

PSYCH 240: Statistics in Psychology
ASSIGNMENT 5: TWO SAMPLE STATISTICS

Purpose: A very common problem in statistics involves comparing two groups or samples. This assignment is designed to give you practice in thinking about and determining the statistical significance of the outcome of two-group experimental and nonexperimental studies.

Problem-Based Questions (50 pts. each): Please show all work and clearly identify the final answer for each of the following questions.

Study 1 (Nonexperimental): An instructor hypothesized that the students who earn a B or higher spend a significantly different number of hours per week outside of class on course work than those who receive a C or lower. She collects the following data on two independent samples of students.

B or higher: 9, 4, 7, 11, 1, 5, 3, 2, 1
C or lower: 3, 2, 0, 3, 2, 1, 4, 3, 3

1. Given the data for the study above, obtain an independent samples t test and a confidence interval for the difference between the means.
 - a. Indicate the statistical significance test and the confidence interval using the descriptive statistic information given to you.
 - b. Describe your findings in an appropriate APA-style Results section. Be sure to interpret the findings of the study. What do the analyses tell you about the difference between the groups? Be specific! Also, be careful about using causal language since this is *not* an experiment!!!

Study 2 (Experimental): A researcher hypothesized that increasing or decreasing body temperature would have a corresponding effect on one's biological clock which, in turn, would affect a person's perception of time. One group of eight participants was subjected to 15 minutes of a cold environment while another 8 participants received 15 minutes of a warm environment. All participants were then asked to press down a button and hold it down until 20 seconds had elapsed. A timing device was used to measure (in seconds) how long the individual actually held down the button. The data follow:

<u>Cold Environment:</u>	<u>Warm Environment:</u>
18.66	18.67
13.66	21.75
19.66	33.47
13.51	12.54
11.58	22.19
17.16	24.65
14.12	16.69
14.83	21.17

2. Given the data for the study above, obtain an independent samples t test and a confidence interval for the difference between the means.
 - a. Indicate the statistical significance of the test and the confidence interval using the descriptive statistic information given to you.
 - b. Describe your findings in an appropriate APA-style Results section. Be sure to interpret the findings of the study. What do the analyses tell you about the difference between the groups?