

How to Calculate and Report Cohen's d for T-Tests

Authored by
stats writer

January 4, 2026

RECOMMENDED CITATION

stats writer (2026). *How to Calculate and Report Cohen's d for T-Tests*. PSYCHOLOGICAL SCALES. Retrieved from <https://scales.arabpsychology.com/?p=111380>

we should report Cohen's d when using a t-test to compare the means of two groups. This statistic is a measure of effect size and indicates the magnitude of the difference between the two means. For example, if the means of Group 1 and Group 2 were 5 and 10 respectively, with a Cohen's d of 0.5, we could say that Group 2 had a larger mean than Group 1, and the difference had a moderate effect size.

In statistics, an effect size tells us how large the difference is between the mean of two groups.

One of the most common measurements of effect size is **Cohen's d**, which is calculated as:

$$\text{Cohen's } d = (x_1 - x_2) / \sqrt{(s_1^2 + s_2^2) / 2}$$

where:

x_1 , x_2 : mean of sample 1 and sample 2, respectively

s_1^2 , s_2^2 : variance of sample 1 and sample 2, respectively

Using this formula, here is how we interpret Cohen's d:

A d of **0.5** indicates that the two group means differ by 0.5 standard deviations.

A d of **1** indicates that the group means differ by 1 standard deviation.

A d of **2** indicates that the group means differ by 2 standard deviations.

And so on.

We use the following rule of thumb when interpreting Cohen's d:

A value of **0.2** represents a small effect size.

A value of **0.5** represents a medium effect size.

A value of **0.8** represents a large effect size.

When reporting the value of Cohen's d in a final report, you should keep the following in mind:

Use a lowercase d .

Round Cohen's d to two decimal places (unless otherwise specified).

Mention whether the effect size is considered small, medium or large.

The following example shows how to report Cohen's d in practice.

Example: How to Report Cohen's d

Suppose a mechanical engineer want to know if a new fuel treatment leads to a change in the average miles per gallon of a certain car.

To test this, he conducts an experiment in which 12 cars receive the new fuel treatment and 12 cars do not.

Here is a summary of the miles per gallon for each group:

x_1 : 21

s_1 : 2.73

Group #2:

x_2 : 22.75

s_2 : 3.25

Here is how to report the results of the independent samples t-test along with the value of Cohen's d :

A two sample t-test was performed to compare miles per gallon between fuel treatment and no fuel treatment.

There was not a significant difference in miles per gallon between fuel treatment ($M = 22.75$, $SD = 3.25$) and no fuel treatment ($M = 21$, $SD = 2.73$); $t(22) = -1.428$, $p = .167$. The effect size, measured by Cohen's d , was $d = 0.58$, indicating a medium effect.

Notice that we included a lowercase d , we rounded Cohen's d to two decimal places, and we mentioned whether the effect size was considered small, medium or large.

The following tutorials provide additional information about Cohen's d :