

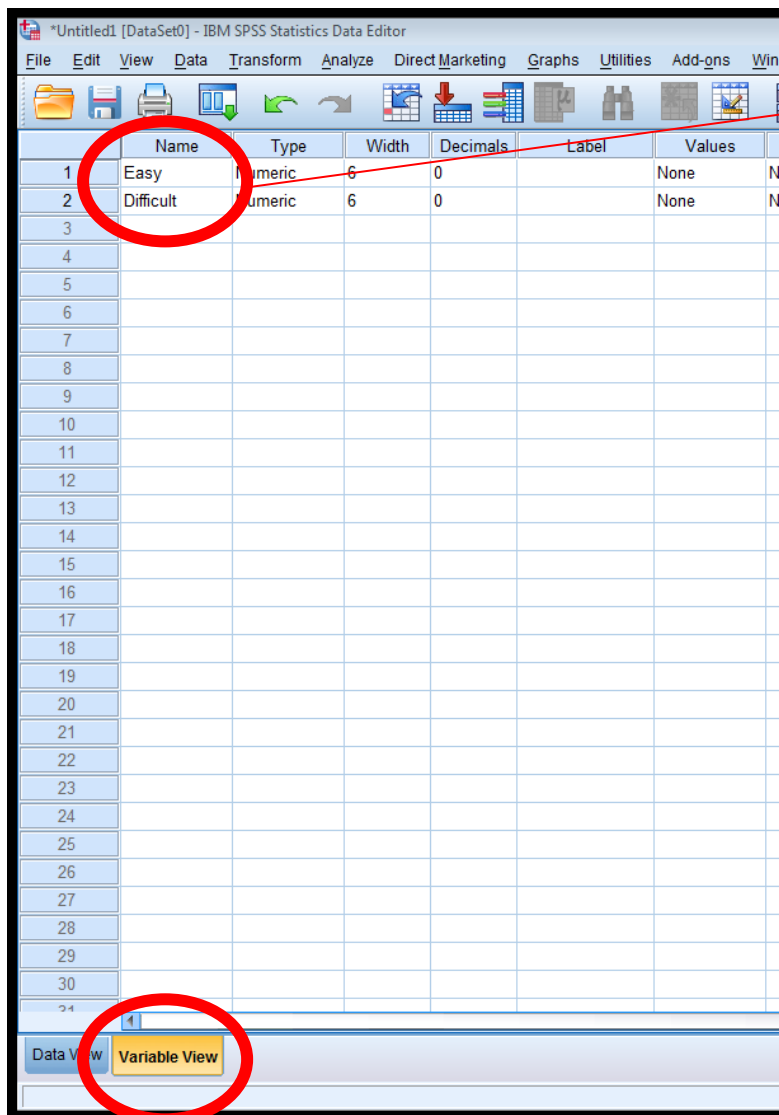
MSc AREA Workshop: Handout (Paired-samples t-test)

In this workshop you will practice the procedure for using SPSS to make a comparison between two sets of scores/data. Specifically, this procedure will use a paired samples t-test analysis, which is used when you have two sets of scores that were generated using the same participants in each condition. This type of data is produced when you use a within/related design for a study.

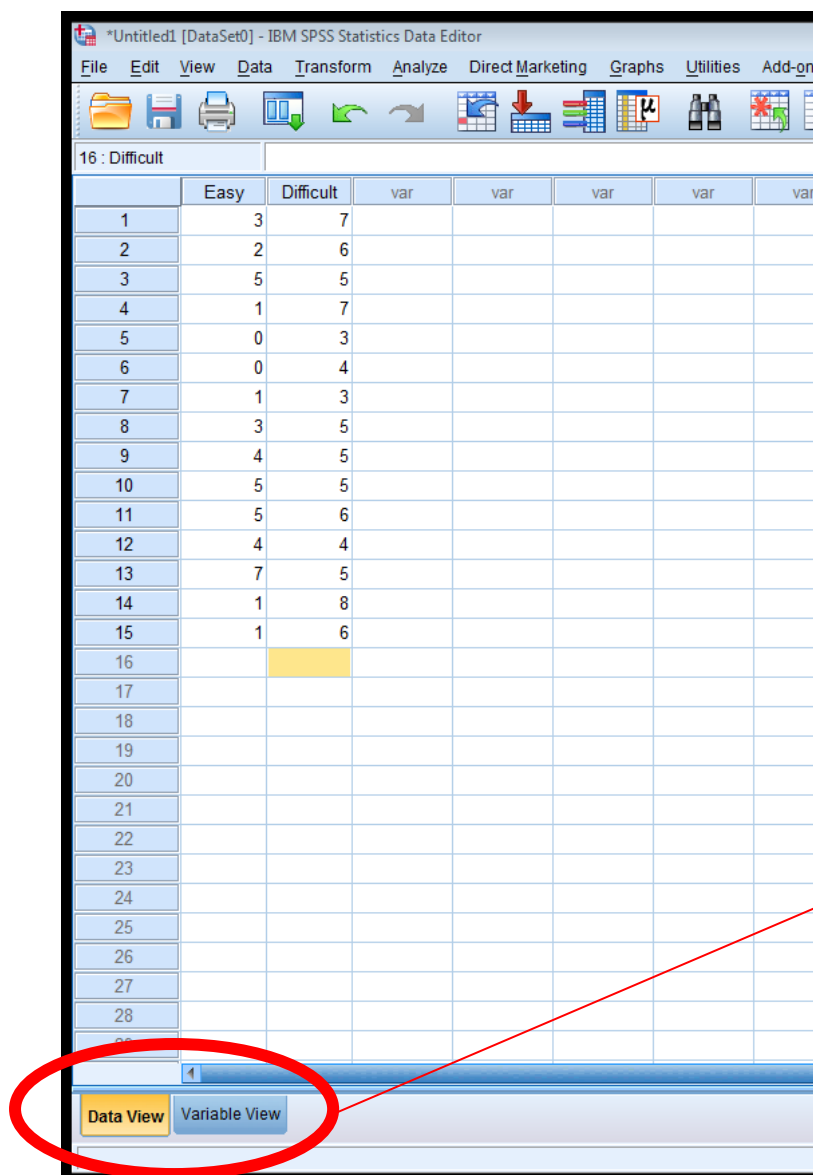
For a paired samples t-test the data has to be entered in the format shown in the graphic below. Where there are two conditions, data must be entered into SPSS in two columns – each column represents scores in each condition. Each row of data represents the scores for a specific participant.

As this is 'paired' data, it is crucial that the data remains in the correct order in terms of each participant (i.e., row 1 should represent the score for participant 1 in both conditions).

Enter the data as shown below, which represents an example study in which the scores are number of errors in 'easy' and 'difficult' task conditions. First you need to name your conditions in the 'Variable view' tab.



Write in the names of your variables/conditions here



NOTE: The tabs at the bottom of the screen – Data view is where you input or manipulate the data scores, Variable view is where you indicate the variable or condition names, and can define these variables further.

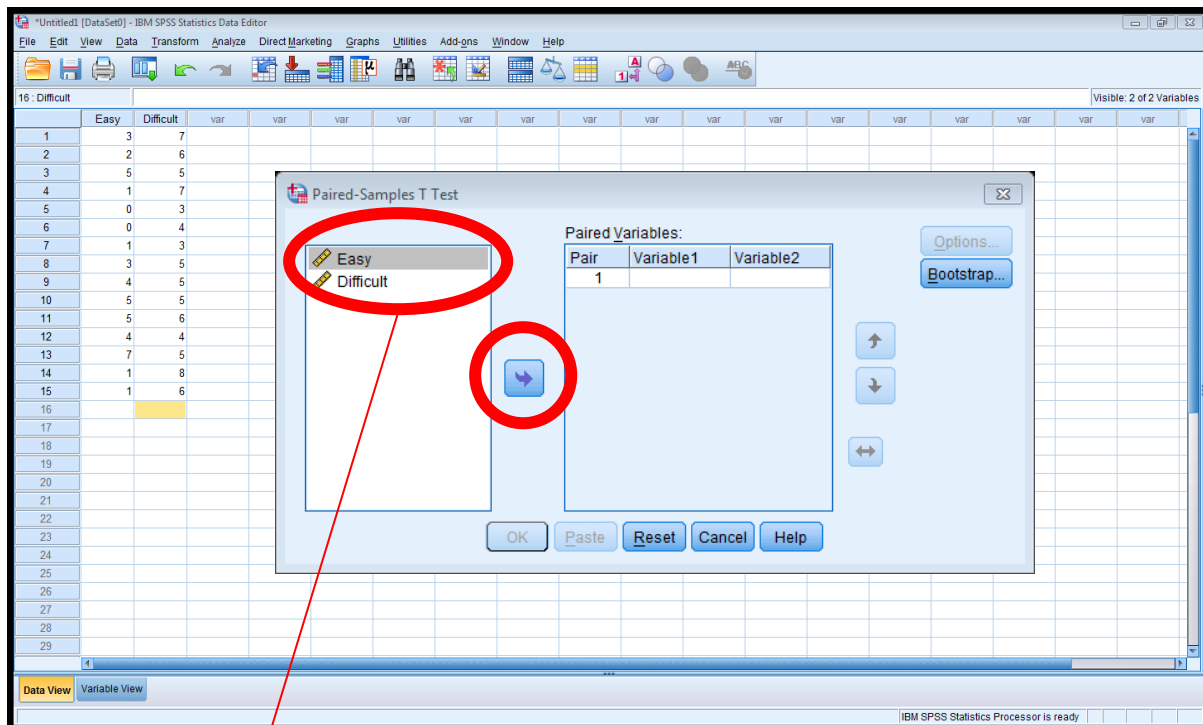
Once you have named your variables, click on data view to input the data.

With the data entered correctly, and conditions defined, we can now carry out a comparison between the two conditions' scores.

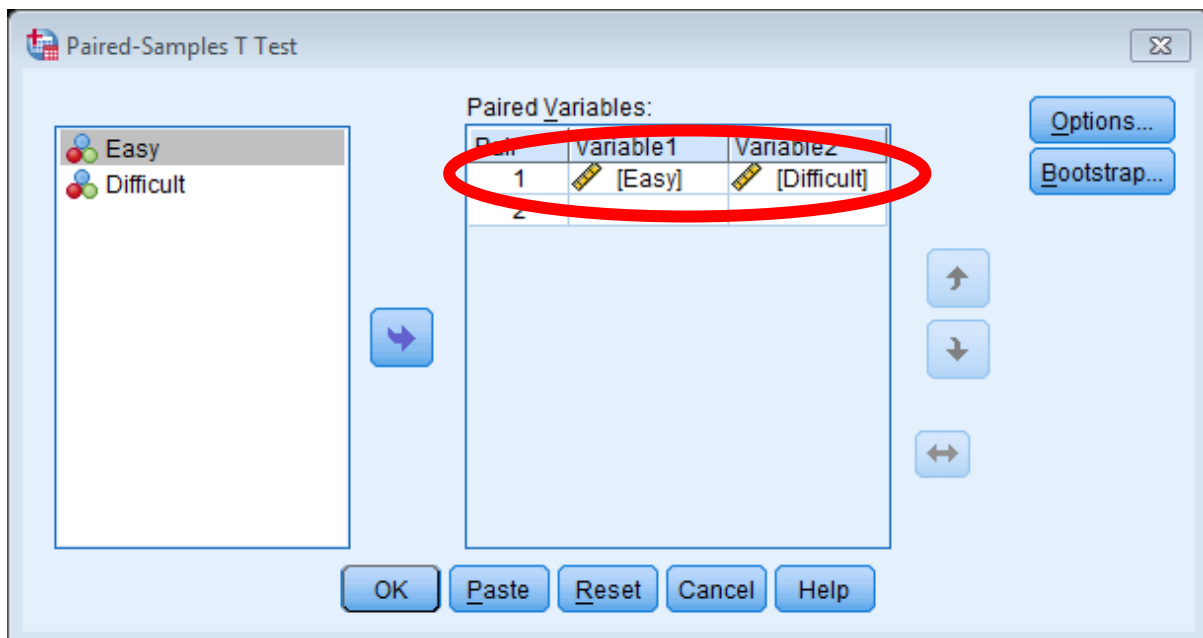
As this is 'paired' data, we can use the paired samples t-test. Analysis can be run using the top menu whether you are in Data view or Variable view.

On the Analysis menu at the top you select 'Compare means' and then 'Paired samples t-test' from the choice of possible comparisons.

A 'dialogue' box will appear. You can then select the conditions to be compared in the dialogue box, drag both conditions over into the 'paired variables' box (or use the arrow button to move them across). See example below.



Select one of the conditions, then press the arrow to move the condition over to the 'Paired variables' box. Then, select the other condition to move it across to the 'Paired variables' box. Both should then appear next to each other (see example below).



SPSS will produce the following output tables:

Paired samples statistics: This shows you the descriptive statistics (e.g., mean, standard deviation) for each of the conditions.

Paired samples correlations: How correlated scores are between conditions (don't worry about this table much at this point).

Paired samples test: This is the most important output table for your analysis, as it reveals whether the test shows a significant difference between scores in the two conditions.

The main statistics to assess and report from this table are the t value, degrees of freedom (df) and the significance (sig.) value (which is the p-value from the analysis).

If the p-value is below 0.05 then it shows a significant difference between the scores.

If the p-value is above 0.05 then there is no significant difference between the scores.

The format for reporting the t-test in APA style is: $t(df) = t \text{ value}, p < 0.05$ or $p > 0.05$.

Where $p < 0.05$, this means less than; where $p > 0.05$ this means more than.

For example: $t(14) = 1.43, p > 0.05$ (in this example the result is not significant).

Note: If the p-value is less than 0.01 we would report $p < 0.01$ instead.

Using your SPSS books and using information provided on the first page of this worksheet regarding the type of study, write-up the results from the analysis you have conducted in the space below: