## SPSS Guide: Independent t-test

A clinical psychologist wonders if eating disorders are exacerbated (i.e., worsened) by peer pressures in college sororities. He compares the body weights of women within a sorority $(105,115,90,120,125)$ to those not in a sorority $(140,135,120,130,110)$. Is there a significant difference?

Why a Independent t-test? We have (1) two groups of participants, (2) no population information, and (3) the two subjects in the two groups are not matched.


## Statistical Hypotheses

$\mathrm{H}_{0}: \mu_{1}-\mu_{2}=0 \quad$ This guess says any difference is just due to sample error.
$\mathrm{H}_{\mathrm{A}}: \mu_{1}-\mu_{2} \neq 0$ This guess says there is a reliable difference - a treatment effect (e.g., if you kept measuring, you'd see that the two groups don't weigh the same).


## Practical Significance

$\hat{s}=\hat{s}_{\bar{x}_{1}-\bar{x}_{2}} * \sqrt{n}=8.216 * \sqrt{5}=18.3715$
$d=\frac{\left|\bar{x}_{1}-\bar{x}_{2}\right|}{\hat{s}}=\frac{|111-127|}{18.3715}=.8709$

## Summary of Statistic:

Retain Ho t(8) $=-1.947$, n.s.

Note: Not required!!!! Provided only so you can see calculation method. Because we did not find statistical significance, we need no calculation of practical significance. Note you must first calculate $\hat{s}$ before calculating $d$. Note " $n$ " is for just one group.

This says that the t-test with 8 degrees of freedom was not significantwe must retain the Ho hypothesis. We must retain the possibilities that the difference between the two groups is zero.

Explanation of Study Outcome: The (research) hypothesis was not supported. The average weight of sorority women $(\mathrm{M}=111)$ did not differ significantly from that of other women $(M=127)$, $\mathrm{t}(8)=-1.947$, n.s.

## Guide to write-ups:

1. State whether the research hypothesis was supported.
2. Summarize the statistical test
3. Summarize the practical significance (if appropriate).
