

Host

Notes

| | | |
|----------------|---|----------------------|
| Output Created | | 23-JUN-2026 00:06:40 |
| Comments | | |
| Input | Active Dataset | DataSet0 |
| | Filter | <none> |
| | Weight | <none> |
| | Split File | <none> |
| Syntax | HOST COMMAND=['cmd /c if not exist "D:\DATA ANALYSIS\E ANOVA Family\One Way MANOVA\SPSS_Output" mkdir "D:\DATA ANALYSIS\E ANOVA Family\One Way MANOVA\SPSS_Output"']... | |
| Resources | Processor Time | 00:00:00.02 |
| | Elapsed Time | 00:00:00.13 |

Host

Notes

| | | |
|----------------|---|----------------------|
| Output Created | | 23-JUN-2026 00:06:40 |
| Comments | | |
| Input | Active Dataset | DataSet0 |
| | Filter | <none> |
| | Weight | <none> |
| | Split File | <none> |
| Syntax | HOST COMMAND=['cmd /c if not exist "D:\DATA ANALYSIS\E ANOVA Family\One Way MANOVA\SPSS_Output\s av" mkdir "D:\DATA ANALYSIS\E ANOVA Family\One Way MANOVA\SPSS_Output\s av"']. | |
| Resources | Processor Time | 00:00:00.00 |
| | Elapsed Time | 00:00:00.11 |

Host

Notes

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|----------------|---|----------------------|
| Output Created | | 23-JUN-2026 00:06:40 |
| Comments | | |
| Input | Active Dataset | DataSet0 |
| | Filter | <none> |
| | Weight | <none> |
| | Split File | <none> |
| Syntax | HOST COMMAND=['cmd /c if not exist "D:\DATA ANALYSIS\E ANOVA Family\One Way MANOVA\SPSS_Output\s pv" mkdir "D:\DATA ANALYSIS\E ANOVA Family\One Way MANOVA\SPSS_Output\s pv"']. | |
| Resources | Processor Time | 00:00:00.00 |
| | Elapsed Time | 00:00:00.10 |

Host

Notes

| | | |
|----------------|---|----------------------|
| Output Created | | 23-JUN-2026 00:06:40 |
| Comments | | |
| Input | Active Dataset | DataSet0 |
| | Filter | <none> |
| | Weight | <none> |
| | Split File | <none> |
| Syntax | HOST COMMAND=['cmd /c if not exist "D:\DATA ANALYSIS\E ANOVA Family\One Way MANOVA\SPSS_Output\p df" mkdir "D:\DATA ANALYSIS\E ANOVA Family\One Way MANOVA\SPSS_Output\p df"']. | |
| Resources | Processor Time | 00:00:00.00 |
| | Elapsed Time | 00:00:00.13 |

Host

Notes

| | | |
|----------------|---|----------------------|
| Output Created | | 23-JUN-2026 00:06:40 |
| Comments | | |
| Input | Active Dataset | DataSet0 |
| | Filter | <none> |
| | Weight | <none> |
| | Split File | <none> |
| Syntax | HOST COMMAND=['cmd /c if not exist "D:\DATA ANALYSIS\E ANOVA Family\One Way MANOVA\SPSS_Output\png" mkdir "D:\DATA ANALYSIS\E ANOVA Family\One Way MANOVA\SPSS_Output\png"']. | |
| Resources | Processor Time | 00:00:00.00 |
| | Elapsed Time | 00:00:00.10 |

Host

Notes

| | | |
|----------------|---|----------------------|
| Output Created | | 23-JUN-2026 00:06:41 |
| Comments | | |
| Input | Active Dataset | DataSet0 |
| | Filter | <none> |
| | Weight | <none> |
| | Split File | <none> |
| Syntax | HOST COMMAND=['cmd /c if not exist "D:\DATA ANALYSIS\E ANOVA Family\One Way MANOVA\SPSS_Output\csv" mkdir "D:\DATA ANALYSIS\E ANOVA Family\One Way MANOVA\SPSS_Output\csv"']. | |
| Resources | Processor Time | 00:00:00.00 |
| | Elapsed Time | 00:00:00.09 |

Host

Notes

| | | |
|----------------|---|----------------------|
| Output Created | | 23-JUN-2026 00:06:41 |
| Comments | | |
| Input | Active Dataset | DataSet0 |
| | Filter | <none> |
| | Weight | <none> |
| | Split File | <none> |
| Syntax | HOST COMMAND=['cmd /c if not exist "D:\DATA ANALYSIS\E ANOVA Family\One Way MANOVA\SPSS_Output\tx t" mkdir "D:\DATA ANALYSIS\E ANOVA Family\One Way MANOVA\SPSS_Output\tx t"']. | |
| Resources | Processor Time | 00:00:00.00 |
| | Elapsed Time | 00:00:00.14 |

Host

Notes

| | | |
|----------------|----------------|--|
| Output Created | | 23-JUN-2026 00:06:41 |
| Comments | | |
| Input | Active Dataset | DataSet0 |
| | Filter | <none> |
| | Weight | <none> |
| | Split File | <none> |
| Syntax | | HOST COMMAND=['cmd /c echo SPSS One Way MANOVA script started > "D:\DATA ANALYSIS\E ANOVA Family\One Way MANOVA\SPSS_Output\txt\SPSS_SCRIPT_START ED.txt"']. |
| Resources | Processor Time | 00:00:00.02 |
| | Elapsed Time | 00:00:00.13 |

One Way MANOVA: G1, G2, and G3 by Studytime

File Information

Notes

| | | |
|-----------|--------------------------------|---|
| | Output Created | 23-JUN-2026 00:06:41 |
| | Comments | |
| | Data | D:\DATA ANALYSIS\E ANOVA Family\One Way MANOVA\SPSS_Output\sav\one_way_manova_spss_ready_data.sav |
| Input | Active Dataset | OneWayMANOVAData |
| | Filter | <none> |
| | Weight | <none> |
| | Split File | <none> |
| | N of Rows in Working Data File | 649 |
| | Syntax | DISPLAY DICTIONARY. |
| Resources | Processor Time | 00:00:00.00 |
| | Elapsed Time | 00:00:00.03 |

[OneWayMANOVAData] D:\DATA ANALYSIS\E ANOVA Family\One Way MANOVA\SPSS_Output\sav\one_way_manova_spss_ready_data.sav

Variable Information

| Variable | Position | Label | Measurement Level | Role | Column Width | Alignment |
|------------|----------|-------------------------|-------------------|-------|--------------|-----------|
| school | 1 | <none> | Nominal | Input | 10 | Left |
| sex | 2 | <none> | Nominal | Input | 10 | Left |
| age | 3 | <none> | Scale | Input | 8 | Right |
| address | 4 | <none> | Nominal | Input | 10 | Left |
| famsize | 5 | <none> | Nominal | Input | 10 | Left |
| Pstatus | 6 | <none> | Nominal | Input | 10 | Left |
| Medu | 7 | <none> | Nominal | Input | 8 | Right |
| Fedu | 8 | <none> | Nominal | Input | 8 | Right |
| Mjob | 9 | <none> | Nominal | Input | 20 | Left |
| Fjob | 10 | <none> | Nominal | Input | 20 | Left |
| reason | 11 | <none> | Nominal | Input | 20 | Left |
| guardian | 12 | <none> | Nominal | Input | 20 | Left |
| traveltime | 13 | <none> | Nominal | Input | 8 | Right |
| studytime | 14 | Weekly study time group | Nominal | Input | 8 | Right |
| failures | 15 | <none> | Nominal | Input | 8 | Right |

One Way MANOVA: G1, G2, and G3 by Studytime

Variable Information

| Variable | Print Format | Write Format |
|------------|--------------|--------------|
| school | A10 | A10 |
| sex | A10 | A10 |
| age | F8.2 | F8.2 |
| address | A10 | A10 |
| famsize | A10 | A10 |
| Pstatus | A10 | A10 |
| Medu | F8.2 | F8.2 |
| Fedu | F8.2 | F8.2 |
| Mjob | A20 | A20 |
| Fjob | A20 | A20 |
| reason | A20 | A20 |
| guardian | A20 | A20 |
| traveltime | F8.2 | F8.2 |
| studytime | F8.2 | F8.2 |
| failures | F8.2 | F8.2 |

One Way MANOVA: G1, G2, and G3 by Studytime

Variable Information

| Variable | Position | Label | Measurement Level | Role | Column Width | Alignment |
|------------|----------|---------------------|-------------------|-------|--------------|-----------|
| schoolsup | 16 | <none> | Nominal | Input | 10 | Left |
| famsup | 17 | <none> | Nominal | Input | 10 | Left |
| paid | 18 | <none> | Nominal | Input | 10 | Left |
| activities | 19 | <none> | Nominal | Input | 10 | Left |
| nursery | 20 | <none> | Nominal | Input | 10 | Left |
| higher | 21 | <none> | Nominal | Input | 10 | Left |
| internet | 22 | <none> | Nominal | Input | 10 | Left |
| romantic | 23 | <none> | Nominal | Input | 10 | Left |
| famrel | 24 | <none> | Nominal | Input | 8 | Right |
| freetime | 25 | <none> | Nominal | Input | 8 | Right |
| goout | 26 | <none> | Nominal | Input | 8 | Right |
| Dalc | 27 | <none> | Nominal | Input | 8 | Right |
| Walc | 28 | <none> | Nominal | Input | 8 | Right |
| health | 29 | <none> | Nominal | Input | 8 | Right |
| absences | 30 | <none> | Scale | Input | 8 | Right |
| G1 | 31 | First period grade | Nominal | Input | 8 | Right |
| G2 | 32 | Second period grade | Nominal | Input | 8 | Right |
| G3 | 33 | Final grade score | Nominal | Input | 8 | Right |

One Way MANOVA: G1, G2, and G3 by Studytime

Variable Information

| Variable | Print Format | Write Format |
|------------|--------------|--------------|
| schoolsup | A10 | A10 |
| famsup | A10 | A10 |
| paid | A10 | A10 |
| activities | A10 | A10 |
| nursery | A10 | A10 |
| higher | A10 | A10 |
| internet | A10 | A10 |
| romantic | A10 | A10 |
| famrel | F8.2 | F8.2 |
| freetime | F8.2 | F8.2 |
| goout | F8.2 | F8.2 |
| Dalc | F8.2 | F8.2 |
| Walc | F8.2 | F8.2 |
| health | F8.2 | F8.2 |
| absences | F8.2 | F8.2 |
| G1 | F8.2 | F8.2 |
| G2 | F8.2 | F8.2 |
| G3 | F8.2 | F8.2 |

Variables in the working file

Variable Values

| Value | Label |
|----------------|-------------|
| studytime 1.00 | Studytime 1 |
| studytime 2.00 | Studytime 2 |
| studytime 3.00 | Studytime 3 |
| studytime 4.00 | Studytime 4 |

Descriptives

One Way MANOVA: G1, G2, and G3 by Studytime

Notes

| | | |
|------------------------|---|--|
| Output Created | 23-JUN-2026 00:06:41 | |
| Comments | | |
| Input | Data | D:\DATA ANALYSIS\ANOVA Family\One Way MANOVA\SPSS_Output\sav\one_way_manova_sps_ready_data.sav |
| | Active Dataset | OneWayMANOVAData |
| | Filter | <none> |
| | Weight | <none> |
| | Split File | <none> |
| | N of Rows in Working Data File | 649 |
| Missing Value Handling | Definition of Missing | User defined missing values are treated as missing. |
| | Cases Used | All non-missing data are used. |
| Syntax | DESCRIPTIVES VARIABLES=G1 G2 G3 /STATISTICS=MEAN STDDEV MIN MAX. | |
| Resources | Processor Time | 00:00:00.00 |
| | Elapsed Time | 00:00:00.06 |

Descriptive Statistics

| | N | Minimum | Maximum | Mean | Std. Deviation |
|--------------------|-----|---------|---------|---------|----------------|
| G1 | 649 | .00 | 19.00 | 11.3991 | 2.74527 |
| G2 | 649 | .00 | 19.00 | 11.5701 | 2.91364 |
| G3 | 649 | .00 | 19.00 | 11.9060 | 3.23066 |
| Valid N (listwise) | 649 | | | | |

Frequencies

One Way MANOVA: G1, G2, and G3 by Studytime

Notes

| | | |
|------------------------|--------------------------------|--|
| Output Created | | 23-JUN-2026 00:06:42 |
| Comments | | |
| Input | Data | D:\DATA ANALYSIS\ANOVA Family\One Way MANOVA\SPSS_Output\sav\one_way_manova_sps_ready_data.sav |
| | Active Dataset | OneWayMANOVAData |
| | Filter | <none> |
| | Weight | <none> |
| | Split File | <none> |
| | N of Rows in Working Data File | 649 |
| Missing Value Handling | Definition of Missing | User-defined missing values are treated as missing. |
| | Cases Used | Statistics are based on all cases with valid data. |
| Syntax | | FREQUENCIES VARIABLES=studytime /ORDER=ANALYSIS. |
| Resources | Processor Time | 00:00:00.00 |
| | Elapsed Time | 00:00:00.01 |

Statistics

studytime

| | | |
|---|---------|-----|
| N | Valid | 649 |
| | Missing | 0 |

studytime

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------|-----------|---------|---------------|--------------------|
| Valid | 1.00 | 212 | 32.7 | 32.7 | 32.7 |
| | 2.00 | 305 | 47.0 | 47.0 | 79.7 |
| | 3.00 | 97 | 14.9 | 14.9 | 94.6 |
| | 4.00 | 35 | 5.4 | 5.4 | 100.0 |
| | Total | 649 | 100.0 | 100.0 | |

One Way MANOVA: G1, G2, and G3 by Studytime

Means

Notes

| | | |
|------------------------|--------------------------------|--|
| Output Created | | 23-JUN-2026 00:06:42 |
| Comments | | |
| Input | Data | D:\DATA ANALYSIS\IE ANOVA Family\One Way MANOVA\SPSS_Output\sav\one_way_manova_sps_ready_data.sav |
| | Active Dataset | OneWayMANOVADData |
| | Filter | <none> |
| | Weight | <none> |
| | Split File | <none> |
| | N of Rows in Working Data File | 649 |
| Missing Value Handling | Definition of Missing | For each dependent variable in a table, user-defined missing values for the dependent and all grouping variables are treated as missing. |
| | Cases Used | Cases used for each table have no missing values in any independent variable, and not all dependent variables have missing values. |
| Syntax | | MEANS TABLES=G1 G2 G3 BY studytime /CELLS=COUNT MEAN STDDEV MEDIAN MIN MAX. |
| Resources | Processor Time | 00:00:00.02 |
| | Elapsed Time | 00:00:00.02 |

One Way MANOVA: G1, G2, and G3 by Studytime

Case Processing Summary

| | Cases | | | | | |
|----------------|----------|---------|----------|---------|-------|---------|
| | Included | | Excluded | | Total | |
| | N | Percent | N | Percent | N | Percent |
| G1 * studytime | 649 | 100.0% | 0 | 0.0% | 649 | 100.0% |
| G2 * studytime | 649 | 100.0% | 0 | 0.0% | 649 | 100.0% |
| G3 * studytime | 649 | 100.0% | 0 | 0.0% | 649 | 100.0% |

Report

| studytime | | G1 | G2 | G3 |
|-----------|----------------|---------|---------|---------|
| 1.00 | N | 212 | 212 | 212 |
| | Mean | 10.5047 | 10.7028 | 10.8443 |
| | Std. Deviation | 2.56572 | 2.69656 | 3.21862 |
| | Median | 10.0000 | 11.0000 | 11.0000 |
| | Minimum | 4.00 | .00 | .00 |
| | Maximum | 18.00 | 18.00 | 18.00 |
| 2.00 | N | 305 | 305 | 305 |
| | Mean | 11.5377 | 11.6623 | 12.0918 |
| | Std. Deviation | 2.73730 | 2.98252 | 3.24313 |
| | Median | 12.0000 | 12.0000 | 12.0000 |
| | Minimum | .00 | .00 | .00 |
| | Maximum | 18.00 | 18.00 | 19.00 |
| 3.00 | N | 97 | 97 | 97 |
| | Mean | 12.4227 | 12.7938 | 13.2268 |
| | Std. Deviation | 2.45728 | 2.46195 | 2.50210 |
| | Median | 13.0000 | 13.0000 | 13.0000 |
| | Minimum | 7.00 | 7.00 | 8.00 |
| | Maximum | 19.00 | 18.00 | 18.00 |
| 4.00 | N | 35 | 35 | 35 |
| | Mean | 12.7714 | 12.6286 | 13.0571 |
| | Std. Deviation | 2.94145 | 3.13506 | 3.03841 |
| | Median | 13.0000 | 12.0000 | 13.0000 |
| | Minimum | 5.00 | 6.00 | 6.00 |
| | Maximum | 18.00 | 19.00 | 19.00 |

One Way MANOVA: G1, G2, and G3 by Studytime

Report

| studytime | | G1 | G2 | G3 |
|-----------|----------------|---------|---------|---------|
| Total | N | 649 | 649 | 649 |
| | Mean | 11.3991 | 11.5701 | 11.9060 |
| | Std. Deviation | 2.74527 | 2.91364 | 3.23066 |
| | Median | 11.0000 | 11.0000 | 12.0000 |
| | Minimum | .00 | .00 | .00 |
| | Maximum | 19.00 | 19.00 | 19.00 |

Correlations

Notes

| | | |
|------------------------|--|---|
| Output Created | 23-JUN-2026 00:06:42 | |
| Comments | | |
| Input | Data | D:\DATA ANALYSIS\ANOVA Family\One Way MANOVA\SPSS_Output\sav\one_way_manova_sps_ready_data.sav |
| | Active Dataset | OneWayMANOVADData |
| | Filter | <none> |
| | Weight | <none> |
| | Split File | <none> |
| | N of Rows in Working Data File | 649 |
| Missing Value Handling | Definition of Missing | User-defined missing values are treated as missing. |
| | Cases Used | Statistics for each pair of variables are based on all the cases with valid data for that pair. |
| Syntax | CORRELATIONS /VARIABLES=G1 G2 G3 /PRINT=TWOTAIL NOSIG /MISSING=PAIRWISE. | |
| Resources | Processor Time | 00:00:00.00 |
| | Elapsed Time | 00:00:00.02 |

One Way MANOVA: G1, G2, and G3 by Studytime

Correlations

| | | G1 | G2 | G3 |
|----|---------------------|--------|--------|--------|
| G1 | Pearson Correlation | 1 | .865** | .826** |
| | Sig. (2-tailed) | | .000 | .000 |
| | N | 649 | 649 | 649 |
| G2 | Pearson Correlation | .865** | 1 | .919** |
| | Sig. (2-tailed) | .000 | | .000 |
| | N | 649 | 649 | 649 |
| G3 | Pearson Correlation | .826** | .919** | 1 |
| | Sig. (2-tailed) | .000 | .000 | |
| | N | 649 | 649 | 649 |

** . Correlation is significant at the 0.01 level (2-tailed).

General Linear Model

Notes

| | | |
|------------------------|--------------------------------|---|
| Output Created | | 23-JUN-2026 00:06:42 |
| Comments | | |
| Input | Data | D:\DATA ANALYSIS\IE ANOVA Family\One Way MANOVA\SPSS_Output\sav\one_way_manova_sps_ready_data.sav |
| | Active Dataset | OneWayMANOVAData |
| | Filter | <none> |
| | Weight | <none> |
| | Split File | <none> |
| | N of Rows in Working Data File | 649 |
| Missing Value Handling | Definition of Missing | User-defined missing values are treated as missing. |
| | Cases Used | Statistics are based on all cases with valid data for all variables in the model. |

One Way MANOVA: G1, G2, and G3 by Studytime

Notes

| | | |
|-----------|----------------|---|
| Syntax | | GLM G1 G2 G3 BY studytime /METHOD=SSTYPE(3) /INTERCEPT=INCLUDE /PRINT=DESCRIPTIVE ETASQ HOMOGENEITY PARAMETER /EMMEANS=TABLES (studytime) /CRITERIA=ALPHA(.05) /DESIGN=studytime. |
| Resources | Processor Time | 00:00:00.05 |
| | Elapsed Time | 00:00:00.16 |

Between-Subjects Factors

| | | Value Label | N |
|-----------|------|-------------|-----|
| studytime | 1.00 | Studytime 1 | 212 |
| | 2.00 | Studytime 2 | 305 |
| | 3.00 | Studytime 3 | 97 |
| | 4.00 | Studytime 4 | 35 |

One Way MANOVA: G1, G2, and G3 by Studytime

Descriptive Statistics

| | studytime | Mean | Std. Deviation | N |
|----|-----------|---------|----------------|-----|
| G1 | 1.00 | 10.5047 | 2.56572 | 212 |
| | 2.00 | 11.5377 | 2.73730 | 305 |
| | 3.00 | 12.4227 | 2.45728 | 97 |
| | 4.00 | 12.7714 | 2.94145 | 35 |
| | Total | 11.3991 | 2.74527 | 649 |
| G2 | 1.00 | 10.7028 | 2.69656 | 212 |
| | 2.00 | 11.6623 | 2.98252 | 305 |
| | 3.00 | 12.7938 | 2.46195 | 97 |
| | 4.00 | 12.6286 | 3.13506 | 35 |
| | Total | 11.5701 | 2.91364 | 649 |
| G3 | 1.00 | 10.8443 | 3.21862 | 212 |
| | 2.00 | 12.0918 | 3.24313 | 305 |
| | 3.00 | 13.2268 | 2.50210 | 97 |
| | 4.00 | 13.0571 | 3.03841 | 35 |
| | Total | 11.9060 | 3.23066 | 649 |

Box's Test of Equality of Covariance Matrices^a

| | |
|---------|-----------|
| Box's M | 91.096 |
| F | 4.975 |
| df1 | 18 |
| df2 | 71839.592 |
| Sig. | .000 |

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a. Design: Intercept + studytime

One Way MANOVA: G1, G2, and G3 by Studytime

Multivariate Tests^a

| Effect | | Value | F | Hypothesis df | Error df | Sig. |
|-----------|--------------------|--------|-----------------------|---------------|----------|------|
| Intercept | Pillai's Trace | .915 | 2320.361 ^b | 3.000 | 643.000 | .000 |
| | Wilks' Lambda | .085 | 2320.361 ^b | 3.000 | 643.000 | .000 |
| | Hotelling's Trace | 10.826 | 2320.361 ^b | 3.000 | 643.000 | .000 |
| | Roy's Largest Root | 10.826 | 2320.361 ^b | 3.000 | 643.000 | .000 |
| studytime | Pillai's Trace | .085 | 6.242 | 9.000 | 1935.000 | .000 |
| | Wilks' Lambda | .916 | 6.382 | 9.000 | 1565.044 | .000 |
| | Hotelling's Trace | .091 | 6.486 | 9.000 | 1925.000 | .000 |
| | Roy's Largest Root | .082 | 17.728 ^c | 3.000 | 645.000 | .000 |

Multivariate Tests^a

| Effect | | Partial Eta Squared |
|-----------|--------------------|---------------------|
| Intercept | Pillai's Trace | .915 |
| | Wilks' Lambda | .915 |
| | Hotelling's Trace | .915 |
| | Roy's Largest Root | .915 |
| studytime | Pillai's Trace | .028 |
| | Wilks' Lambda | .029 |
| | Hotelling's Trace | .029 |
| | Roy's Largest Root | .076 |

a. Design: Intercept + studytime

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

One Way MANOVA: G1, G2, and G3 by Studytime

Levene's Test of Equality of Error Variances^a

| | | Levene Statistic | df1 | df2 | Sig. |
|----|--------------------------------------|------------------|-----|---------|------|
| G1 | Based on Mean | .542 | 3 | 645 | .653 |
| | Based on Median | .555 | 3 | 645 | .645 |
| | Based on Median and with adjusted df | .555 | 3 | 637.966 | .645 |
| | Based on trimmed mean | .547 | 3 | 645 | .650 |
| G2 | Based on Mean | 1.703 | 3 | 645 | .165 |
| | Based on Median | 1.613 | 3 | 645 | .185 |
| | Based on Median and with adjusted df | 1.613 | 3 | 626.977 | .185 |
| | Based on trimmed mean | 1.688 | 3 | 645 | .168 |
| G3 | Based on Mean | .985 | 3 | 645 | .400 |
| | Based on Median | 1.026 | 3 | 645 | .380 |
| | Based on Median and with adjusted df | 1.026 | 3 | 609.885 | .380 |
| | Based on trimmed mean | 1.081 | 3 | 645 | .356 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + studytime

One Way MANOVA: G1, G2, and G3 by Studytime

Tests of Between-Subjects Effects

| Source | Dependent Variable | Type III Sum of Squares | df | Mean Square | F |
|-----------------|--------------------|-------------------------|-----|-------------|----------|
| Corrected Model | G1 | 342.986 ^a | 3 | 114.329 | 16.240 |
| | G2 | 346.518 ^b | 3 | 115.506 | 14.454 |
| | G3 | 465.078 ^c | 3 | 155.026 | 15.876 |
| Intercept | G1 | 47599.452 | 1 | 47599.452 | 6761.504 |
| | G2 | 48716.355 | 1 | 48716.355 | 6095.992 |
| | G3 | 51680.984 | 1 | 51680.984 | 5292.670 |
| studytime | G1 | 342.986 | 3 | 114.329 | 16.240 |
| | G2 | 346.518 | 3 | 115.506 | 14.454 |
| | G3 | 465.078 | 3 | 155.026 | 15.876 |
| Error | G1 | 4540.653 | 645 | 7.040 | |
| | G2 | 5154.542 | 645 | 7.992 | |
| | G3 | 6298.189 | 645 | 9.765 | |
| Total | G1 | 89214.000 | 649 | | |
| | G2 | 92381.000 | 649 | | |
| | G3 | 98761.000 | 649 | | |
| Corrected Total | G1 | 4883.639 | 648 | | |
| | G2 | 5501.060 | 648 | | |
| | G3 | 6763.267 | 648 | | |

One Way MANOVA: G1, G2, and G3 by Studytime

Tests of Between-Subjects Effects

| Source | Dependent Variable | Sig. | Partial Eta Squared |
|-----------------|--------------------|------|---------------------|
| Corrected Model | G1 | .000 | .070 |
| | G2 | .000 | .063 |
| | G3 | .000 | .069 |
| Intercept | G1 | .000 | .913 |
| | G2 | .000 | .904 |
| | G3 | .000 | .891 |
| studytime | G1 | .000 | .070 |
| | G2 | .000 | .063 |
| | G3 | .000 | .069 |
| Error | G1 | | |
| | G2 | | |
| | G3 | | |
| Total | G1 | | |
| | G2 | | |
| | G3 | | |
| Corrected Total | G1 | | |
| | G2 | | |
| | G3 | | |

a. R Squared = .070 (Adjusted R Squared = .066)

b. R Squared = .063 (Adjusted R Squared = .059)

c. R Squared = .069 (Adjusted R Squared = .064)

One Way MANOVA: G1, G2, and G3 by Studytime

Parameter Estimates

| Dependent Variable | Parameter | B | Std. Error | t | Sig. | 95% ... Lower Bound |
|--------------------|------------------|----------------|------------|--------|------|------------------------|
| G1 | Intercept | 12.771 | .448 | 28.477 | .000 | 11.891 |
| | [studytime=1.00] | -2.267 | .484 | -4.682 | .000 | -3.217 |
| | [studytime=2.00] | -1.234 | .474 | -2.605 | .009 | -2.164 |
| | [studytime=3.00] | -.349 | .523 | -.667 | .505 | -1.376 |
| | [studytime=4.00] | 0 ^a | . | . | . | . |
| G2 | Intercept | 12.629 | .478 | 26.429 | .000 | 11.690 |
| | [studytime=1.00] | -1.926 | .516 | -3.734 | .000 | -2.939 |
| | [studytime=2.00] | -.966 | .505 | -1.915 | .056 | -1.957 |
| | [studytime=3.00] | .165 | .557 | .296 | .767 | -.929 |
| | [studytime=4.00] | 0 ^a | . | . | . | . |
| G3 | Intercept | 13.057 | .528 | 24.720 | .000 | 12.020 |
| | [studytime=1.00] | -2.213 | .570 | -3.881 | .000 | -3.332 |
| | [studytime=2.00] | -.965 | .558 | -1.731 | .084 | -2.060 |
| | [studytime=3.00] | .170 | .616 | .275 | .783 | -1.040 |
| | [studytime=4.00] | 0 ^a | . | . | . | . |

One Way MANOVA: G1, G2, and G3 by Studytime

Parameter Estimates

| Dependent Variable | Parameter | 95% Confidence | Partial Eta Squared |
|--------------------|------------------|----------------|---------------------|
| | | Upper Bound | |
| G1 | Intercept | 13.652 | .557 |
| | [studytime=1.00] | -1.316 | .033 |
| | [studytime=2.00] | -.304 | .010 |
| | [studytime=3.00] | .679 | .001 |
| | [studytime=4.00] | . | . |
| G2 | Intercept | 13.567 | .520 |
| | [studytime=1.00] | -.913 | .021 |
| | [studytime=2.00] | .024 | .006 |
| | [studytime=3.00] | 1.260 | .000 |
| | [studytime=4.00] | . | . |
| G3 | Intercept | 14.094 | .487 |
| | [studytime=1.00] | -1.093 | .023 |
| | [studytime=2.00] | .130 | .005 |
| | [studytime=3.00] | 1.380 | .000 |
| | [studytime=4.00] | . | . |

a. This parameter is set to zero because it is redundant.

Estimated Marginal Means

One Way MANOVA: G1, G2, and G3 by Studytime

Weekly study time group

| Dependent Variable | Weekly study time group | Mean | Std. Error | 95% Confidence Interval | |
|--------------------|-------------------------|--------|------------|-------------------------|-------------|
| | | | | Lower Bound | Upper Bound |
| G1 | 1.00 | 10.505 | .182 | 10.147 | 10.863 |
| | 2.00 | 11.538 | .152 | 11.239 | 11.836 |
| | 3.00 | 12.423 | .269 | 11.894 | 12.952 |
| | 4.00 | 12.771 | .448 | 11.891 | 13.652 |
| G2 | 1.00 | 10.703 | .194 | 10.322 | 11.084 |
| | 2.00 | 11.662 | .162 | 11.344 | 11.980 |
| | 3.00 | 12.794 | .287 | 12.230 | 13.357 |
| | 4.00 | 12.629 | .478 | 11.690 | 13.567 |
| G3 | 1.00 | 10.844 | .215 | 10.423 | 11.266 |
| | 2.00 | 12.092 | .179 | 11.740 | 12.443 |
| | 3.00 | 13.227 | .317 | 12.604 | 13.850 |
| | 4.00 | 13.057 | .528 | 12.020 | 14.094 |