

Host

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Hartleys F Max Test

Hartleys F Max Test
Import data

Hartleys F Max context

Hartleys F Max context
G3 by studytime

Means

[HartleysFMaxData] D:\DATA ANALYSIS\B Normality and Assumption Tests\Hartleys F Max Test\SPSS_Output\sav\Hartleys-F-Max-Test-data.sav

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
G3 * studytime	649	100.0%	0	0.0%	649	100.0%

Report

G3

studytime	N	Mean	Std. Deviation	Variance
1	212	10.84	3.219	10.360
2	305	12.09	3.243	10.518
3	97	13.23	2.502	6.261
4	35	13.06	3.038	9.232
Total	649	11.91	3.231	10.437

Group spread plots

Group spread plots
G3 by studytime

Explore

Study time group

Case Processing Summary

	studytime	Valid		Cases Missing		Total	
		N	Percent	N	Percent	N	Percent
G3	1	212	100.0%	0	0.0%	212	100.0%
	2	305	100.0%	0	0.0%	305	100.0%
	3	97	100.0%	0	0.0%	97	100.0%
	4	35	100.0%	0	0.0%	35	100.0%

Descriptives

studytime		Statistic	Std. Error		
G3	1	Mean	10.84	.221	
		95% Confidence Interval for Mean	Lower Bound	10.41	
			Upper Bound	11.28	
		5% Trimmed Mean	11.04		
		Median	11.00		
		Variance	10.360		
		Std. Deviation	3.219		
		Minimum	0		
		Maximum	18		
		Range	18		
		Interquartile Range	3		
		Skewness	-1.078	.167	
		Kurtosis	3.117	.333	
		2	2	Mean	12.09
95% Confidence Interval for Mean	Lower Bound			11.73	
	Upper Bound			12.46	
5% Trimmed Mean	12.25				
Median	12.00				
Variance	10.518				
Std. Deviation	3.243				

Group spread plots
G3 by studytime

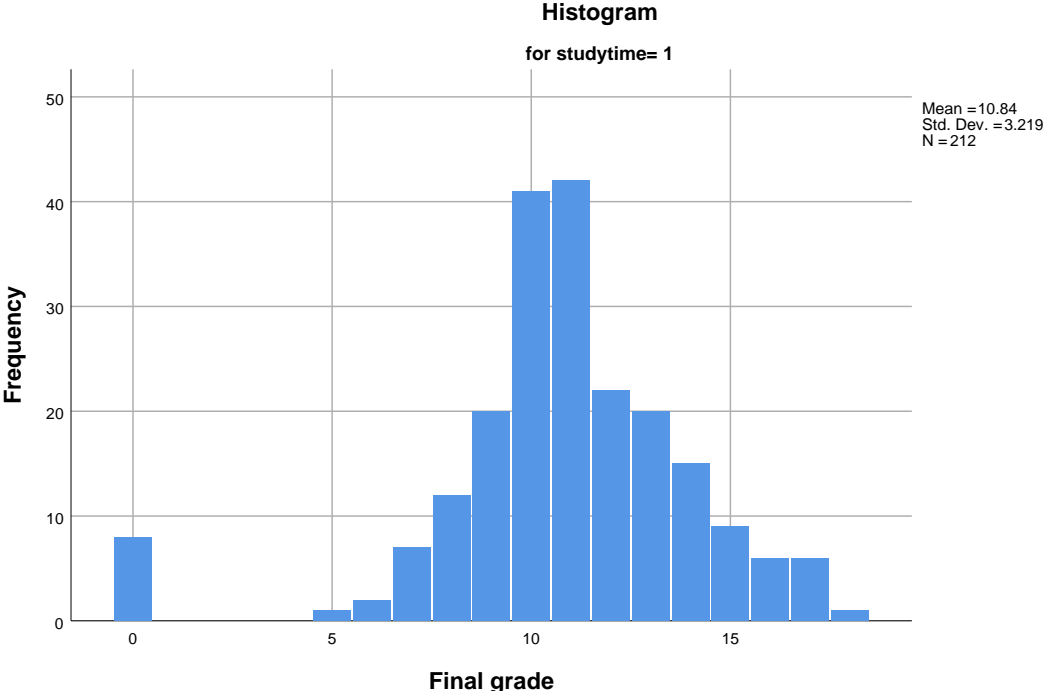
Descriptives

studytime		Statistic	Std. Error	
3	Minimum	0		
	Maximum	19		
	Range	19		
	Interquartile Range	4		
	Skewness	-1.028	.140	
	Kurtosis	3.044	.278	
	Mean	13.23	.254	
	95% Confidence Interval for Mean	Lower Bound	12.72	
		Upper Bound	13.73	
	5% Trimmed Mean	13.27		
	Median	13.00		
	Variance	6.261		
	Std. Deviation	2.502		
	Minimum	8		
Maximum	18			
Range	10			
Interquartile Range	4			
Skewness	-.190	.245		
Kurtosis	-.502	.485		
4	Mean	13.06	.514	
	95% Confidence Interval for Mean	Lower Bound	12.01	
		Upper Bound	14.10	
	5% Trimmed Mean	13.07		
	Median	13.00		
	Variance	9.232		
	Std. Deviation	3.038		
	Minimum	6		
	Maximum	19		
	Range	13		
	Interquartile Range	4		
	Skewness	.209	.398	
	Kurtosis	-.339	.778	

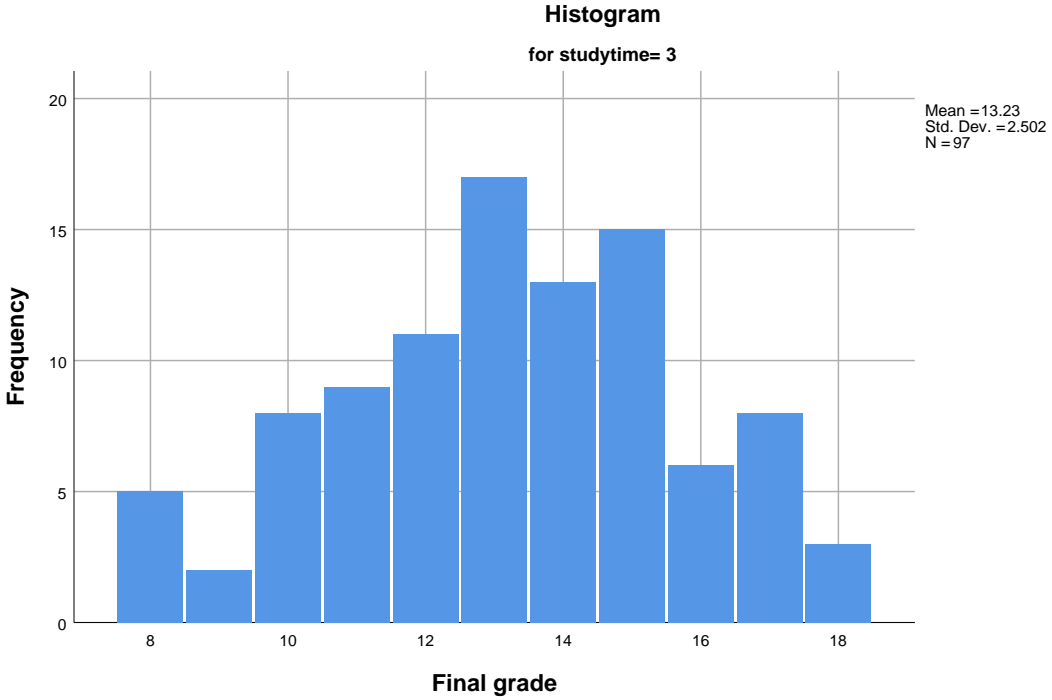
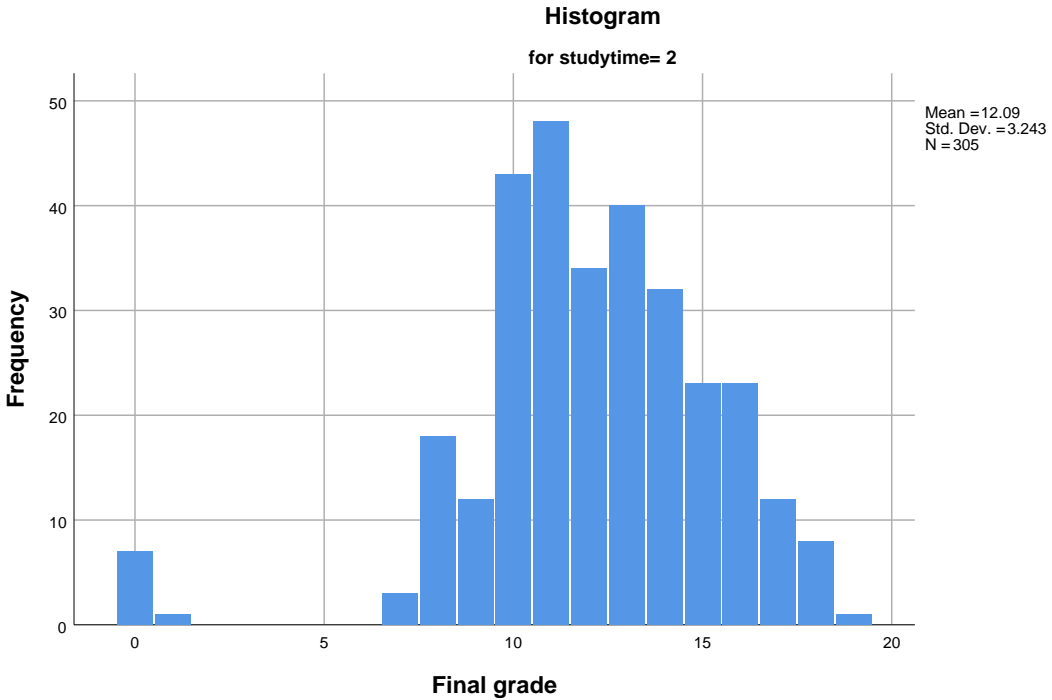
Group spread plots
G3 by studytime

Final grade

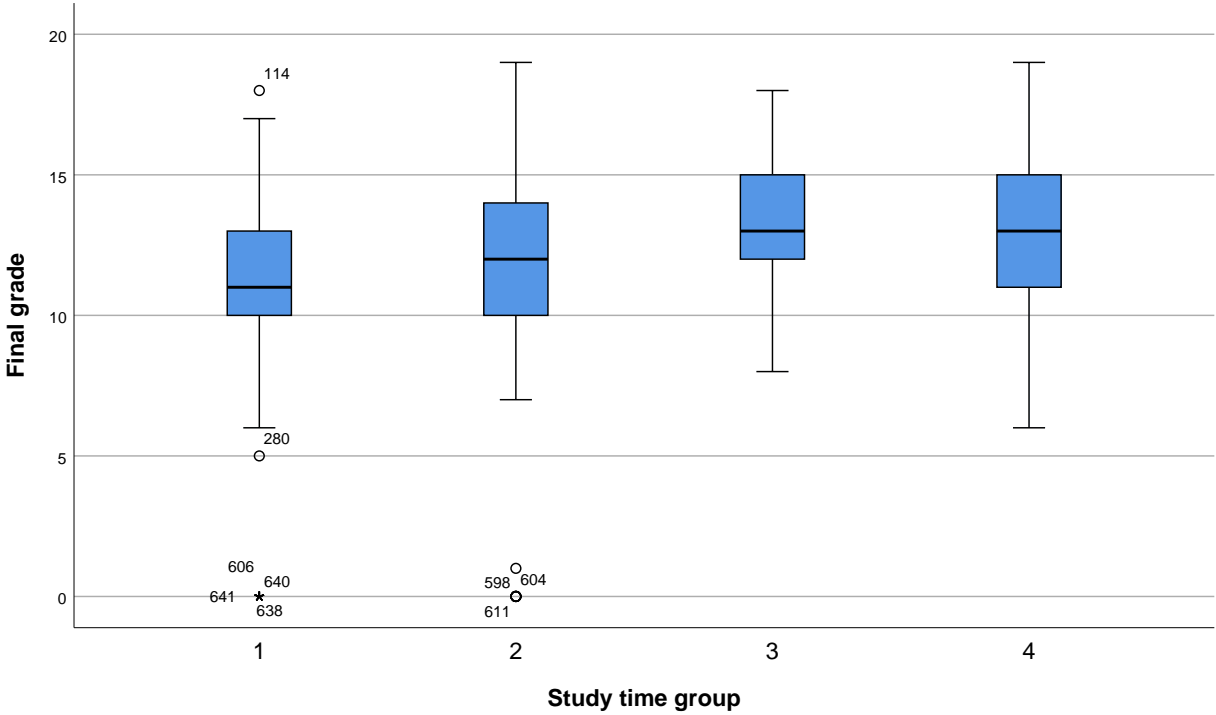
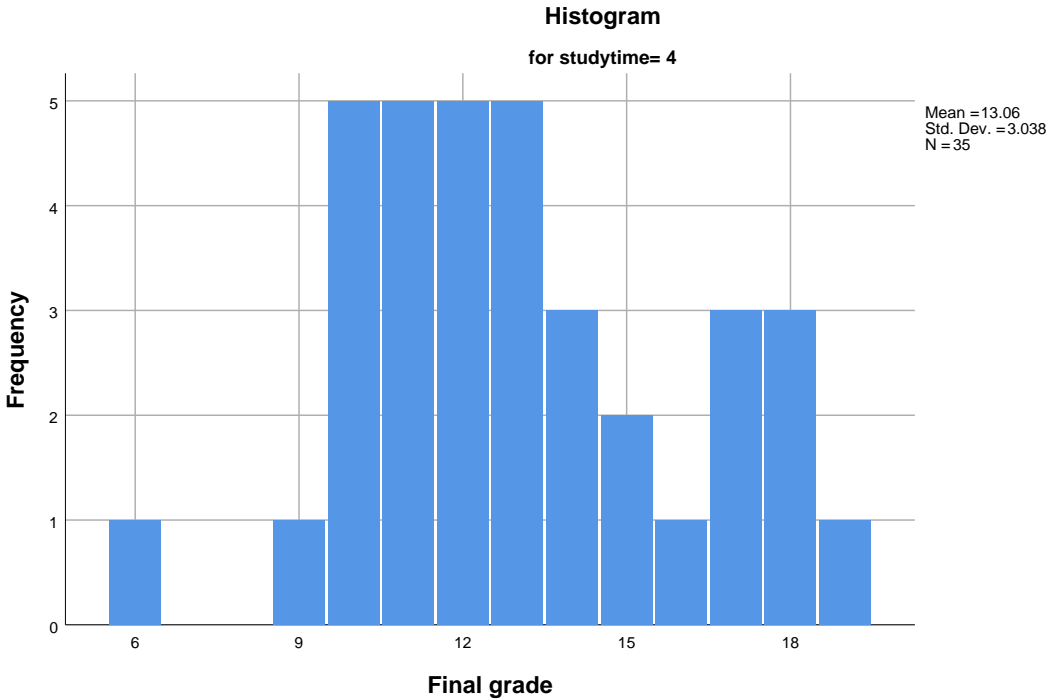
Histograms



Group spread plots
G3 by studytime



Group spread plots
G3 by studytime



Hartleys F Max group table

Hartleys F Max group table
Variance components

List

[HartleyGroups] D:\DATA ANALYSIS\B Normality and Assumption Tests\Hartleys F Max Test\SPSS_Output\temp\hartley_groups.sav

>Error # 13007 in column 10. Text: ALL

>The CASES subcommand specification is incorrect. A number must follow FROM,
>TO, or BY.

>Execution of this command stops.

Hartleys F Max result

Hartleys F Max result
Largest variance divided by smallest variance

List

Hartleys F Max result
Largest variance divided by smallest variance

number_of_groups	total_n	min_n	max_n	min_variance	max_variance	hartley_f_max
4	649.00	35	305	6.26052	10.51786	1.68003

Number of cases read: 1 Number of cases listed: 1

>Warning # 67. Command name: GET FILE
>The document is already in use by another user or process. If you make
>changes to the document they may overwrite changes made by others or your
>changes may be overwritten by others.
>File opened D:\DATA ANALYSIS\B Normality and Assumption Tests\Hartleys F Max
Test\SPSS_Output\sav\Hartleys-F-Max-Test-data.sav

Levene comparison

Levene comparison
Homogeneity context

Oneway

[HartleysFMaxData2]

Descriptives

G3

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum
					Lower Bound	Upper Bound	
1	212	10.84	3.219	.221	10.41	11.28	0
2	305	12.09	3.243	.186	11.73	12.46	0
3	97	13.23	2.502	.254	12.72	13.73	8
4	35	13.06	3.038	.514	12.01	14.10	6
Total	649	11.91	3.231	.127	11.66	12.16	0

Descriptives

G3

	Maximum
1	18
2	19
3	18
4	19
Total	19

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
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

Levene comparison
Homogeneity context

ANOVA

G3

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	465.078	3	155.026	15.876	.000
Within Groups	6298.189	645	9.765		
Total	6763.267	648			

Normality context

Normality context
Hartleys assumption

Explore

Study time group

Case Processing Summary

studytime	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
G3 1	212	100.0%	0	0.0%	212	100.0%
2	305	100.0%	0	0.0%	305	100.0%
3	97	100.0%	0	0.0%	97	100.0%
4	35	100.0%	0	0.0%	35	100.0%

Descriptives

studytime	Statistic	Std. Error	
G3 1	Mean	10.84	
	95% Confidence Interval for Mean	Lower Bound	10.41
		Upper Bound	11.28
	5% Trimmed Mean	11.04	
	Median	11.00	
	Variance	10.360	
	Std. Deviation	3.219	
	Minimum	0	
	Maximum	18	
	Range	18	
	Interquartile Range	3	
	Skewness	-1.078	.167
	Kurtosis	3.117	.333
	2	Mean	12.09
95% Confidence Interval for Mean		Lower Bound	11.73
		Upper Bound	12.46
5% Trimmed Mean		12.25	
Median		12.00	
Variance		10.518	
Std. Deviation		3.243	

Normality context
Hartleys assumption

Descriptives

studytime		Statistic	Std. Error	
3	Minimum	0		
	Maximum	19		
	Range	19		
	Interquartile Range	4		
	Skewness	-1.028	.140	
	Kurtosis	3.044	.278	
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	Variance	6.261		
	Std. Deviation	2.502		
	Minimum	8		
Maximum	18			
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	5% Trimmed Mean	13.07		
	Median	13.00		
	Variance	9.232		
	Std. Deviation	3.038		
	Minimum	6		
	Maximum	19		
	Range	13		
	Interquartile Range	4		
	Skewness	.209	.398	
	Kurtosis	-.339	.778	

Normality context
Hartleys assumption

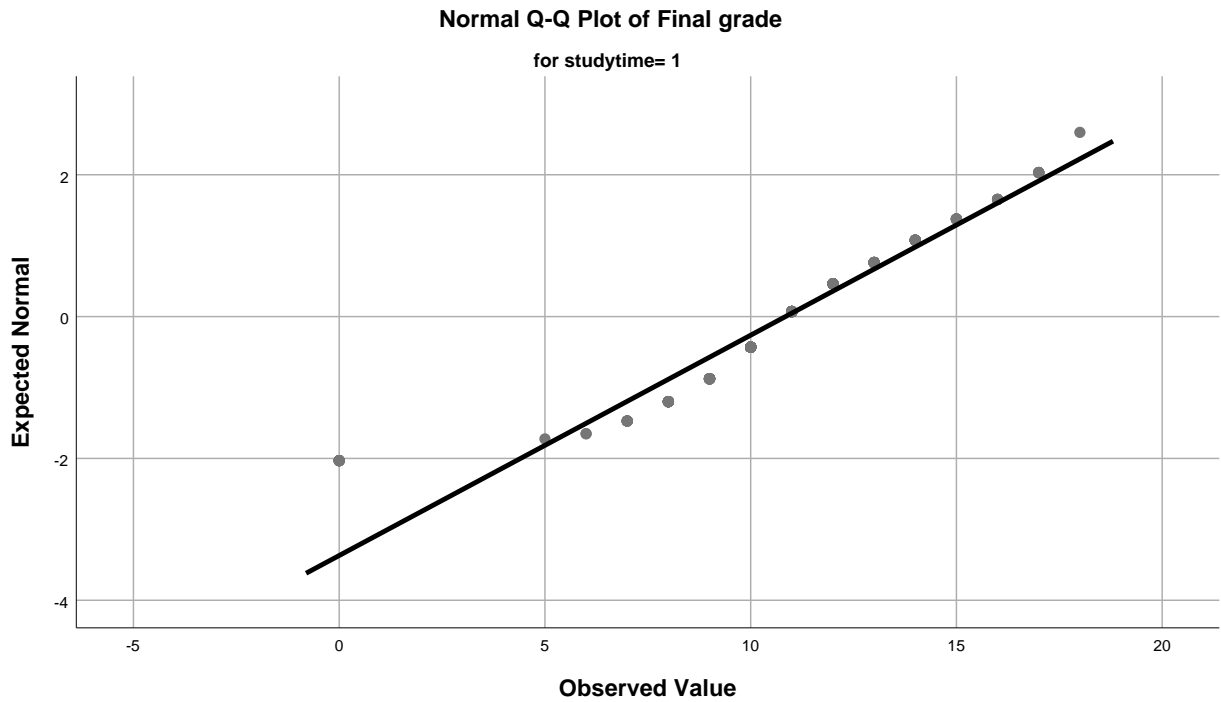
Tests of Normality

studytime	Kolmogorov-Smirnov ^a			Shapiro-Wilk			
	Statistic	df	Sig.	Statistic	df	Sig.	
G3	1	.161	212	.000	.898	212	.000
	2	.125	305	.000	.917	305	.000
	3	.103	97	.013	.970	97	.025
	4	.136	35	.099	.955	35	.166

a. Lilliefors Significance Correction

Final grade

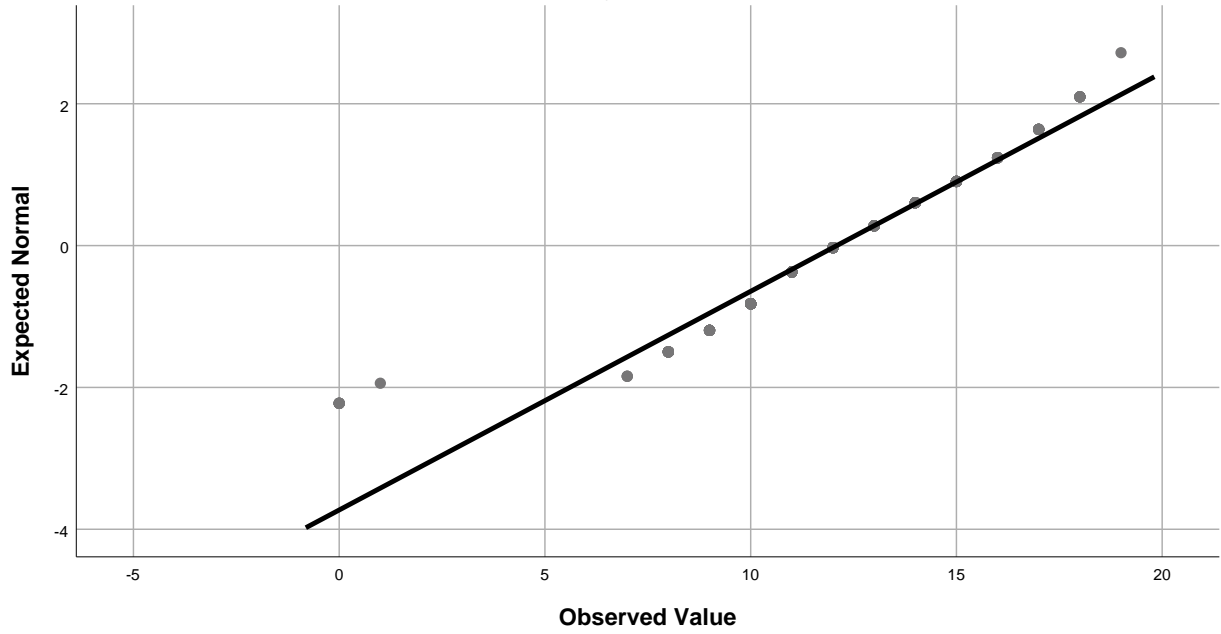
Normal Q-Q Plots



Normality context
Hartleys assumption

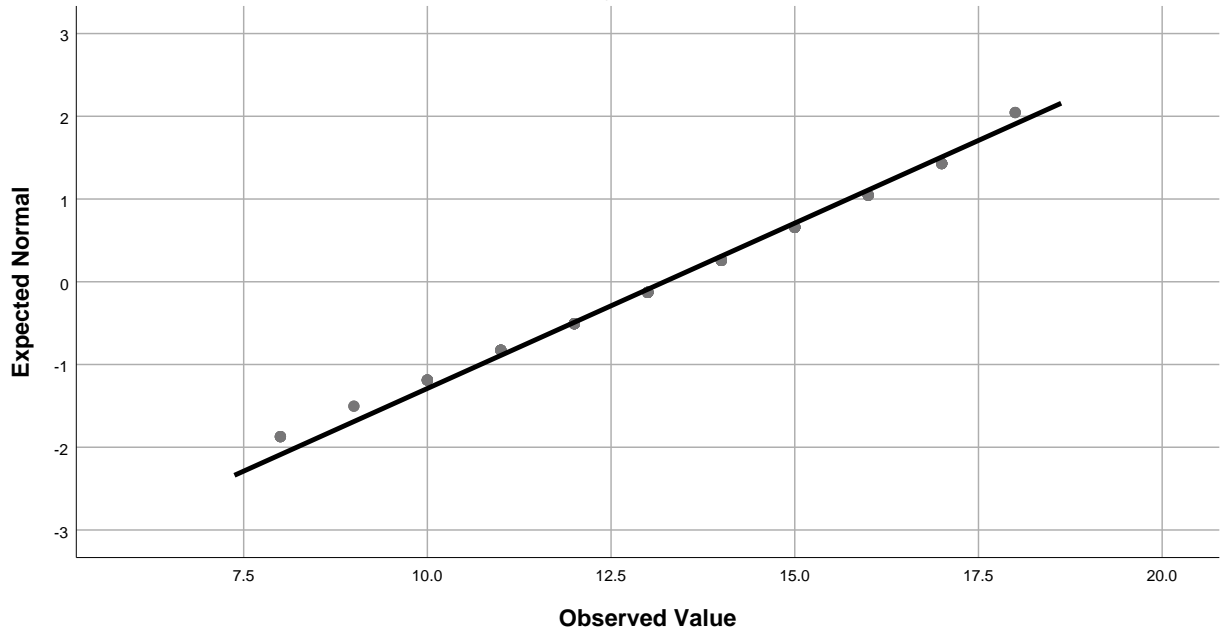
Normal Q-Q Plot of Final grade

for studytime= 2

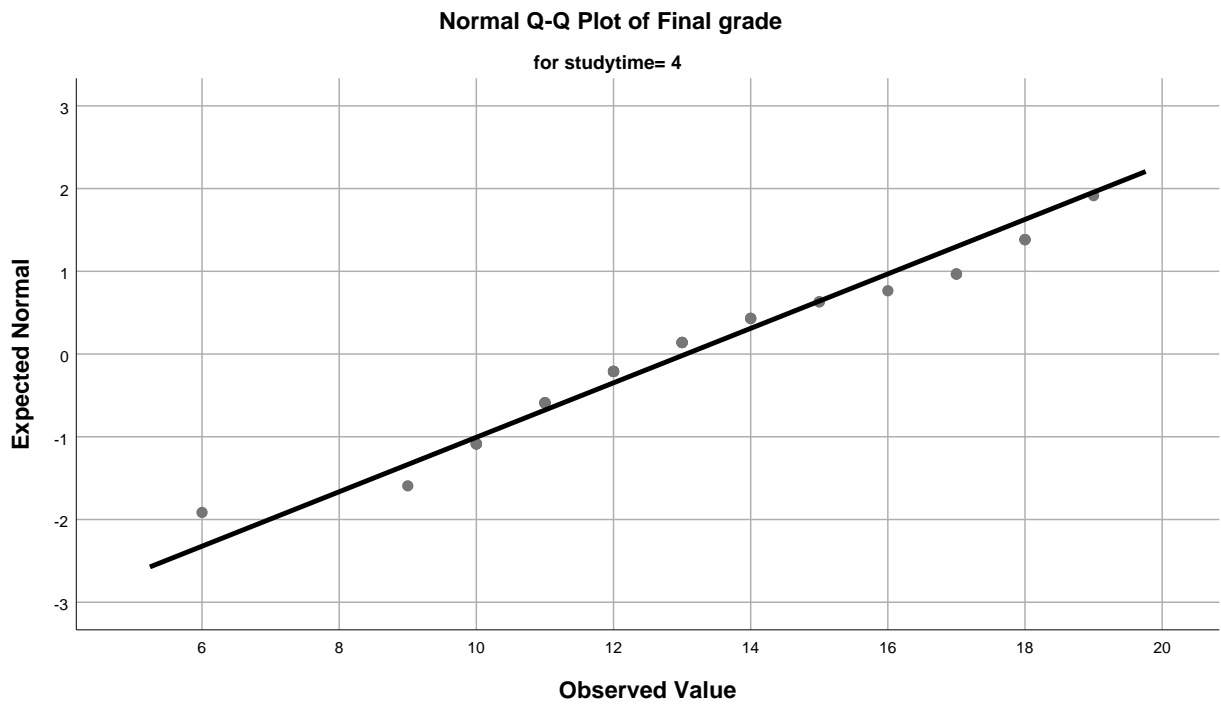


Normal Q-Q Plot of Final grade

for studytime= 3



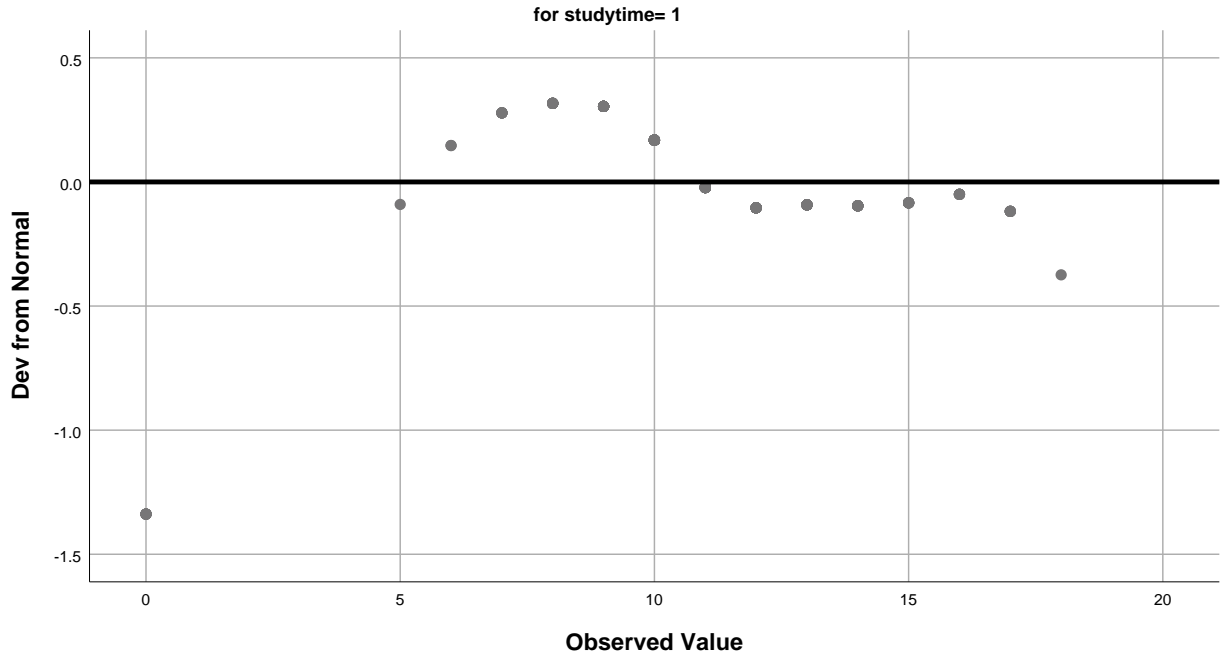
Normality context
Hartleys assumption



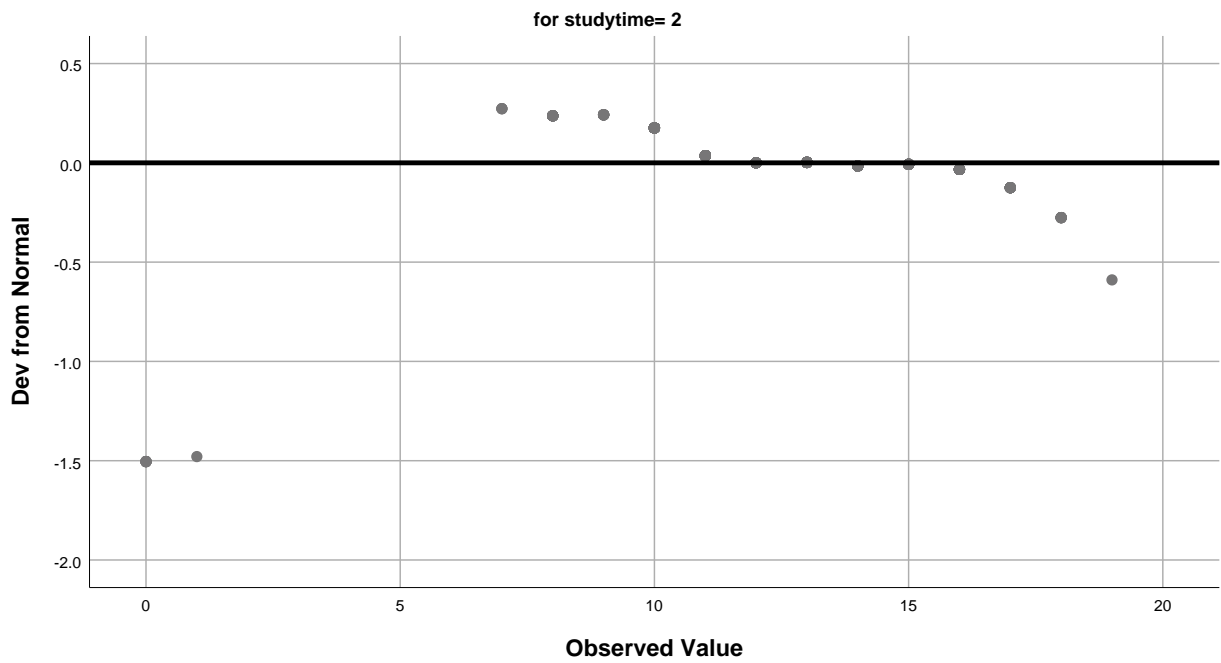
Detrended Normal Q-Q Plots

Normality context
Hartleys assumption

Detrended Normal Q-Q Plot of Final grade



Detrended Normal Q-Q Plot of Final grade



Normality context
Hartleys assumption

