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Sidak Correction Post Hoc Analysis

Sidak Correction Post Hoc Analysis
Import dataset.csv from the Sidak Correction folder

Sidak Correction: Descriptive Statistics

Sidak Correction: Descriptive Statistics
 Group descriptives for G3 by studytime

Means

[SidakCorrectionData] D:\DATA ANALYSIS\F Post Hoc Tests\Sidak Correction\SPSS_
 Output\sav\Sidak-Correction-data.sav

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Final grade / dependent variable * Weekly study time group / Sidak post hoc factor	649	100.0%	0	0.0%	649	100.0%

Report

Final grade / dependent variable

Weekly study time group / Sidak post hoc factor	N	Mean	Std. Deviation	Variance	Minimum	Maximum
<2 hours	212	10.84	3.219	10.360	0	18
2 to 5 hours	305	12.09	3.243	10.518	0	19
5 to 10 hours	97	13.23	2.502	6.261	8	18
>10 hours	35	13.06	3.038	9.232	6	19
Total	649	11.91	3.231	10.437	0	19

Sidak Correction: Distribution and Assumption Context

Sidak Correction: Distribution and Assumption Context
 Boxplot, histogram, normality plot, and descriptives

Explore

Weekly study time group / Sidak post hoc factor

Case Processing Summary

Final grade / dependent variable	Weekly study time group / Sidak post hoc factor	Cases			
		Valid		Missing	
		N	Percent	N	Percent
	<2 hours	212	100.0%	0	0.0%
	2 to 5 hours	305	100.0%	0	0.0%
	5 to 10 hours	97	100.0%	0	0.0%
	>10 hours	35	100.0%	0	0.0%

Case Processing Summary

Final grade / dependent variable	Weekly study time group / Sidak post hoc factor	Cases	
		Total	
		N	Percent
	<2 hours	212	100.0%
	2 to 5 hours	305	100.0%
	5 to 10 hours	97	100.0%
	>10 hours	35	100.0%

Sidak Correction: Distribution and Assumption Context
 Boxplot, histogram, normality plot, and descriptives

Descriptives

	Weekly study time group / Sidak post hoc factor		Statistic	
Final grade / dependent variable	<2 hours	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	
		Kurtosis	3.117	
		2 to 5 hours	Mean	12.09
			95% Confidence Interval for Mean	Lower Bound
	Upper Bound			12.46
	5% Trimmed Mean		12.25	
	Median		12.00	
	Variance		10.518	
	Std. Deviation		3.243	
	Minimum		0	
	Maximum		19	
	Range		19	
	Interquartile Range		4	
	Skewness		-1.028	
	Kurtosis		3.044	
	5 to 10 hours		Mean	13.23
			95% Confidence Interval for Mean	Lower Bound
		Upper Bound		13.73
		5% Trimmed Mean	13.27	
		Median	13.00	
		Variance	6.261	

Sidak Correction: Distribution and Assumption Context
 Boxplot, histogram, normality plot, and descriptives

Descriptives

	Weekly study time group / Sidak post hoc factor		Std. Error	
Final grade / dependent variable	<2 hours	Mean	.221	
		95% Confidence Interval for Mean	Lower Bound	
			Upper Bound	
		5% Trimmed Mean		
		Median		
		Variance		
		Std. Deviation		
		Minimum		
		Maximum		
		Range		
		Interquartile Range		
		Skewness	.167	
		Kurtosis	.333	
		2 to 5 hours	Mean	.186
	95% Confidence Interval for Mean		Lower Bound	
			Upper Bound	
	5% Trimmed Mean			
	Median			
	Variance			
	Std. Deviation			
Minimum				
Maximum				
Range				
Interquartile Range				
Skewness	.140			
Kurtosis	.278			
5 to 10 hours	Mean		.254	
	95% Confidence Interval for Mean	Lower Bound		
		Upper Bound		
	5% Trimmed Mean			
	Median			
Variance				

Sidak Correction: Distribution and Assumption Context
 Boxplot, histogram, normality plot, and descriptives

Descriptives

Weekly study time group / Sidak post hoc factor		Statistic
	Std. Deviation	2.502
	Minimum	8
	Maximum	18
	Range	10
	Interquartile Range	4
	Skewness	-.190
	Kurtosis	-.502
>10 hours	Mean	13.06
	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
	Kurtosis	-.339

Sidak Correction: Distribution and Assumption Context
 Boxplot, histogram, normality plot, and descriptives

Descriptives

Weekly study time group / Sidak post hoc factor		Std. Error
	Std. Deviation	
	Minimum	
	Maximum	
	Range	
	Interquartile Range	
	Skewness	.245
	Kurtosis	.485
>10 hours	Mean	.514
	95% Confidence Interval for Mean	Lower Bound Upper Bound
	5% Trimmed Mean	
	Median	
	Variance	
	Std. Deviation	
	Minimum	
	Maximum	
	Range	
	Interquartile Range	
	Skewness	.398
	Kurtosis	.778

Tests of Normality

	Weekly study time group / Sidak post hoc factor	Kolmogorov-Smirnov ^a			Shapiro-...
		Statistic	df	Sig.	Statistic
Final grade / dependent variable	<2 hours	.161	212	.000	.898
	2 to 5 hours	.125	305	.000	.917
	5 to 10 hours	.103	97	.013	.970
	>10 hours	.136	35	.099	.955

Sidak Correction: Distribution and Assumption Context
 Boxplot, histogram, normality plot, and descriptives

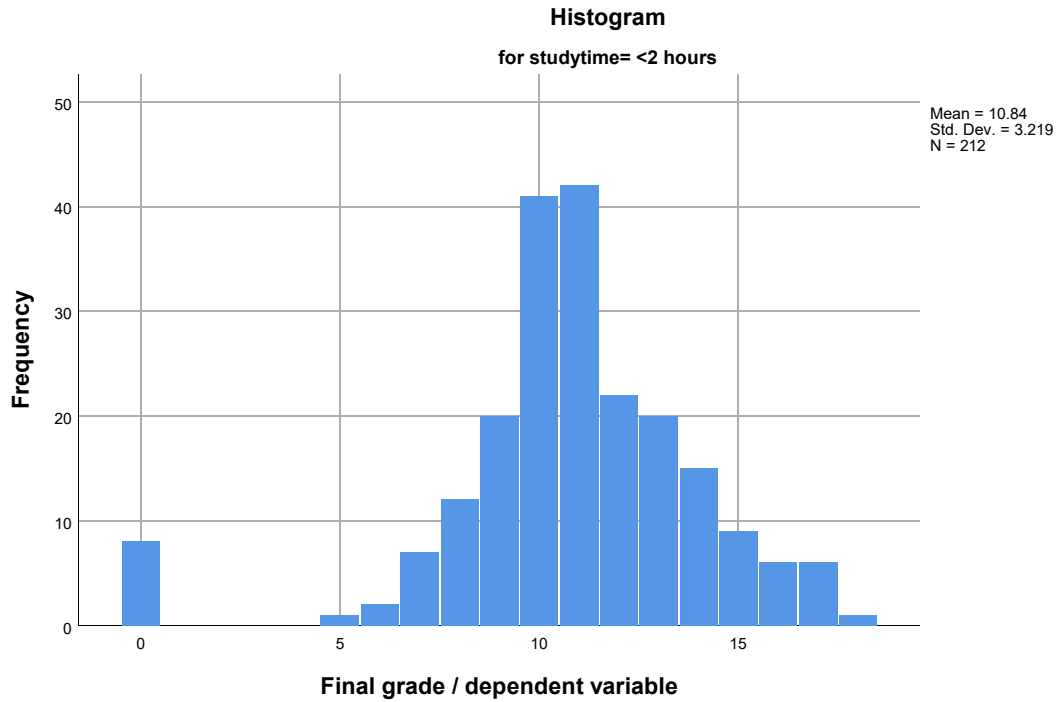
Tests of Normality

Final grade / dependent variable	Weekly study time group / Sidak post hoc factor	Shapiro-Wilk	
		df	Sig.
Final grade / dependent variable	<2 hours	212	.000
	2 to 5 hours	305	.000
	5 to 10 hours	97	.025
	>10 hours	35	.166

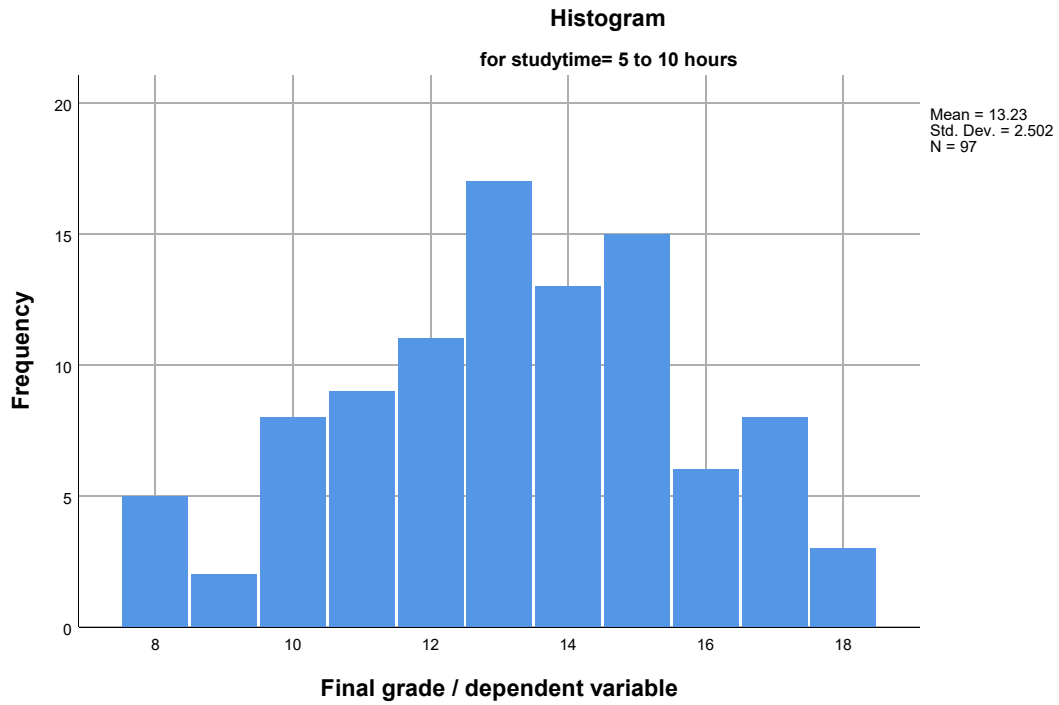
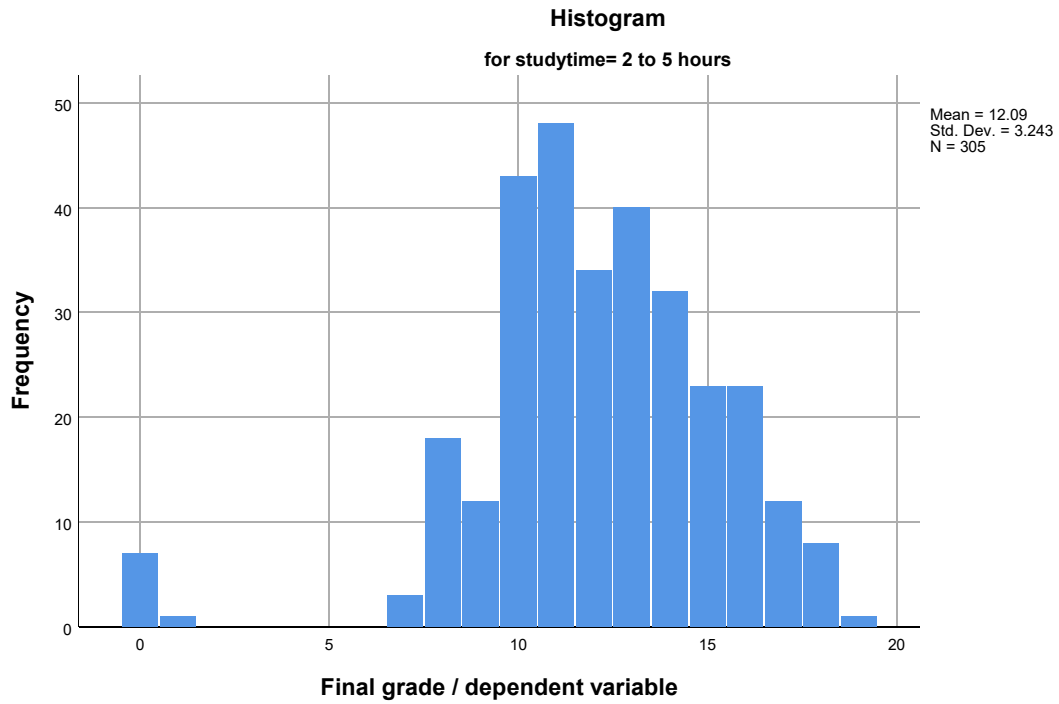
a. Lilliefors Significance Correction

Final grade / dependent variable

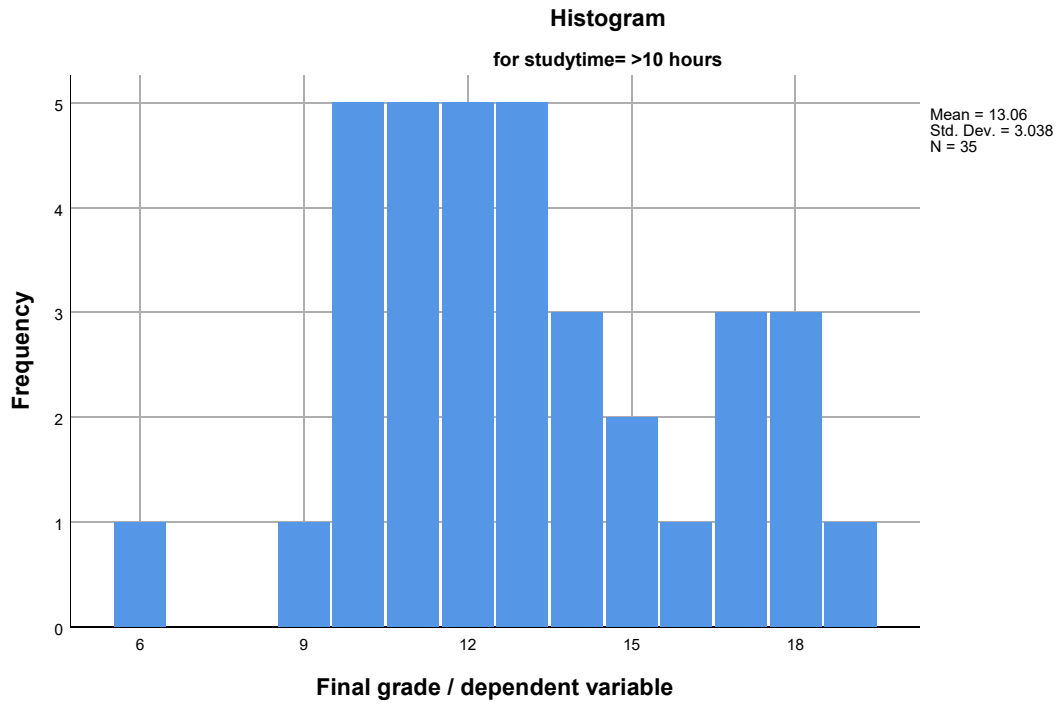
Histograms



Sidak Correction: Distribution and Assumption Context
Boxplot, histogram, normality plot, and descriptives

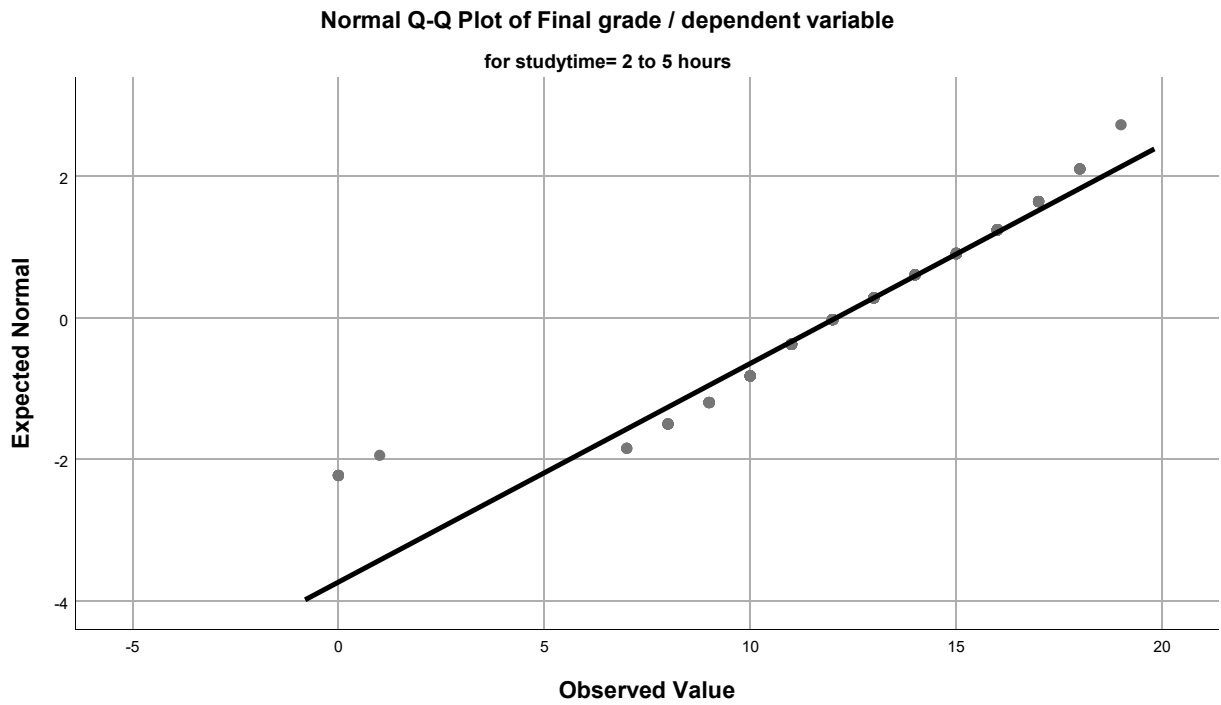
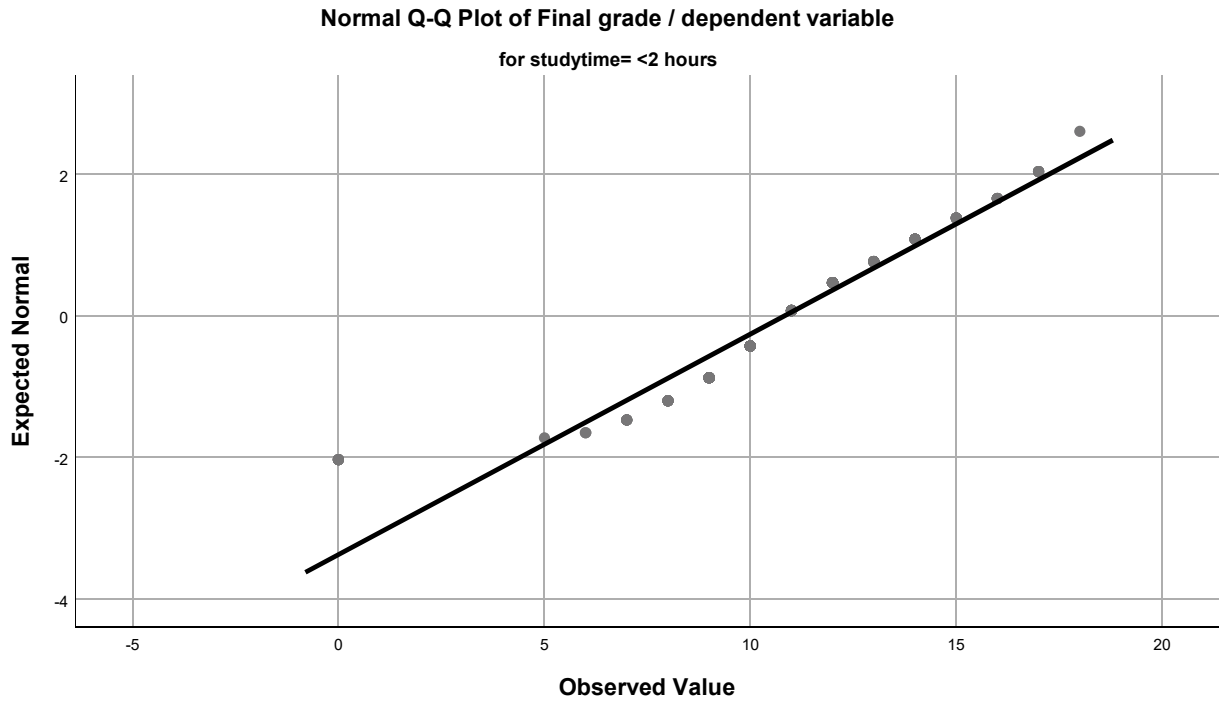


Sidak Correction: Distribution and Assumption Context
Boxplot, histogram, normality plot, and descriptives

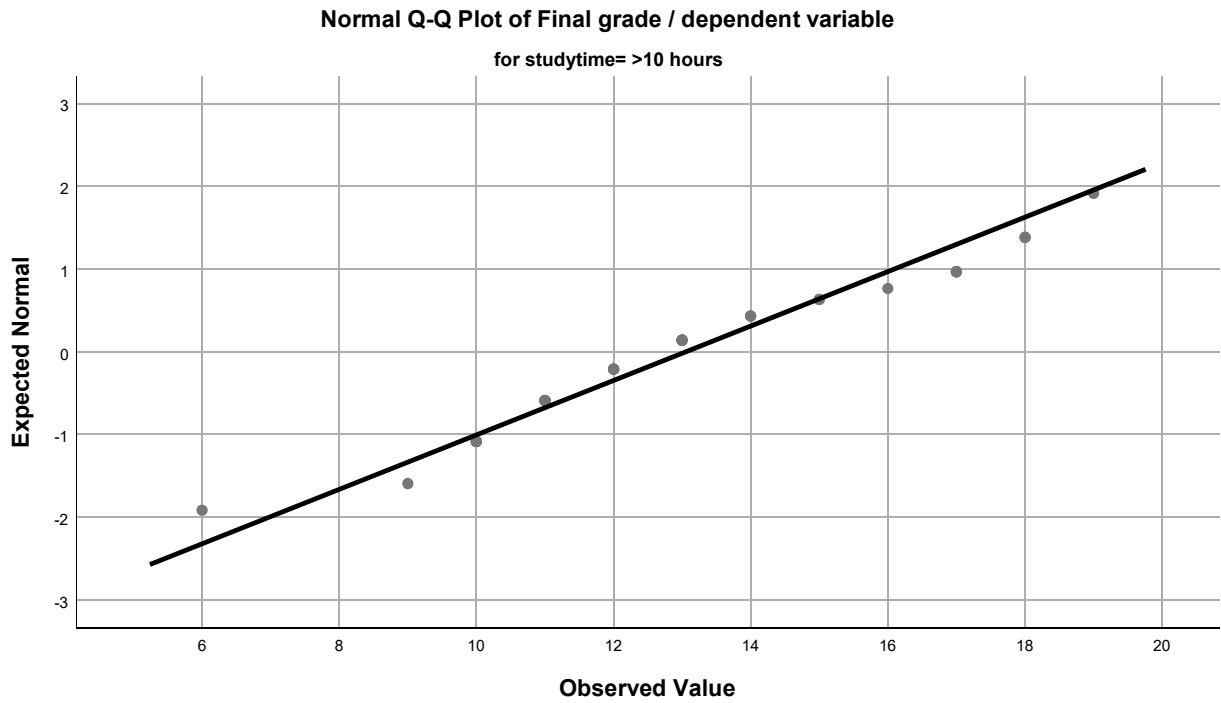
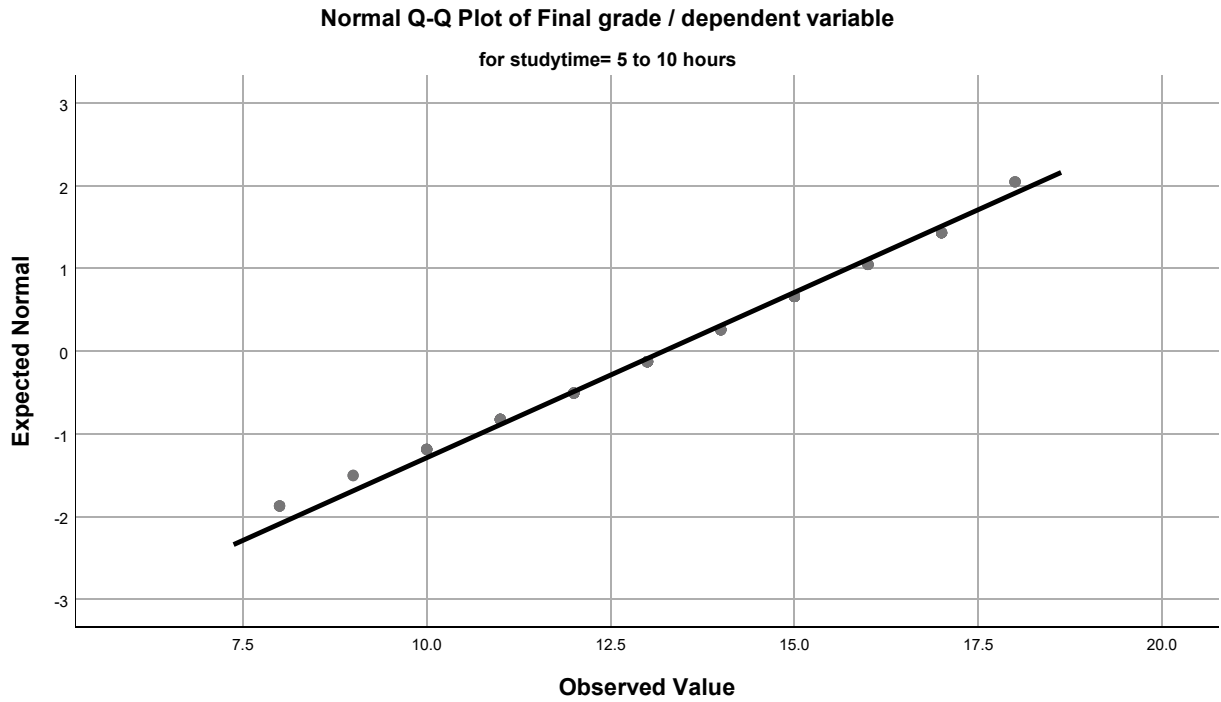


Normal Q-Q Plots

Sidak Correction: Distribution and Assumption Context
Boxplot, histogram, normality plot, and descriptives

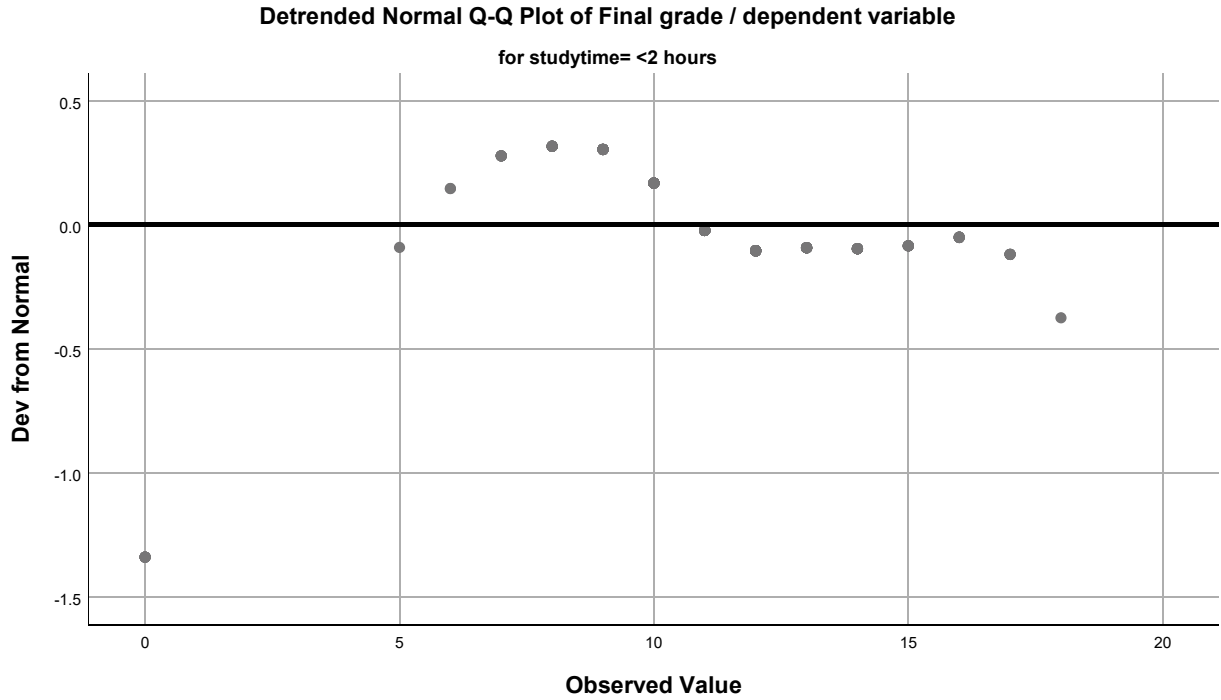


Sidak Correction: Distribution and Assumption Context
Boxplot, histogram, normality plot, and descriptives



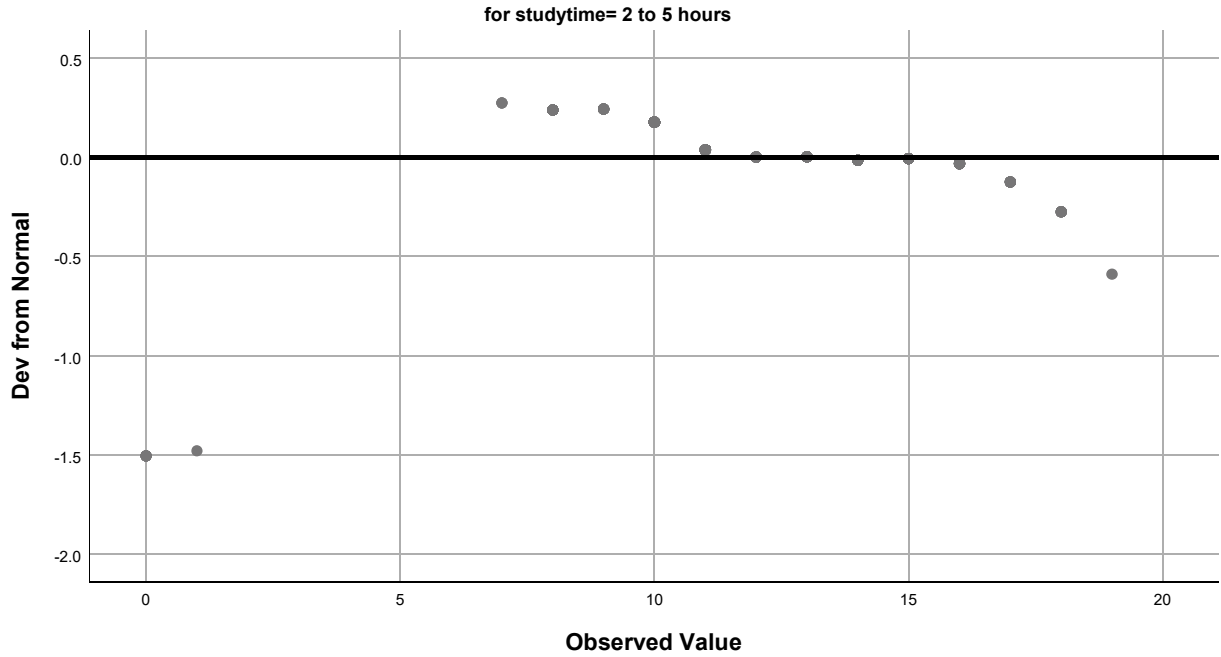
Sidak Correction: Distribution and Assumption Context
Boxplot, histogram, normality plot, and descriptives

Detrended Normal Q-Q Plots

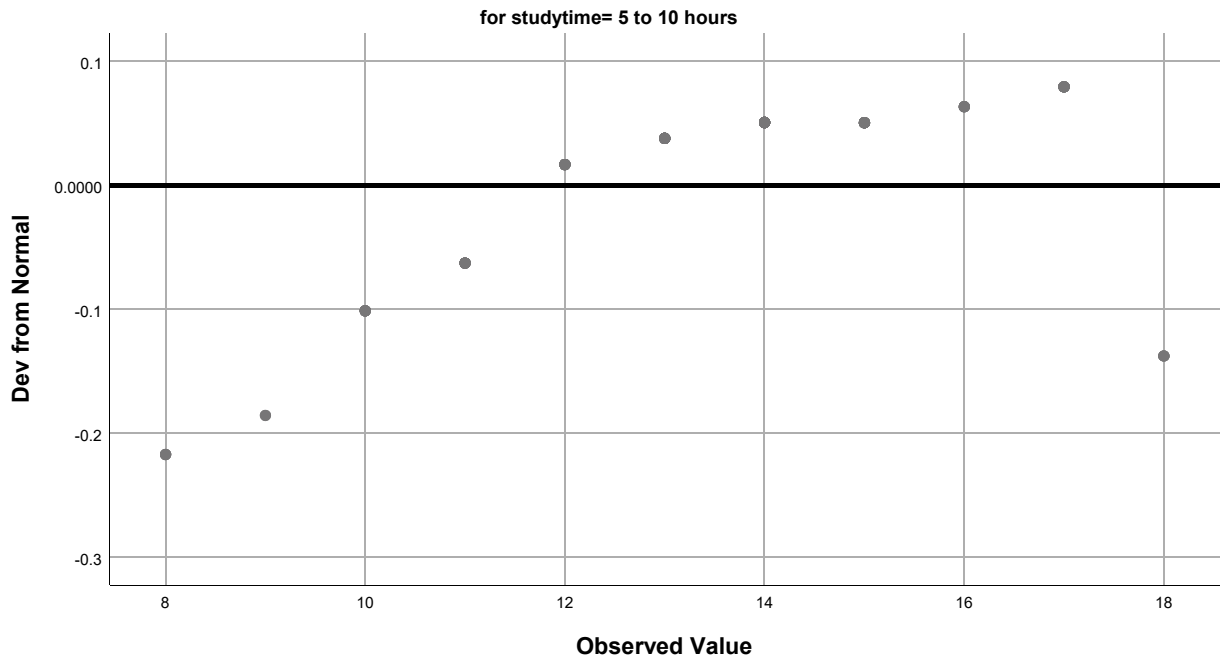


Sidak Correction: Distribution and Assumption Context
Boxplot, histogram, normality plot, and descriptives

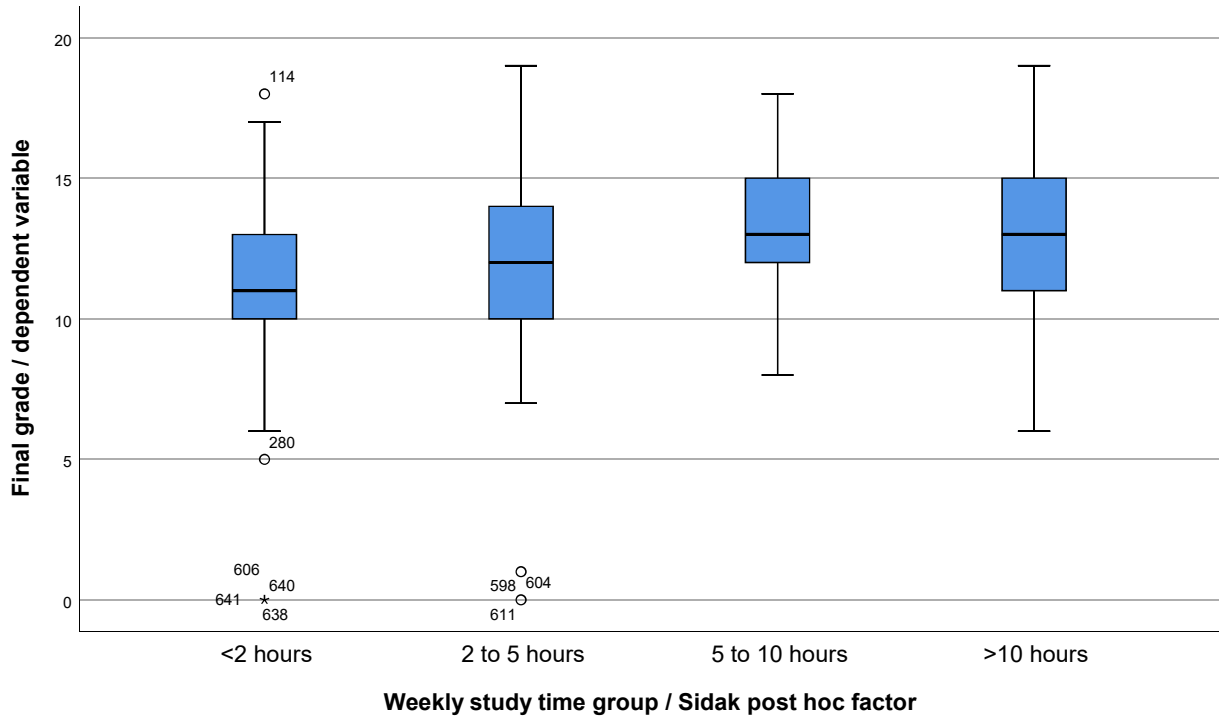
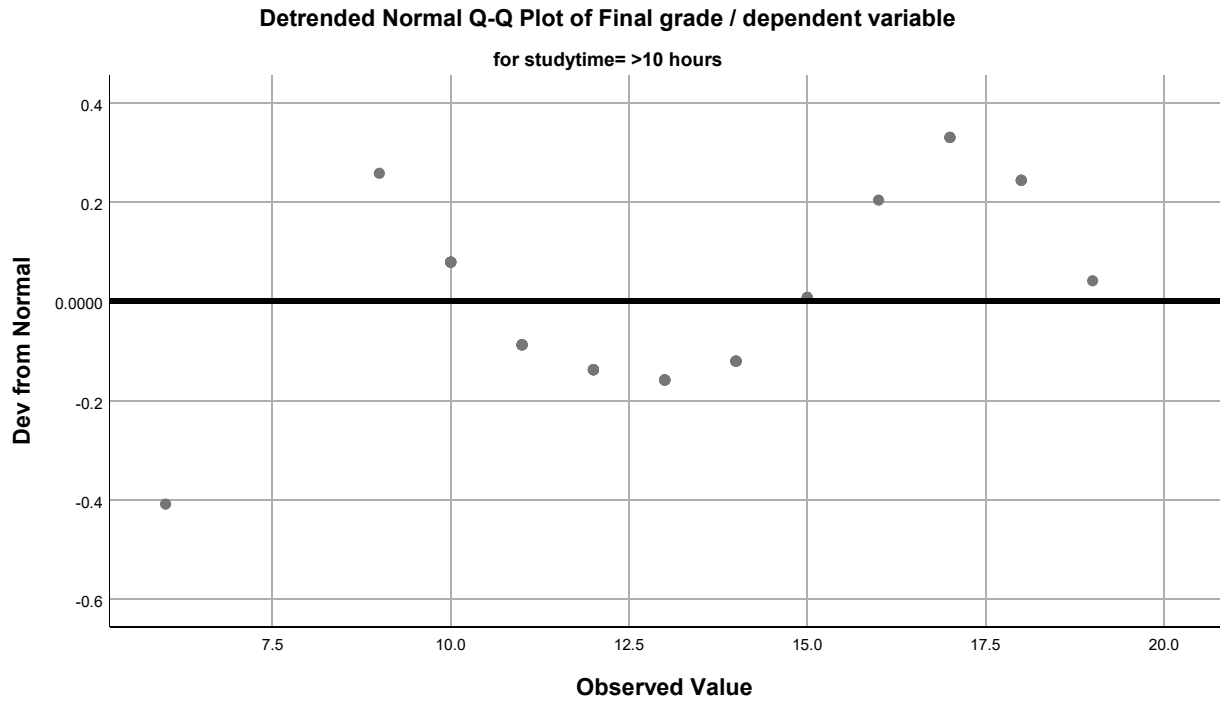
Detrended Normal Q-Q Plot of Final grade / dependent variable



Detrended Normal Q-Q Plot of Final grade / dependent variable



Sidak Correction: Distribution and Assumption Context
 Boxplot, histogram, normality plot, and descriptives



Sidak Correction: One-way ANOVA with Sidak Post Hoc Test

Sidak Correction: One-way ANOVA with Sidak Post Hoc Test
 Dependent variable: G3; factor: studytime

Oneway

Descriptives

Final grade / dependent variable

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
<2 hours	212	10.84	3.219	.221	10.41	11.28
2 to 5 hours	305	12.09	3.243	.186	11.73	12.46
5 to 10 hours	97	13.23	2.502	.254	12.72	13.73
>10 hours	35	13.06	3.038	.514	12.01	14.10
Total	649	11.91	3.231	.127	11.66	12.16

Descriptives

Final grade / dependent variable

	Minimum	Maximum
<2 hours	0	18
2 to 5 hours	0	19
5 to 10 hours	8	18
>10 hours	6	19
Total	0	19

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Final grade / dependent variable	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

Sidak Correction: One-way ANOVA with Sidak Post Hoc Test
 Dependent variable: G3; factor: studytime

ANOVA

Final grade / dependent variable

	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			

Post Hoc Tests

Multiple Comparisons

Dependent Variable: Final grade / dependent variable

Sidak

(I) Weekly study time group / Sidak post hoc factor	(J) Weekly study time group / Sidak post hoc factor	Mean Difference (I-J)	Std. Error	Sig.
<2 hours	2 to 5 hours	-1.247 [*]	.279	.000
	5 to 10 hours	-2.382 [*]	.383	.000
	>10 hours	-2.213 [*]	.570	.001
2 to 5 hours	<2 hours	1.247 [*]	.279	.000
	5 to 10 hours	-1.135 [*]	.364	.011
	>10 hours	-.965	.558	.409
5 to 10 hours	<2 hours	2.382 [*]	.383	.000
	2 to 5 hours	1.135 [*]	.364	.011
	>10 hours	.170	.616	1.000
>10 hours	<2 hours	2.213 [*]	.570	.001
	2 to 5 hours	.965	.558	.409
	5 to 10 hours	-.170	.616	1.000

Sidak Correction: One-way ANOVA with Sidak Post Hoc Test
 Dependent variable: G3; factor: studytime

Multiple Comparisons

Dependent Variable: Final grade / dependent variable

Sidak

(I) Weekly study time group / Sidak post hoc factor	(J) Weekly study time group / Sidak post hoc factor	95% Confidence Interval	
		Lower Bound	Upper Bound
<2 hours	2 to 5 hours	-1.98	-.51
	5 to 10 hours	-3.39	-1.37
	>10 hours	-3.72	-.71
2 to 5 hours	<2 hours	.51	1.98
	5 to 10 hours	-2.10	-.17
	>10 hours	-2.44	.51
5 to 10 hours	<2 hours	1.37	3.39
	2 to 5 hours	.17	2.10
	>10 hours	-1.46	1.80
>10 hours	<2 hours	.71	3.72
	2 to 5 hours	-.51	2.44
	5 to 10 hours	-1.80	1.46

*. The mean difference is significant at the 0.05 level.

Reference Output: Bonferroni for Comparison with Sidak

Reference Output: Bonferroni for Comparison with Sidak
 Sidak is commonly slightly less conservative than Bonferroni

Oneway

Descriptives

Final grade / dependent variable

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
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<2 hours	212	10.84	3.219	.221	10.41	11.28
2 to 5 hours	305	12.09	3.243	.186	11.73	12.46
5 to 10 hours	97	13.23	2.502	.254	12.72	13.73
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Total	649	11.91	3.231	.127	11.66	12.16

Descriptives

Final grade / dependent variable

	Minimum	Maximum
<2 hours	0	18
2 to 5 hours	0	19
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Total	0	19

ANOVA

Final grade / dependent variable

	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			

Post Hoc Tests

Reference Output: Bonferroni for Comparison with Sidak
 Sidak is commonly slightly less conservative than Bonferroni

Multiple Comparisons

Dependent Variable: Final grade / dependent variable

Bonferroni

(I) Weekly study time group / Sidak post hoc factor	(J) Weekly study time group / Sidak post hoc factor	Mean Difference (I-J)	Std. Error	Sig.
<2 hours	2 to 5 hours	-1.247*	.279	.000
	5 to 10 hours	-2.382*	.383	.000
	>10 hours	-2.213*	.570	.001
2 to 5 hours	<2 hours	1.247*	.279	.000
	5 to 10 hours	-1.135*	.364	.011
	>10 hours	-.965	.558	.504
5 to 10 hours	<2 hours	2.382*	.383	.000
	2 to 5 hours	1.135*	.364	.011
	>10 hours	.170	.616	1.000
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Multiple Comparisons

Dependent Variable: Final grade / dependent variable

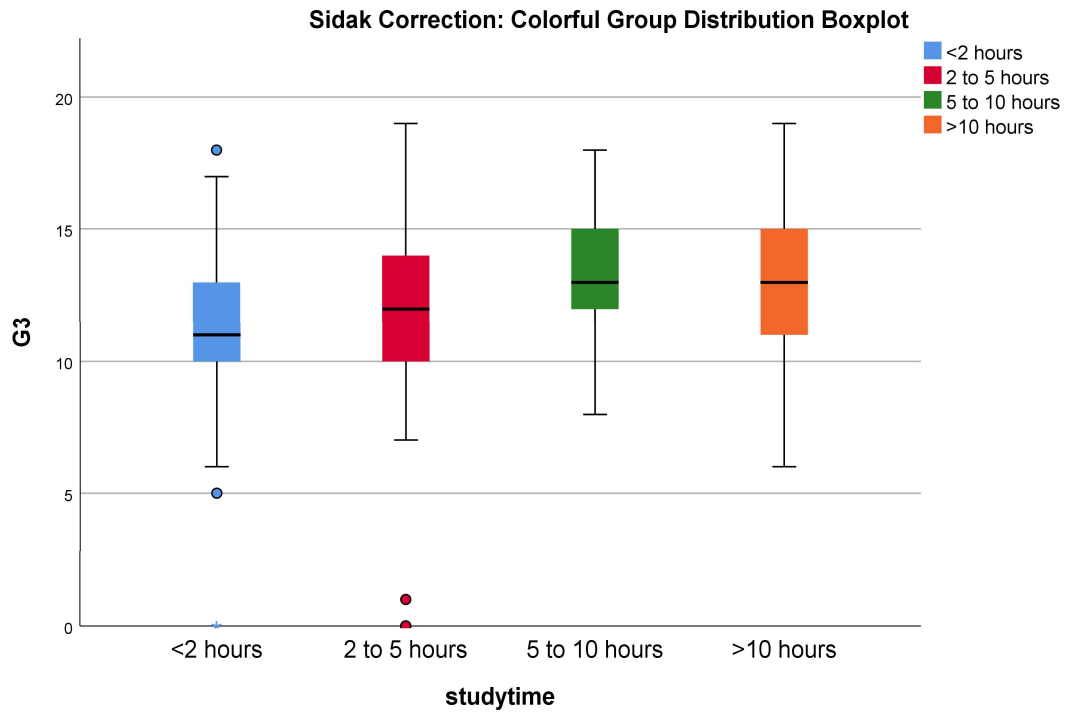
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5 to 10 hours	<2 hours	1.37	3.40
	2 to 5 hours	.17	2.10
	>10 hours	-1.46	1.80
>10 hours	<2 hours	.70	3.72
	2 to 5 hours	-.51	2.44
	5 to 10 hours	-1.80	1.46

*. The mean difference is significant at the 0.05 level.

GGraph

Reference Output: Bonferroni for Comparison with Sidak
Sidak is commonly slightly less conservative than Bonferroni



Graph

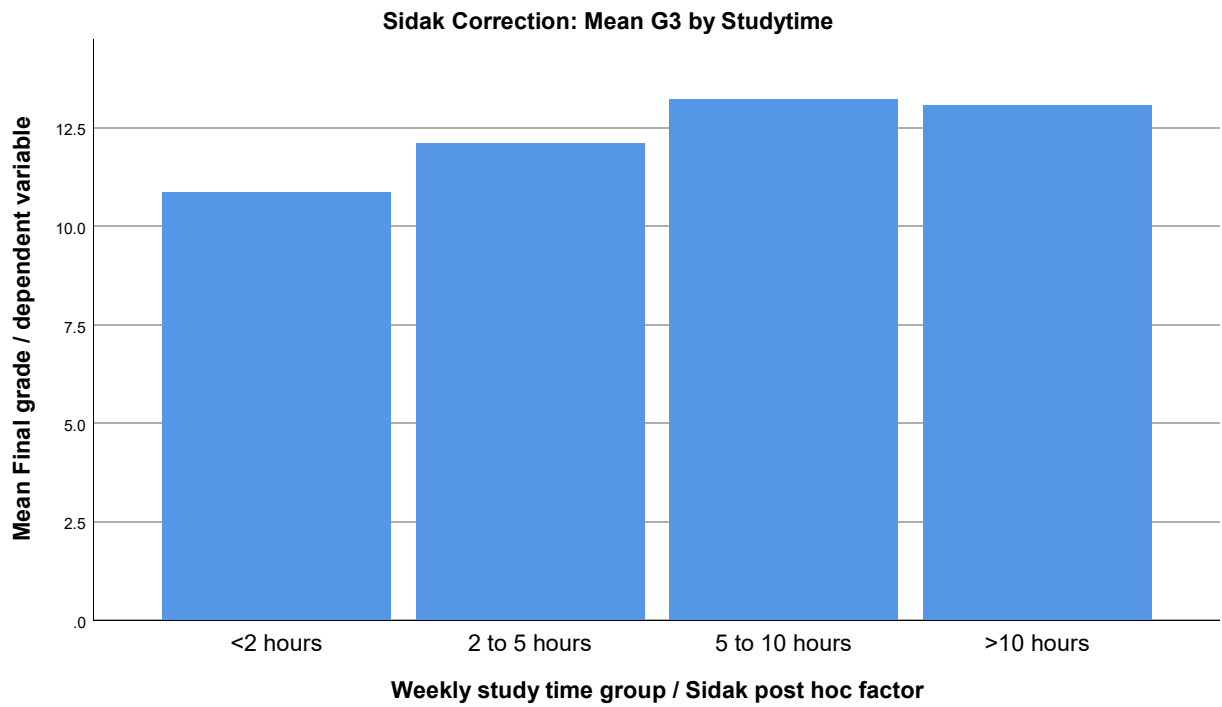
```
>Warning # 17848
```

```
>The requested bar chart type cannot be drawn with the provided data. Ins
```

```
,
```

```
>Graphics will attempt to draw a simple bar chart.
```

Reference Output: Bonferroni for Comparison with Sidak
Sidak is commonly slightly less conservative than Bonferroni



Sidak Correction Final Run for Table Export

Oneway

Descriptives

Final grade / dependent variable

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					Lower Bound	Upper Bound
<2 hours	212	10.84	3.219	.221	10.41	11.28
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		Levene Statistic	df1	df2	Sig.
Final grade / dependent variable	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

Sidak Correction Final Run for Table Export

ANOVA

Final grade / dependent variable

	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			

Post Hoc Tests

Multiple Comparisons

Dependent Variable: Final grade / dependent variable

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	2 to 5 hours	.965	.558	.409
	5 to 10 hours	-.170	.616	1.000

Sidak Correction Final Run for Table Export

Multiple Comparisons

Dependent Variable: Final grade / dependent variable

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	>10 hours	-3.72	-.71
2 to 5 hours	<2 hours	.51	1.98
	5 to 10 hours	-2.10	-.17
	>10 hours	-2.44	.51
5 to 10 hours	<2 hours	1.37	3.39
	2 to 5 hours	.17	2.10
	>10 hours	-1.46	1.80
>10 hours	<2 hours	.71	3.72
	2 to 5 hours	-.51	2.44
	5 to 10 hours	-1.80	1.46

*. The mean difference is significant at the 0.05 level.

Output Export

Warnings

The name EMBEDBOOKMARKS is not a recognized subcommand.

Execution of this command stops.
