

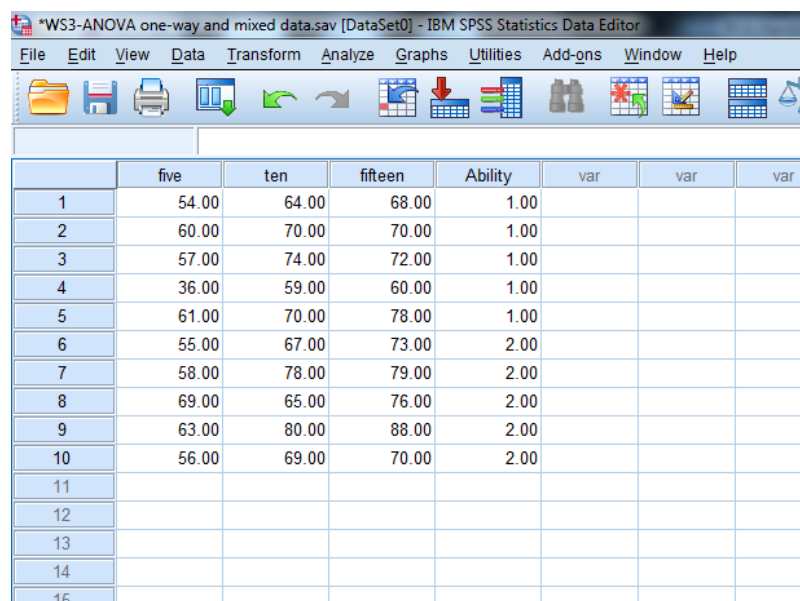
Mixed ANOVA

In this workshop you will practice a mixed-design ANOVA.

(This is used when we have 2 IVs, where one IV is within and one IV is between).

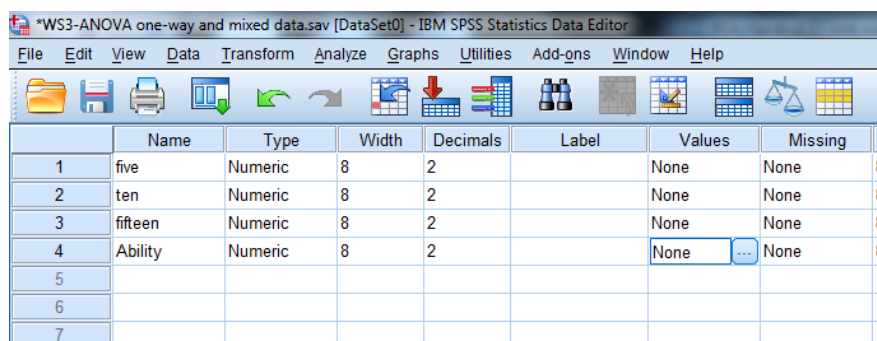
For this example, let's use the data from the one-way within ANOVA worksheet but presume we are also interested in whether the level of ability of each participant was a factor, so we divide the participants into either a 'high' or 'low' ability group. This could then be a between variable (ability) in our analysis.

You can add this variable into your analysis by adding a column of data (which defines this between variable grouping) as below:

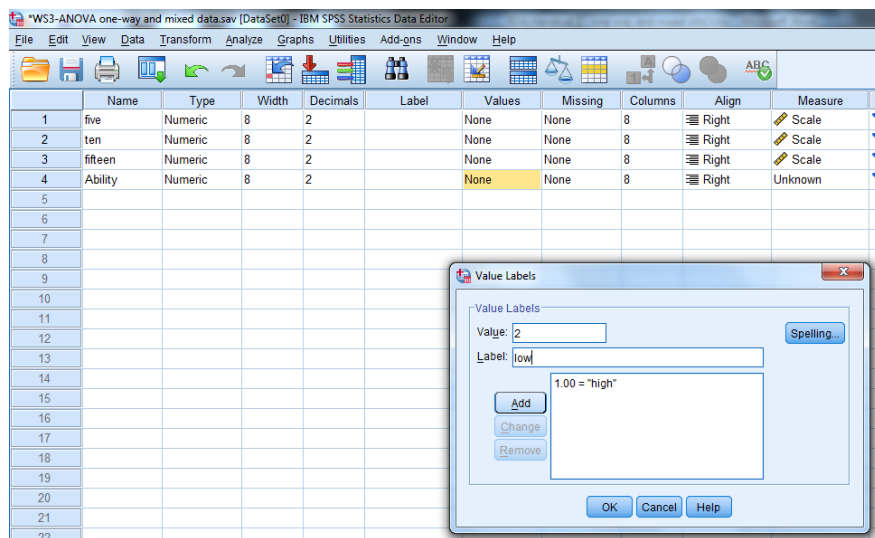


	five	ten	fifteen	Ability	var	var	var
1	54.00	64.00	68.00	1.00			
2	60.00	70.00	70.00	1.00			
3	57.00	74.00	72.00	1.00			
4	36.00	59.00	60.00	1.00			
5	61.00	70.00	78.00	1.00			
6	55.00	67.00	73.00	2.00			
7	58.00	78.00	79.00	2.00			
8	69.00	65.00	76.00	2.00			
9	63.00	80.00	88.00	2.00			
10	56.00	69.00	70.00	2.00			
11							
12							
13							
14							
15							

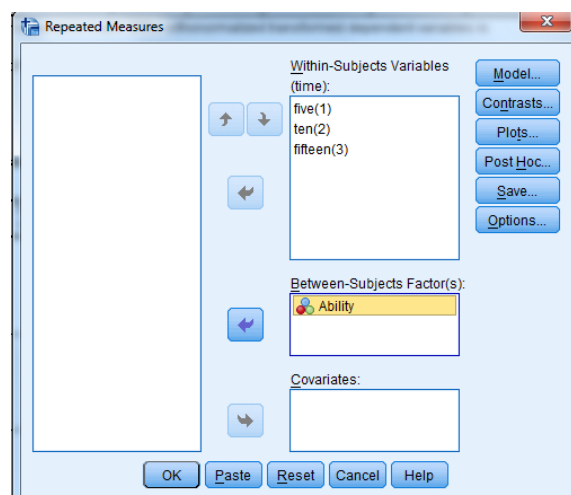
Note. You will need to name this new column 'Ability' in the variable view. This variable could be used to re represent 1=high, 2=low, and this can be labelled using the variable view (values column as shown following).



	Name	Type	Width	Decimals	Label	Values	Missing	
1	five	Numeric	8	2		None	None	8
2	ten	Numeric	8	2		None	None	8
3	fifteen	Numeric	8	2		None	None	8
4	Ability	Numeric	8	2		None	None	8
5								
6								
7								



To run the mixed-ANOVA analysis, including the between variable now, follow the same procedure as with the previous ANOVA with the additional step of adding the between subject's factor into the correct box (as below):



The output for the mixed-design ANOVA now includes the analysis of the within-variable (time), between variable (ability) and interaction of these variables in their effect.

Tests of within subjects effects

The top row of data still shows the analysis for the within variable as before.

The middle row of data (top line of this middle section) from the table shows the analysis of the interaction effect for both the within variable (time) and between variable (ability).

Tests of between subjects effects

This output table is the analysis of the effect of the between subjects variable (ability) alone. For this table the same output data should be reported as for the other analyses (F-value, degrees of freedom and p-value level). These statistics should be read from the **middle line** for the F-value and p-value and first df (with the second of the df values taken from the bottom line).

The format for reporting this output analysis for the within variable effect, the between variable effect and the 'interaction' effect is the same as before:

In its general format this is: **$F(df, df) = F\text{-value}, p < 0.05$ or $p > 0.05$** (alternatively $p < 0.01$ or $p < 0.001$ depending on the sig. value shown).

E.g. $F(1,18) = 5.63, p < 0.01$

Write out the necessary output data (using the output tables you have now produced) in the correct format (as described above). This should include an analysis of the effect of the within variable (time), the effect of the between variable (ability) and the effect of the interaction. Make sure you use the means in your write-up.