

Matched Groups t-test (Repeated Measures t test)

As in the previous problem for the independent groups t-test, the researcher in the present problem was also interested in the issue of persuasion. However, this researcher was interested in finding out whether exposure to a newspaper article would influence the subjects' baseline attitudes toward the issue of gun control. What the researcher did was to measure the subjects' initial attitudes toward the topic of gun control using a 15 point scale that looked like that below:

pro gun control: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15: against gun control

Then the researcher gave to the subjects a newspaper article to read which pointed out a number of problems associated with unrestricted access to handguns. The thrust of the newspaper article appeared to be in favor of stricter gun control but the researcher wasn't sure, thus the researcher wanted to find out if reading the article was associated with an alteration of the subjects' attitudes toward the issue of gun control. After the subjects read the newspaper article the researcher re-administered the attitude scale and had the subjects respond a second time to the same attitude scale. The subjects baseline responses and their responses after reading the newspaper article are listed below. In this study each subject is responding to the same scale on two separate occasions.

<u>Subject</u>	<u>Baseline Attitude</u>	<u>Attitude After Reading Article</u>
1	12	8
2	11	10
3	11	9
4	10	9
5	10	6

1. Logon to system
2. **Click Start > Programs > SPSS for Windows > SPSS 10.1 for Windows.** At this point a window will appear asking you what you would like to do. Click on the circle next to Type in Data (2nd option in list) and then click **OK** at the bottom of the window.
3. A Data Editor will appear. Look in the lower left corner of the screen. You should see a **Data View** tab and to the right of it a **Variable View** tab. The **Variable View** tab will be used first for the **Data Definition** Phase of creating a data file. The **Data View** tab will be used to actually enter the raw numbers listed above. (See pages 1-3 for a more detailed explanation of creating data files.)

DATA DEFINITION PHASE

4. Click on the **Variable View** tab in the lower left corner. A new screen will appear with the following words at the top of each column.
Name Type Width Decimals **Label** **Values** Missing Columns Align Measure
5. Click on the white cell in **Row 1** under the word **Name** and type in the word **Baseline** (for baseline attitude).
6. Click on the white cell in **Row 1** under the word **Label** and type in **Baseline Attitude**. (Doing this will provide you with a more expansive label in the results output).
7. Click on the white cell in **Row 2** under the word **Name** and type in the word **After** (for attitudes after reading article).
8. Click on the white cell in **Row 2** under the word **Label** and type in **After Reading Article**. (Doing this will provide you with a more expansive label in the results output).

DATA ENTRY PHASE

9. Click on the Data **View** tab in the lower left corner. The data view screen will now appear with column 1 named **Baseline** (for the Baseline attitude condition) and Column 2 will be named **After** (for the After Reading Article condition).
10. Enter data for all 5 subjects as follows. Click on the white cell at Row 1, Column 1 under **Baseline** and enter
 12 tab 8 enter. Then mouse to the second row to enter the data for the second case.
 11 tab 10 enter. Then mouse to the third row to enter the data for the third case etc.
 11 tab 9 enter
 10 tab 9 enter
 10 tab 6 enter

The data may also be entered down one column at a time, entering all the baseline data first, and then moving on to column 2 and entering the after article data.

Data Analysis

1. Click on **Analyze** at top of screen then
 - a. Click on **compare means** then
 - b. Click on **Paired Samples t-test**
2. Highlight the word **After** by clicking on it and then Highlight the word **baseline** by clicking on it
3. Click on the **arrow >** to transfer these names to the **Paired Variables Box**
4. Click on **OK**
5. Your results will appear in a Window. Scroll up using the slide bar on the right to the top of the output. The results of this analysis are presented below.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Baseline Attitude	10.8000	5	.83666	.37417
	After Reading Article	8.4000	5	1.51658	.67823

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Baseline Attitude & After Reading Article	5	.276	.653

Paired Samples Test

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
							Lower	Upper	
Pair 1	Baseline Attitude - After Reading Article	2.4000	1.51658	.67823	.5169	4.2831	3.539	4	.024

6. For the problem above the null and alternative hypothesis are spelled out below:

H_{null} : The mean score on the attitude scale prior to reading the newspaper article	will equal	the mean score on the attitude scale after reading the newspaper article
H_{alt} : The mean score on the attitude scale prior to reading the newspaper article	will not equal	the mean score on the attitude scale after reading the newspaper article.

7. **Interpretation and APA writing template for Result Above:**

Results indicate that the mean attitude score toward gun control after reading the newspaper article was 8.4 (\underline{M} = 8.40, \underline{SD} = .837), whereas the mean attitude score toward gun control prior to reading the newspaper article was 10.8 (\underline{M} = 10.8, \underline{SD} = 1.51). A two-tailed repeated measures t test performed on these differences indicated that the difference between these two means was significant $t(4) = 3.54$, $p < .05$. The results indicate that the null hypothesis of no difference should be rejected. Since lower scores imply a more favorable attitude toward the gun control issue, reading the newspaper article appears to be associated with a more favorable attitude toward gun control.