Inferential Statistics Basics:

You have a **hypothesis**, in this case one might be: The deviation in cents at note start in the performance of quarter tones is not equal to the deviation in the performance of semitones.

You then have a **null hypothesis**, which is that there is no difference (it is null): There is no difference between the cent deviation at the start of quarter tone or semitone note performances.

The p value:

The p value is the **probability that the results are due to chance alone**, or due to error alone
Usually, we aim for $p < 0.05$ → this means that there is less than 5% chance the results are due to error alone

- If $p < 0.05$, there is a chance of Type I error (the chance that you have a 'false positive,' in that case 5%), the results are statistically significant, and you reject the null hypothesis (you go with your hypothesis instead).

- If $p > 0.05$, there is a chance of Type II error (a 'false negative'), the results are not statistically significant, and you cannot reject the null hypothesis (you cannot say that there is a difference between your conditions).

Effect size (R^2 value, Cohen's d):

The effect size tells you **the strength of the effect/relationship examined**, or quantifies the degree of difference between the two groups. F and p are not always related - you can have a significant result with a small effect, or a non significant result with a large effect. This is why we report both.

Because there are obviously multiple factors at play, we want to try to find the effect of the one being examined. Defined by Cohen, these are:

- Small effect: 0.2, weak relationship
- Medium effect: 0.5, moderate relationship
- Large effect: 0.8, strong relationship

An effect of 0 would mean that if you chose a score at random you'd have a 50/50 guess at which group it came from (i.e. it's difficult to spot a difference between the groups).