

**Host**

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**Host**

Box Cox Transformation

Box Cox Transformation  
Import data

Original normality

Original normality  
G3 before transform

## Explore

[BoxCoxData] D:\DATA ANALYSIS\B Normality and Assumption Tests\Box Cox Transformation\SPSS\_Output\sav\Box-Cox-Transformation-data.sav

### Case Processing Summary

	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
G3	649	100.0%	0	0.0%	649	100.0%

### Descriptives

		Statistic	Std. Error	
G3	Mean	11.91	.127	
	95% Confidence Interval for Mean	Lower Bound	11.66	
		Upper Bound	12.16	
	5% Trimmed Mean	12.06		
	Median	12.00		
	Variance	10.437		
	Std. Deviation	3.231		
	Minimum	0		
	Maximum	19		
	Range	19		
	Interquartile Range	4		
	Skewness	-.913	.096	
	Kurtosis	2.712	.192	

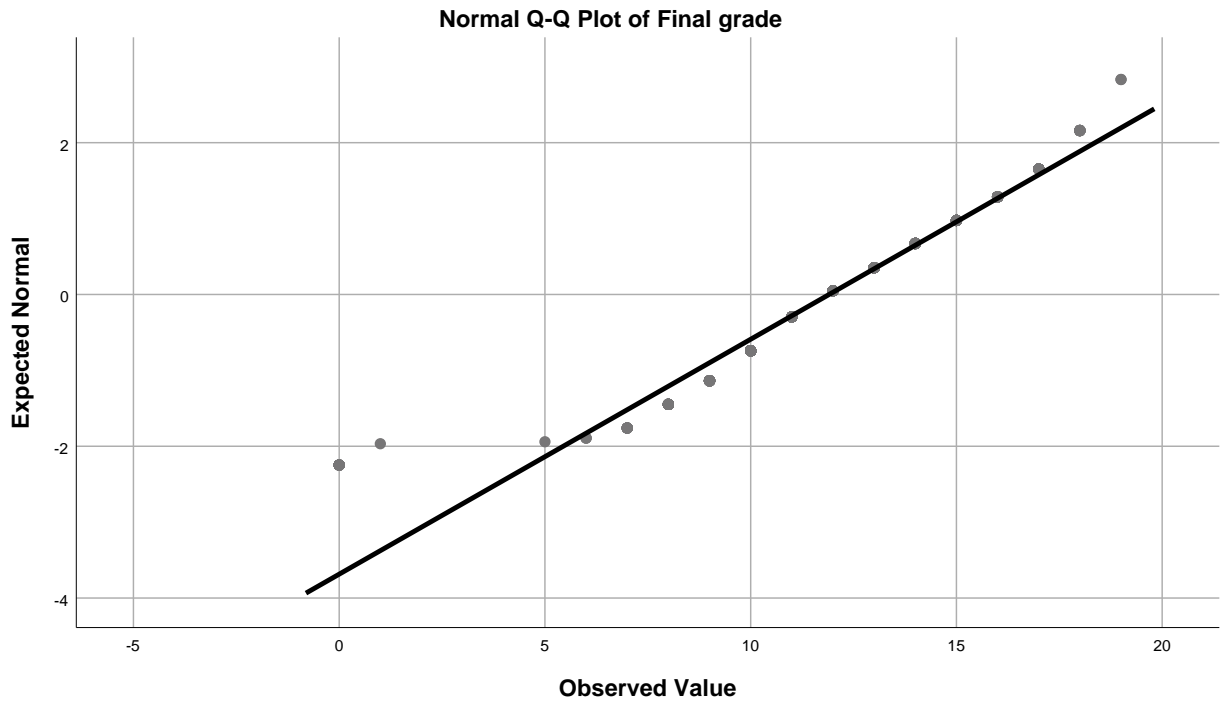
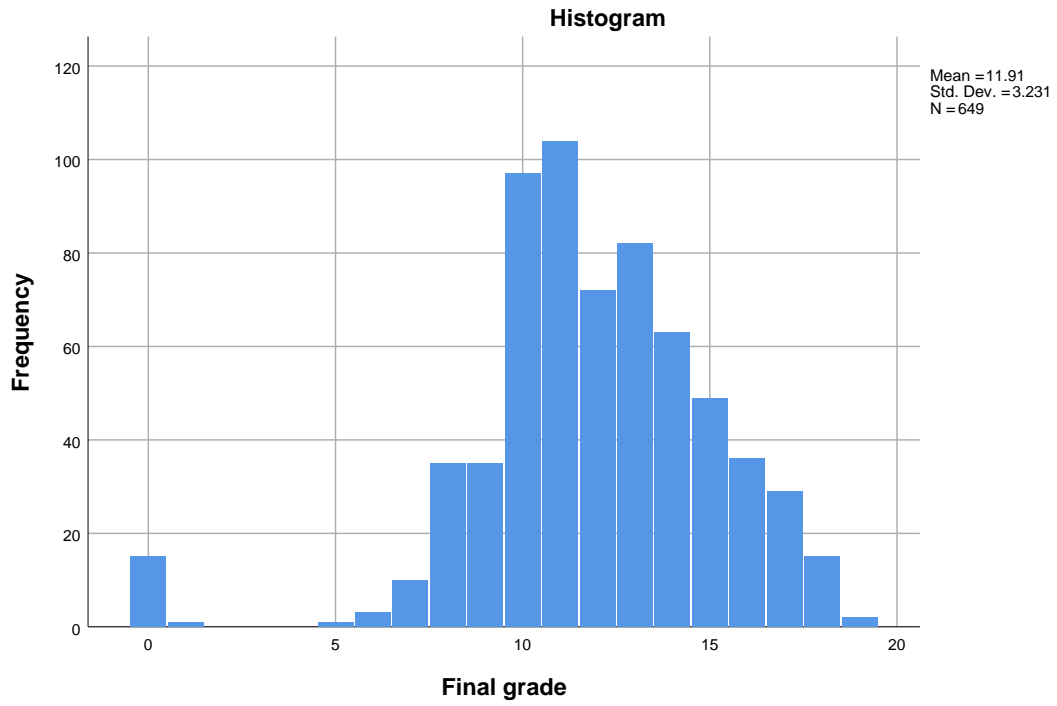
### Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
G3	.124	649	.000	.926	649	.000

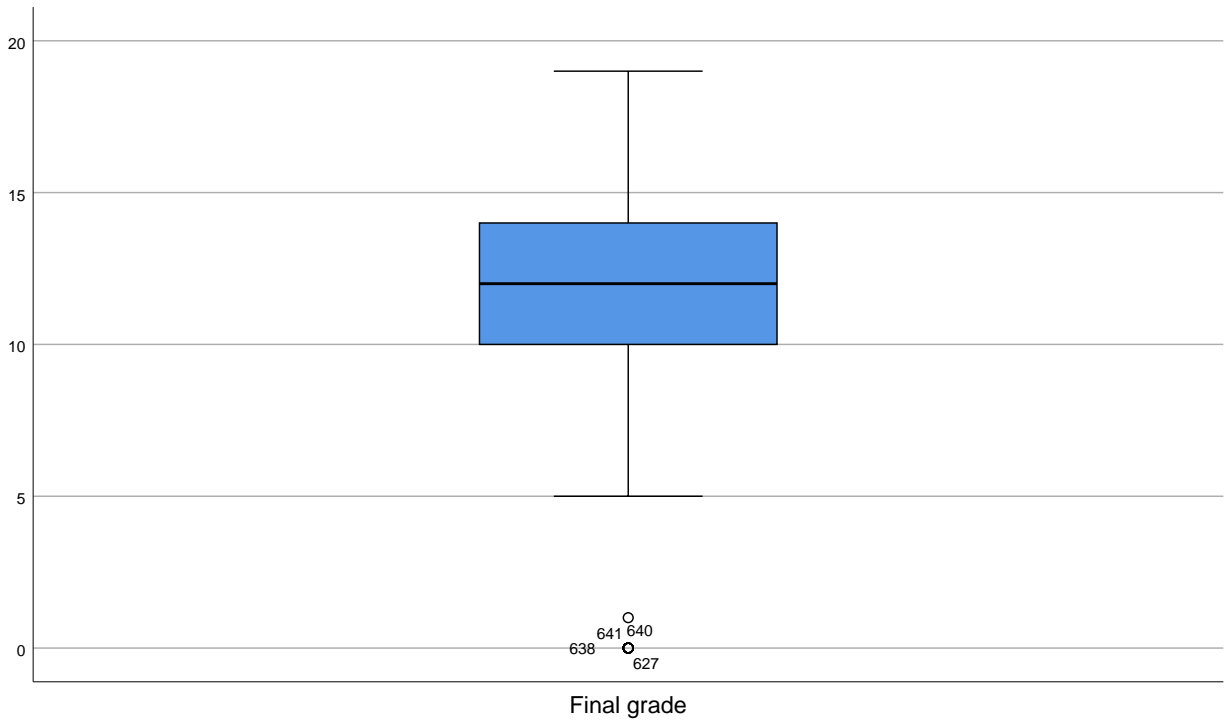
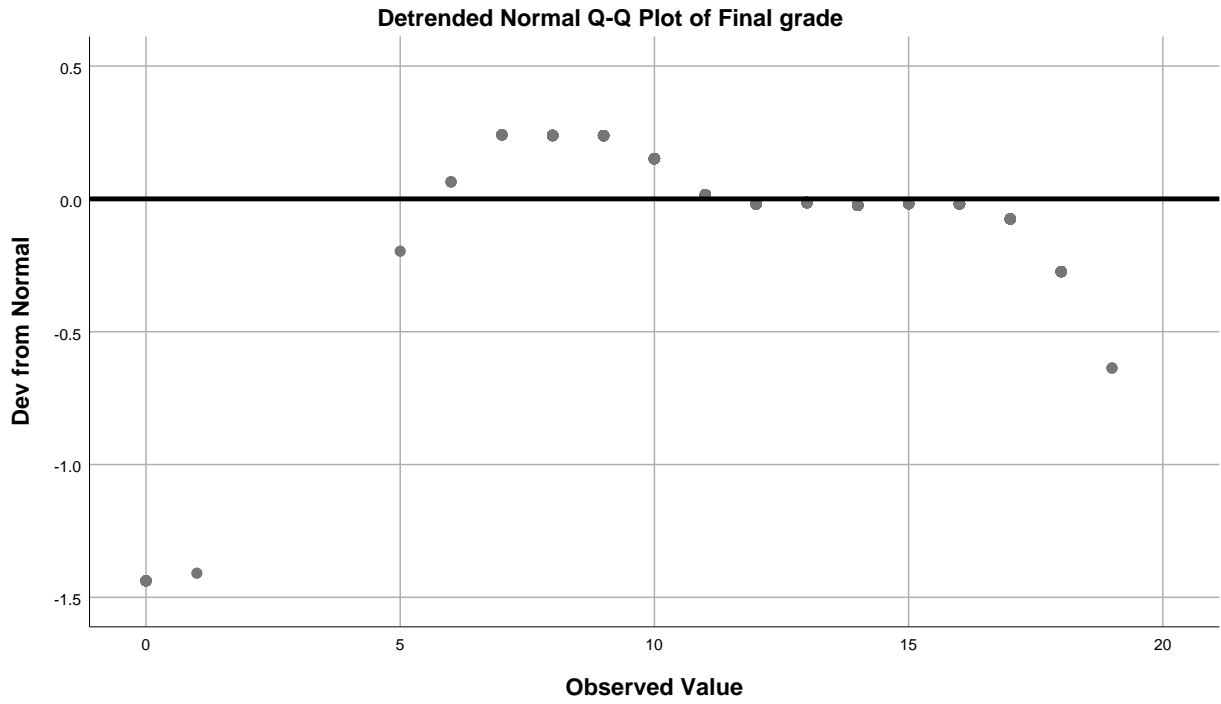
a. Lilliefors Significance Correction

## Final grade

Original normality  
G3 before transform



Original normality  
G3 before transform



Box Cox candidates

Box Cox candidates  
Descriptives

**Descriptives**

**Descriptive Statistics**

	N Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic	Skewness Statistic
G3	649	0	19	11.91	3.231	-.913
G3_shifted	649	1.0000	20.0000	12.906009	3.2306562	-.913
G3_boxcox_lam_m1	649	.0000	.9500	.899083	.1403702	-6.128
G3_boxcox_lam_m05	649	.0000	1.5528	1.406334	.2265156	-5.607
G3_boxcox_lam_0	649	.0000	2.9957	2.497926	.4408516	-4.264
G3_boxcox_lam_05	649	.0000	6.9443	5.103093	1.0825465	-2.369
G3_boxcox_lam_1	649	.0000	19.0000	11.906009	3.2306562	-.913
Valid N (listwise)	649					

**Descriptive Statistics**

	Skewness	Kurtosis	
	Std. Error	Statistic	Std. Error
G3	.096	2.712	.192
G3_shifted	.096	2.712	.192
G3_boxcox_lam_m1	.096	36.413	.192
G3_boxcox_lam_m05	.096	31.987	.192
G3_boxcox_lam_0	.096	21.649	.192
G3_boxcox_lam_05	.096	9.475	.192
G3_boxcox_lam_1	.096	2.712	.192
Valid N (listwise)			

Log candidate

Log candidate  
Lambda zero

## Explore

### Case Processing Summary

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
G3_boxcox_lam_0	649	100.0%	0	0.0%	649	100.0%

### Descriptives

		Statistic	Std. Error	
G3_boxcox_lam_0	Mean	2.497926	.0173049	
	95% Confidence Interval for Mean	Lower Bound	2.463946	
		Upper Bound	2.531907	
	5% Trimmed Mean	2.554082		
	Median	2.564949		
	Variance	.194		
	Std. Deviation	.4408516		
	Minimum	.0000		
	Maximum	2.9957		
	Range	2.9957		
	Interquartile Range	.3102		
	Skewness	-4.264	.096	
	Kurtosis	21.649	.192	

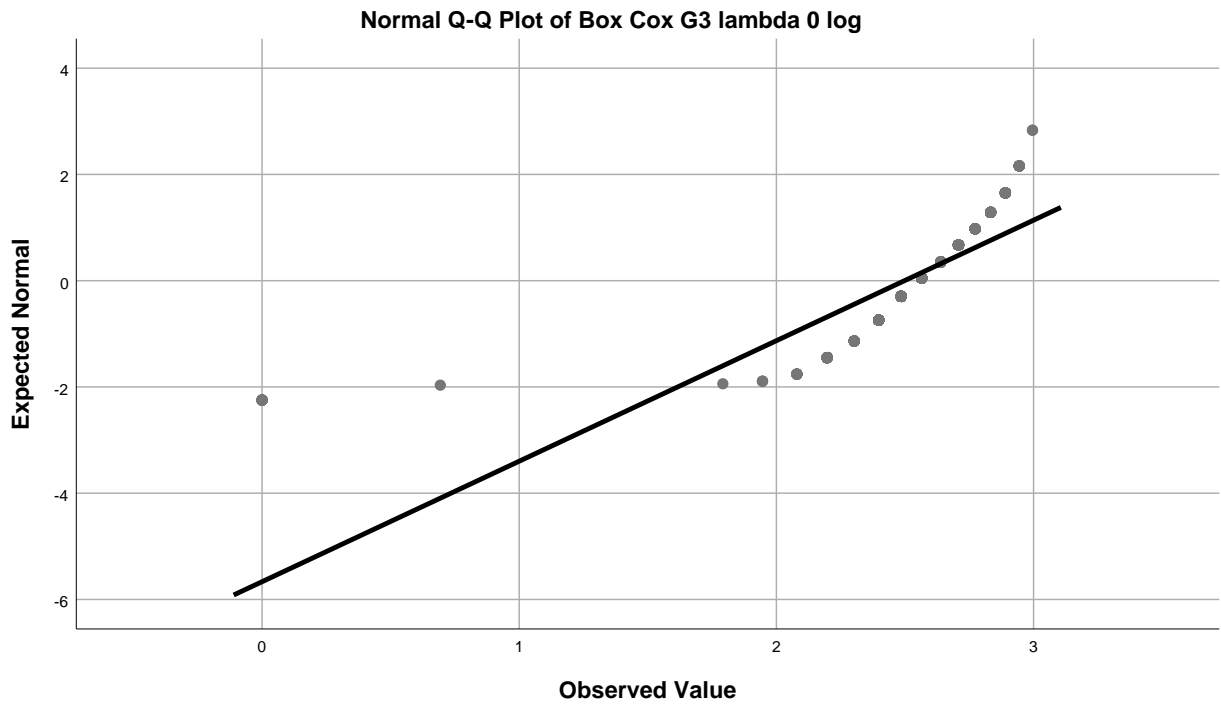
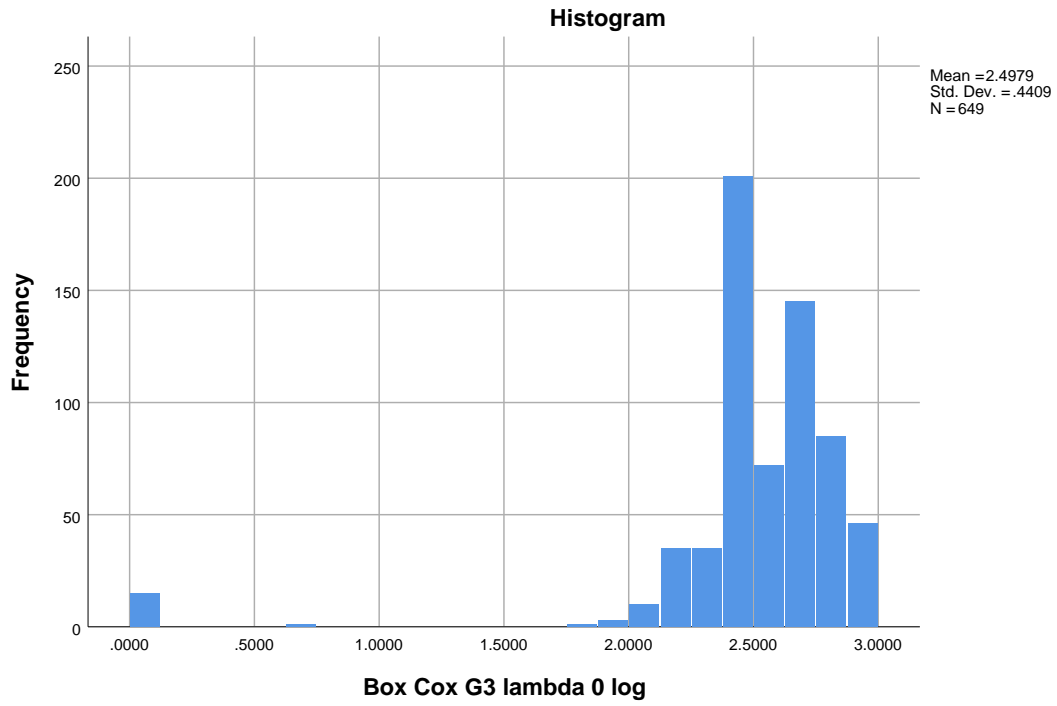
### Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
G3_boxcox_lam_0	.256	649	.000	.561	649	.000

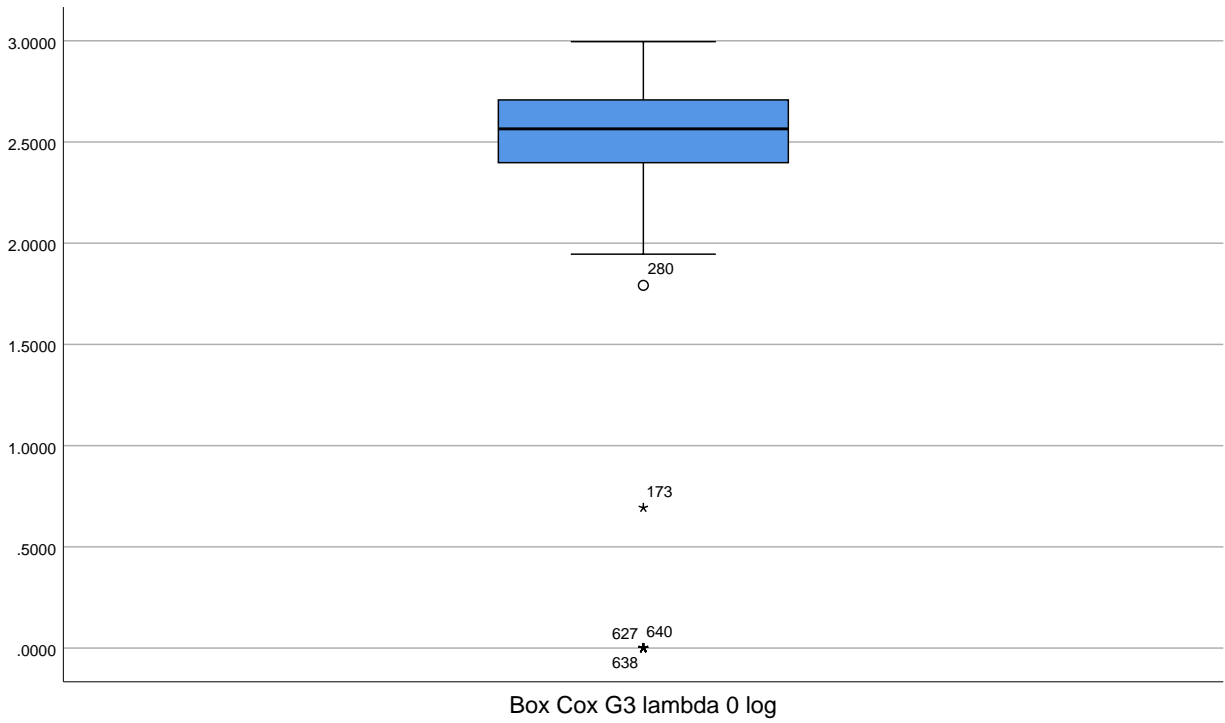
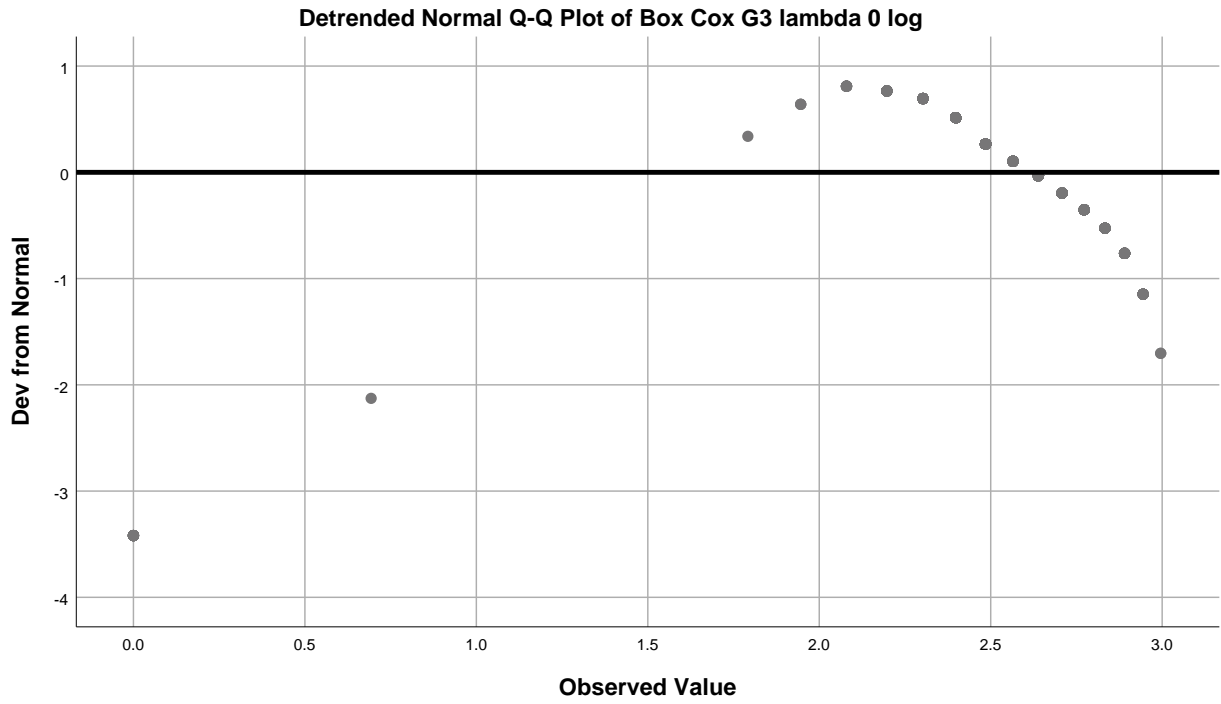
a. Lilliefors Significance Correction

## Box Cox G3 lambda 0 log

Log candidate  
Lambda zero



Log candidate  
Lambda zero



Square root candidate

Square root candidate  
Lambda point five

## Explore

### Case Processing Summary

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
	G3_boxcox_lam_05	649	100.0%	0	0.0%	649

### Descriptives

		Statistic	Std. Error	
G3_boxcox_lam_05	Mean	5.103093	.0424937	
	95% Confidence Interval for Mean	Lower Bound	5.019651	
		Upper Bound	5.186535	
	5% Trimmed Mean	5.199596		
	Median	5.211103		
	Variance	1.172		
	Std. Deviation	1.0825465		
	Minimum	.0000		
	Maximum	6.9443		
	Range	6.9443		
	Interquartile Range	1.1127		
	Skewness	-2.369	.096	
	Kurtosis	9.475	.192	

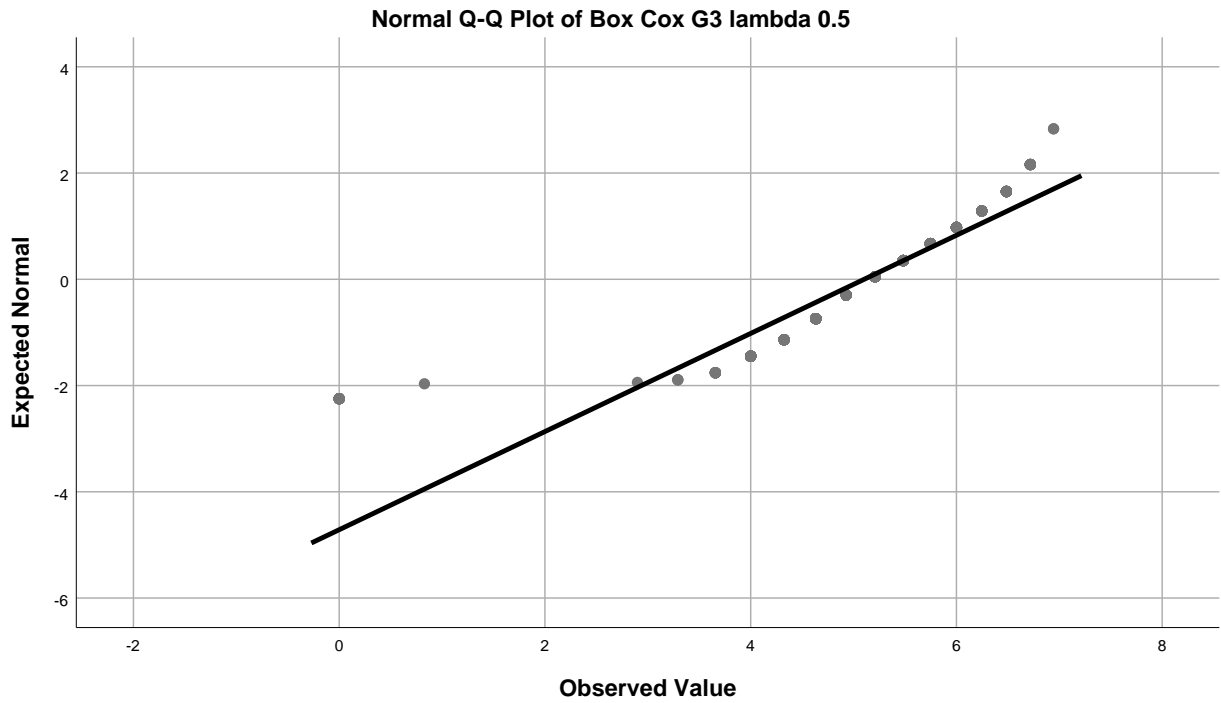
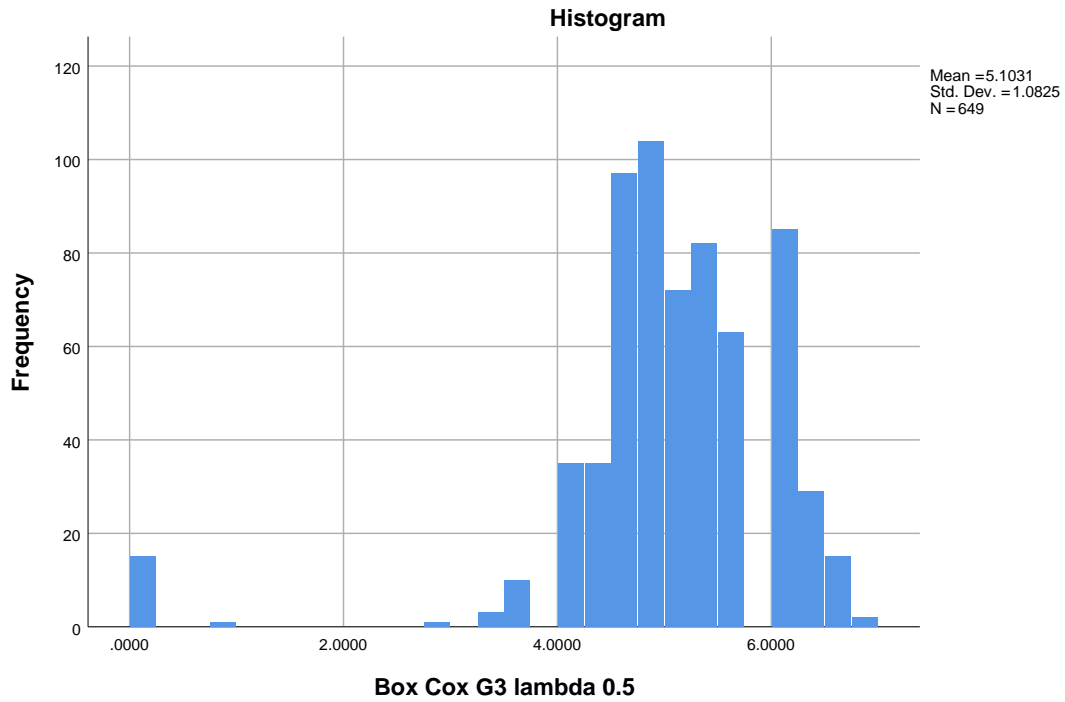
### Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
G3_boxcox_lam_05	.178	649	.000	.791	649	.000

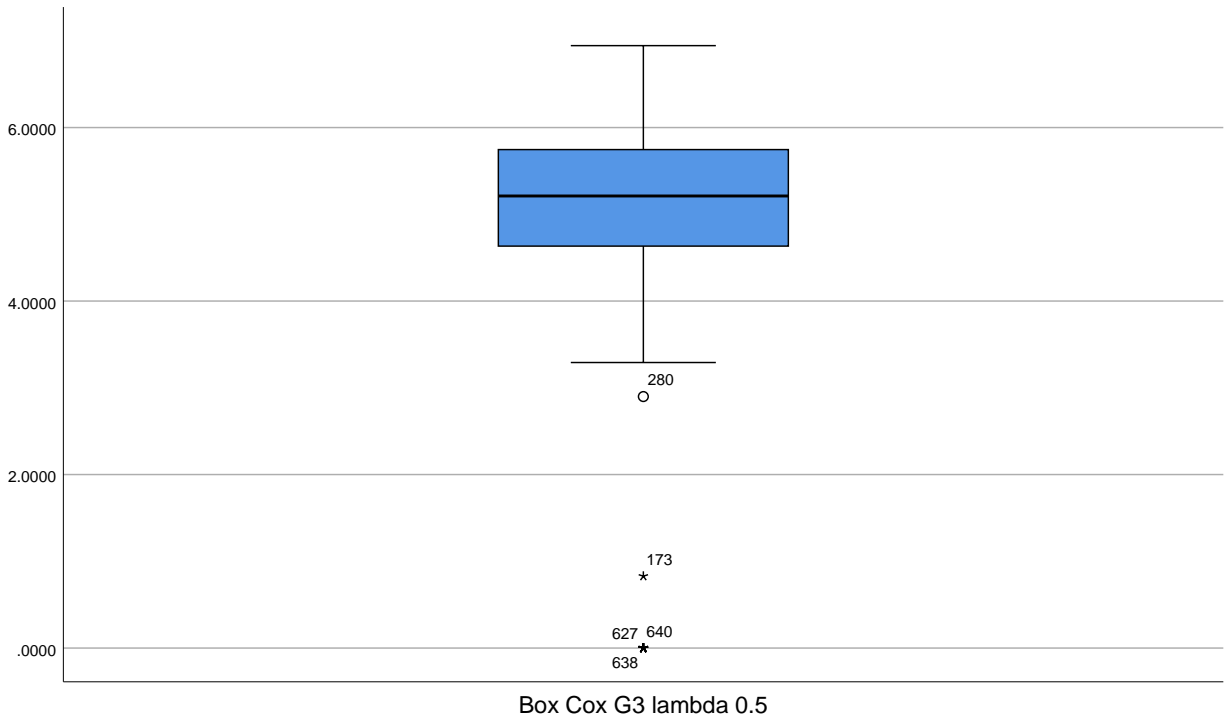
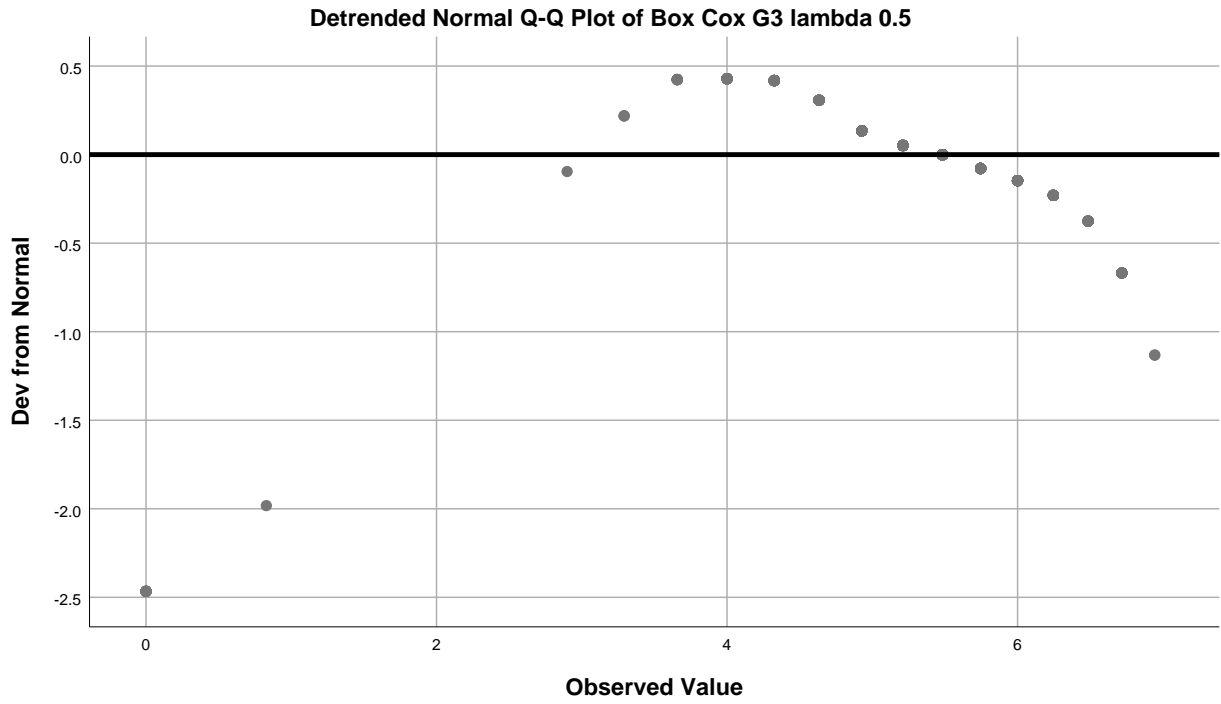
a. Lilliefors Significance Correction

## Box Cox G3 lambda 0.5

Square root candidate  
Lambda point five



Square root candidate  
Lambda point five



Group transformed scores

Group transformed scores  
By sex

**Means**

**Case Processing Summary**

	Included		Cases Excluded		Total	
	N	Percent	N	Percent	N	Percent
	G3_boxcox_lam_0 * sex	649	100.0%	0	0.0%	649
G3_boxcox_lam_05 * sex	649	100.0%	0	0.0%	649	100.0%

**Report**

sex		G3_boxcox_lam_0	G3_boxcox_lam_05
F	N	383	383
	Mean	2.534161	5.210206
	Std. Deviation	.3999583	1.0142360
M	N	266	266
	Mean	2.445754	4.948868
	Std. Deviation	.4899161	1.1585952
Total	N	649	649
	Mean	2.497926	5.103093
	Std. Deviation	.4408516	1.0825465