

Statistical Significance

t test – an inferential statistical test that is used to determine whether significant differences exist between the means of two samples (see handout “Data Analysis Using Microsoft Excel” to determine p values)

Hypotheses

Research hypothesis – hypothesis made by the experimenter from a review of the literature and suggests the outcome of an experiment

Null hypothesis – hypothesis based on the assumption that two samples are from the same population and there is essentially no difference between the groups

Level of Significance

-set by the experimenter

-affected by the sample size and the nature of the experiment

-used to reject or accept the null hypothesis

.05 – 5 chances out of 100 the difference is due to chance (most commonly accepted level)

.01 – 1 chance out of 100 the difference is due to chance (used when sample size is small)

.001 – 1 chance out of 1000 the difference is due to chance (used when an error would have a major impact- ex. drug testing)

In the Discussion section of your lab report/research project the p value and the level of significance should be given and whether or not you accept or reject the null hypothesis based on the numbers derived.

To reject the null hypothesis, meaning there is a significant difference between the groups and that difference is due to what the experimenter did with the independent variable and not due to chance, the p value must be less than the level of significance (.05, .01, and .001)

If the p value is greater than or equal to the level of significance selected then the null hypothesis must be accepted, meaning the difference seen was due to chance.