

Two-Way (Factorial) ANOVA

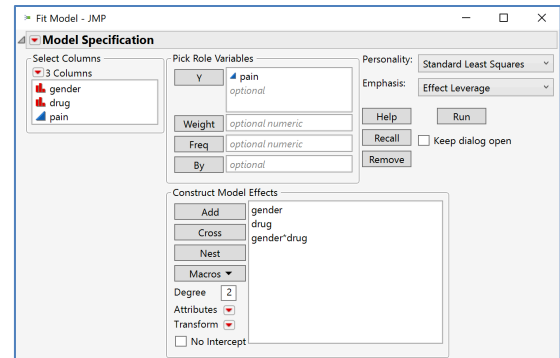
Use to test and estimate the effect that two categorical factors and their interaction have on the population mean.

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).
3. 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.

Analgesics.jmp (Help > Sample Data Folder)

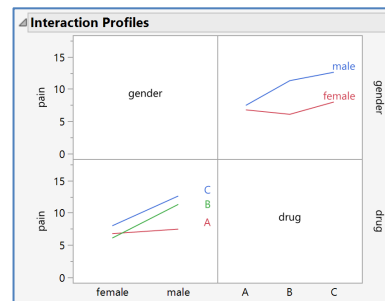
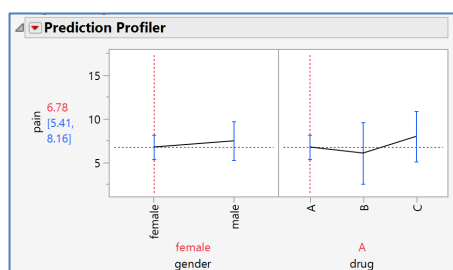


Effect Summary				
Source	Logworth			PValue
gender	2.848			0.00142
drug	1.645			0.02267
gender*drug	1.038			0.09161
Remove Add Edit <input type="checkbox"/> FDR				

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