

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	
	F	M	continuous_value	649	383	266
mean_positive_category	mean_negative_category	mean_difference_positive_minus_negative	sd_continuous_total			
12.25326	11.40602	0.8472487	3.230656			
point_biserial_r_correl	point_biserial_r_manual	r_squared	t_value	df	p_value_two_tailed	fisher_ci95_lower
0.1290775	0.1290775	0.016661	3.310938	647	0.0009815287	0.05263773
fisher_ci95_upper	cohen_d	decision_alpha_0_05				
0.2040135	0.264261	Significant relationship				

interpretation

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	12.25326	3.124147	0.1596365	0	19	11.93939	12.56714
0	M	266	11.40602	3.320690	0.2036046	0	19	11.00513	11.80690

Assumption context:

check

Point biserial assumptions and equivalent tests

linearity_note

The binary variable is coded 0/1, so the correlation is equivalent to the independent-samples t test for mean difference.

normality_p_positive_category	normality_p_negative_category	median_centered levene_statistic
5.699868e-12	2.536043e-11	0.007145147
median_centered levene_p_value		
0.932662		

variance_note

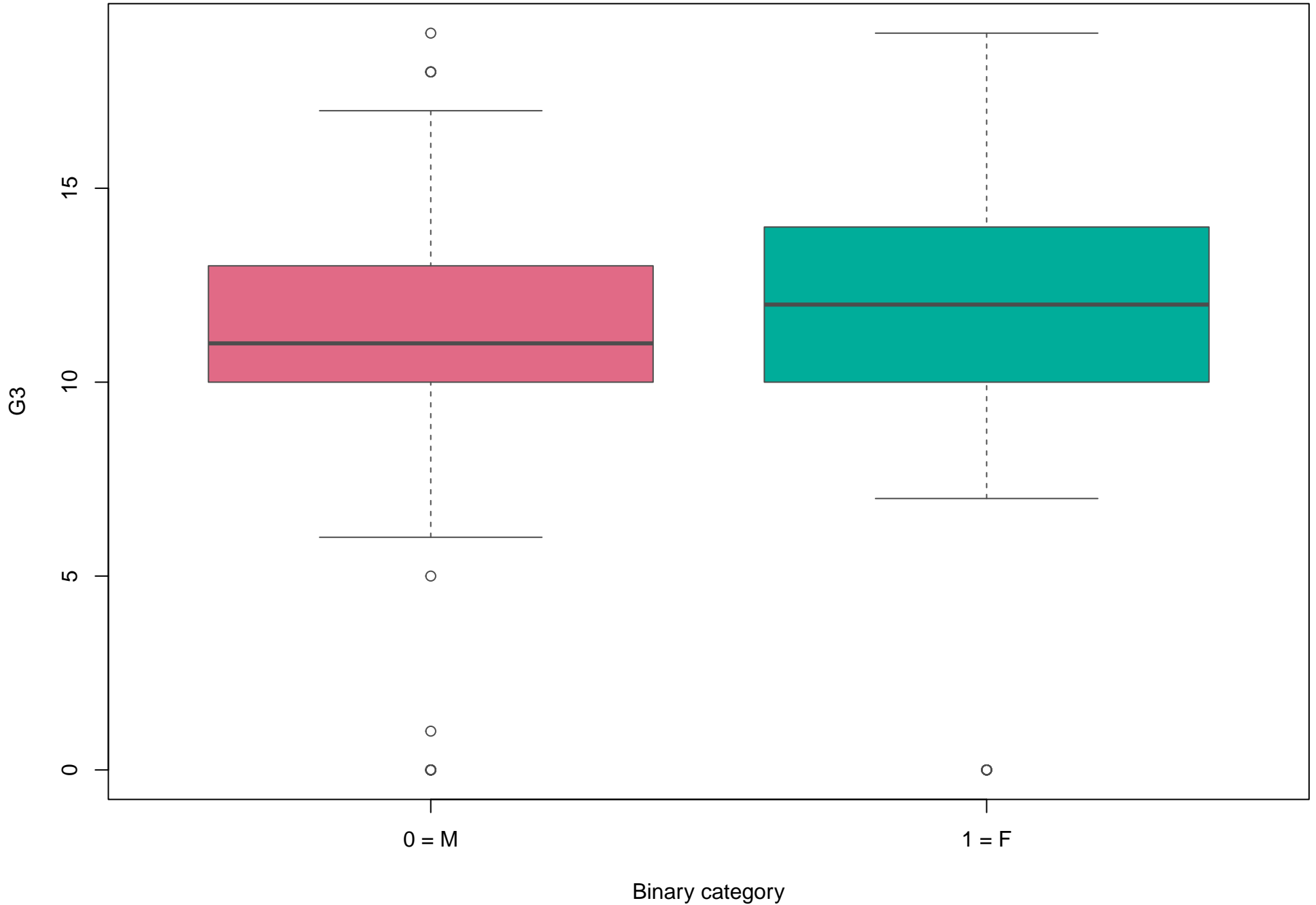
Point biserial correlation does not require equal group sizes; for the equivalent t-test, inspect variance context.

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	0.04366178	0.0019063512	0.2667017080
selected binary coded 0/1	absences	649	-0.02133580	0.0004552162	0.5874372033
selected binary coded 0/1	G1	649	0.10410857	0.0108385940	0.0079468696
selected binary coded 0/1	G2	649	0.10400517	0.0108170751	0.0080095208
selected binary coded 0/1	G3	649	0.12907749	0.0166609975	0.0009815287

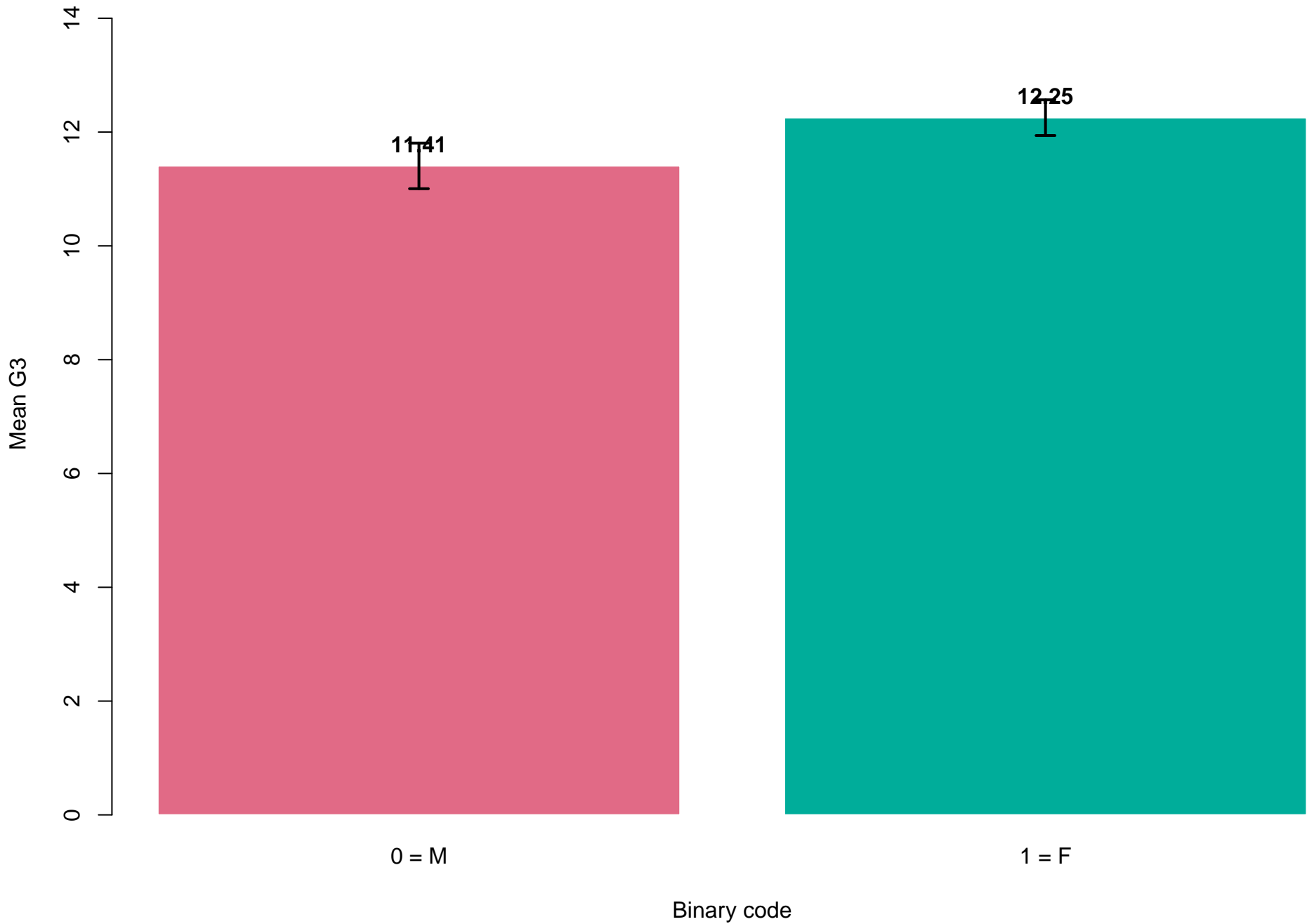
Point Biserial Correlation: Colorful Distribution by Binary Group

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



Point Biserial Correlation: Colorful Group Means with 95% CIs

The mean difference is the source of the point-biserial relationship.



Point Biserial Correlation: Colorful Statistical Decision

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

POINT BISERIAL CORRELATION REPORT CARD

rpb = 0.1291

r-squared = 0.0167

t = 3.3109

p = 0.000981529

Decision at alpha = 0.05:

Significant relationship

Direction:

Positive r means the category coded 1 has the higher mean; negative r means

Point Biserial Correlation: Colorful Overlaid Distributions

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

