Omega Squared Effect Size Report

```
Model:
G3 ~ studytime

ANOVA and effect size result:
     test_name outcome    factor   n groups df_between df_error df_total ss_between ss_error ss_total ms_between
 Omega Squared      G3 studytime 649      4          3      645      648   465.0778 6298.189 6763.267   155.0259
 ms_error f_statistic      p_value eta_squared partial_eta_squared omega_squared epsilon_squared
 9.764634    15.87627 5.705728e-10  0.06876527          0.06876527    0.06434105      0.06443394
 omega_squared_interpretation bartlett_statistic bartlett_p_value fligner_statistic fligner_p_value alpha
                       medium           9.462687       0.02373164          3.994339        0.262076  0.05
 decision_alpha_0_05
  Reject equal means

Formula:
Omega squared = (SS_between - df_between * MS_error) / (SS_total + MS_error)

Group summary:
 group   n     mean median standard_deviation  variance minimum maximum standard_error ci95_low ci95_high
     1 212 10.84434     11           3.218624 10.359541       0      18      0.2210560 10.40858  11.28010
     2 305 12.09180     12           3.243125 10.517860       0      19      0.1857008 11.72638  12.45722
     3  97 13.22680     13           2.502104  6.260524       8      18      0.2540502 12.72252  13.73109
     4  35 13.05714     13           3.038410  9.231933       6      19      0.5135850 12.01341  14.10087

ANOVA table:
             Df Sum Sq Mean Sq F value    Pr(>F)
studytime     3  465.1 155.026  15.876 5.706e-10 ***
Residuals   645 6298.2   9.765
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Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```
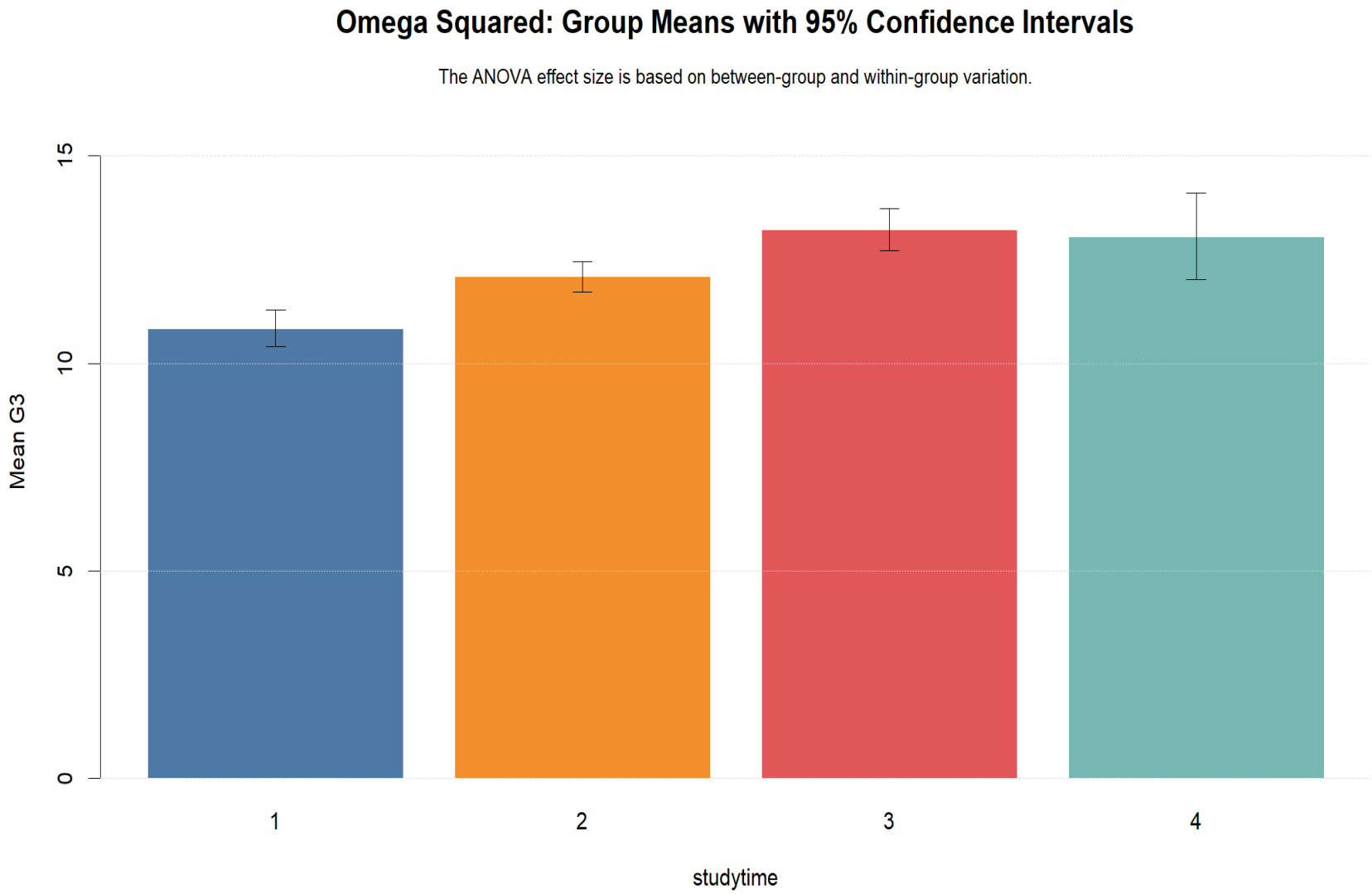
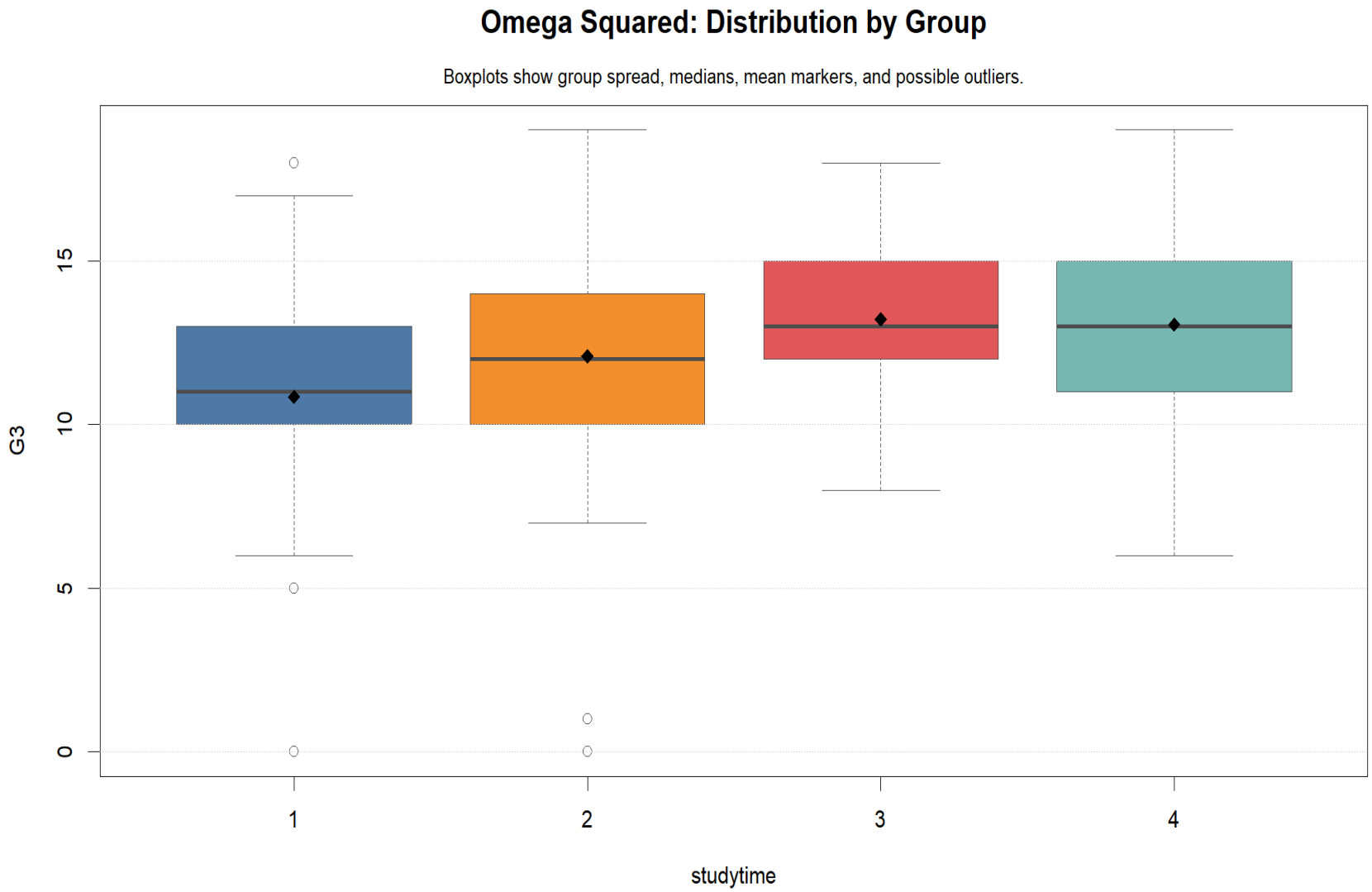
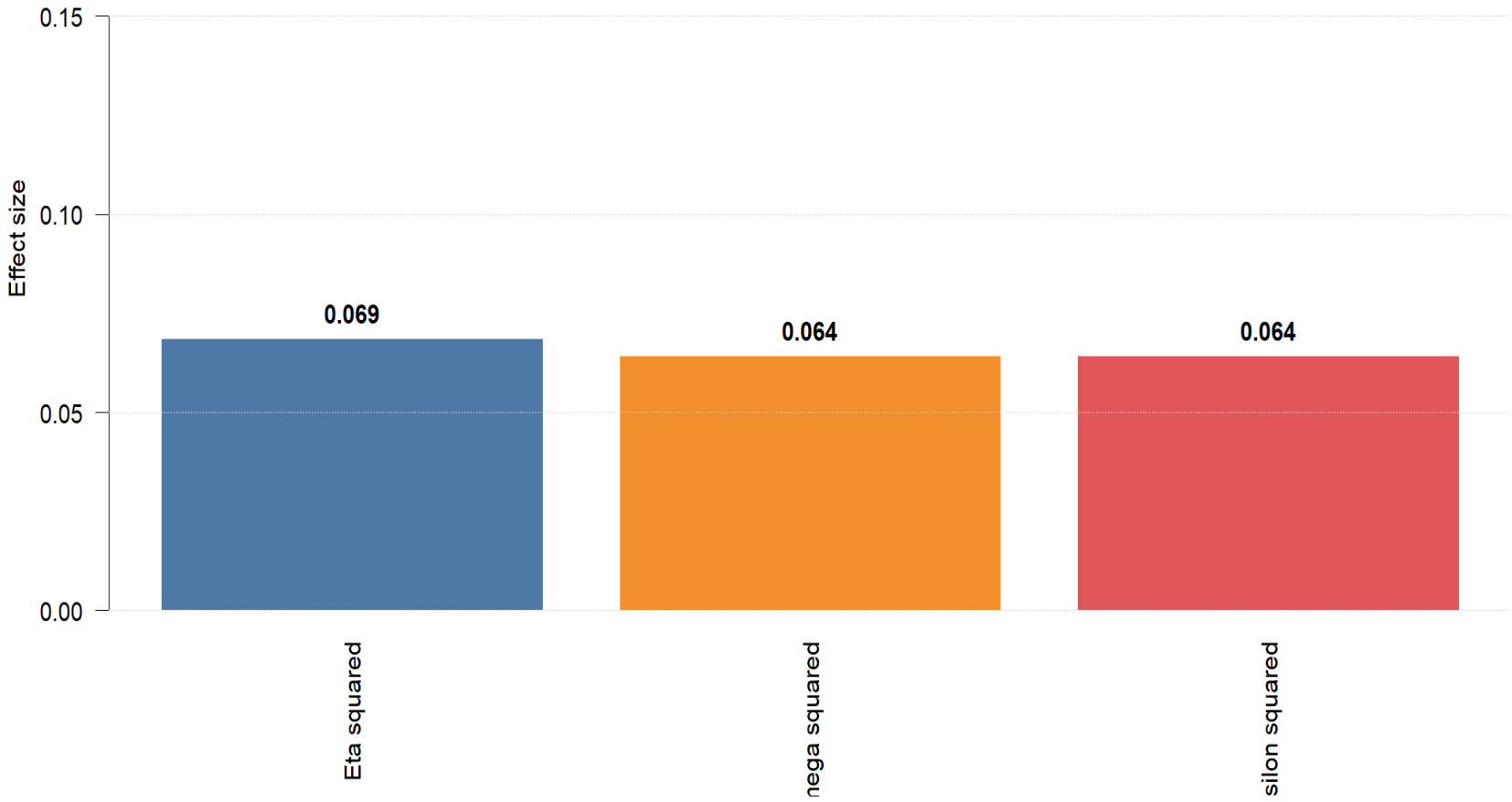
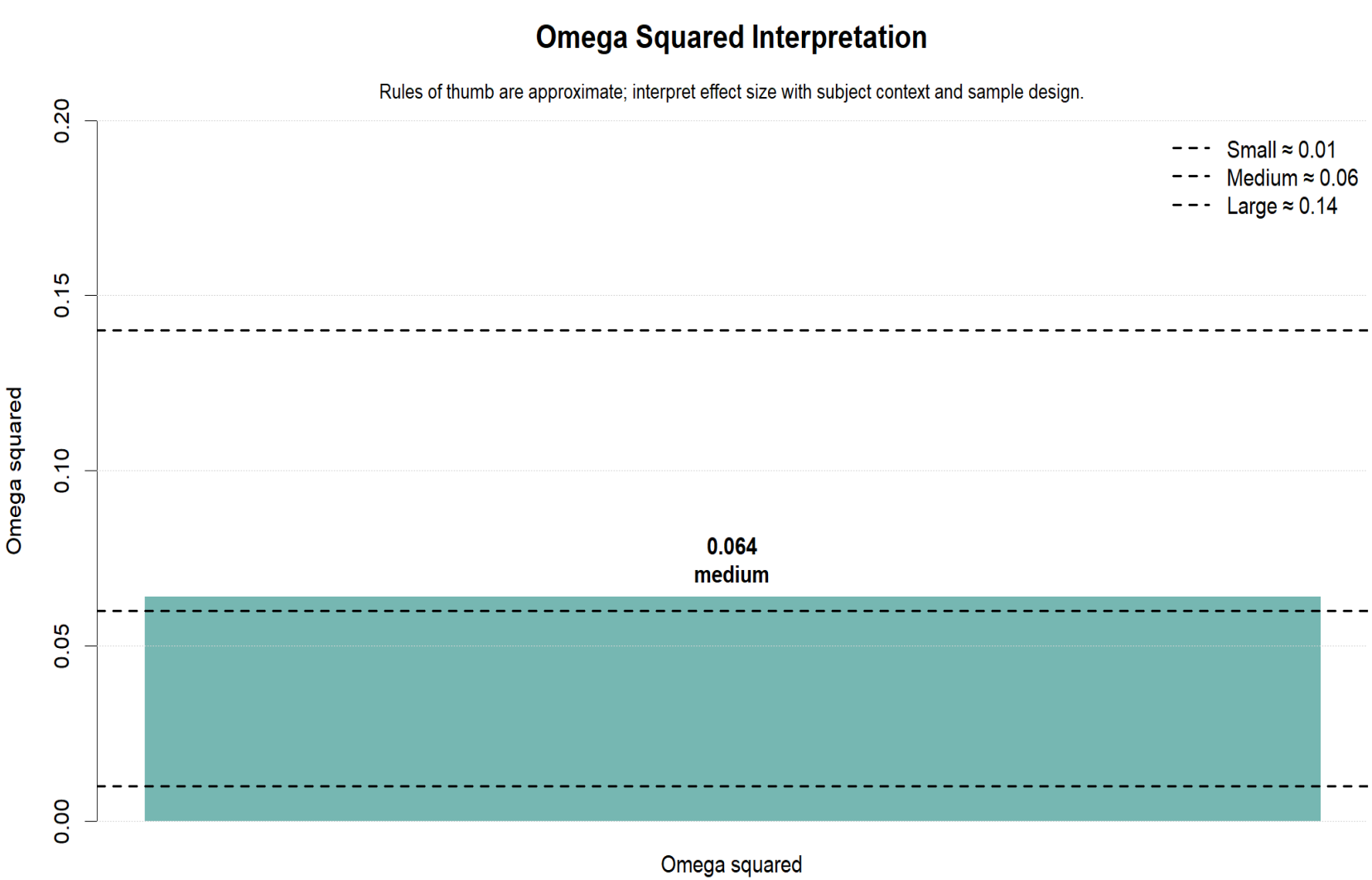


Omega Squared: Group Means with 95% Confidence Intervals
The ANOVA effect size is based on between-group and within-group variation.
Mean G3
0
5
10
15
1
2
3
4
studytime

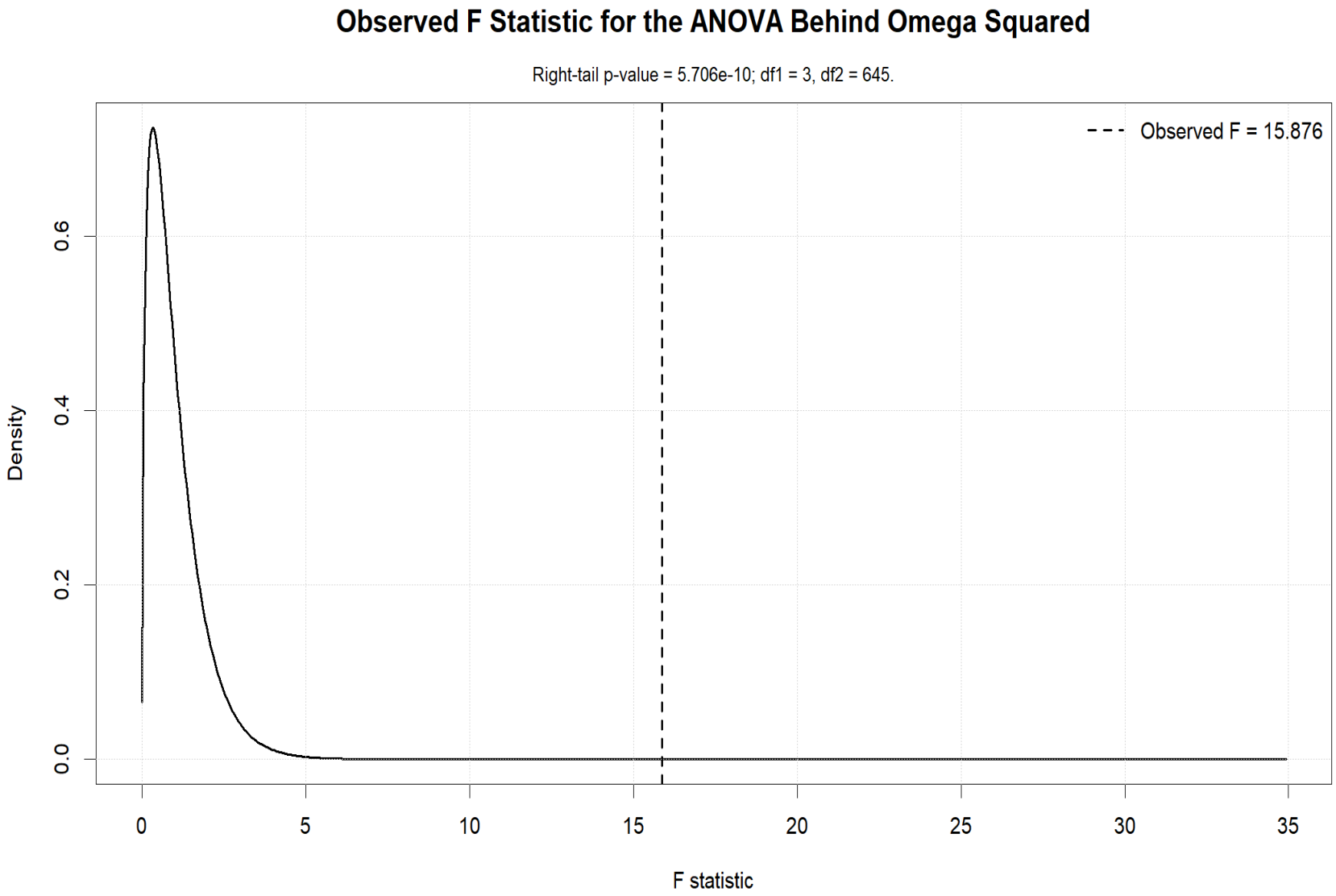

Omega Squared: Distribution by Group
Boxplots show group spread, medians, mean markers, and possible outliers.
G3
0
5
10
15
1
2
3
4
studytime

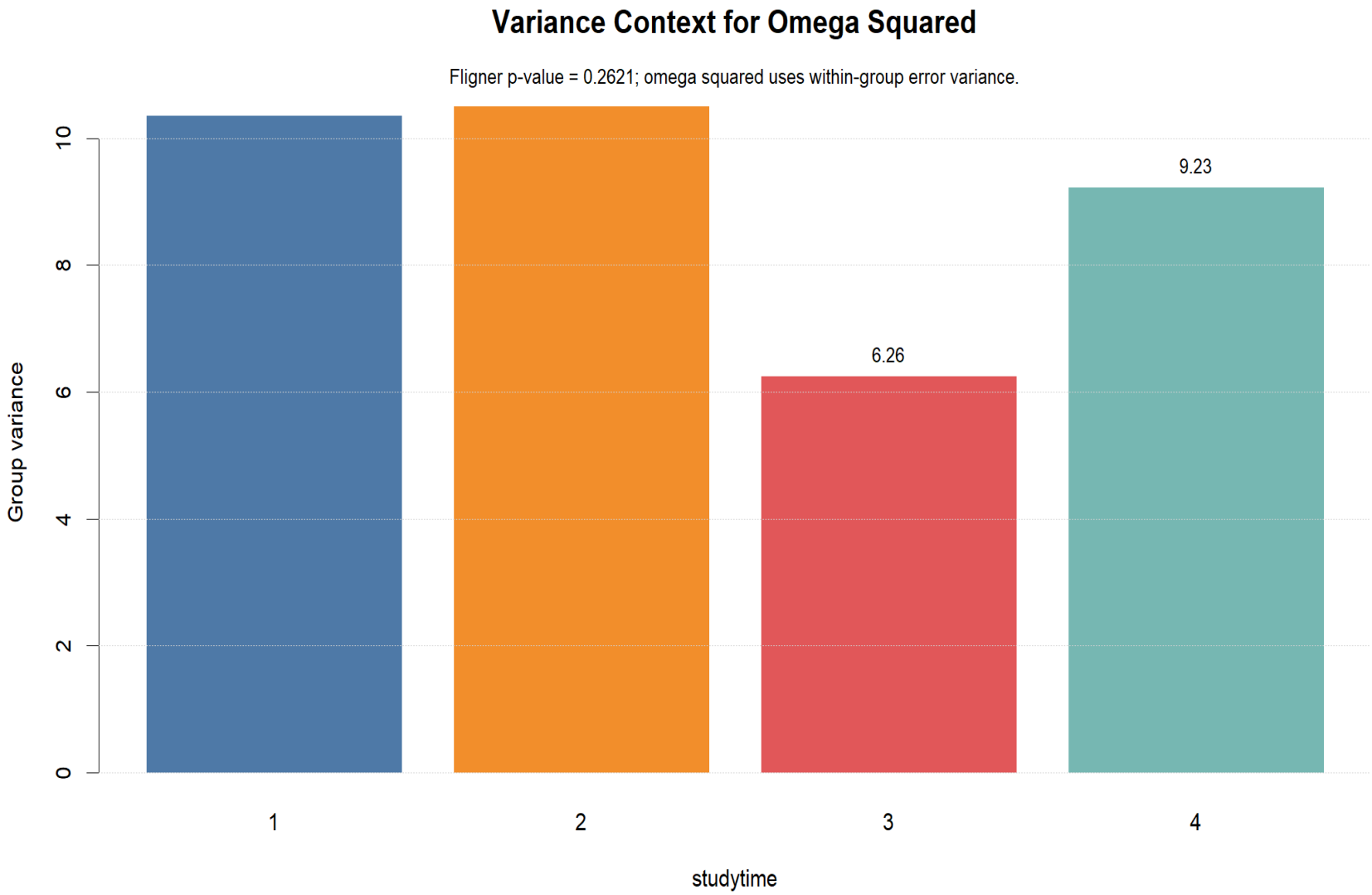
Effect Size Comparison: Eta, Omega, and Epsilon Squared

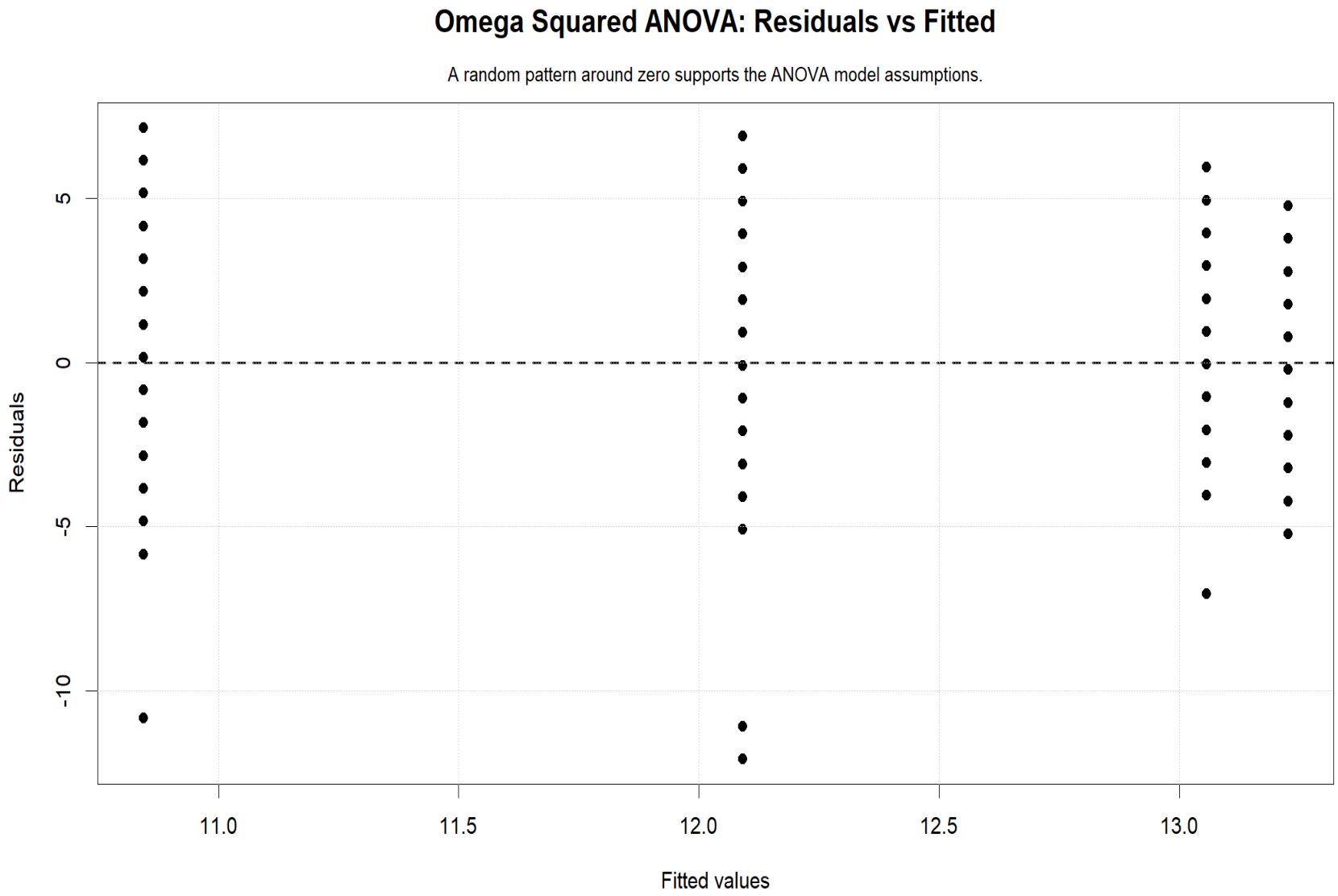
Omega squared is usually less biased than eta squared for estimating population effect size.

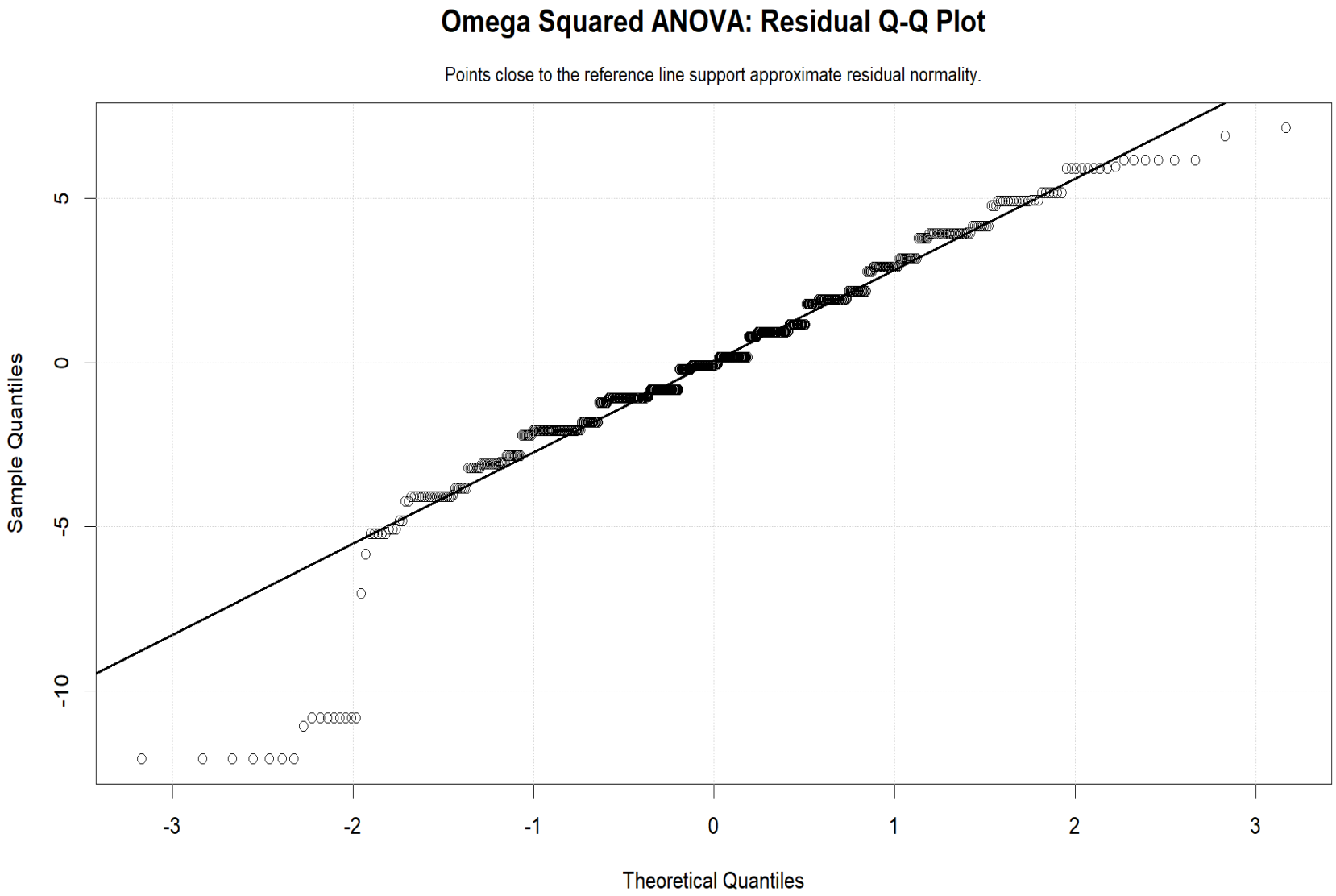



Omega Squared Interpretation
Rules of thumb are approximate; interpret effect size with subject context and sample design.
Small ≈ 0.01
Medium ≈ 0.06
Large ≈ 0.14
0.064
medium
Omega squared
0.00
0.05
0.10
0.15
0.20
Omega squared


Observed F Statistic for the ANOVA Behind Omega Squared
Right-tail p-value = 5.706e-10; df1 = 3, df2 = 645.
Observed F = 15.876
Density
0.0
0.2
0.4
0.6
0
5
10
15
20
25
30
35
F statistic


Variance Context for Omega Squared
Fligner p-value = 0.2621; omega squared uses within-group error variance.
Group variance
0
2
4
6
8
10
9.23
6.26
1
2
3
4
studytime


Omega Squared ANOVA: Residuals vs Fitted
A random pattern around zero supports the ANOVA model assumptions.
Residuals
5
0
-5
-10
11.0
11.5
12.0
12.5
13.0
Fitted values


Omega Squared ANOVA: Residual Q-Q Plot
Points close to the reference line support approximate residual normality.
Sample Quantiles
5
0
-5
-10
-3
-2
-1
0
1
2
3
Theoretical Quantiles