

Two-Way (Factorial) ANOVA

Use to test and estimate the effect that two categorical factors and their interaction have on the population mean.

- 1. From an open JMP[°] data table, select **Analyze > Fit Model**.
- 2. Click on a continuous variable from **Select Columns**, and click **Y**, **Response** (continuous variables have blue triangles).
- Click on two categorical variables from Select Columns, and click Macros, Full Factorial (categorical variables have red or green bars). This adds each main effect and the interaction between the factors as model effects. Click Run. The Fit Model output window will display.

The Effect Summary table shows p-values for statistical

tests for the significance of each model term. More details in these tests are provided in the **Effect Tests** table.

ffect Summ	nary				
Source	Logworth				PValu
gender	2.848				0.0014
- drug	1.645				0.0226
aandor*drug	1.038				0.0916

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Select Columns	Pick Role Va	ariables	Personality:	Standard Least Squares		
S Columns Gender drug pain	Y	▲ pain optional	Emphasis:	Effect Leverage		
	Weight	optional numeric	Help Recall	Run Keep dialog open		
	Freq	optional numeric				
	By	optional	Remove			
	Add	gender drug gender⁺drug				
	Macros	~				
	Macros Degree Attributes	 ▼ 2 ▼ 				

gende

drug

	Effect Tests								
	Source	Nparm	DF	Sum of Squares	F Ratio	Prob > F			
	gender	1	1	73.808295	12.6378	0.0014*			
	drug	2	2	51.059196	4.3713	0.0227*			
l	gender*drug	2	2	30.542763	2.6148	0.0916			

- Terms can be removed from the model by selecting them in the **Effect Summary** table and clicking **Remove**.
- The Null Hypothesis in these tests is that the term has no effect on the outcome and the alternative hypothesis is that the term does have an effect.
- The accepted approach is to examine the test for the interaction(s) first. If not significant, remove them
 from the model and proceed to testing the main effects.
 Note: if an interaction is included in the model, the main effects must also be included regardless if the
 tests for the main effects are significant or not.
- Here we'll choose to keep all terms in the model (interaction term is significant at the 0.10 level).

Many options are available under the **Red Triangle** such as **Show Predicted Expression**, **Model Diagnostics**, **Multiple Comparisons**, **Saving results to the data table**, and **Factor Profilers** (shown below)



Visit **Discoverying JMP > Analyze Your Data > Compare Averages for Multiple Factors** and **Fitting Linear Models** in **JMP Help** to learn more.