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C:\Users\q2001\AppData\Local\Programs\Python\Python39\python.exe C:/Users/q2001/Desktop/nform/xlsx/ana.py
C:\Users\q2001\AppData\Local\Programs\Python\Python39\lib\site-packages\numpy\_distributor_init.py:30: UserWarning: loaded more than 1 DLL from .libs:
C:\Users\q2001\AppData\Local\Programs\Python\Python39\lib\site-packages\numpy\.libs\libopenblas.XWYDX2IKJW2NMTWSFYNGFUWKQU3LYTCZ.gfortran-win_amd64.dll
C:\Users\q2001\AppData\Local\Programs\Python\Python39\lib\site-packages\numpy\.libs\libopenblas64_v0.3.21-gcc_10_3_0.dll
  warnings.warn("loaded more than 1 DLL from .libs:"
               timestamp ... email
0 2023-03-31 16:09:00.805 ... 982650021@qq.com
1 2023-03-31 16:10:07.876 ... NaN
2 2023-03-31 16:10:13.024 ... ranmozanqin@163.com
3 2023-03-31 16:10:51.863 ... NaN
4 2023-03-31 16:12:22.339 ... 2667664183@qq.com
```

[5 rows x 68 columns]

Mixed Linear Model Regression Results						
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Model:	MixedLM	Dependent Variable:			rating	
No. Observations:	6600	Method:			REML	
No. Groups:	110	Scale:			2.0530	
Min. group size:	60	Log-Likelihood:			-12108.6966	
Max. group size:	60	Converged:			Yes	
Mean group size:	60.0					

		Coef.	Std.Err.	z	P> z	[0.025 0.975]

Intercept		2.682	0.220	12.190	0.000	2.251 3.113
C(size)[T.human]		-1.127	0.210	-5.370	0.000	-1.539 -0.716
C(shape)[T.quadruped]		-0.855	0.193	-4.423	0.000	-1.233 -0.476
C(color)[T.blue]		-0.209	0.193	-1.082	0.279	-0.588 0.170
C(color)[T.red]		-0.245	0.193	-1.270	0.204	-0.624 0.133
C(color)[T.white]		0.355	0.193	1.835	0.066	-0.024 0.733
C(color)[T.yellow]		-1.018	0.193	-5.270	0.000	-1.397 -0.640
C(semantic)[T.evil]		-0.373	0.193	-1.929	0.054	-0.751 0.006
C(semantic)[T.ghosty]		-0.491	0.193	-2.541	0.011	-0.870 -0.112
C(size)[T.human]:C(shape)[T.quadruped]		0.955	0.273	3.494	0.000	0.419 1.490
C(size)[T.human]:C(color)[T.blue]		2.127	0.273	7.786	0.000	1.592 2.663
C(size)[T.human]:C(color)[T.red]		1.536	0.273	5.623	0.000	1.001 2.072
C(size)[T.human]:C(color)[T.white]		-0.682	0.273	-2.495	0.013	-1.217 -0.146
C(size)[T.human]:C(color)[T.yellow]		1.964	0.273	7.187	0.000	1.428 2.499
C(shape)[T.quadruped]:C(color)[T.blue]		1.464	0.273	5.357	0.000	0.928 1.999
C(shape)[T.quadruped]:C(color)[T.red]		0.227	0.273	0.832	0.406	-0.308 0.763
C(shape)[T.quadruped]:C(color)[T.white]		-0.591	0.273	-2.163	0.031	-1.126 -0.055
C(shape)[T.quadruped]:C(color)[T.yellow]		1.155	0.273	4.226	0.000	0.619 1.690
C(size)[T.human]:C(semantic)[T.evil]		0.709	0.273	2.595	0.009	0.174 1.245
C(size)[T.human]:C(semantic)[T.ghosty]		0.191	0.273	0.699	0.485	-0.345 0.726
C(shape)[T.quadruped]:C(semantic)[T.evil]		1.200	0.273	4.392	0.000	0.664 1.736
C(shape)[T.quadruped]:C(semantic)[T.ghosty]		2.018	0.273	7.386	0.000	1.483 2.554
C(color)[T.blue]:C(semantic)[T.evil]		0.336	0.273	1.231	0.218	-0.199 0.872
C(color)[T.red]:C(semantic)[T.evil]		0.227	0.273	0.832	0.406	-0.308 0.763
C(color)[T.white]:C(semantic)[T.evil]		-0.245	0.273	-0.898	0.369	-0.781 0.290
C(color)[T.yellow]:C(semantic)[T.evil]		0.455	0.273	1.664	0.096	-0.081 0.990
C(color)[T.blue]:C(semantic)[T.ghosty]		0.345	0.273	1.264	0.206	-0.190 0.881
C(color)[T.red]:C(semantic)[T.ghosty]		0.991	0.273	3.627	0.000	0.455 1.526
C(color)[T.white]:C(semantic)[T.ghosty]		-0.227	0.273	-0.832	0.406	-0.763 0.308
C(color)[T.yellow]:C(semantic)[T.ghosty]		0.936	0.273	3.427	0.001	0.401 1.472
C(size)[T.human]:C(shape)[T.quadruped]:C(color)[T.blue]		-3.045	0.386	-7.881	0.000	-3.803 -2.288
C(size)[T.human]:C(shape)[T.quadruped]:C(color)[T.red]		-1.509	0.386	-3.905	0.000	-2.266 -0.752
C(size)[T.human]:C(shape)[T.quadruped]:C(color)[T.white]		0.555	0.386	1.435	0.151	-0.203 1.312
C(size)[T.human]:C(shape)[T.quadruped]:C(color)[T.yellow]		-2.091	0.386	-5.411	0.000	-2.848 -1.334
C(size)[T.human]:C(shape)[T.quadruped]:C(semantic)[T.evil]		-1.518	0.386	-3.929	0.000	-2.276 -0.761
C(size)[T.human]:C(shape)[T.quadruped]:C(semantic)[T.ghosty]		-1.445	0.386	-3.741	0.000	-2.203 -0.688
C(size)[T.human]:C(shape):C(color)[T.blue]:C(semantic)[T.evil]		-1.100	0.386	-2.847	0.004	-1.857 -0.343
C(size)[T.human]:C(shape):C(color)[T.red]:C(semantic)[T.evil]		-1.391	0.386	-3.600	0.000	-2.148 -0.634
C(size)[T.human]:C(shape):C(color)[T.white]:C(semantic)[T.evil]		0.964	0.386	2.494	0.013	0.206 1.721
C(size)[T.human]:C(shape):C(color)[T.yellow]:C(semantic)[T.evil]		-1.491	0.386	-3.858	0.000	-2.248 -0.734
C(size)[T.human]:C(shape):C(color)[T.blue]:C(semantic)[T.ghosty]		-1.509	0.386	-3.905	0.000	-2.266 -0.752
C(size)[T.human]:C(shape):C(color)[T.red]:C(semantic)[T.ghosty]		-0.918	0.386	-2.376	0.017	-1.676 -0.161
C(size)[T.human]:C(shape):C(color)[T.white]:C(semantic)[T.ghosty]		0.764	0.386	1.976	0.048	0.006 1.521
C(size)[T.human]:C(shape):C(color)[T.yellow]:C(semantic)[T.ghosty]		-0.464	0.386	-1.200	0.230	-1.221 0.294
C(shape)[T.quadruped]:C(color)[T.blue]:C(semantic)[T.evil]		-1.364	0.386	-3.529	0.000	-2.121 -0.606
C(shape)[T.quadruped]:C(color)[T.red]:C(semantic)[T.evil]		0.136	0.386	0.353	0.724	-0.621 0.894
C(shape)[T.quadruped]:C(color)[T.white]:C(semantic)[T.evil]		0.436	0.386	1.129	0.259	-0.321 1.194
C(shape)[T.quadruped]:C(color)[T.yellow]:C(semantic)[T.evil]		-0.864	0.386	-2.235	0.025	-1.621 -0.106
C(shape)[T.quadruped]:C(color)[T.blue]:C(semantic)[T.ghosty]		-3.191	0.386	-8.258	0.000	-3.948 -2.434
C(shape)[T.quadruped]:C(color)[T.red]:C(semantic)[T.ghosty]		-1.209	0.386	-3.129	0.002	-1.966 -0.452
C(shape)[T.quadruped]:C(color)[T.white]:C(semantic)[T.ghosty]		-1.318	0.386	-3.411	0.001	-2.076 -0.561
C(shape)[T.quadruped]:C(color)[T.yellow]:C(semantic)[T.ghosty]		-2.609	0.386	-6.752	0.000	-3.366 -1.852
C(size)[T.human]:C(shape):C(color)[T.blue]:C(semantic)[T.evil]		2.127	0.546	3.893	0.000	1.056 3.198
C(size)[T.human]:C(shape):C(color)[T.red]:C(semantic)[T.evil]		1.455	0.546	2.662	0.008	0.383 2.526
C(size)[T.human]:C(shape):C(color)[T.white]:C(semantic)[T.evil]		-0.182	0.546	-0.333	0.739	-1.253 0.889
C(size)[T.human]:C(shape):C(color)[T.yellow]:C(semantic)[T.evil]		1.718	0.546	3.144	0.002	0.647 2.789
C(size)[T.human]:C(shape):C(color)[T.blue]:C(semantic)[T.ghosty]		3.791	0.546	6.937	0.000	2.720 4.862
C(size)[T.human]:C(shape):C(color)[T.red]:C(semantic)[T.ghosty]		0.655	0.546	1.198	0.231	-0.417 1.726
C(size)[T.human]:C(shape):C(color)[T.white]:C(semantic)[T.ghosty]		0.782	0.546	1.431	0.153	-0.289 1.853
C(size)[T.human]:C(shape):C(color)[T.yellow]:C(semantic)[T.ghosty]		2.645	0.546	4.841	0.000	1.574 3.717
Group Var		3.271	0.318			
Group x C(size)[T.human] Cov		-0.779	0.128			
C(size)[T.human] Var		0.742	0.084			
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Normality p-value: 0.00099999999999998899
C:\Users\q2001\Desktop\nform\xlsx\ana.py:67: MatplotlibDeprecationWarning: Support for FigureCanvases without a required_interactive_framework attribute was deprecated in
Matplotlib 3.6 and will be removed two minor releases later.
  plt.scatter(mixed_result.fittedvalues, mixed_result.resid)
C:\Users\q2001\Desktop\nform\xlsx\ana.py:71: MatplotlibDeprecationWarning: Support for FigureCanvases without a required_interactive_framework attribute was deprecated in
Matplotlib 3.6 and will be removed two minor releases later.
  plt.show()
Size Tukey HSD results:
  Multiple Comparison of Means - Tukey HSD, FWER=0.05
=====
 group1  group2 meandiff p-adj  lower  upper reject
-----
colossal  human  -0.3739   0.0 -0.4834 -0.2645  True
-----

Shape Tukey HSD results:
  Multiple Comparison of Means - Tukey HSD, FWER=0.05
=====
 group1  group2 meandiff p-adj  lower  upper reject
-----
humanoid quadruped  -0.1891 0.0007 -0.2988 -0.0793  True
```

Color Tukey HSD results:
Multiple Comparison of Means - Tukey HSD, FWER=0.05
=====

group1	group2	meandiff	p-adj	lower	upper	reject
black	blue	0.3515	0.0007	0.1105	0.5925	True
black	red	0.2773	0.0147	0.0363	0.5183	True
black	white	-0.1098	0.7257	-0.3508	0.1312	False
black	yellow	-0.0591	0.963	-0.3001	0.1819	False
blue	red	-0.0742	0.918	-0.3152	0.1668	False
blue	white	-0.4614	0.0	-0.7024	-0.2204	True
blue	yellow	-0.4106	0.0	-0.6516	-0.1696	True
red	white	-0.3871	0.0001	-0.6281	-0.1461	True
red	yellow	-0.3364	0.0013	-0.5774	-0.0954	True
white	yellow	0.0508	0.9788	-0.1902	0.2918	False

Semantic Tukey HSD results:
Multiple Comparison of Means - Tukey HSD, FWER=0.05
=====

group1	group2	meandiff	p-adj	lower	upper	reject
devil	evil	0.1455	0.0859	-0.0154	0.3063	False
devil	ghosty	0.0095	0.9894	-0.1513	0.1704	False
evil	ghosty	-0.1359	0.117	-0.2967	0.0249	False

```
C:\Users\q2001\Desktop\nform\xlsx\ana.py:96: MatplotlibDeprecationWarning: Support for FigureCanvases without a required_interactive_framework attribute was deprecated in
Matplotlib 3.6 and will be removed two minor releases later.
    plt.figure(figsize=(25, 10)) # 
C:\Users\q2001\Desktop\nform\xlsx\ana.py:101: MatplotlibDeprecationWarning: Support for FigureCanvases without a required_interactive_framework attribute was deprecated in
Matplotlib 3.6 and will be removed two minor releases later.
    plt.show()
```

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