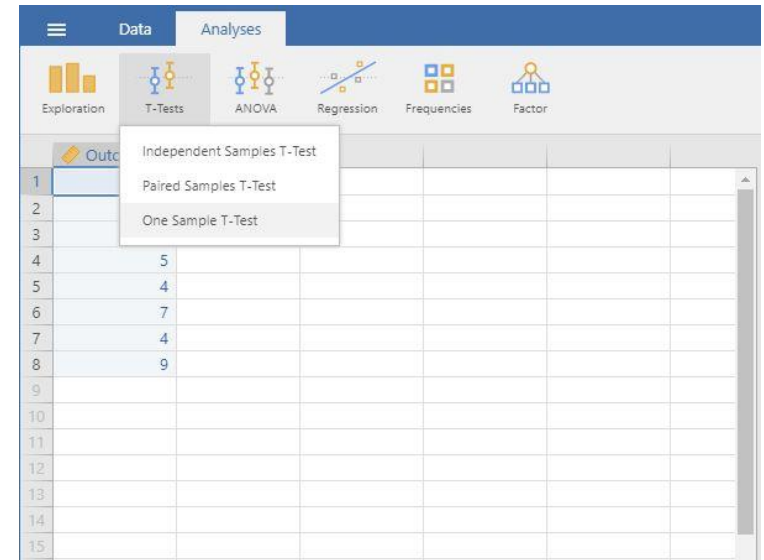
Steps for Obtaining the Statistics

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.

Tests

☑ Student's

☐ Bayes factor

Prior 0.707

☐ Wilcoxon rank

Hypothesis

Test value 0

◉ ≠ Test value

○ > Test value

○ < Test value

Missing values

◉ Exclude cases analysis by analysis

○ Exclude cases listwise

Additional Statistics

☐ Mean difference

☐ Effect size

☑ Confidence interval

Interval 95 %

☑ Descriptives

☑ Descriptives plots

Assumption Checks

☐ Normality (Shapiro-Wilk)

☐ Normality (Q-Q plot)

Your data have now been analyzed!

T Test (One Sample)

Steps for Obtaining One-Sample Inferential Statistics

10. First, enter the data (described elsewhere).

11. On the "Analysis" tab, select the "T-Tests → One Sample T-Test" 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 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.

14. Output will automatically appear on the right side of the window. Output can be copied and pasted into other documents for printing.
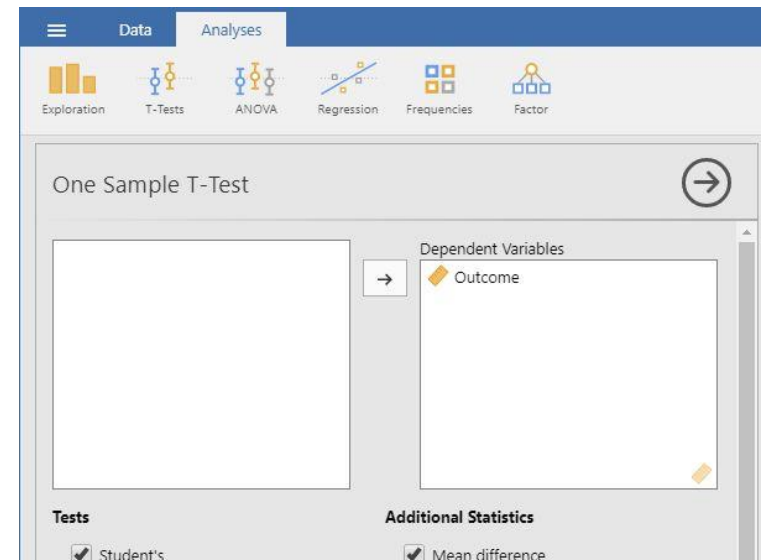
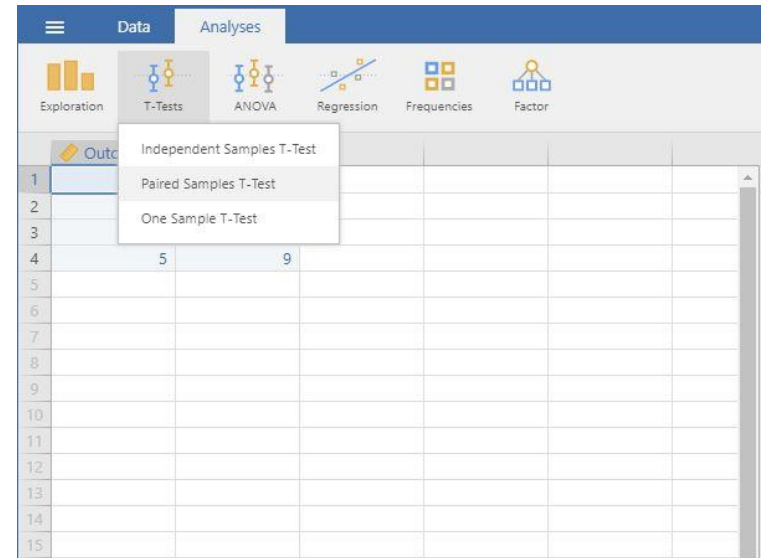### Steps for Obtaining Additional Statistics

15. 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.

16. If you wish to view (and alter) the width of the confidence interval, check the "Confidence Interval" box.

17. 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.

18. 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!

T Test (Paired Samples)

Steps for Obtaining Paired-Sample Inferential Statistics

1. First, enter paired samples or repeated measures data (described elsewhere).

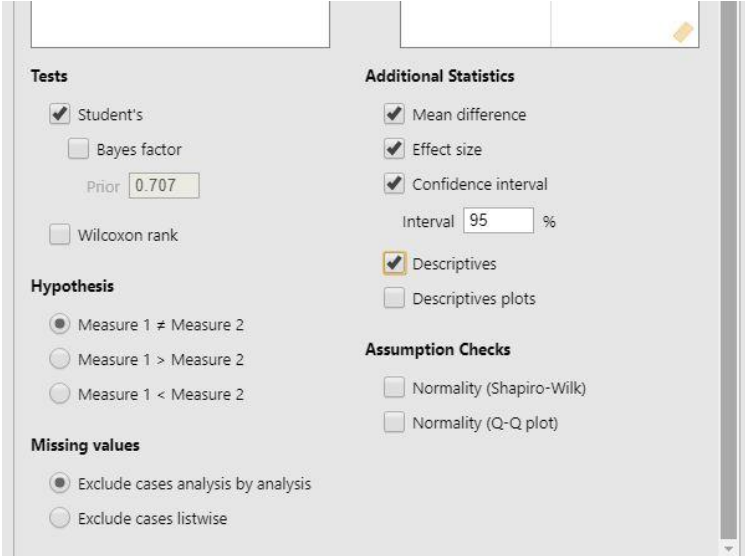2. On the "Analysis" tab, Select the "T-Tests → Paired Samples T-Test" option.

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.
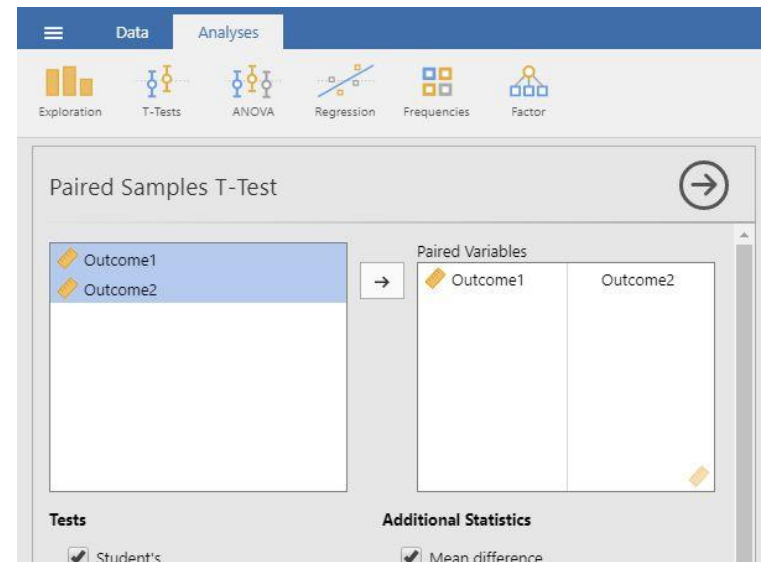
Steps for Obtaining Additional Statistics

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.

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.
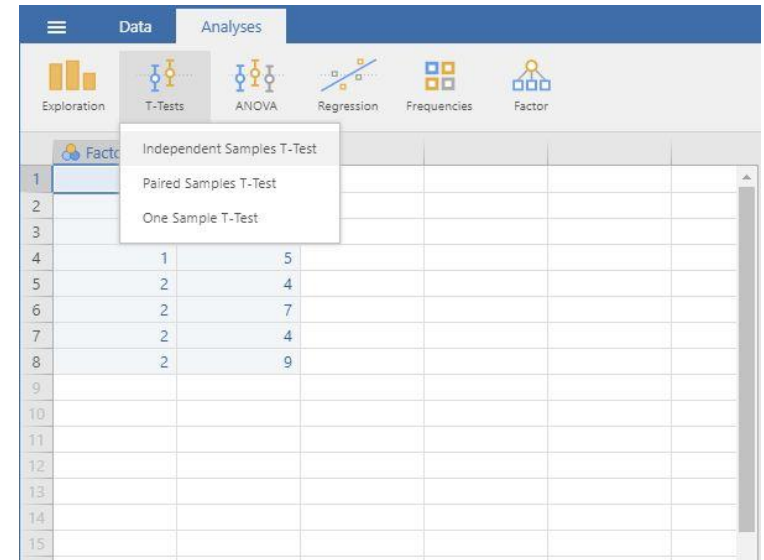
Steps for Obtaining the Significance Test

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.
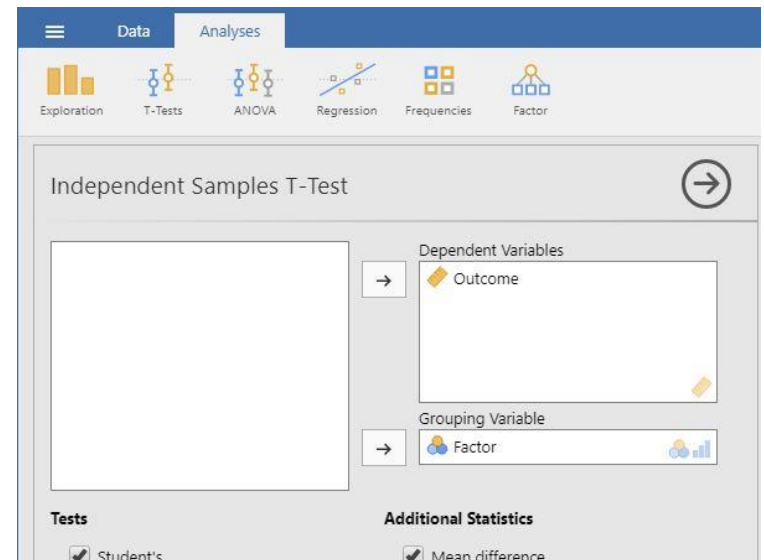
Steps for Obtaining Additional Statistics

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.
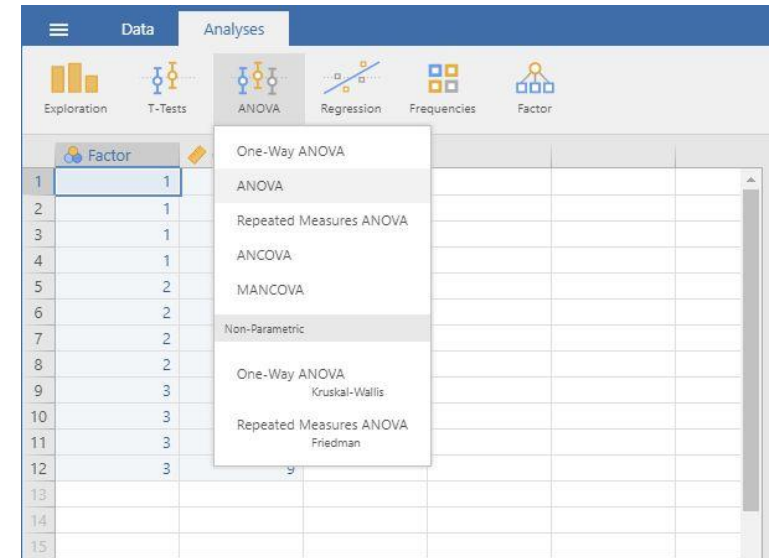

Your data have now been analyzed!
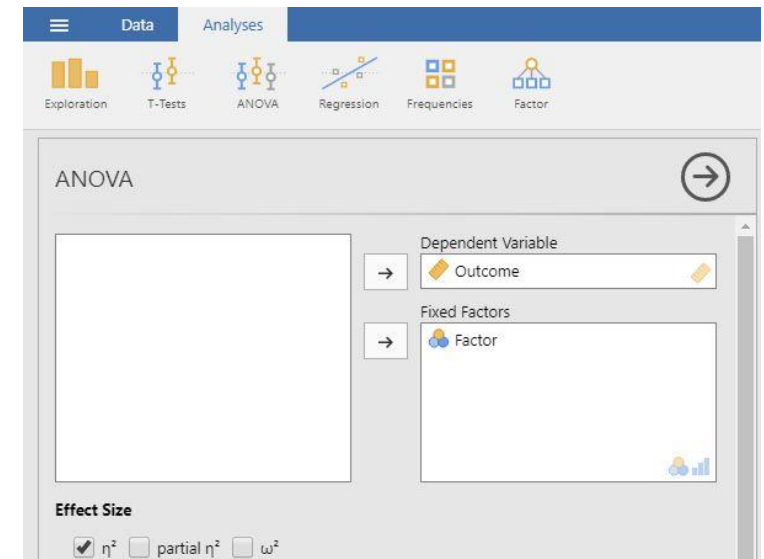
ANOVA (OneWay ANOVA)

Steps for Obtaining Multiple-Sample Inferential Statistics

1. First, enter multiple group data (described elsewhere).

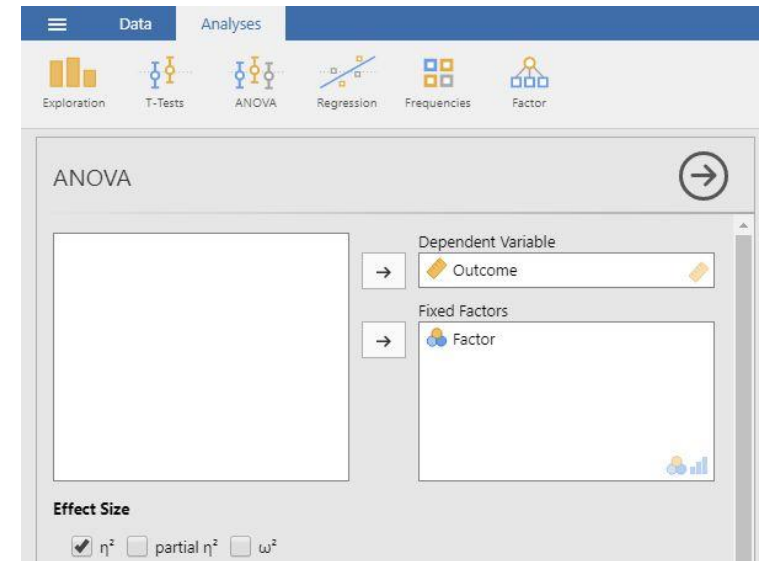2. On the "Analysis" tab, select the "ANOVA $\rightarrow$ ANOVA" option.

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.
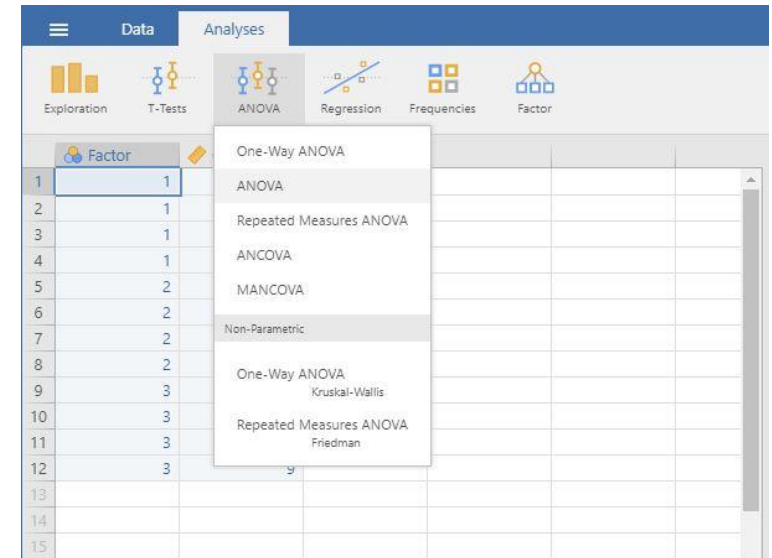
Your data have now been analyzed!
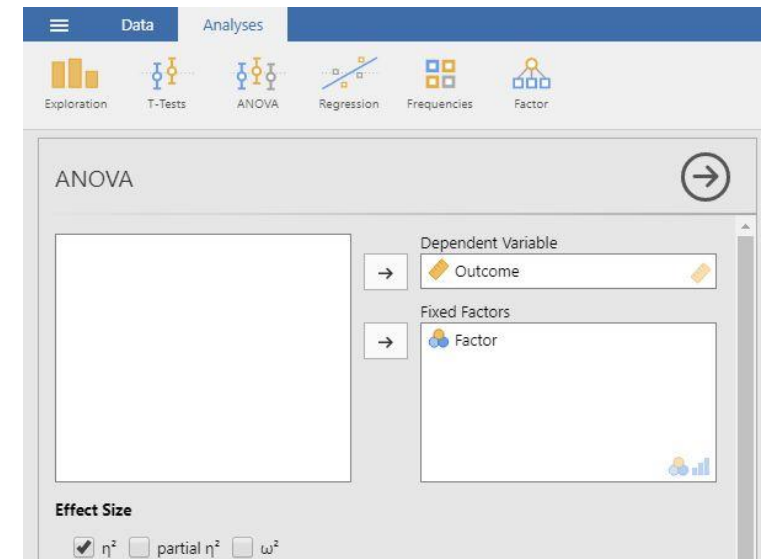
Post Hoc Tests (OneWay ANOVA)

Steps for Obtaining Multiple-Sample Inferential Statistics

1. First, enter multiple group data (described elsewhere).

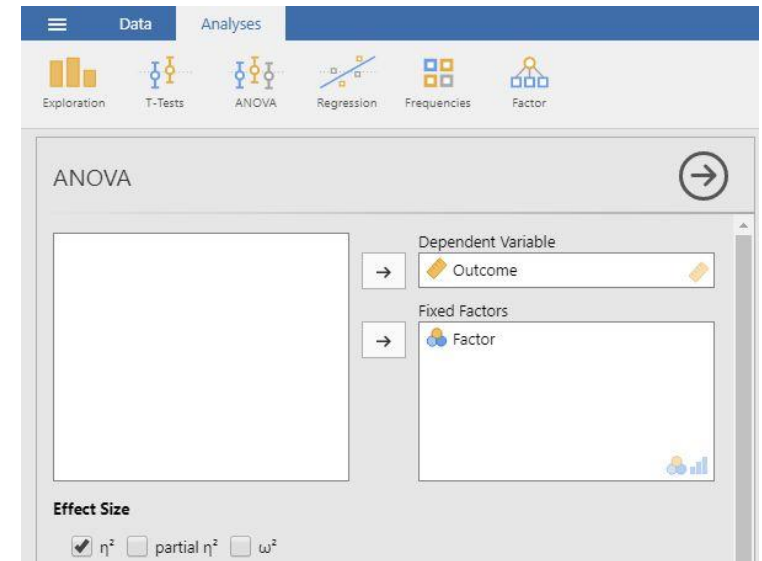2. On the "Analysis" tab, select the "ANOVA → ANOVA" option.

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.
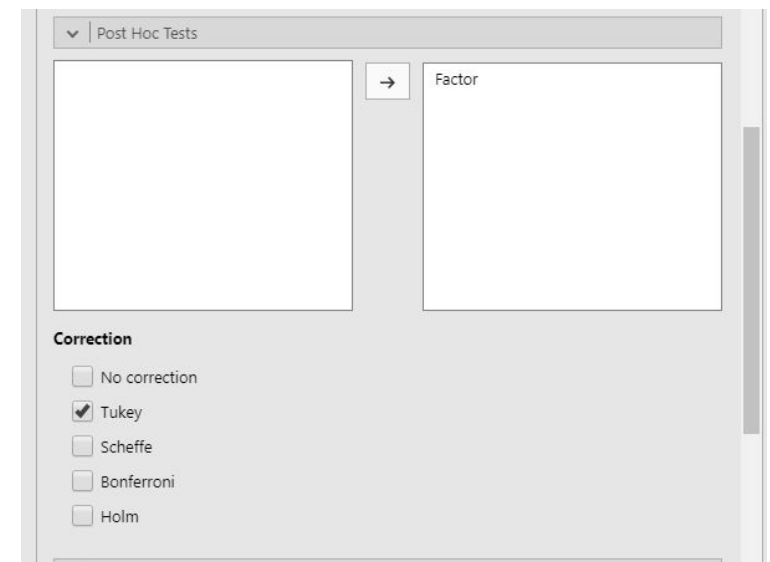
Steps for Obtaining Additional Statistics

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.

Steps for 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. Output can be copied and pasted into other documents for printing.
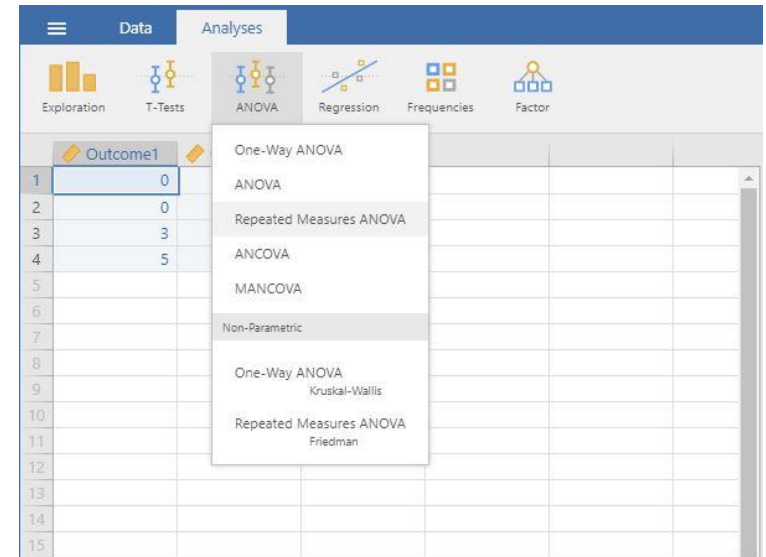
Your data have now been analyzed!
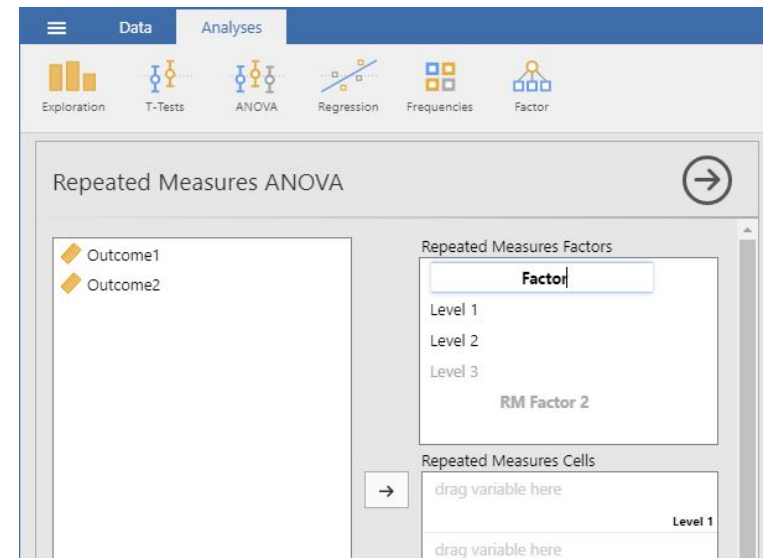
Repeated Measures ANOVA

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.

Your data have now been analyzed!
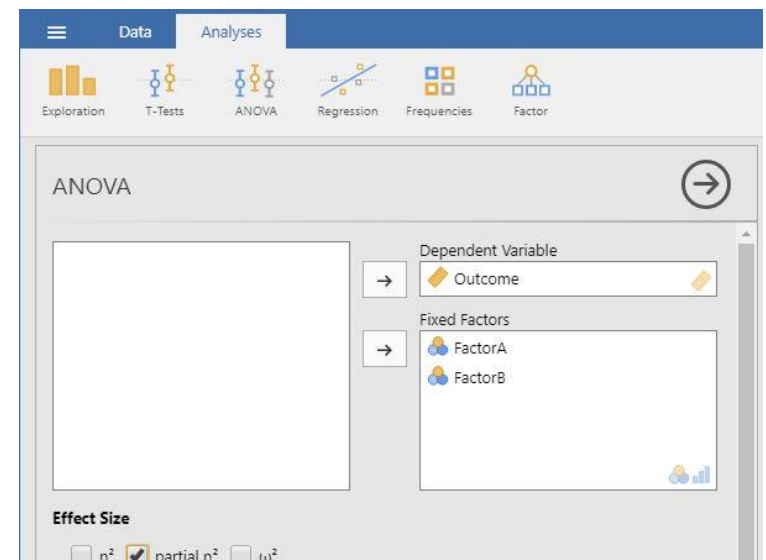
ANOVA (Factorial ANOVA)

Steps for Obtaining Factorial Inferential Statistics

1. First, enter factorial data (described elsewhere).
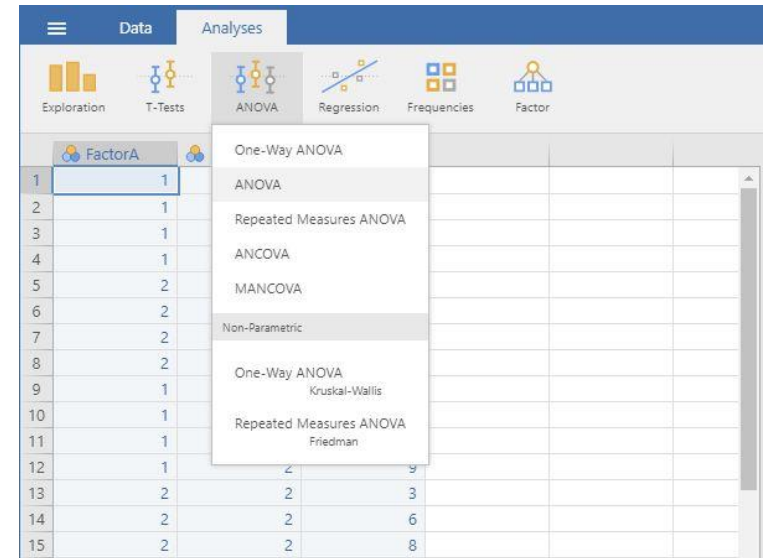
2. On the "Analysis" tab, select the "ANOVA $\rightarrow$ ANOVA" option.

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.

Your data have now been analyzed!