Two Way ANOVA Report

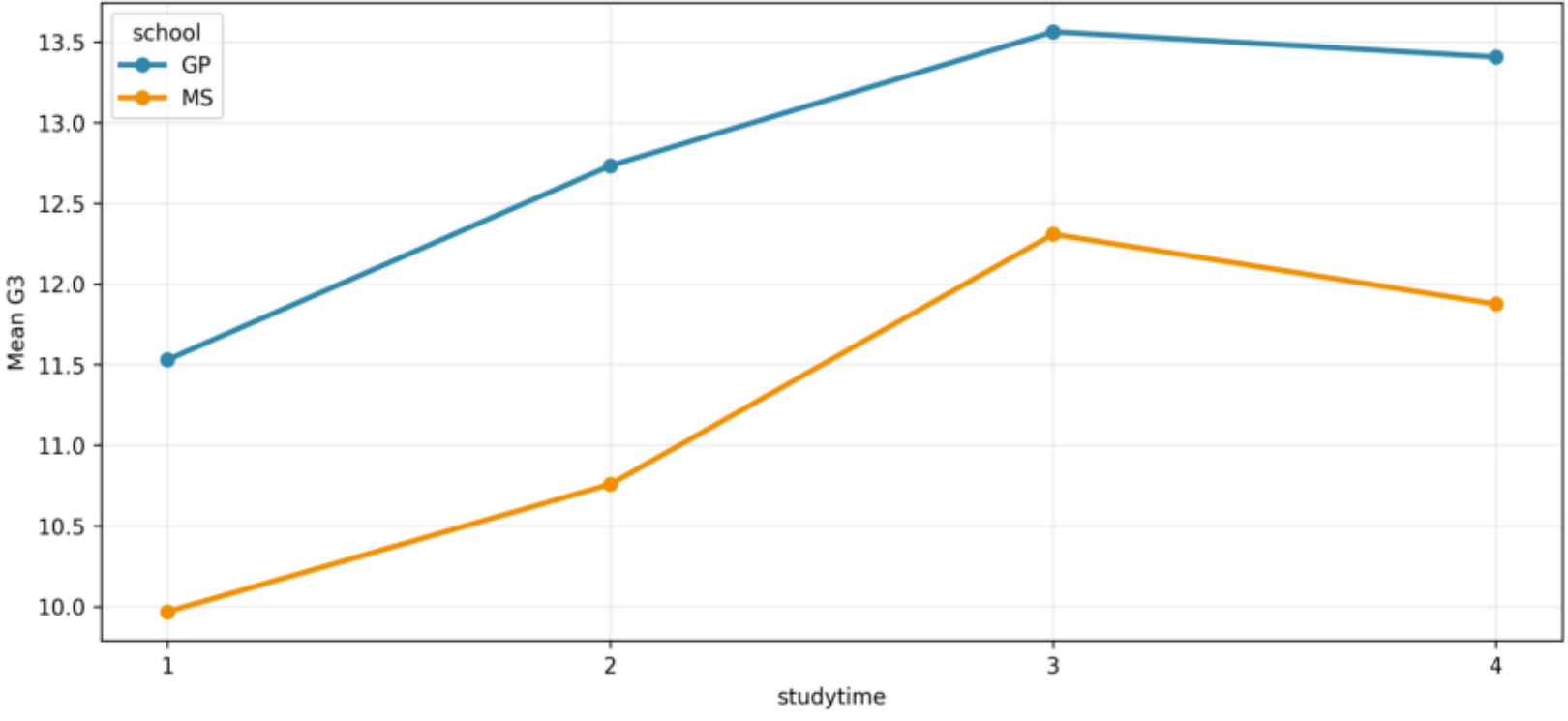
Outcome: G3
Factor A: studytime
Factor B: school
Model: G3 ~ studytime * school

Main effects and the interaction are tested together.

effect	raw_effect	df	sum_sq	mean_sq	f_statistic	p_value	partial_eta_squared	decision_alpha_0_05
studytime	C(Q("studytime"))	3.0	341.211787	113.737262	12.429678	6.556833e-08	0.054975	Reject H0
school	C(Q("school"))	1.0	422.762615	422.762615	46.201245	2.444779e-11	0.067231	Reject H0
studytime × school	C(Q("studytime")):C(Q("school"))	3.0	9.981718	3.327239	0.363614	7.793037e-01	0.001699	Fail to reject H0

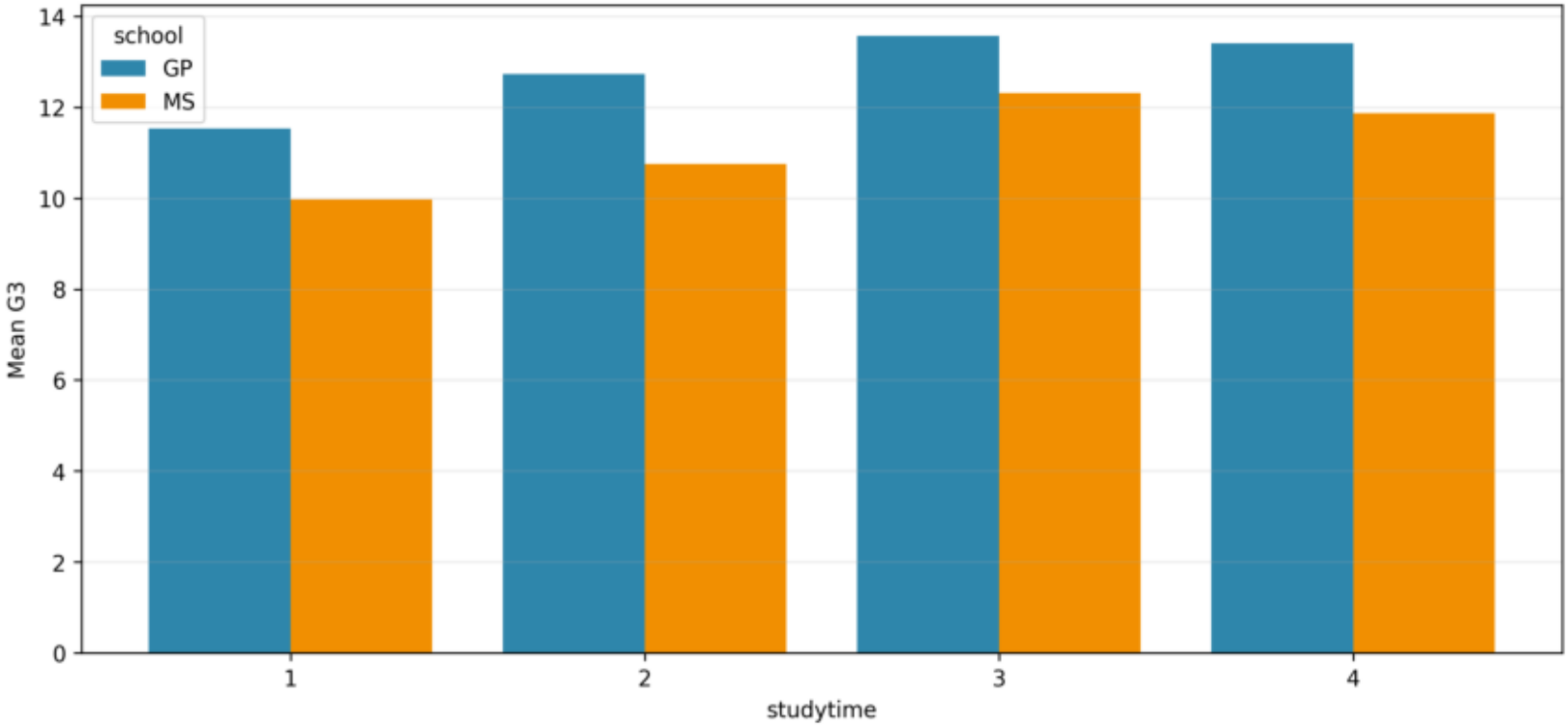
Two Way ANOVA: Interaction Plot

Non-parallel lines suggest that studytime and school may interact.



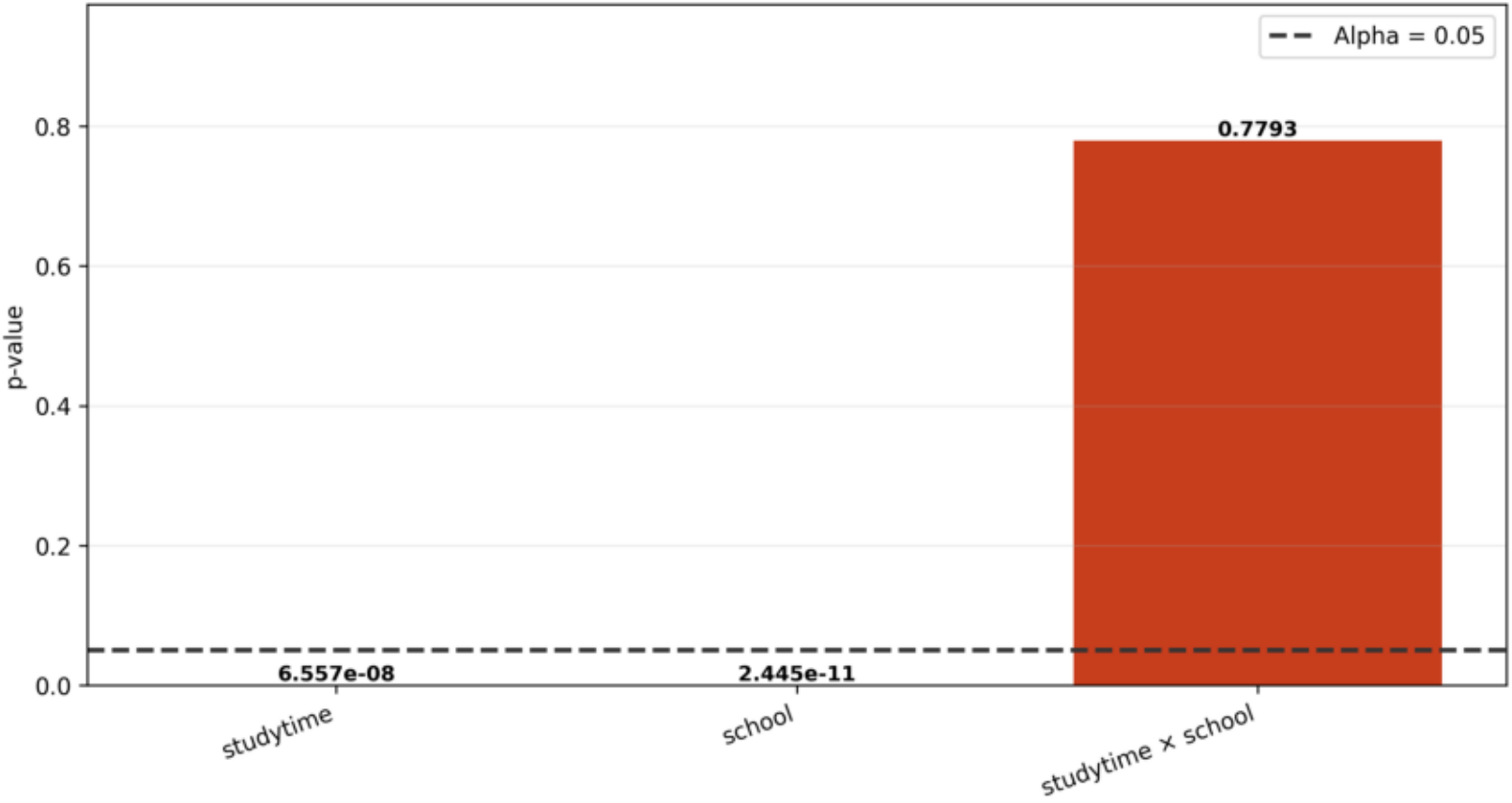
Two Way ANOVA: Cell Means

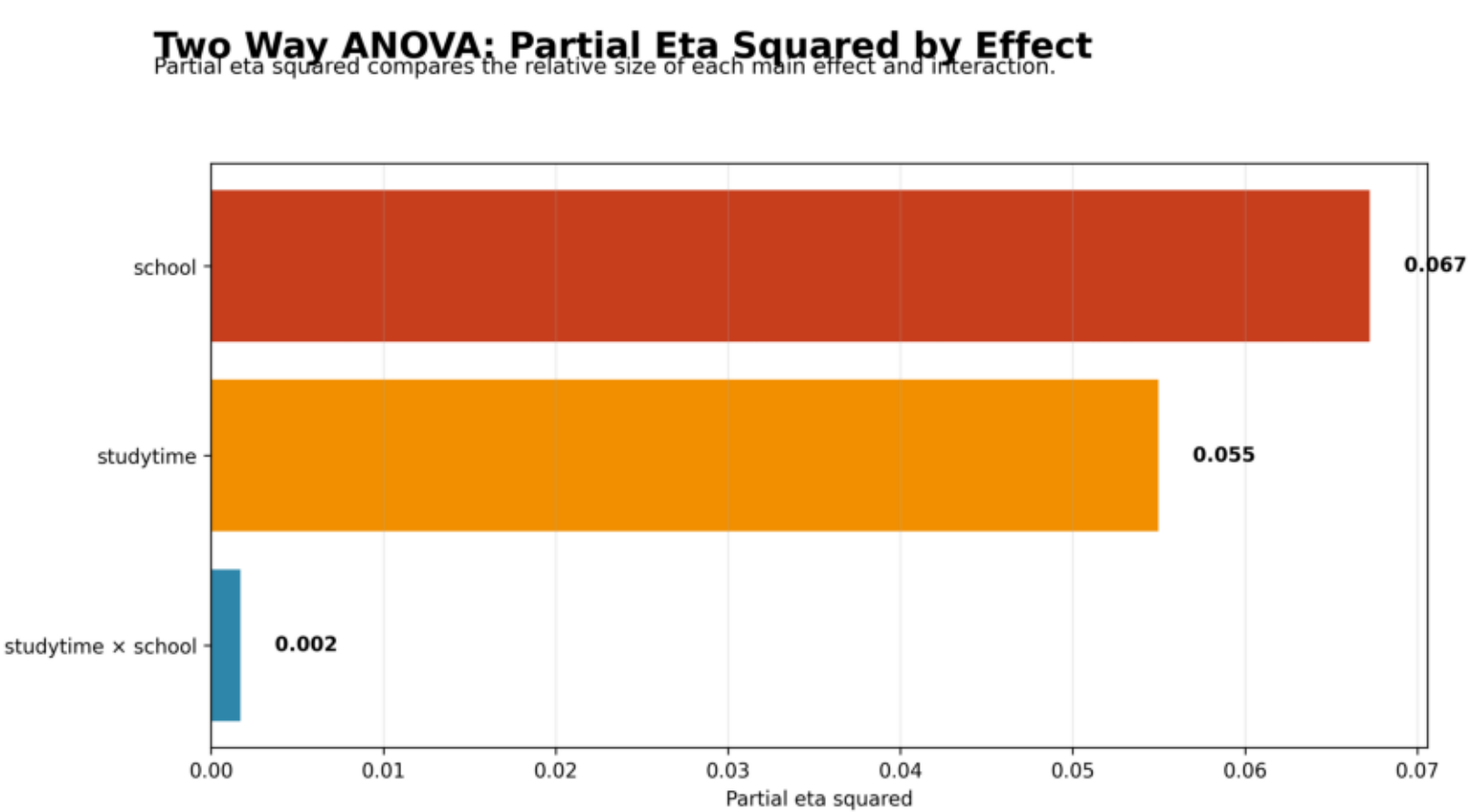
Bars compare mean G3 for every studytime × school cell.



Two Way ANOVA: p-value Decision Summary

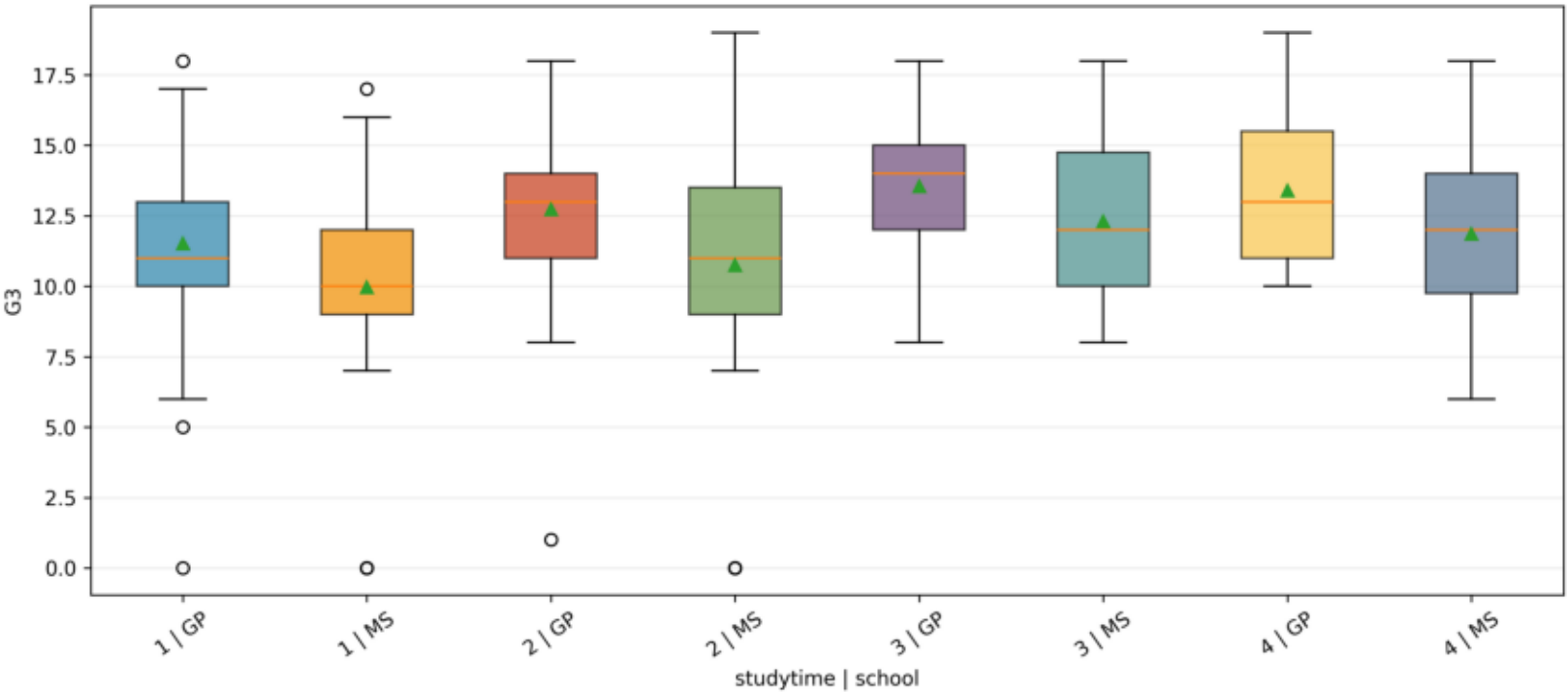
Effects below alpha are statistically significant at the selected threshold.




Two Way ANOVA: Partial Eta Squared by Effect
Partial eta squared compares the relative size of each main effect and interaction.
school
studytime
studytime × school
0.067
0.055
0.002
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
Partial eta squared

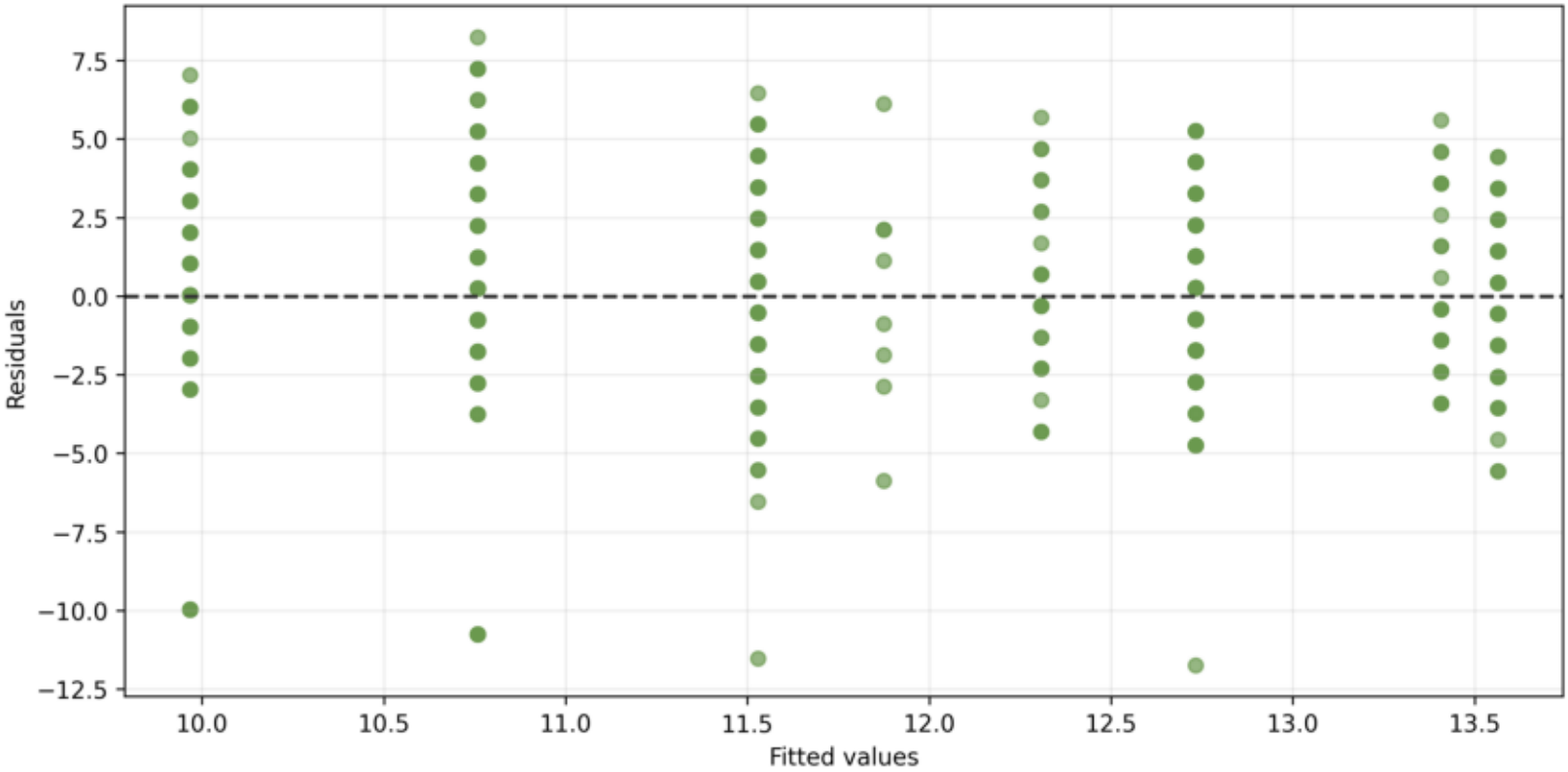
Two Way ANOVA: Distribution by Cell

Boxplots show spread, median, mean marker, and possible outliers in every factor cell.



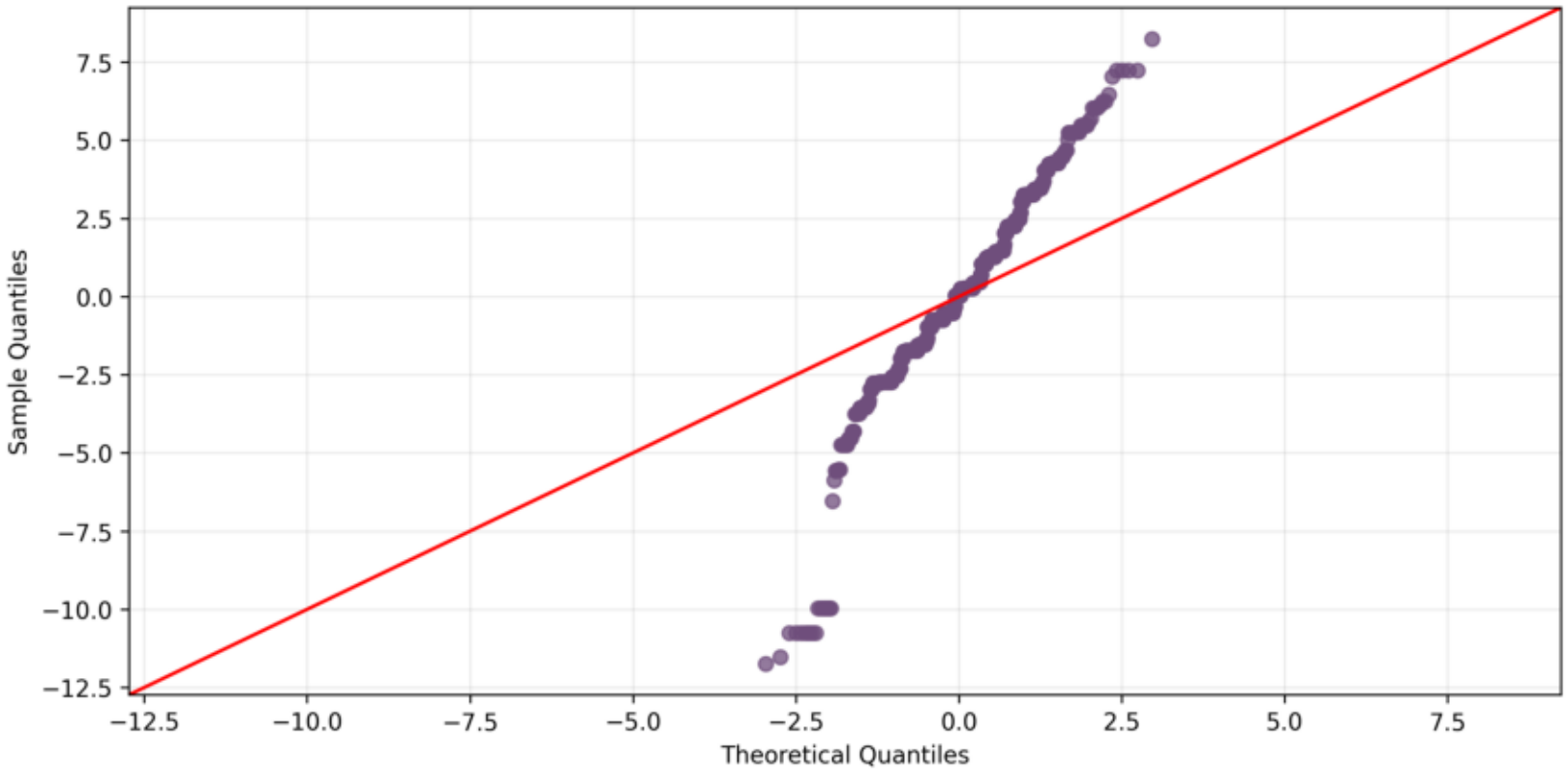
Two Way ANOVA: Residuals vs Fitted Values

A random cloud around zero supports the model-fit assumption.



Two Way ANOVA: Q-Q Plot of Residuals

Points close to the reference line support approximate residual normality.



Two Way ANOVA: Results Summary Table

The table reports main effects, interaction, p-values, and partial eta squared.

Effect	df	SS	F	p	partial eta²	Decision
studytime	3	341.2	12.43	6.557e-08	0.05498	Reject H0
school	1	422.8	46.2	2.445e-11	0.06723	Reject H0
studytime × school	3	9.982	0.3636	0.7793	0.001699	Fail to reject H0