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Student-Newman-Keuls Test / SNK Post Hoc Analysis

Student-Newman-Keuls Test / SNK Post Hoc Analysis
Import dataset.csv from the Student Newman Keuls Test folder

Student-Newman-Keuls Test Context
Group descriptives for G3 by studytime

Means

[StudentNewmanKeulsData] D:\DATA ANALYSIS\F Post Hoc Tests\Student Newman Keuls Test\SPSS_Output\sav\Student-Newman-Keuls-Test-data.sav

Case Processing Summary

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

Report

Final grade / dependent variable

Weekly study time group / SNK 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

```
>Warning # 2004.  Command name: SUBTITLE
>The subtitle given exceeds 60 characters in length.  The first 60 characters
>will be used.
```

Assumption and distribution context before SNK
Boxplot, histogram, normality, and Levene homogeneity contex

Explore

Weekly study time group / SNK post hoc factor

Case Processing Summary

	Weekly study time group / SNK post hoc factor	Cases			
		Valid		Missing	
		N	Percent	N	Percent
Final grade / dependent variable	<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

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

Assumption and distribution context before SNK
Boxplot, histogram, normality, and Levene homogeneity contex

Descriptives

	Weekly study time group / SNK 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	11.73
			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	12.72
			Upper Bound	13.73
		5% Trimmed Mean		13.27
		Median		13.00
		Variance		6.261

Assumption and distribution context before SNK
Boxplot, histogram, normality, and Levene homogeneity contex

Descriptives

	Weekly study time group / SNK 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		

Assumption and distribution context before SNK
Boxplot, histogram, normality, and Levene homogeneity contex

Descriptives

Weekly study time group / SNK 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

Assumption and distribution context before SNK
Boxplot, histogram, normality, and Levene homogeneity contex

Descriptives

Weekly study time group / SNK 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 / SNK 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

Assumption and distribution context before SNK
Boxplot, histogram, normality, and Levene homogeneity contex

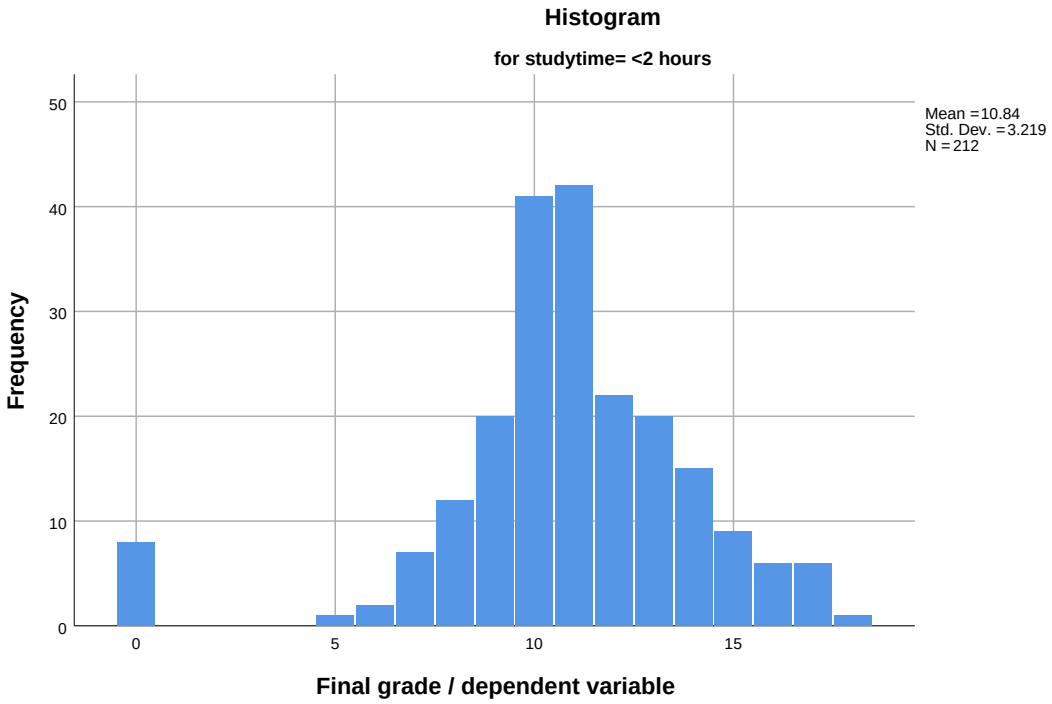
Tests of Normality

	Weekly study time group / SNK post hoc factor	Shapiro-Wilk df	Shapiro-Wilk 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

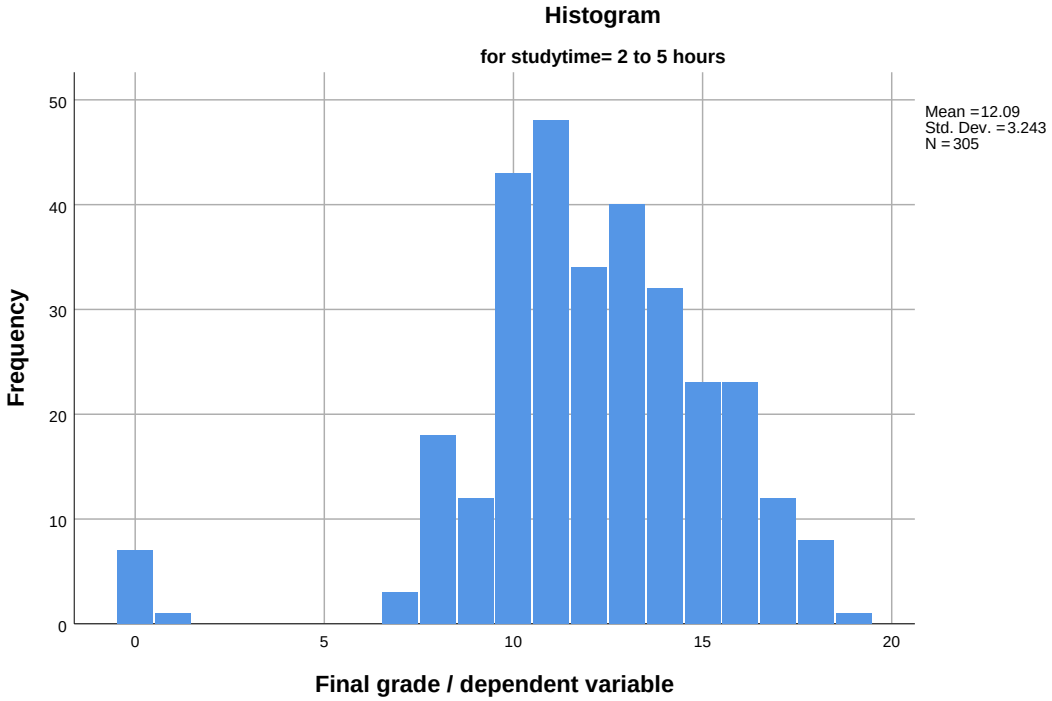
a. Lilliefors Significance Correction

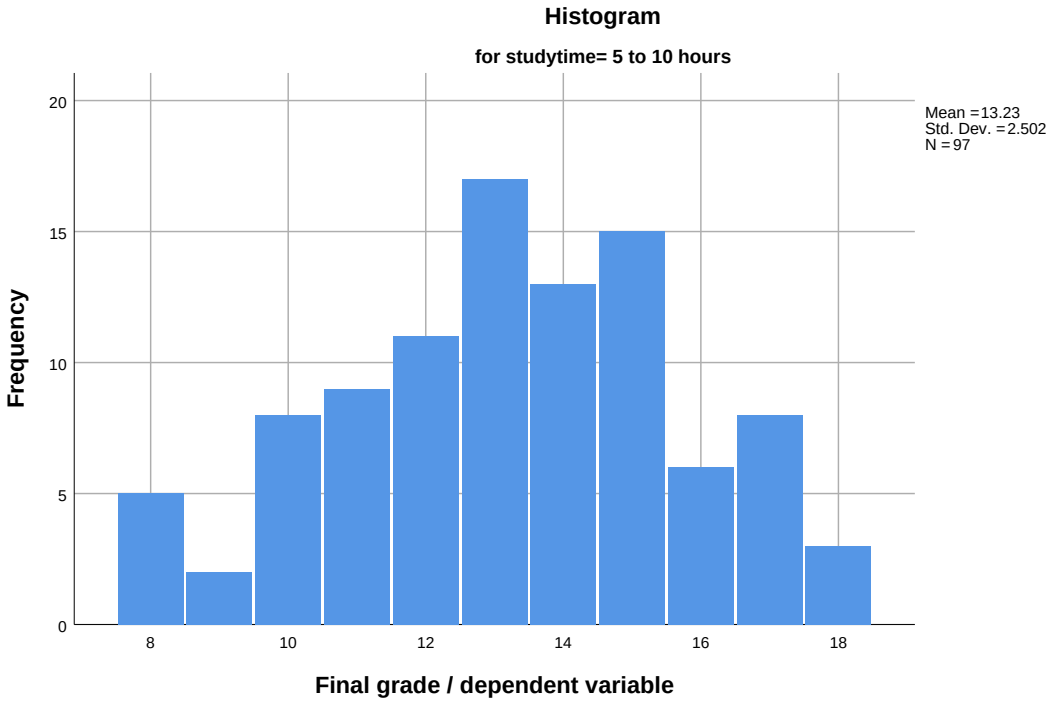
Final grade / dependent variable

Histograms

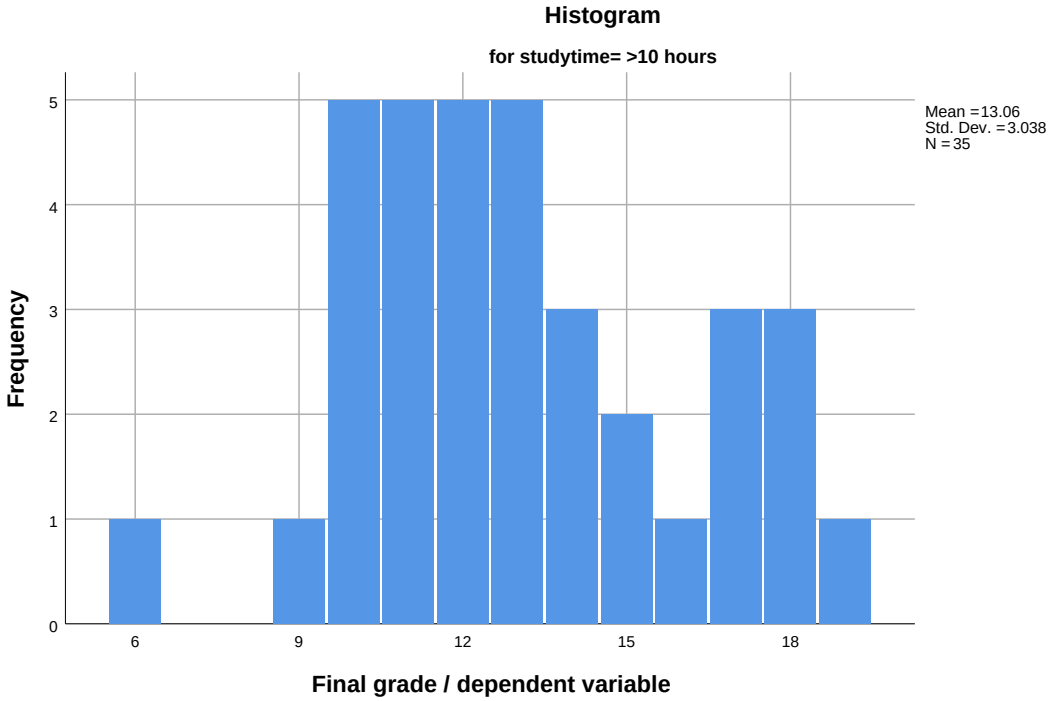


Assumption and distribution context before SNK
Boxplot, histogram, normality, and Levene homogeneity contex



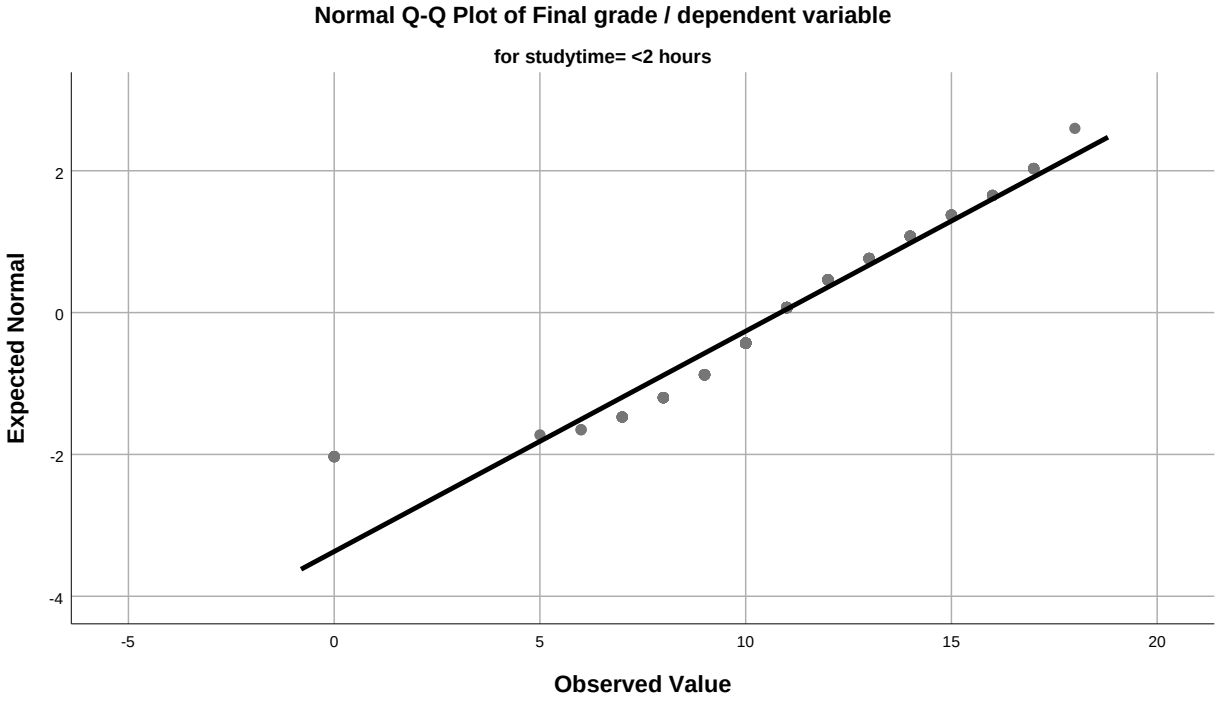


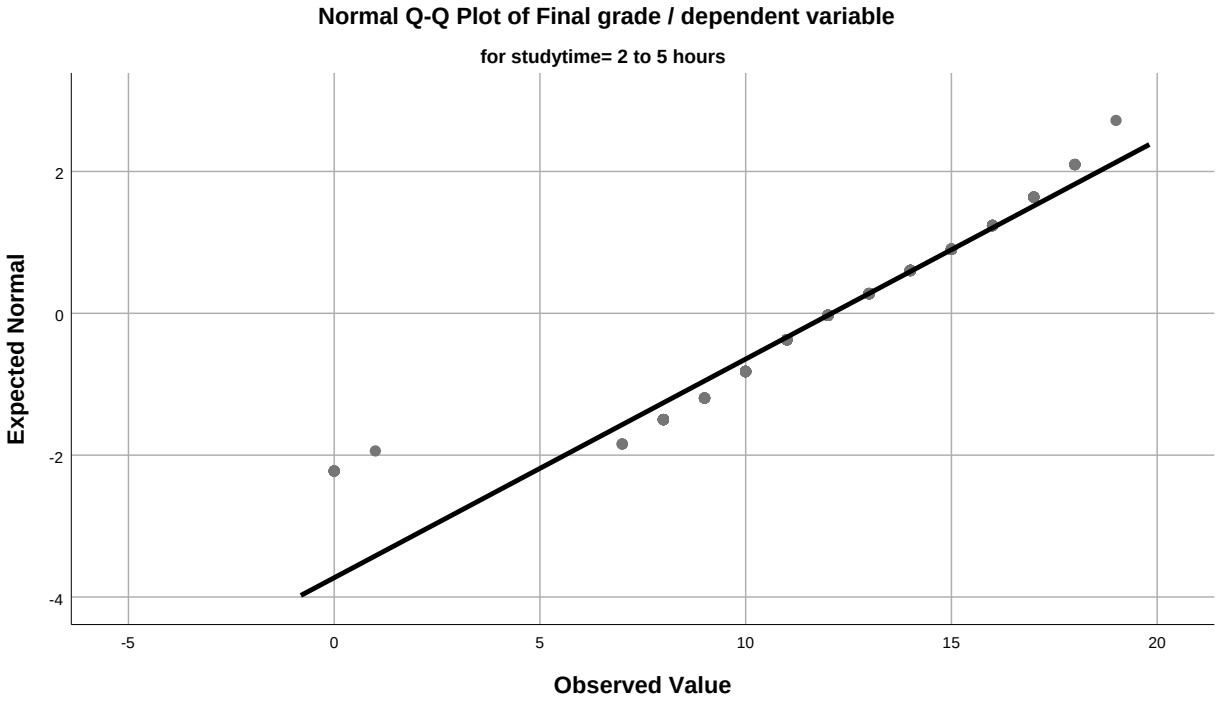
Assumption and distribution context before SNK
Boxplot, histogram, normality, and Levene homogeneity contex



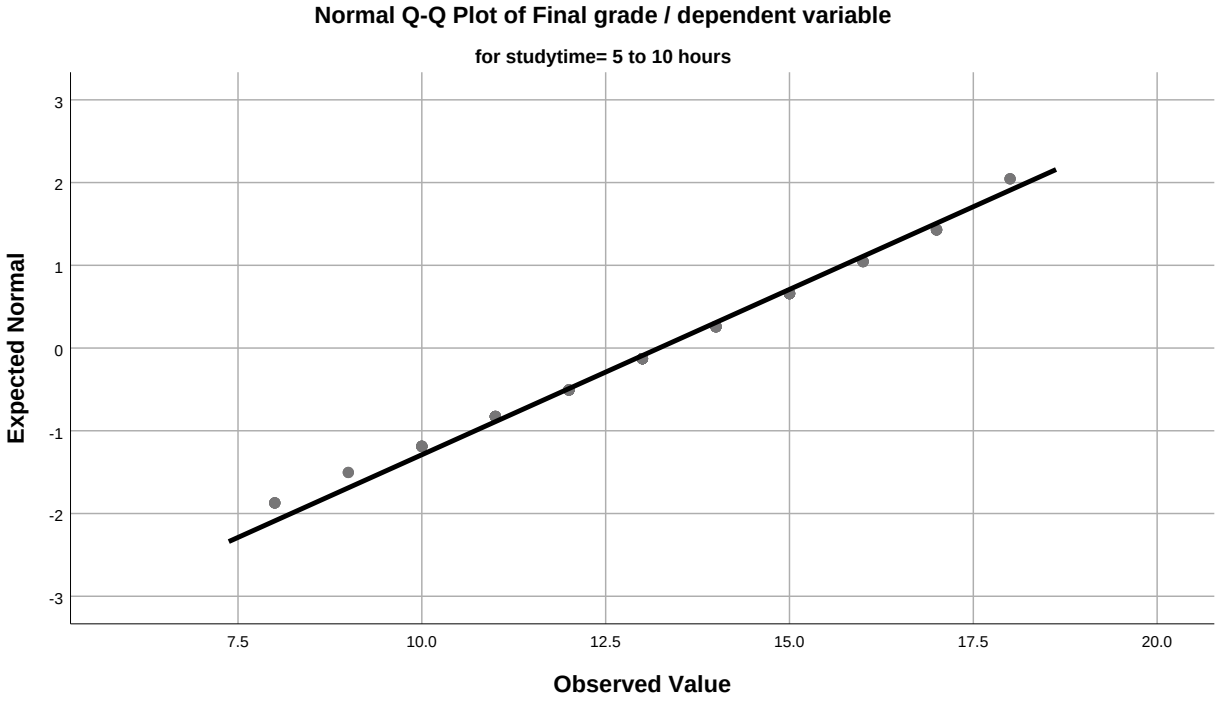
Normal Q-Q Plots

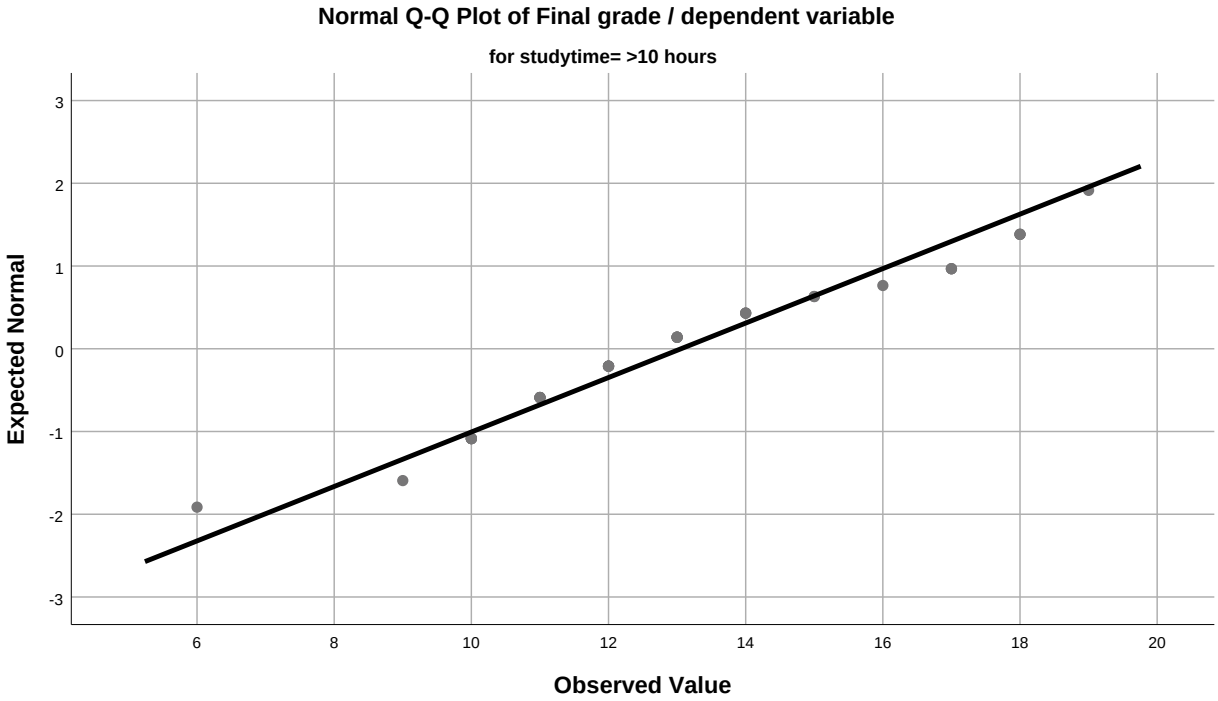
Assumption and distribution context before SNK
Boxplot, histogram, normality, and Levene homogeneity contex





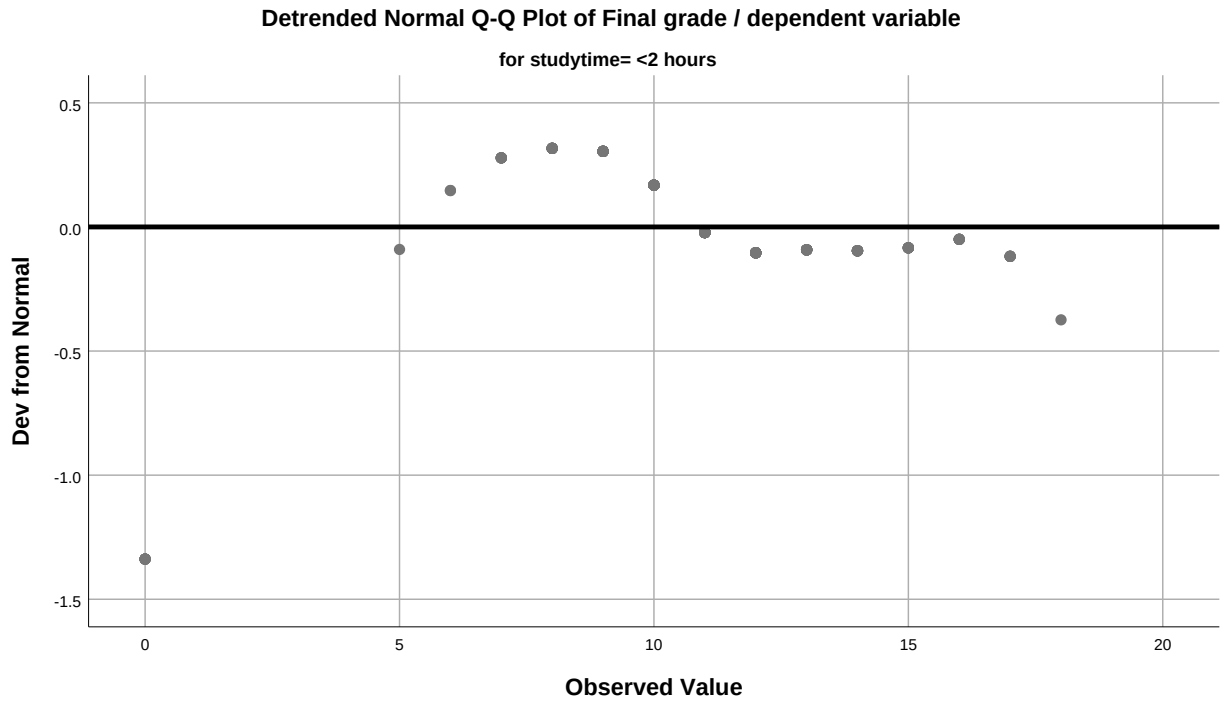
Assumption and distribution context before SNK
Boxplot, histogram, normality, and Levene homogeneity contex



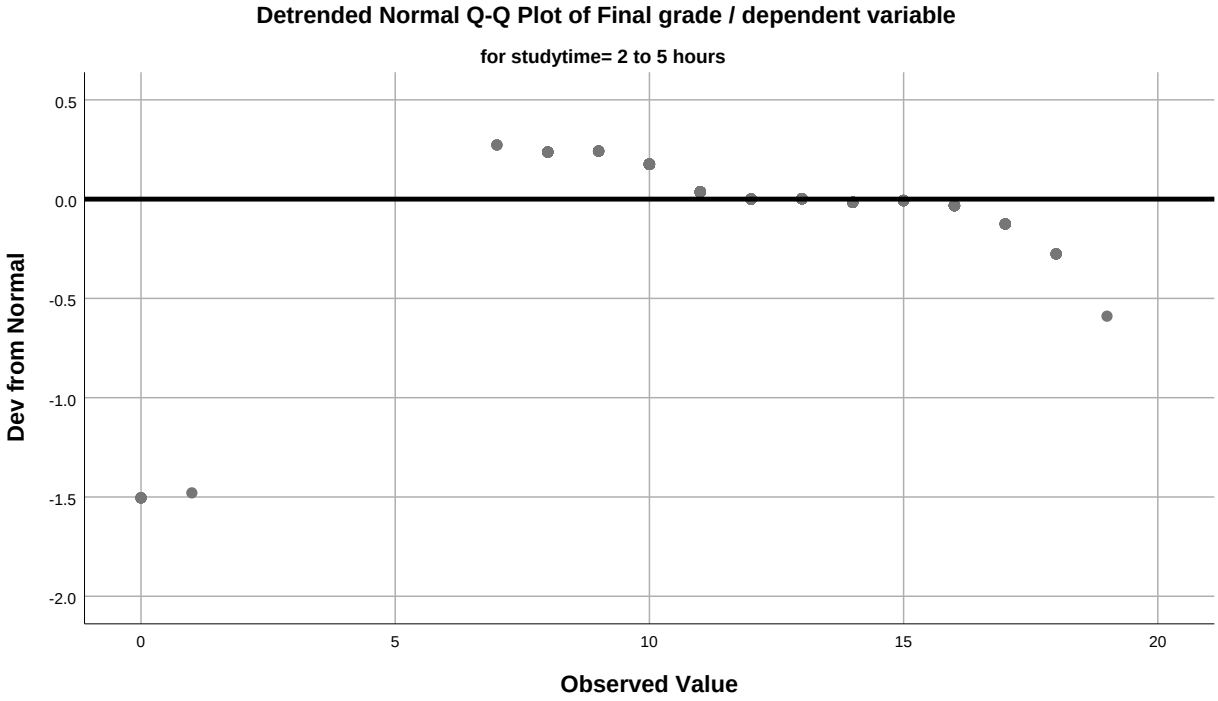


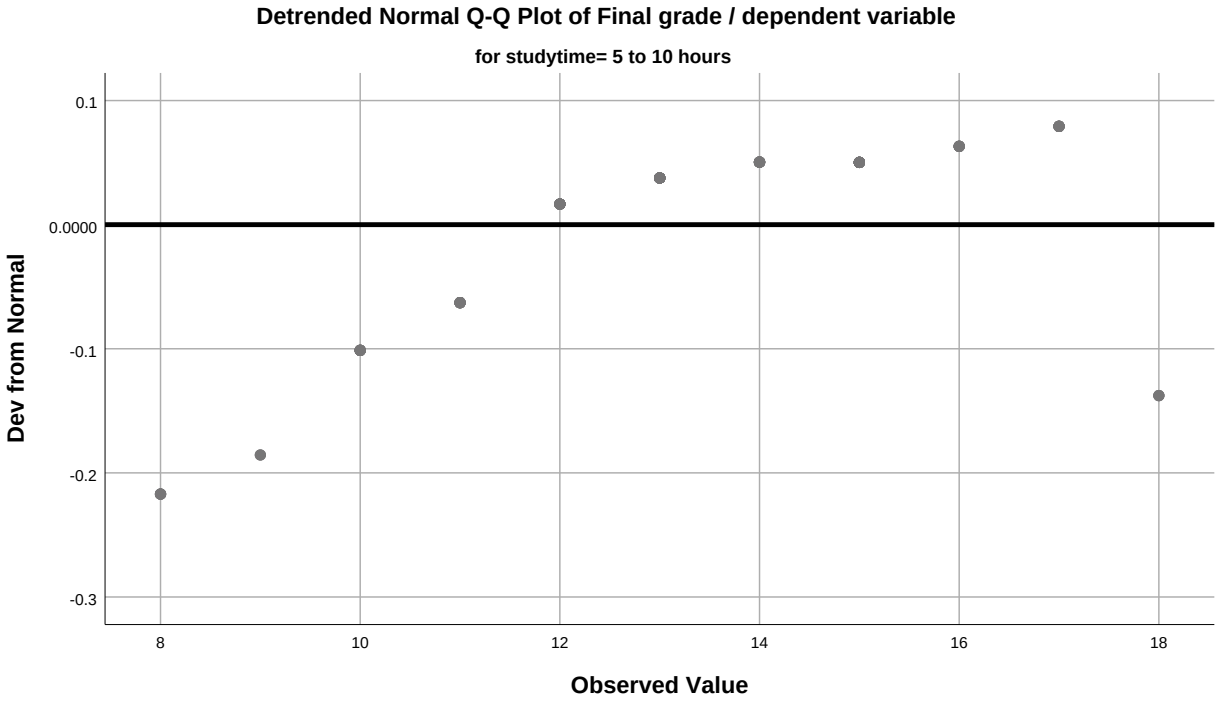
Assumption and distribution context before SNK
Boxplot, histogram, normality, and Levene homogeneity contex

Detrended Normal Q-Q Plots

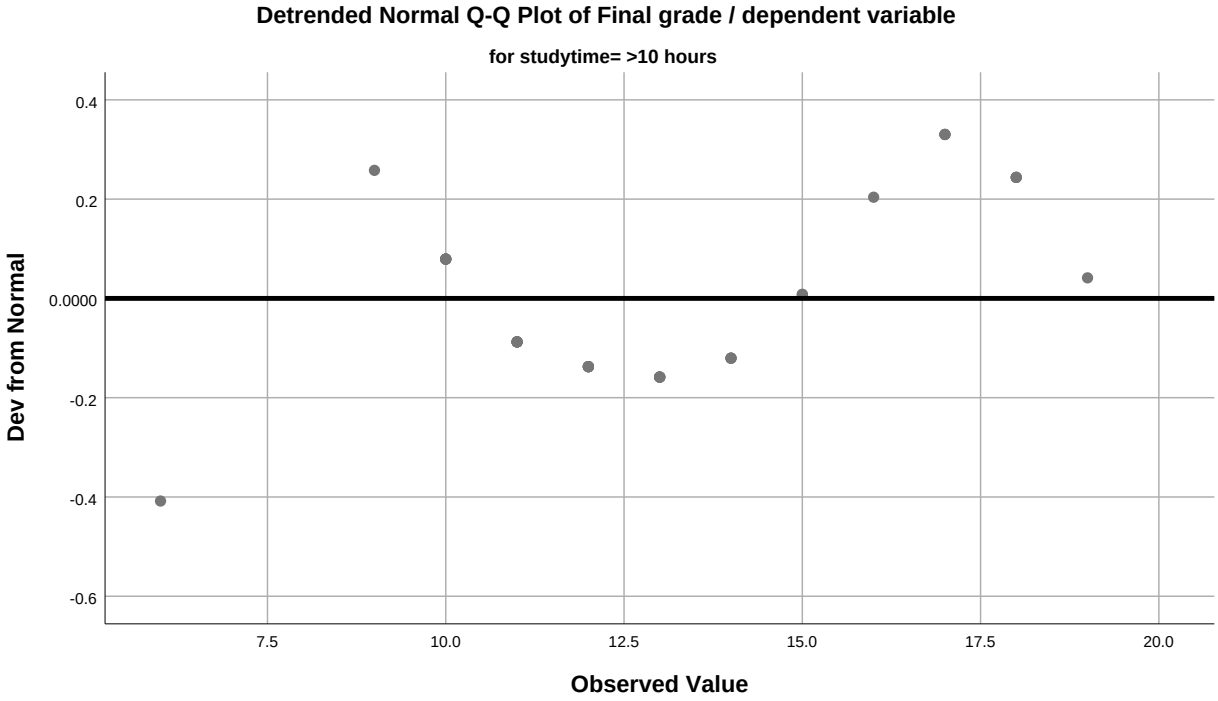


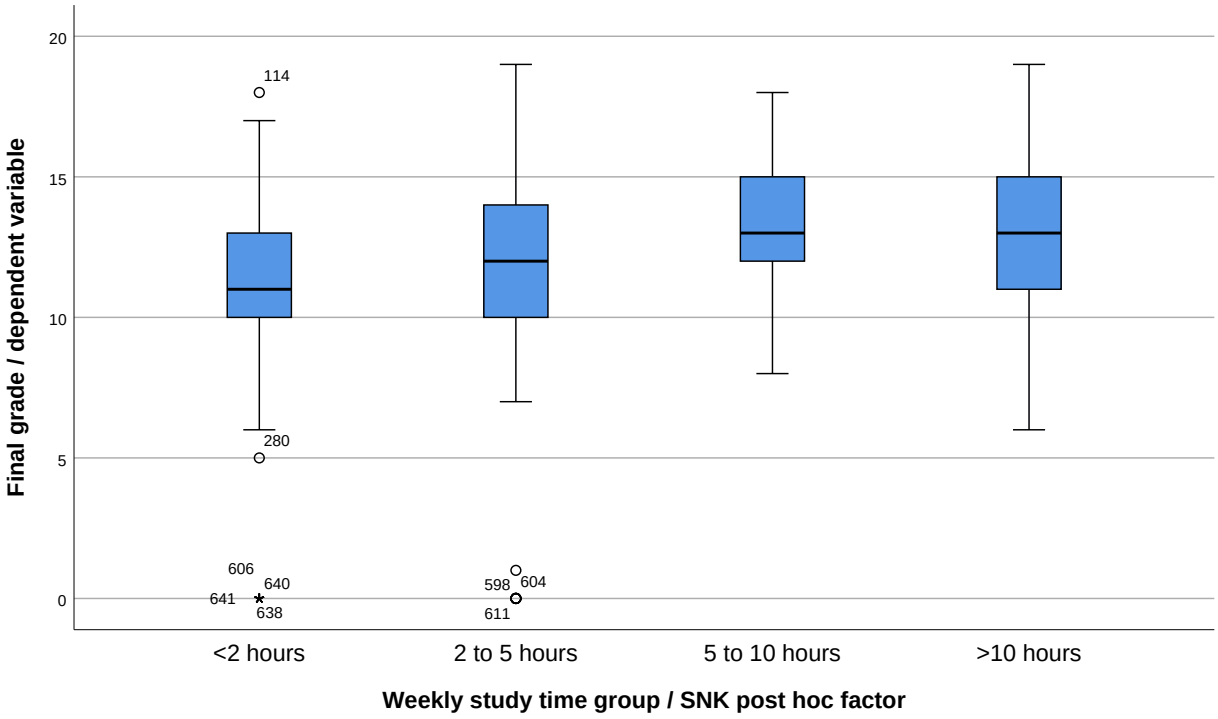
Assumption and distribution context before SNK
Boxplot, histogram, normality, and Levene homogeneity contex





Assumption and distribution context before SNK
Boxplot, histogram, normality, and Levene homogeneity contex





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>Warning # 2004.  Command name: SUBTITLE
>The subtitle given exceeds 60 characters in length.  The first 60 characters
>will be used.
```

One-way ANOVA with Student-Newman-Keuls Post Hoc Test
Dependent variable: G3; factor: studytime; true SNK requeste

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

One-way ANOVA with Student-Newman-Keuls Post Hoc Test
Dependent variable: G3; factor: studytime; true SNK requeste

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

Homogeneous Subsets

Final grade / dependent variable

Student-Newman-Keuls[a,b]

Weekly study time group / SNK post hoc factor	N	Subset for alpha = 0.05		
		1	2	3
<2 hours	212	10.84		
2 to 5 hours	305		12.09	
>10 hours	35			13.06
5 to 10 hours	97			13.23
Sig.		1.000	1.000	.723

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 85.331.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Graph

```
>Warning # 17849
>The requested line chart type cannot be drawn with the provided data.
>Instead, Graphics will attempt to draw a simple line chart.
```

One-way ANOVA with Student-Newman-Keuls Post Hoc Test
Dependent variable: G3; factor: studytime; true SNK requeste