**What is this test used for?**

The paired-samples t-test is used to determine whether the mean difference between paired observations is significantly different from zero. The participants are either the same individuals tested on two occasions, or under two different conditions, on the same dependent variable.

H0: There are no differences between TIME1/CONDITION1 and TIME2/CONDITION2 on the dependent variable.

H1: There are differences between TIME1/CONDITION1 and TIME2/CONDITION2 on the dependent variable.

**Assumptions**

1. You have a continuous dependent variable; meaning, the dependent variable is measured at either the interval or ratio level.
2. Your independent variable is categorical with two related groups.
3. No significant outliers. Look at boxplot.
4. Dependent variable is normally distributed. Look at skewness and kurtosis statistics (are they not more than 1-2?). Look at normality tests (Shapiro-Wilk and Kolmogorov-Smirnox tests. If they are significant (*p* < .05), then you do not meet this assumption.

**Interpretation**

1. Look at the *t* statistic value and significance value (the *p* value).
   1. If the *p* value is less than your alpha level (normally .05), then you reject your null hypothesis.
   2. If the *p* value is larger than your alpha level (normally .05), then you fail to reject (or you accept) your null hypothesis.
2. Look at the 95% confidence intervals. If 0 is included in the confidence interval, you fail to reject you null hypothesis. If 0 is not included in the confidence interval, you reject your null hypothesis.
3. Calculate the Cohen’s *d* effect size by dividing the paired samples test mean by the standard deviation.
   1. .2 is a small effect; .5 is a medium effect; .8 is a large effect

**Reporting**

A paired-samples t-test was used to determine whether there was a statistically significant mean difference between TIME1/CONDITION1 and TIME2/CONDITION2. Two outliers were detected that were more than 1.5 box-lengths from the edge of the box in a boxplot. Inspection of their values did not reveal them to be extreme and they were kept in the analysis. The assumption of normality was not violated, as assessed by Shapiro-Wilk's test (p < .05). TIME1/CONDITION1 scores on the DEPENDENT VARIABLE were higher/lower (M = ??, SD = ??) compared to TIME2/CONDITION2 (M = ??, SD = ??), a statistically significant mean increase/decrease of ??, 95% CI [??, ??], t = ??, p < .05, d = ??.

**Effect Size Test**

Confidence Intervals, Cohen’s *d*