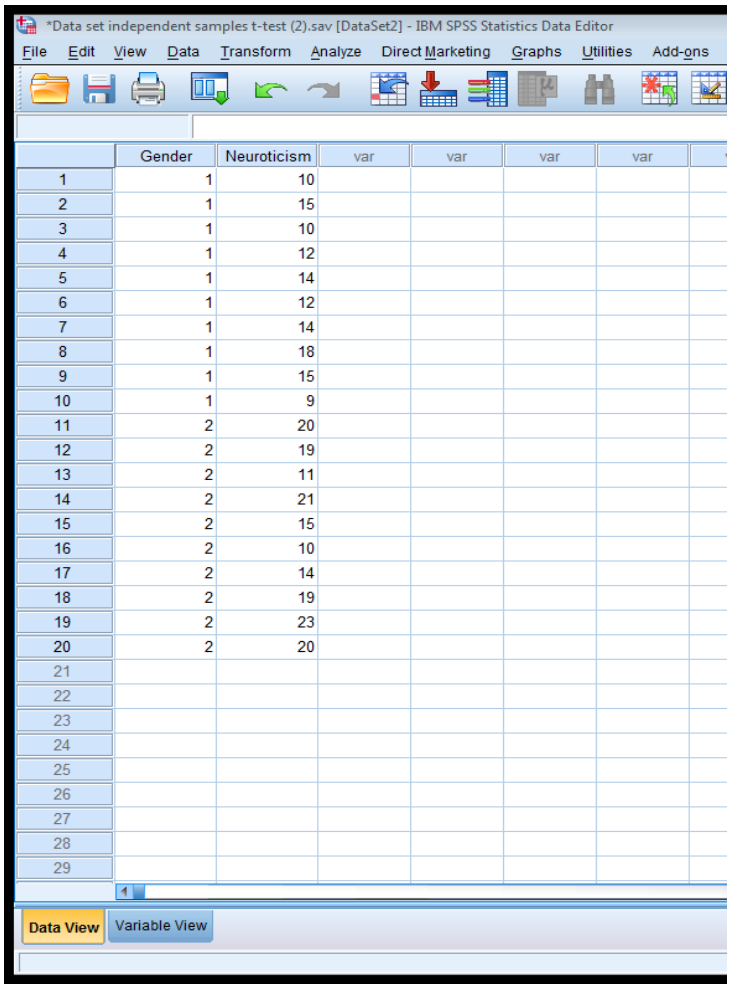
**MSc - Independent-samples t-test**

You will now practice the procedure for using SPSS to make a comparison between two groups. Specifically, this procedure will use an Independent samples t-test analysis, which is used when you have two sets of scores that were generated by two different groups of participants. This type of data is produced when you use a between participants study design.

For this example, you will be looking at gender and neuroticism to see if there is a significant difference in the mean neuroticism scores between males and females.

What you need is one categorical variable (gender: male/female) and one continuous variable (scores of neuroticism out of 25).

For an independent samples t-test the data has to be entered in the format shown below.




| | Gender | Neuroticism | var | var | var | var |
|---|---|---|---|---|---|---|
| 1 | 1 | 10 | | | | |
| 2 | 1 | 15 | | | | |
| 3 | 1 | 10 | | | | |
| 4 | 1 | 12 | | | | |
| 5 | 1 | 14 | | | | |
| 6 | 1 | 12 | | | | |
| 7 | 1 | 14 | | | | |
| 8 | 1 | 18 | | | | |
| 9 | 1 | 15 | | | | |
| 10 | 1 | 9 | | | | |
| 11 | 2 | 20 | | | | |
| 12 | 2 | 19 | | | | |
| 13 | 2 | 11 | | | | |
| 14 | 2 | 21 | | | | |
| 15 | 2 | 15 | | | | |
| 16 | 2 | 10 | | | | |
| 17 | 2 | 14 | | | | |
| 18 | 2 | 19 | | | | |
| 19 | 2 | 23 | | | | |
| 20 | 2 | 20 | | | | |
| 21 | | | | | | |
| 22 | | | | | | |
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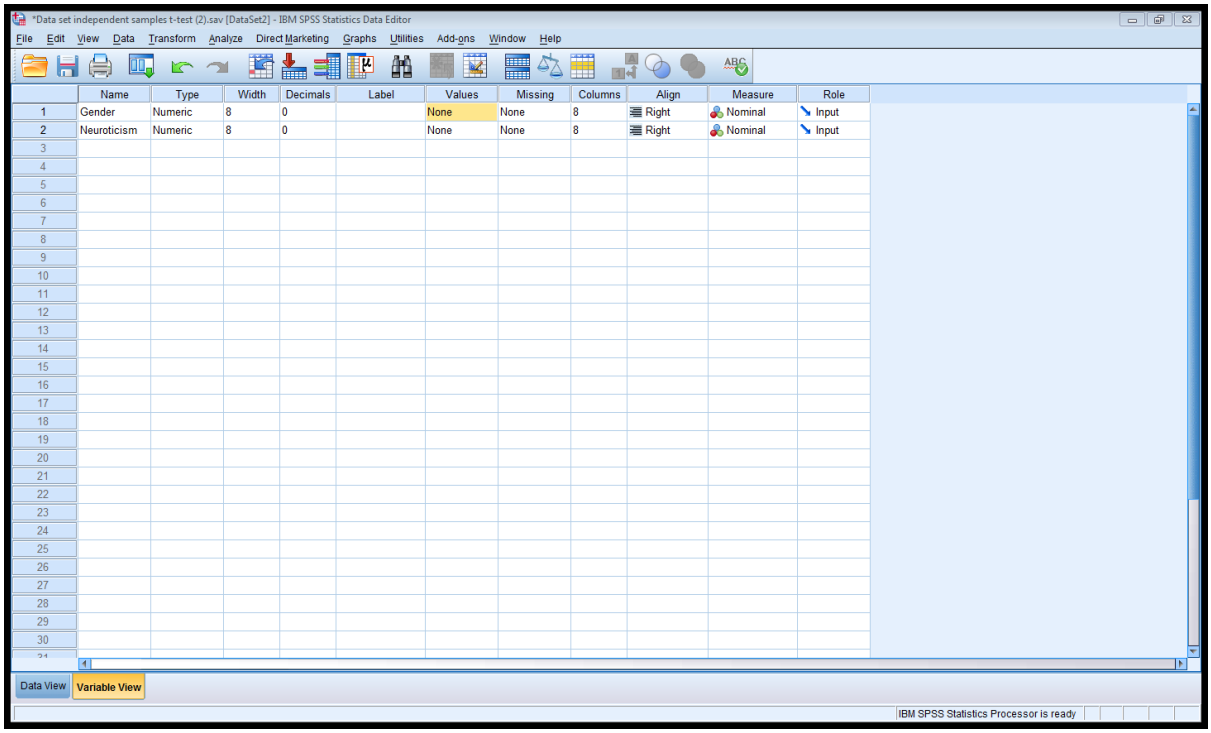
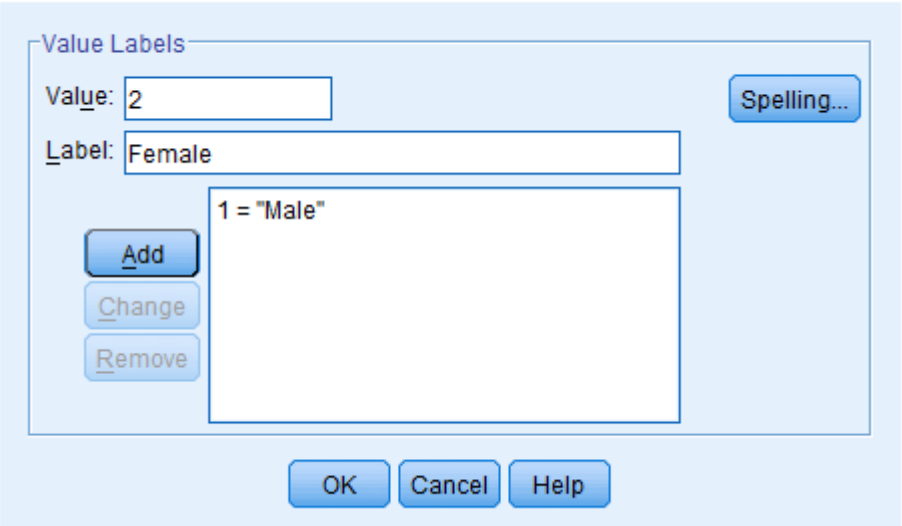
| 24 | | | | | | |
| 25 | | | | | | |
| 26 | | | | | | |
| 27 | | | | | | |
| 28 | | | | | | |
| 29 | | | | | | |

To set the data up like this you will first need to click on the variable view tab along the bottom and specify to SPSS that you have two groups.

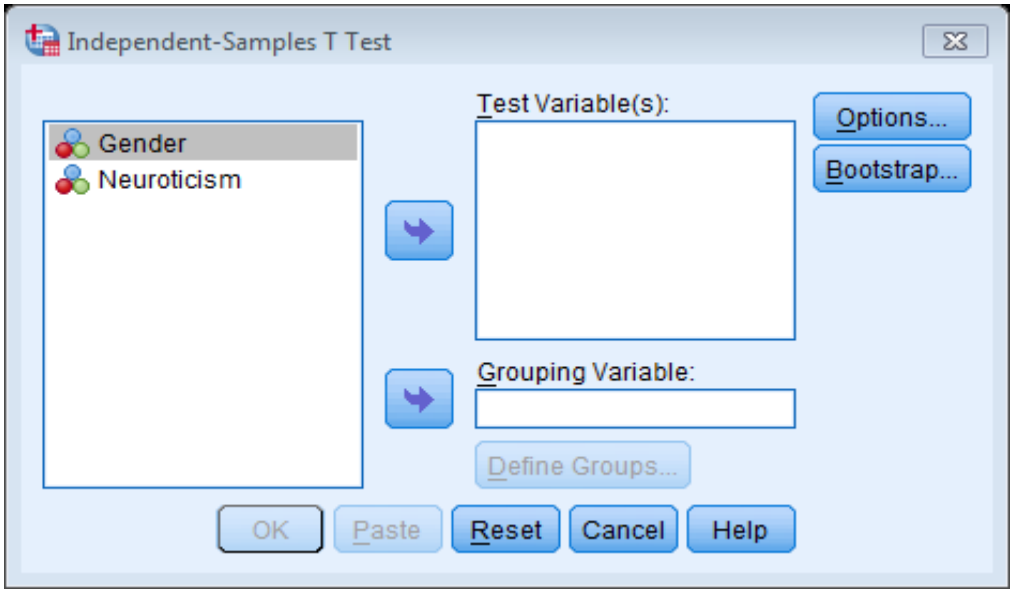



Click the row under value column (the one highlighted in yellow) to define the values for this field. A value labels box will appear. Type in "1" in the value box and the name of that group in the label box, e.g., Male, and then click add. Do the same for the other group, e.g., 2 = Female.

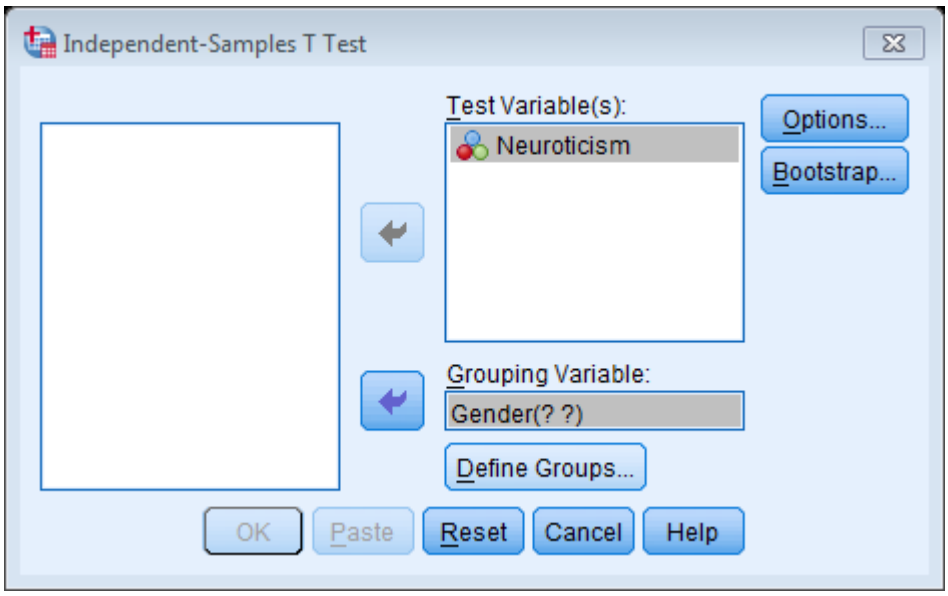



Back in data view you will need to type out the number values you have just assigned to each group and then place the score in next to that participant in their group. Each row relates to a single participant.

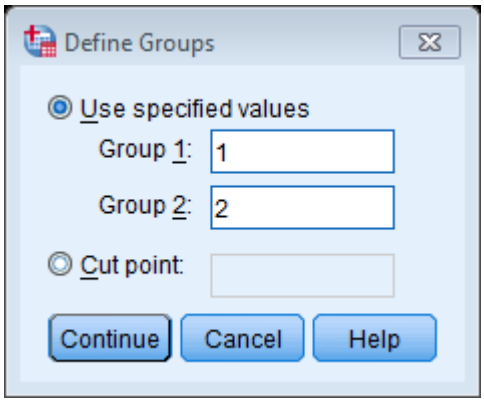
Once all the data has been entered correctly we can now carry out the comparison between the two groups. To do this go to Analyze and select 'compare means' and then the 'Independent samples t-test' from the choice of comparisons. A dialogue box will appear……




You will need to move the Dependent variable (the continuous variable) into the Test variable box and move the Independent variable (the categorical variable) into the Grouping variable box.




Then click on Define Groups and type in the numbers used in the data set to code each group. So this just means 1=males and 2=females.



Then click OK to run the analysis.

SPSS will produce the following output tables:

**Group statistics:** This shows you the descriptive statistics (e.g., mean, standard deviation).

**Independent Samples Test:** This is the important table for your analysis, as it reveals whether the test shows a significant difference in the scores between the two groups.

- Levene's Test for equality of variance: If Levene's $p>.05$ then there is equality of variance so use the top row of values. If Levene's $p<.05$ there is no equality of variance so use the bottom row of values.
- You will need the t-value, degrees of freedom (df), and the significance value (p-value).
- If the p value is below 0.05 then it is a significant comparison, or shows a significant difference.
- The format for reporting the t-test in APA style is: t(df) = t value, $p > 0.05$ or $p < 0.05$.
- If the p value is less than 0.01 we should report $p < 0.01$.

(Note: the *p* value is for 2-tailed test so if your hypothesis is one-tailed then divide the sig value by 2).

Write out the results of this test as you would for a report (make sure to include both the descriptive statistics and the inferential statistics in your write-up).