**Psy 230
Comparing Between- and Within-Subject Designs**

 Treatment 1 Treatment 2

 10 11

 2 5

 1 2

 15 18

 7 9

 M=7 M=9

 SS=134 SS=150

1. Assume that the data are from an independent measures experiment using two separate samples, each with n = 5 subjects. Do the data indicate a significant difference between the two treatments? Use a two-tailed test with alpha = .05.

2. Now assume that the data are from a repeated-measures experiment using the same sample of n = 5 subjects in both treatments. Calculate the difference score for each subject and conduct a t-test for repeated measures. Do the data indicate a significant difference between the two treatments? Again, use a two-tailed test with alpha = .05.

3. How do you explain the different outcomes? (Compare the variances or SS values for the two different tests. Also compare the mean differences obtained.)

(3) A researcher seeks to demonstrate a relationship between hot or cold baths and the amount of relaxation they produce. He obtains the following relaxation scores from two separate samples:

 Sample 1 (Hot): *M* = 43, *S2* = 22.79, *n* = 15

 Sample 2 (Cold): *M* = 39, *S2* = 24.6, *n* = 15

a) What are *Ho* and *H1* for this study?

b) Compute the *t*-statistic.

c) With α= .05, what is *tcrit*?

d) How big of an effect does bath temperature have on relaxation? 

e) What should the researcher conclude about this relationship? Use APA format.