

SPSS OUTPUT FOR INDEPENDENT GROUPS *t*-TEST

Obtained Using Menu Items: Compare Means > Independent-Samples *T* Test

T-TEST

Group Statistics

	Condition	N	Mean	Std. Deviation	Std. Error Mean
Number of words recalled	Mnemonic condition	11	17.7273	2.8667	.8944
	No mnemonic condition	10	14.1000	3.5730	1.1299

Useful descriptives showing that those in the mnemonic condition remembered the most words.

We will not be discussing these values. To find out about them consult a statistics text.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference
Number of words recalled	Equal variances assumed	.605	.446	2.578	19	.018	3.6273	1.40721	.68194 .657260
	Equal variances not assumed			2.550	17.288	.021	3.6273	1.42259	.62066 .62439

If Levene's $p > 0.05$, then there is equality of variance, use the top row of values for t . If Levene's $p \leq 0.05$, then there is not equality of variance, use the bottom row of values for t . See Footnote.

This is the p value for 2-tailed tests, but this hypothesis was 1-tailed, so divide by 2.

For these results there is equality of variance, so $t = 2.578$, $df = 19$, $p = 0.009$, one-tailed.

In a report you would write: There was a significant difference between the conditions ($t = 2.578$, $df = 19$, $p = 0.009$, one-tailed). More words were recalled in the mnemonic condition (mean = 17.7 words) than in the no mnemonic condition (mean = 14.1 words).

Equality (or at least similarity) of variance is one of the requirements for using parametric statistical tests. SPSS, however, carries out two versions of the independent groups t -test: the top row for when there is equality of variance and the bottom row for when the variances are unequal. If you use the latter in a report, you must note that fact.

Remember to say in which direction any difference (ie - mean + SD).

Footnote

SPSS OUTPUT FOR PAIRED (OR RELATED) *t*-TEST

Obtained Using Menu Items: > Compare Means > Paired-Samples T Test

t-Test

You can do several paired *t*-tests at once, so SPSS labels each pair. Next it puts the variable labels, if you entered them; if not, it puts the variable names.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	decision time for large differences	1156.6875	16	290.0489	72.5122
	decision time for small differences	1462.4375	16	500.4961	125.1240

Useful descriptives showing that mean decision time was fastest for large difference trials.

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	decision time for large differences & decision time for small differences	16	.893	.000

A correlation analysis is also carried out (see footnote 1).

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	decision time for large differences - decision time for small differences	-305.7500	274.2552	68.5638	-451.8903	-159.6097	-4.459	15	.000

We will not be discussing these values. To find out about them consult a statistics text.

$t = 4.459$ (see footnote 2).

Degrees of freedom.

The *p* value (see footnote 3).

In a report you would write: The time to decide which of the pair of animals was larger, was significantly longer for small size difference trials than for large size difference trials ($t = 4.459$, $df = 15$, $p < 0.00025$, one-tailed).

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Paired *t*-test

Paired t -test.

Footnotes

1. SPSS performs a Pearson's correlation (see Chapter 4, Section 3) to see if the two variables are correlated. Ignore this, if you only want a t -test. A significant correlation would tell you that participants who were fast on large size difference trials were also fast on small size difference trials. A significant result on this test does not mean that the scores are significantly different.
2. The minus sign just means that the mean value for the first variable name in the **Paired Variables** box is lower on average than the mean value for the second variable name.
3. A p value can never equal zero. SPSS rounds to 3 decimal places, so p must be less than 0.0005 or it would appear as .001. In a report put $p < 0.0005$ if the hypothesis was two-tailed. Here the hypothesis was one-tailed, so divide by 2 which gives $p < 0.00025$, one-tailed.