Point Biserial Correlation Report

Binary variable: sex
Category coded 1: F
Category coded 0: M
Continuous variable: G3

Main result:

binary_variable_positive_category	binary_variable_negative_category	continuous_variable	n	n_positive	n_negative	mean_positive_category	mean_negative_category	mean_difference_positive_minus_negative	sd_continuous_total	point_biserial_r_correl
F	M	continuous_value	649	383	266	12.253264	11.406015	0.847249	3.230656	0.129077

point_biserial_r_manual	r_squared	t_value	df	p_value_two_tailed	fisher_ci95_lower	fisher_ci95_upper	cohen_d	decision_alpha_0_05	interpretation
0.129077	0.016661	3.310938	647	0.000982	0.052638	0.204013	0.264261	Significant relationship	Positive r means the category coded 1 has the higher mean; negative r means the category coded 0 has the higher mean.

Group descriptives:

binary_code	category	n	mean	standard_deviation	standard_error	minimum	maximum	ci95_lower	ci95_upper
1	F	383	12.253264	3.124147	0.159636	0.0	19.0	11.939388	12.567140
0	M	266	11.406015	3.320690	0.203605	0.0	19.0	11.005127	11.806904

Assumption context:

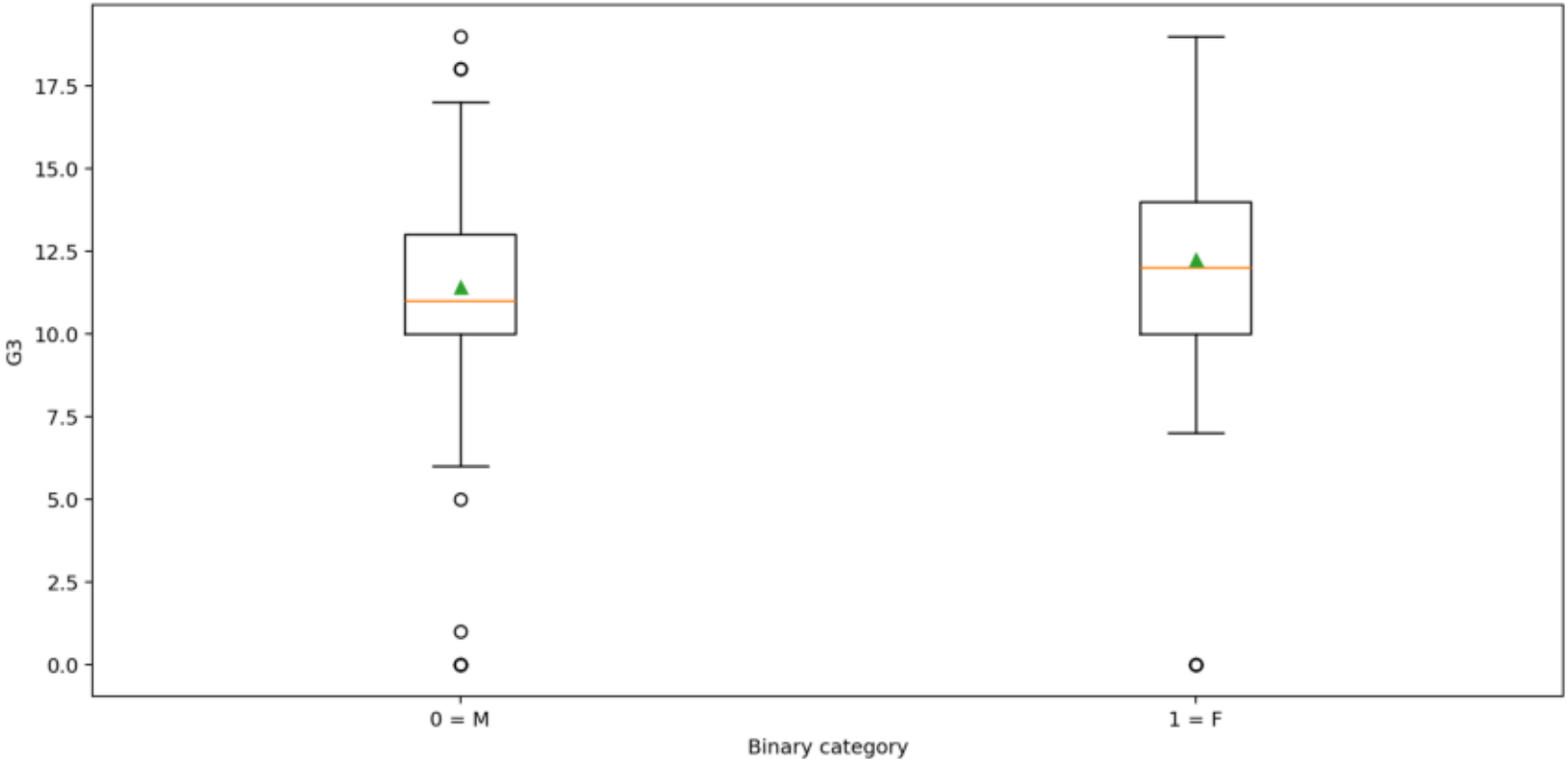
check	linearity_note	normality_p_positive_category	normality_p_negative_category	median_centered_levene_statistic	median_centered_levene_p_value	variance_note
Point biserial assumptions and equivalent tests	The binary variable is coded 0/1, so the correlation is equivalent to the independent-samples t test for mean difference.	5.699869e-12	2.536043e-11	0.007145	0.932662	Point biserial correlation does not require equal group sizes; for the equivalent t-test, inspect variance context.

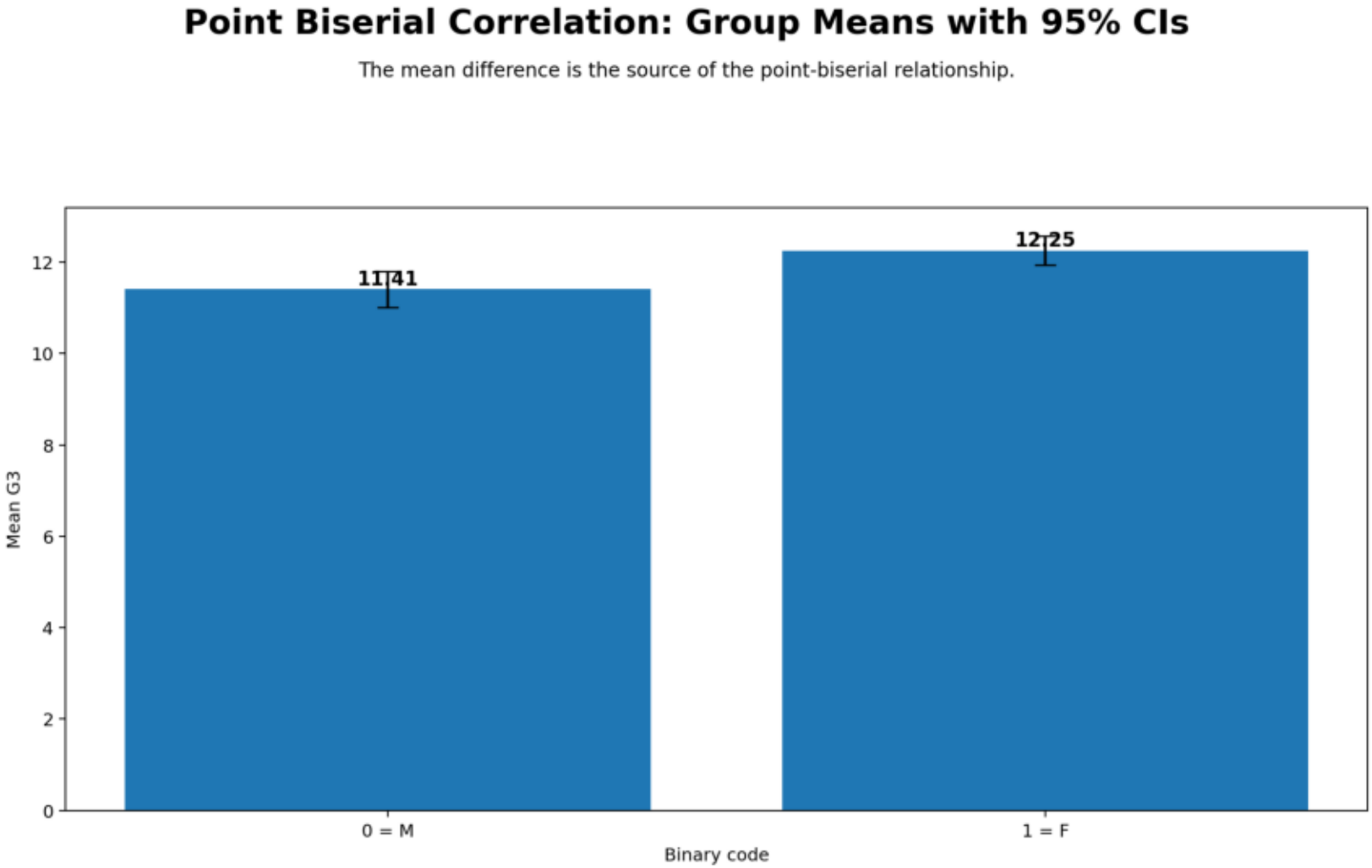
Selected numeric correlations:

binary_code_variable	numeric_variable	n	point_biserial_r	r_squared	p_value_two_tailed
selected binary coded 0/1	age	649	0.043662	0.001906	0.266702
selected binary coded 0/1	absences	649	-0.021336	0.000455	0.587437
selected binary coded 0/1	G1	649	0.104109	0.010839	0.007947
selected binary coded 0/1	G2	649	0.104005	0.010817	0.008010
selected binary coded 0/1	G3	649	0.129077	0.016661	0.000982

Point Biserial Correlation: Distribution by Binary Group

Boxplots show how the continuous variable differs between the two coded categories.




Point Biserial Correlation: Group Means with 95% CIs
The mean difference is the source of the point-biserial relationship.
11.41
12.25
Mean G3
0
2
4
6
8
10
12
0 = M
1 = F
Binary code

Point Biserial Correlation: Statistical Decision

This card summarizes the main test statistic, significance, and practical direction.

POINT BISERIAL CORRELATION REPORT CARD

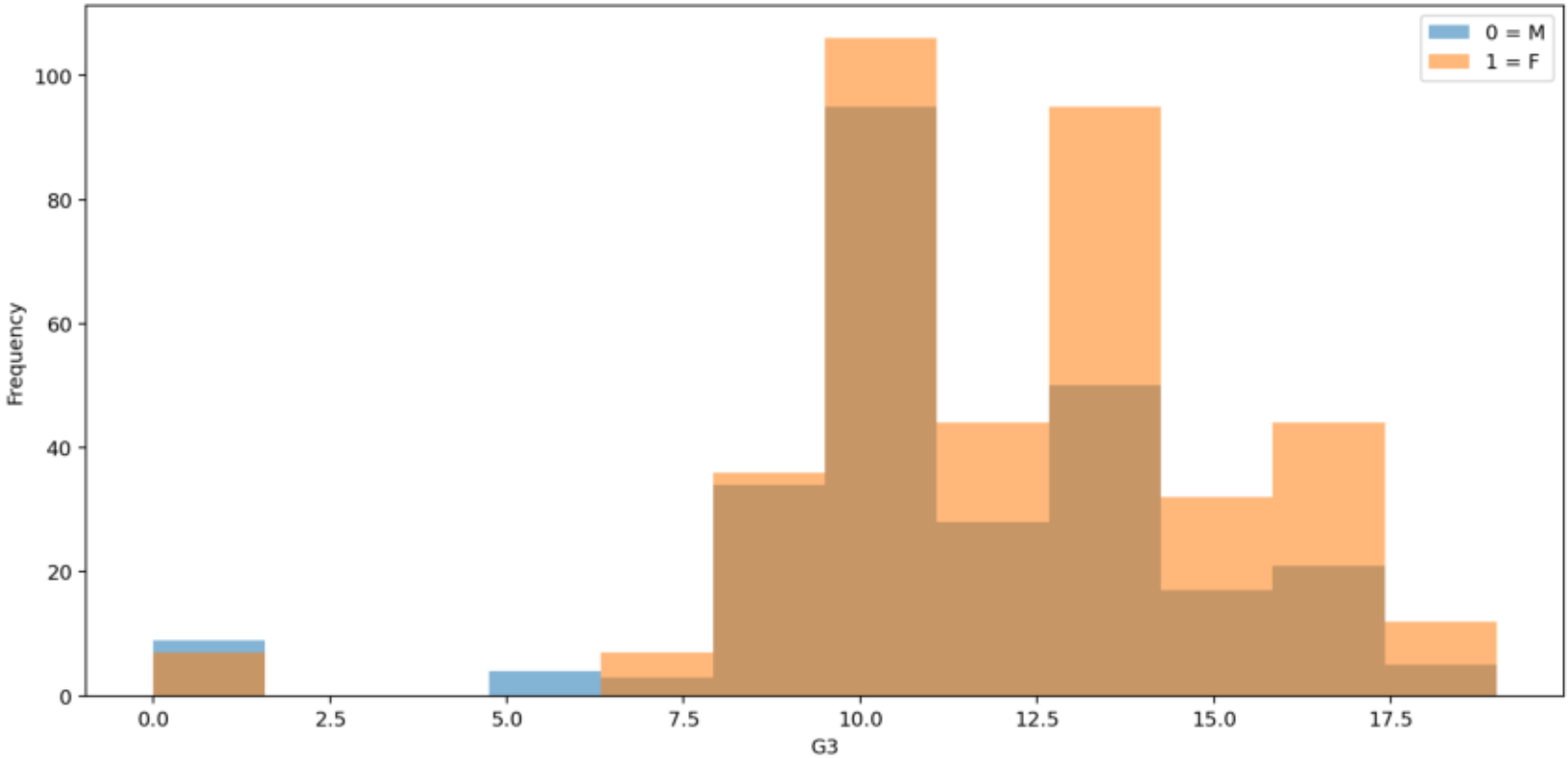
rpb = 0.1291
r^2 = 0.0167
t = 3.3109
p = 0.000982

Decision at alpha = 0.05:
Significant relationship

Direction:
Positive r means the category coded 1 has the higher mean; negative r means the category coded 0 has the higher mean.

Point Biserial Correlation: Overlaid Distributions

The overlap between groups helps explain the strength of the correlation.



Point Biserial Correlation: 0/1 Scatter with Fitted Line

With a binary predictor, the fitted line connects the two group means.