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Biserial Correlation Analysis

Continuous variable: G3
Binary variable: sex
Group coding: F = 0, M = 1

H0: the continuous variable is not associated with the dichotomous variable.
H1: the continuous variable is associated with the dichotomous variable.

Main result:
continuous_variable binary_variable group_0_label group_1_label  n_total  n_group_0  n_group_1  proportion_group_0_q  proportion_group_1_p  mean_group_0  mean_group_1  sd_group_0  sd_group_1  pooled_continuous_sd  mean_difference_group_1_minus_group_0  point_biserial_correlation_rpb  point_biserial_ci95_lower  point_biserial_ci95_upper  t_value_for_rpb  df  p_value_two_tailed  normal_cut_point_z  normal_ordinate_y  biserial_correlation_rb  biserial_correlation_rb_clipped_to_minus1_plus1  biserial_from_rpb_check     decision_alpha_0_05                                                                                                                                                           method_
                 G3             sex             F             M      649        383        266              0.590139              0.409861     12.253264     11.406015    3.124147     3.32069              3.230656                              -0.847249                       -0.129077                  -0.204013                  -0.052638        -3.310938 647            0.000982            0.227902           0.388715                -0.163185                                        -0.163185                -0.163311 Significant association Point-biserial is Pearson r between a 0/1 variable and a continuous variable; biserial r applies the normal-cut correction for an artificially dichotomized variab

Group descriptives:
binary_variable  group_code group_label   n      mean  standard_deviation  minimum  maximum
            sex           0           F 383 12.253264            3.124147      0.0     19.0
            sex           1           M 266 11.406015            3.320690      0.0     19.0

Assumption context:
                                  check  statistic      p_value                                                                                                       note
     Shapiro normality context: Group 0   0.934167 5.699869e-12 Biserial correlation assumes the continuous variable is approximately normal within the underlying groups.
     Shapiro normality context: Group 1   0.912873 2.536043e-11 Biserial correlation assumes the continuous variable is approximately normal within the underlying groups.
Median-centered Levene variance context   0.007145 9.326620e-01         Large variance imbalance affects mean-difference interpretation and confidence in the association.
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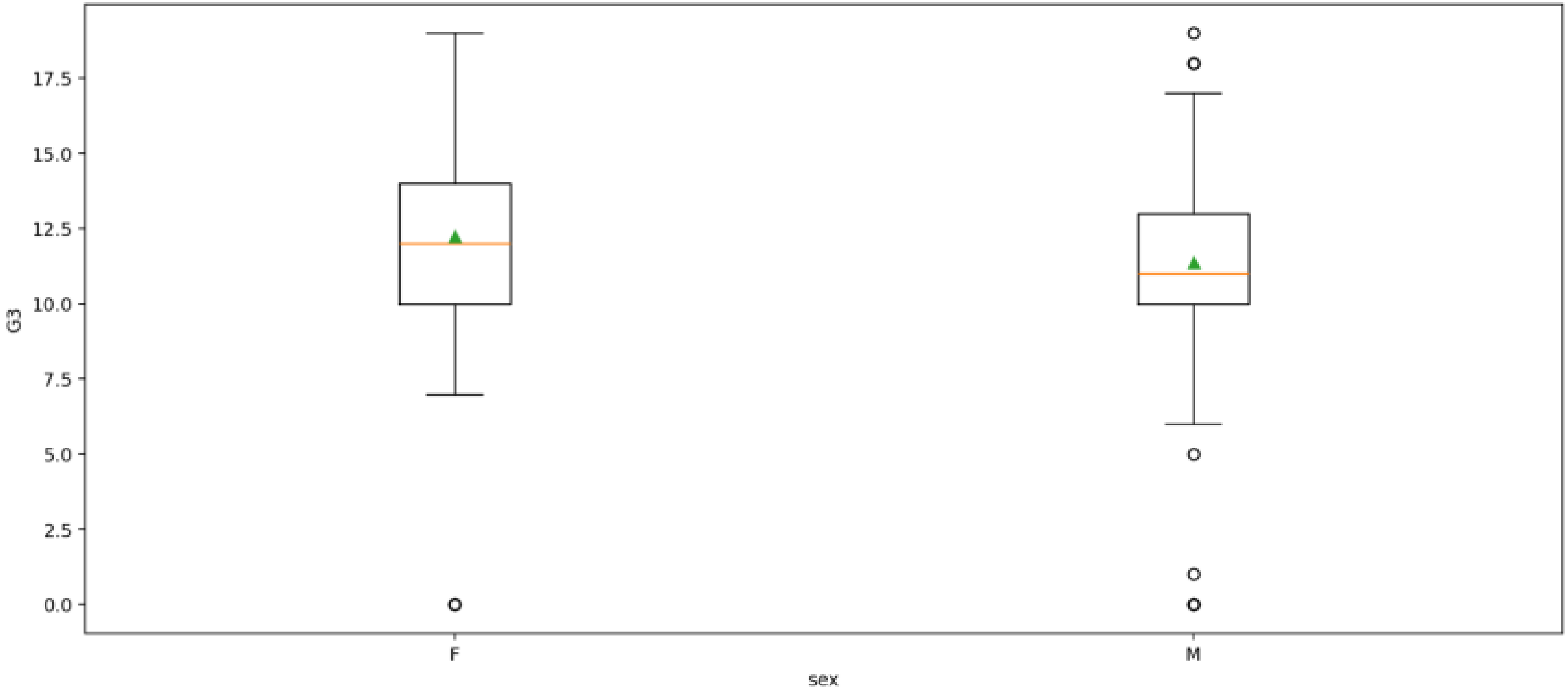
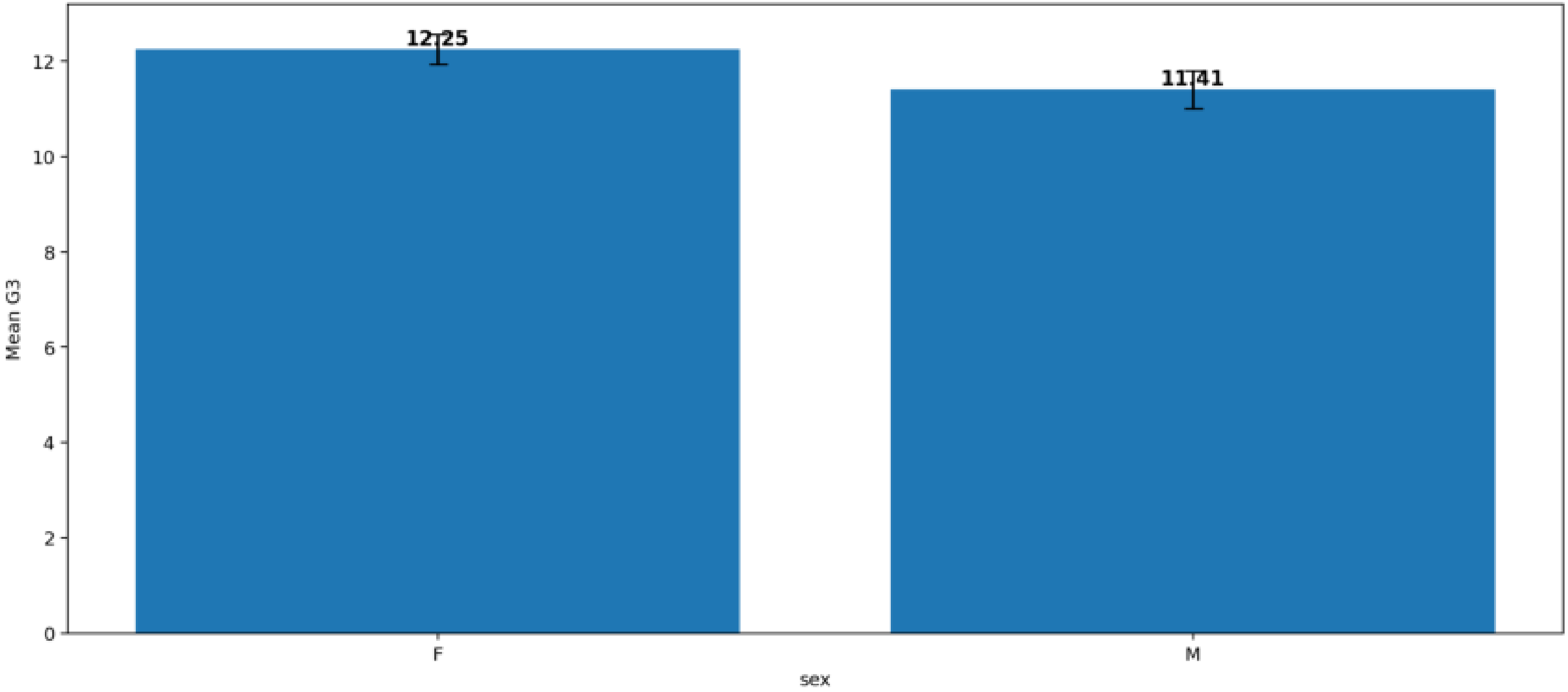
Biserial Correlation: Continuous Scores by Binary Group

Boxplots show whether the continuous score shifts between the two dichotomous categories.



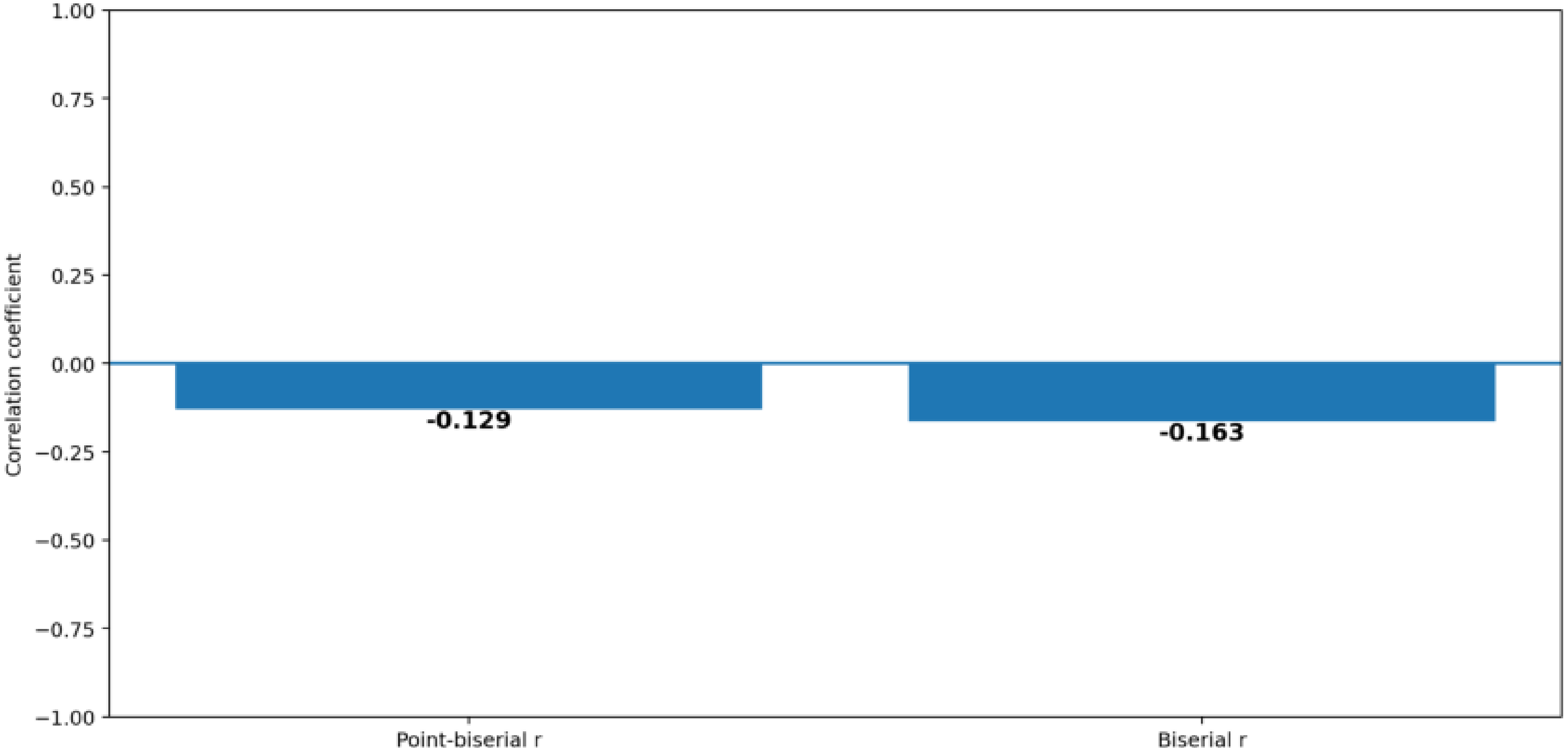
Biserial Correlation: Group Mean Difference

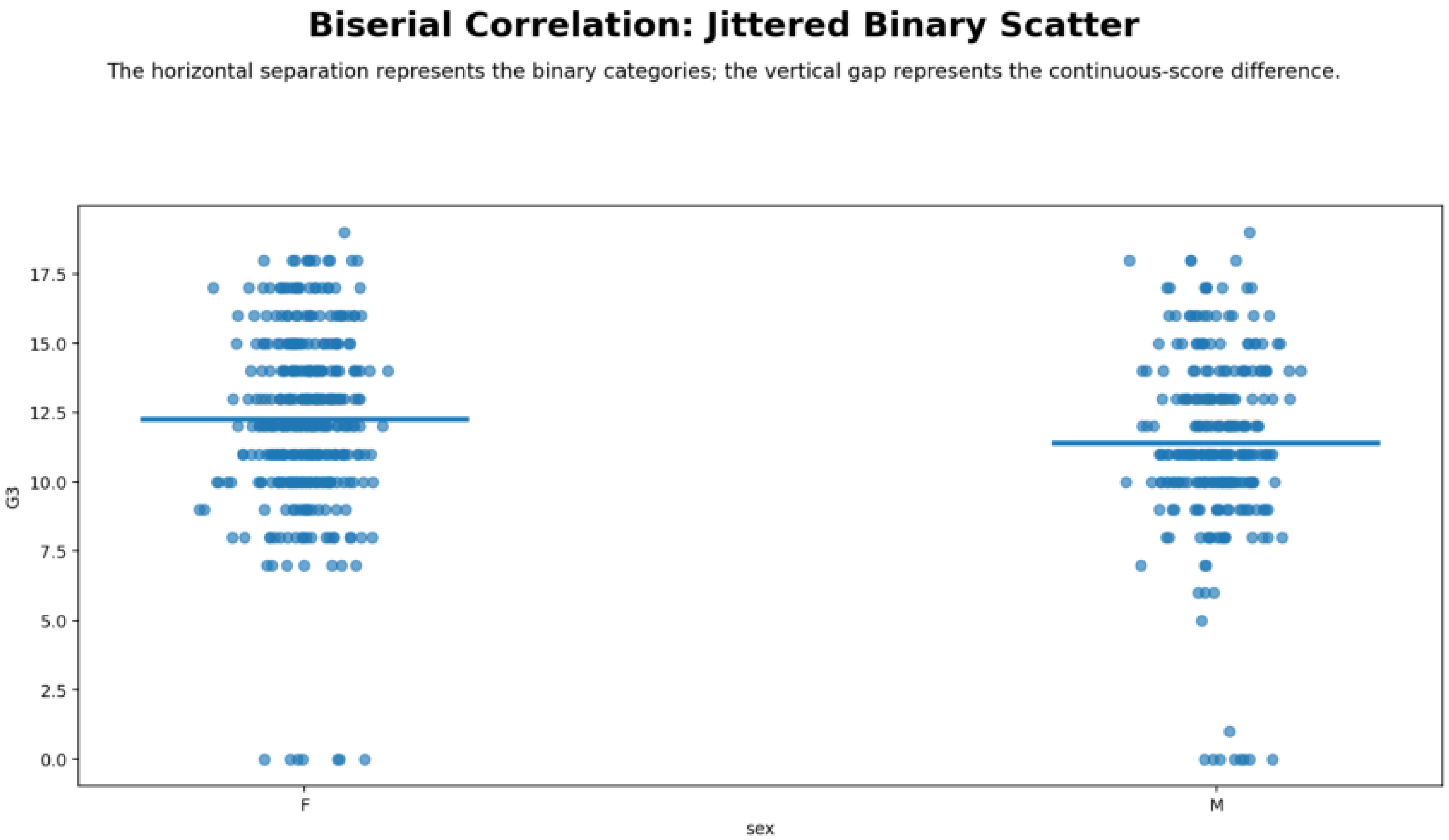
The point-biserial coefficient is driven by the mean gap and the group proportions.



Biserial Correlation: Point-biserial vs Biserial Coefficient

Biserial r adjusts the observed binary split as though it came from an underlying normal threshold.





Biserial Correlation: Jittered Binary Scatter

The horizontal separation represents the binary categories; the vertical gap represents the continuous-score difference.

Biserial Correlation: Statistical Summary

Use this page as the quick output summary for the article/report.

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Biserial Correlation Report Card

Continuous variable: G3
Binary variable: sex (F = 0, M = 1)
N = 649; n0 = 383; n1 = 266

Point-biserial r = -0.1291
95% CI for point-biserial r = [-0.2040, -0.0526]
t(647) = -3.3109; p = 0.000982
Biserial r = -0.1632

Decision at alpha .05: Significant association
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