

Statistical End Notes

Regarding the *Independent t Statistic*

- There is a relatively new procedure statisticians use for assessing the significance and strength of the *Independent t test* result called ***EFFECT SIZE***. It may be defined as: "... a measure of the strength of the relationship between two variables. In scientific experiments, it is often useful to know not only whether an experiment has a statistically significant effect, but also the size of any observed effects."
http://en.wikipedia.org/wiki/Effect_size [28-Apr-10]
- An online calculator for *EFFECT SIZE* may be found here:
<http://www.uccs.edu/~faculty/lbecker/> [28-Apr-10]

Regarding the *Single Factor Analysis of Variance*

- If the results of your *Single Factor Analysis of Variance* analysis of your research data leads to H_0 (Null) being accepted, it means that your independent variable has had no effect and that your treatment groups, for all intents and purposes, are performing similarly on the dependent variable, that their means are pretty much equal to each other.
- If the results of your *Single Factor Analysis of Variance* analysis of your research data leads to H_0 (Null) being rejected, it is then necessary to do further analyses—called *post hoc* analyses—to determine just where the treatment effects took place, that is, which group means differed significantly from each other.
- This involves doing a series of comparison tests between the means of your groups. $N(N-1)/2$ tells you the number of tests you will need to do where N stands for the number of treatment groups in your investigation. **4 groups? 6 comparison tests!**
- A common way of doing this is to employ *Tukey's HSD (Q) Test*.
 - This procedure is best performed either by means of on line calculators or the built in calculator in a computer based statistics package.
 - There are, however, several on line sites (active 28-Apr-10) that you may consult. They are:
 - <http://web.mst.edu/~psyworld/tukeyssteps.htm>
 - <http://web.mst.edu/~psyworld/tukeysexample.htm>
 - <http://web.mst.edu/~psyworld/tukeyscalculator.htm>
- Alternatively, you may use any number of online statistics analysis programs that will report the outcome of *Tukey's HSD (Q) Test* for you. My recommendation is *VassarStats* available on line from Vassar College in Poughkeepsie, New York:
<http://faculty.vassar.edu/lowry/VassarStats.html>