

How to Use SPSS Statistics to Run a T-Test FACULTY CREATED CONTENT

A short burst learning video prepared by the Research & Methodology SIG in the Research Hub

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Welcome to this short burst learning video on how to use SPSS statistics to run a T-test.

Presented by the research and methodology special interest group on the university research hub.

I'm Dr. Frederick Lawrence, a quantitative methodologist.

We illustrate the procedure with an example, courtesy of Laerd statistics and images from SPSS statistics with permission from the IBM corporation.

The research question was, is exercise or weight loss better for lowering cholesterol concentration? A sample of 40 inactive males who were classified as overweight was randomly chosen and split into two groups of 20.

The males participated in a treatment program in which one group ate a calorie controlled diet, and the other group underwent an exercise training regimen.

At the end of the treatment program, mean cholesterol concentrations were compared between the two groups using an independent samples T-test.

To start the data were entered in the data view and the variable attributes in the variable view of SPSS statistics.

For help with these steps see our short burst learning video using quantitative analysis program.

Then the assumptions were checked.

The dependent test variable should be measured on a continuous scale interval or ratio.

The independent or group variable should consist of two categorical independent groups.

Observations should be independent and there should be no significant outliers.

Homogeneity of variances can be checked with Levene's test, which is a part of the independent samples T-test in SPSS statistics.

For further discussion on checking assumptions see the example on the Laerd website.

Choose independent samples T-test in the compare means group on the analyze menu.

In the dialog box, move the test variable cholesterol concentration to the test variables window.

And the grouping variable, treatment diet or exercise to the grouping variable window.

Then click define groups.

In that dialog box enter the numerical coded values for the groups.

In this example, group one was coded as one and group two coded as two.

In the options window, you may change the level of significance or specify how to handle missing values.

The default values are shown on this screen.

Then click continue, and then click okay at the bottom of the dialog box.

On the independent samples test output, if Levene's test for equality of variances is not statistically significant use the equal variances assumed column.

If Levene's test is statistically significant, use the equal variances not assumed column.

In this example, Levine's test was not statistically significant, so equal variances were assumed.

In the group statistics output, the means of the test variables are shown for the two treatment groups.

For this example, the main difference 0.35 was statistically significant at the 2% level for a two-tailed test.

And so at the 1% level for a one-tailed test, such as with the alternate hypothesis the mean difference is greater than zero.

For the latter hypothesis test the conclusion was, inactive males who underwent the exercise training regimen have lower

cholesterol levels at the end of the treatment program than those who ate a calorie controlled diet.

Further help is available through the quantitative office hours.

On the research hub homepage navigate to the research and methodology group, and then to office hours implementing research.

Contact a quantitative methodologist to schedule a consulting appointment.

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