```
1654  0  OUTPUT ACTIVATE TestRetestReliabilityOutput.
1654  0 M>  OUTPUT ACTIVATE TestRetestReliabilityOutput.
1655  0  TITLE 'Test-Retest Reliability'.
1655  0 M>  TITLE 'Test-Retest Reliability'.
```

```
1656  0
1656  0 M>
1657  0  GET DATA
1657  0 M>  GET DATA
1658  0    /TYPE=TXT
1658  0 M>    /TYPE=TXT
1659  0    /FILE='D:\DATA ANALYSIS\K Reliability and Agreement Tests\Test Rete
st Reliability\dataset.csv'
1659  0 M>    /FILE='D:\DATA ANALYSIS\K Reliability and Agreement Tests\Test R
etest Reliability\dataset.csv'
1660  0    /ENCODING='UTF8'
1660  0 M>    /ENCODING='UTF8'
1661  0    /DELCASE=LINE
1661  0 M>    /DELCASE=LINE
1662  0    /DELIMITERS=','
1662  0 M>    /DELIMITERS=','
1663  0    /QUALIFIER='"'
1663  0 M>    /QUALIFIER='"'
1664  0    /ARRANGEMENT=DELIMITED
1664  0 M>    /ARRANGEMENT=DELIMITED
1665  0    /FIRSTCASE=2
1665  0 M>    /FIRSTCASE=2
1666  0    /VARIABLES=
1666  0 M>    /VARIABLES=
1667  0      school A8 sex A8 age F8.0 address A8 famsize A8 Pstatus A8
1667  0 M>      school A8 sex A8 age F8.0 address A8 famsize A8 Pstatus A8
1668  0      Medu F8.0 Fedu F8.0 Mjob A16 Fjob A16 reason A16 guardian A16
1668  0 M>      Medu F8.0 Fedu F8.0 Mjob A16 Fjob A16 reason A16 guardian A16
1669  0      traveltime F8.0 studytime F8.0 failures F8.0 schoolsup A8 famsup
A8
1669  0 M>      traveltime F8.0 studytime F8.0 failures F8.0 schoolsup A8 fams
up A8
1670  0      paid A8 activities A8 nursery A8 higher A8 internet A8 romantic A
8
1670  0 M>      paid A8 activities A8 nursery A8 higher A8 internet A8 romanti
c A8
1671  0      famrel F8.0 freetime F8.0 goout F8.0 Dalc F8.0 Walc F8.0 health F
8.0
```

```
1671  0 M>      famrel F8.0 freetime F8.0 goout F8.0 Dalc F8.0 Walc F8.0 healt
h F8.0
1672  0      absences F8.0 G1 F8.0 G2 F8.0 G3 F8.0.
1672  0 M>      absences F8.0 G1 F8.0 G2 F8.0 G3 F8.0.
1673  0  DATASET NAME TestRetestReliabilityData.
1673  0 M>  DATASET NAME TestRetestReliabilityData.
1674  0  EXECUTE.
1674  0 M>  EXECUTE.
1675  0
1675  0 M>
1676  0  COMPUTE subject_id=$CASENUM.
1676  0 M>  COMPUTE subject_id=$CASENUM.
1677  0  COMPUTE Dalc_R=6-Dalc.
1677  0 M>  COMPUTE Dalc_R=6-Dalc.
1678  0  COMPUTE Walc_R=6-Walc.
1678  0 M>  COMPUTE Walc_R=6-Walc.
1679  0  RECODE schoolsup famsup paid activities higher internet ('no'=0) ('ye
s'=1)
1679  0 M>  RECODE schoolsup famsup paid activities higher internet ('no'=0) (
'yes'=1)
1680  0    INTO schoolsup_b famsup_b paid_b activities_b higher_b internet_b.
1680  0 M>    INTO schoolsup_b famsup_b paid_b activities_b higher_b internet_
b.
1681  0  RECODE G1 G2 G3 (LO THRU 9=1) (10 THRU 13=2) (14 THRU HI=3)
1681  0 M>  RECODE G1 G2 G3 (LO THRU 9=1) (10 THRU 13=2) (14 THRU HI=3)
1682  0    INTO G1_cat3 G2_cat3 G3_cat3.
1682  0 M>    INTO G1_cat3 G2_cat3 G3_cat3.
1683  0  RECODE G1 G3 (LO THRU 8=1) (9 THRU 10=2) (11 THRU 12=3) (13 THRU 14=4
) (15 THRU HI=5)
1683  0 M>  RECODE G1 G3 (LO THRU 8=1) (9 THRU 10=2) (11 THRU 12=3) (13 THRU 1
4=4) (15 THRU HI=5)
1684  0    INTO G1_cat5 G3_cat5.
1684  0 M>    INTO G1_cat5 G3_cat5.
1685  0  VARIABLE LEVEL schoolsup_b famsup_b paid_b activities_b higher_b inte
rnet_b G1_cat3 G2_cat3 G3_cat3 G1_cat5 G3_cat5 (NOMINA
            L).
1685  0 M>  VARIABLE LEVEL schoolsup_b famsup_b paid_b activities_b higher_b i
nternet_b G1_cat3 G2_cat3 G3_cat3 G1_cat5 G3_cat5 (NOM
              INAL).
```

```
1686  0  FORMATS subject_id schoolsup_b famsup_b paid_b activities_b higher_b
internet_b G1_cat3 G2_cat3 G3_cat3 G1_cat5 G3_cat5 (F5
           .0).
1686  0 M>  FORMATS subject_id schoolsup_b famsup_b paid_b activities_b higher
_b internet_b G1_cat3 G2_cat3 G3_cat3 G1_cat5 G3_cat5
              (F5.0).
1687  0  EXECUTE.
1687  0 M>  EXECUTE.
1688  0
1688  0 M>
1689  0  * BEGIN METHOD-SPECIFIC SPSS WORKFLOW.
1689  0 M>  * BEGIN METHOD-SPECIFIC SPSS WORKFLOW.
1690  0  TITLE 'Test Retest Reliability'.
1690  0 M>  TITLE 'Test Retest Reliability'.
```

```
1691  0  SUBTITLE 'G1 G2 rank-order stability plus systematic change and measu
rement error'.
1691  0 M>  SUBTITLE 'G1 G2 rank-order stability plus systematic change and me
asurement error'.

>Warning # 2004 on line 1691.  Command name: SUBTITLE
>The subtitle given exceeds 60 characters in length.  The first 60 characters
>will be used.
```

```
1692  0  COMPUTE retest_change=G2-G1.
1692  0 M>  COMPUTE retest_change=G2-G1.
1693  0  CORRELATIONS /VARIABLES=G1 G2 /PRINT=TWOTAIL NOSIG /MISSING=PAIRWISE.
1693  0 M>  CORRELATIONS /VARIABLES=G1 G2 /PRINT=TWOTAIL NOSIG /MISSING=PAIRWI
SE.
```

Correlations

Notes

Output Created		16-JUL-2026 21:10:47
Comments		
Input	Data	D:\DATA ANALYSIS\K Reliability and Agreement Tests\Test Retest Reliability\dataset.csv
	Active Dataset	TestRetestReliabilityData
	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 /PRINT=TWOTAIL NOSIG /MISSING=PAIRWISE.
Resources	Processor Time	00:00:00.08
	Elapsed Time	00:00:00.05

```
[TestRetestReliabilityData]
```

Correlations

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

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

```
1694  0  T-TEST PAIRS=G1 WITH G2 (PAIRED) /CRITERIA=CI(.95).
1694  0 M>  T-TEST PAIRS=G1 WITH G2 (PAIRED) /CRITERIA=CI(.95).
```

T-Test

Notes

Output Created		16-JUL-2026 21:10:47
Comments		
Input	Data	D:\DATA ANALYSIS\K Reliability and Agreement Tests\Test Retest Reliability\dataset.csv
	Active Dataset	TestRetestReliabilityData
	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 analysis are based on the cases with no missing or out-of-range data for any variable in the analysis.

Test Retest Reliability
G1 G2 rank-order stability plus systematic change and measur

Notes

Syntax		T-TEST PAIRS=G1 WITH G2 (PAIRED) /CRITERIA=CI(.95).
Resources	Processor Time	00:00:00.06
	Elapsed Time	00:00:00.08

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	G1	11.40	649	2.745	.108
	G2	11.57	649	2.914	.114

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	G1 & G2	649	.865	.000

Paired Samples Test

		Paired Differences				
					95% Confidence Interval of the Difference	
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper
Pair 1	G1 - G2	-.171	1.479	.058	-.285	-.057

Paired Samples Test

		t	df	Sig. (2-tailed)
Pair 1	G1 - G2	-2.945	648	.003

```
1695  0  FREQUENCIES VARIABLES=retest_change /STATISTICS=MEAN MEDIAN STDDEV VA
RIANCE MINIMUM MAXIMUM /HISTOGRAM.
1695  0 M>  FREQUENCIES VARIABLES=retest_change /STATISTICS=MEAN MEDIAN STDDEV
 VARIANCE MINIMUM MAXIMUM /HISTOGRAM.
```

Frequencies

Notes

Output Created		16-JUL-2026 21:10:47
Comments		
Input	Data	D:\DATA ANALYSIS\K Reliability and Agreement Tests\Test Retest Reliability\dataset.csv
	Active Dataset	TestRetestReliabilityData
	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=retest_change /STATISTICS=MEAN MEDIAN STDDEV VARIANCE MINIMUM MAXIMUM /HISTOGRAM.
Resources	Processor Time	00:00:00.55
	Elapsed Time	00:00:00.52

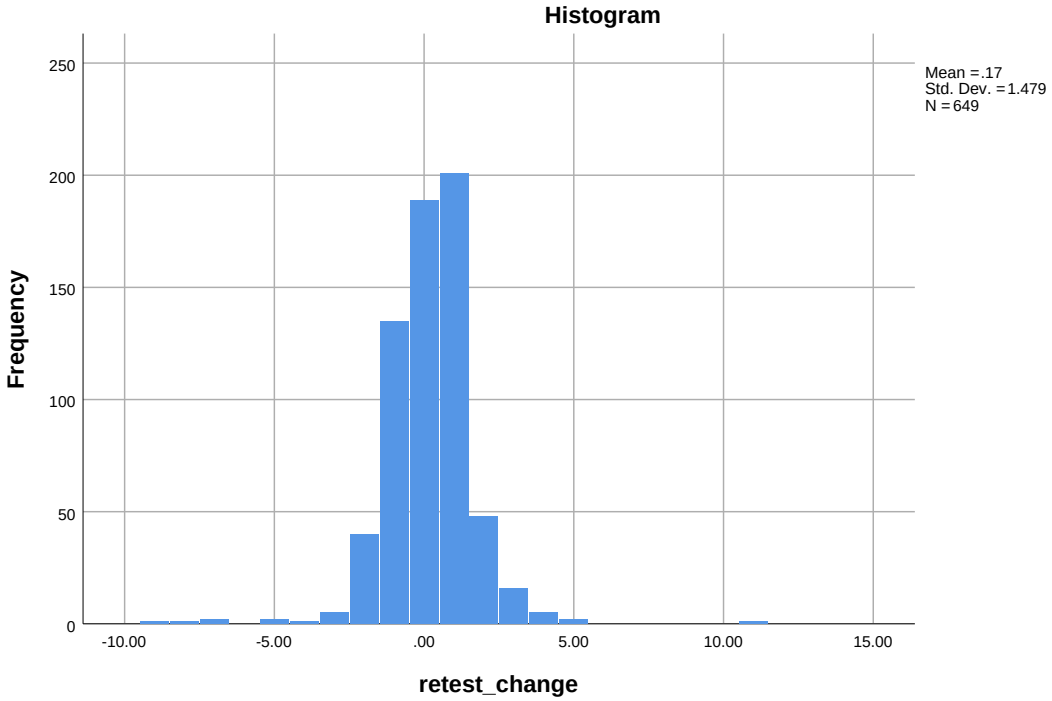
Statistics

retest_change

N	Valid	649
	Missing	0
Mean		.1710
Median		.0000
Std. Deviation		1.47929
Variance		2.188
Minimum		-9.00
Maximum		11.00

retest_change

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-9.00	1	.2	.2	.2
	-8.00	1	.2	.2	.3
	-7.00	2	.3	.3	.6
	-5.00	2	.3	.3	.9
	-4.00	1	.2	.2	1.1
	-3.00	5	.8	.8	1.8
	-2.00	40	6.2	6.2	8.0
	-1.00	135	20.8	20.8	28.8
	.00	189	29.1	29.1	57.9
	1.00	201	31.0	31.0	88.9
	2.00	48	7.4	7.4	96.3
	3.00	16	2.5	2.5	98.8
	4.00	5	.8	.8	99.5
	5.00	2	.3	.3	99.8
	11.00	1	.2	.2	100.0
	Total	649	100.0	100.0	



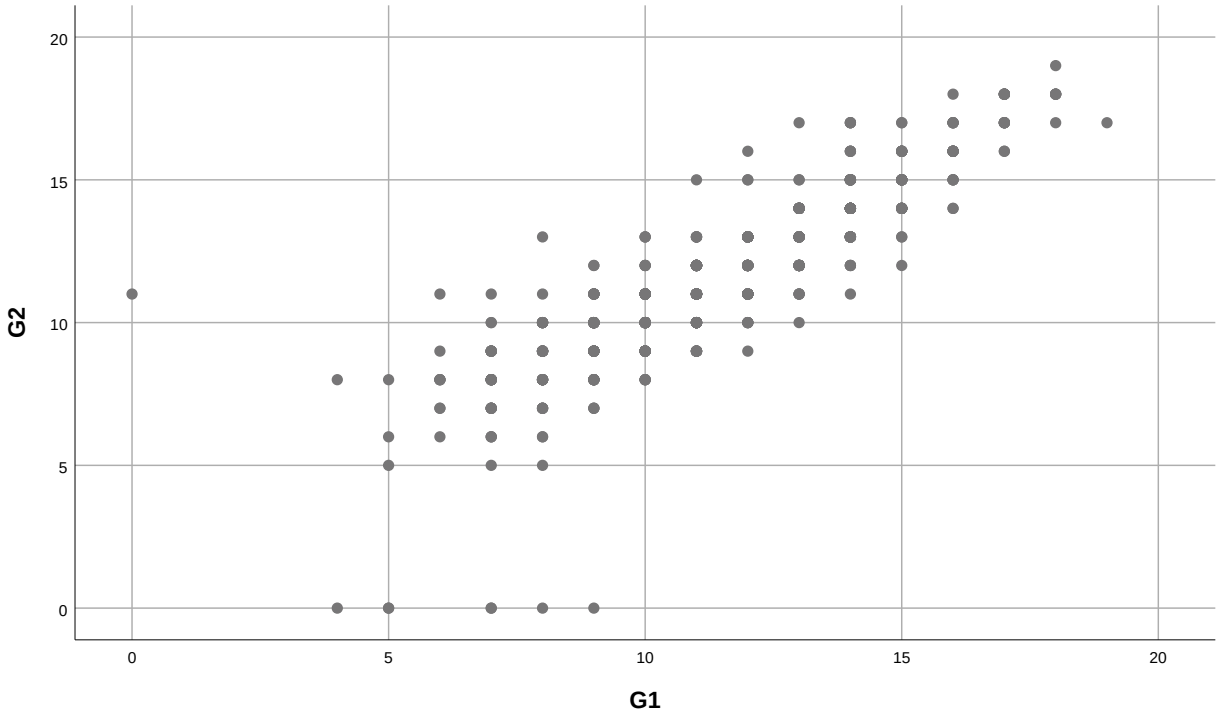

```
1696  0  GRAPH /SCATTERPLOT(BIVAR)=G1 WITH G2.
1696  0 M>  GRAPH /SCATTERPLOT(BIVAR)=G1 WITH G2.
```

Graph

Test Retest Reliability
G1 G2 rank-order stability plus systematic change and measur

Notes

Output Created		16-JUL-2026 21:10:47
Comments		
Input	Data	D:\DATA ANALYSIS\K Reliability and Agreement Tests\Test Retest Reliability\dataset.csv
	Active Dataset	TestRetestReliabilityData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /SCATTERPLOT (BIVAR)=G1 WITH G2.
Resources	Processor Time	00:00:00.42
	Elapsed Time	00:00:00.40



```
1697  0  EXAMINE VARIABLES=retest_change /PLOT=HISTOGRAM NPPLOT /STATISTICS=DE
SCRIPTIVES.
1697  0 M>  EXAMINE VARIABLES=retest_change /PLOT=HISTOGRAM NPPLOT /STATISTICS
=DESCRIPTIVES.
```

Explore

Notes

Output Created		16-JUL-2026 21:10:48
Comments		
Input	Data	D:\DATA ANALYSIS\K Reliability and Agreement Tests\Test Retest Reliability\dataset.csv
	Active Dataset	TestRetestReliabilityData
	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 for dependent variables are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any dependent variable or factor used.
Syntax		EXAMINE VARIABLES=retest_change /PLOT=HISTOGRAM NPPLOT /STATISTICS=DESCRIPTIVES.
Resources	Processor Time	00:00:00.81
	Elapsed Time	00:00:00.74

Total Sample

Case Processing Summary

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

Descriptives

			Statistic	Std. Error
retest_change	Mean		.1710	.05807
	95% Confidence Interval for Mean	Lower Bound	.0570	
		Upper Bound	.2851	
	5% Trimmed Mean		.1815	
	Median		.0000	
	Variance		2.188	
	Std. Deviation		1.47929	
	Minimum		-9.00	
	Maximum		11.00	
	Range		20.00	
	Interquartile Range		2.00	
	Skewness		-.308	.096
	Kurtosis		9.272	.192

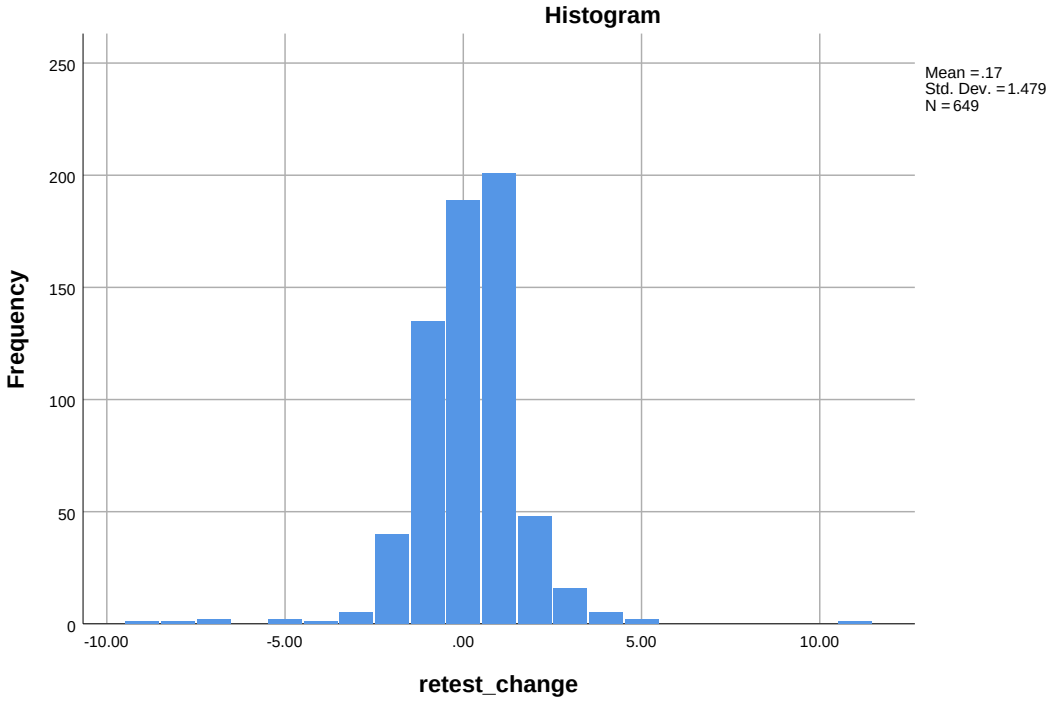
Tests of Normality

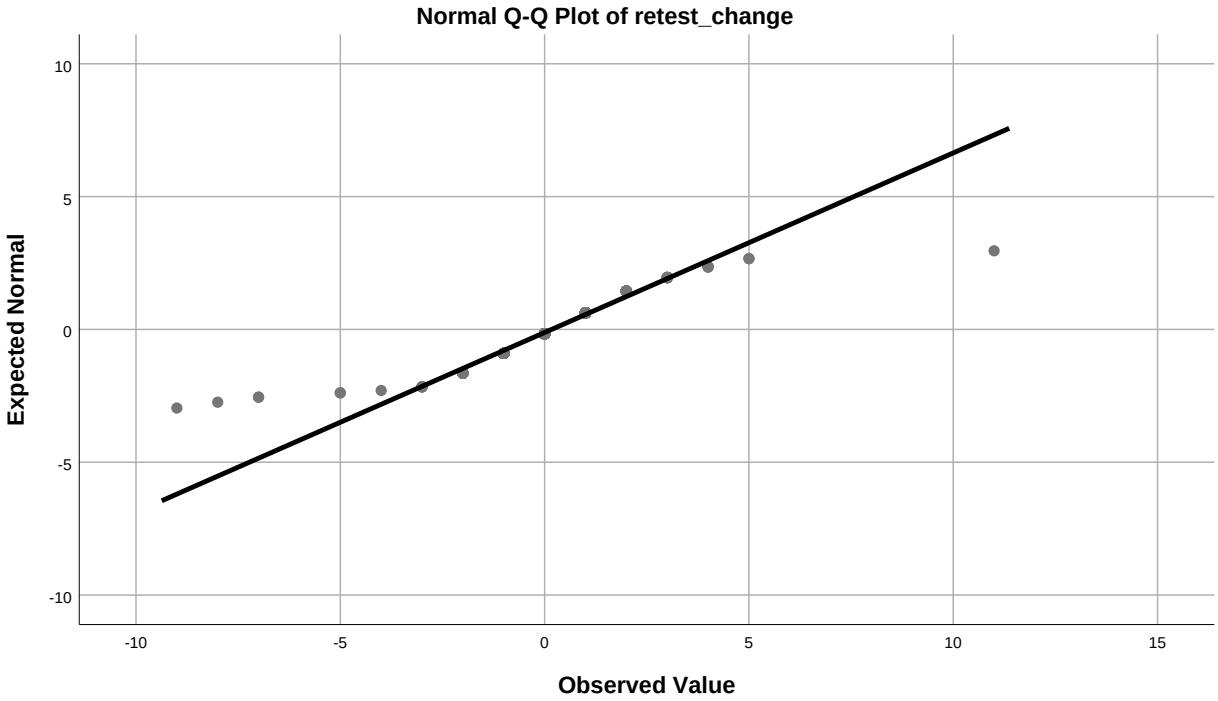
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
retest_change	.177	649	.000	.866	649	.000

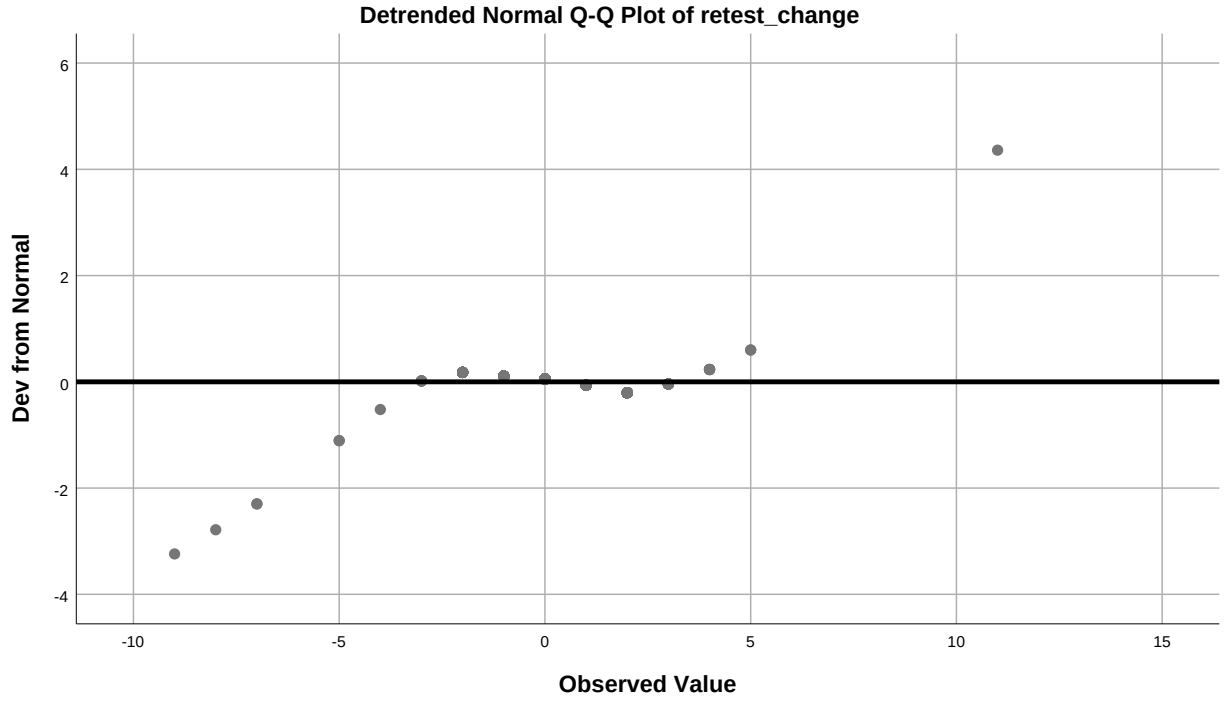
a. Lilliefors Significance Correction

retest_change

Test Retest Reliability
G1 G2 rank-order stability plus systematic change and measur








```
1698  0  * END METHOD-SPECIFIC SPSS WORKFLOW.
1698  0 M>  * END METHOD-SPECIFIC SPSS WORKFLOW.
1699  0
1699  0 M>
1700  0  SAVE OUTFILE='D:\DATA ANALYSIS\K Reliability and Agreement Tests\Test
 Retest Reliability\SPSS_Output\sav\test-retest-reliab
           ility_spss_ready_data.sav' /COMPRESSED.
1700  0 M>  SAVE OUTFILE='D:\DATA ANALYSIS\K Reliability and Agreement Tests\T
est Retest Reliability\SPSS_Output\sav\test-retest-rel
              iability_spss_ready_data.sav' /COMPRESSED.
1701  0
1701  0 M>
1702  0  ECHO '============================================================
=========='.
1702  0 M>  ECHO '============================================================
============'.
==============================================================================
1703  0  ECHO 'TEST-RETEST RELIABILITY'.
1703  0 M>  ECHO 'TEST-RETEST RELIABILITY'.
TEST-RETEST RELIABILITY
```

```
1704  0  ECHO 'Design: Temporal stability of continuous G1 and G2 scores using
 Pearson association and change-score error.'.
1704  0 M>  ECHO 'Design: Temporal stability of continuous G1 and G2 scores us
ing Pearson association and change-score error.'.
Design: Temporal stability of continuous G1 and G2 scores using Pearson associ
ation and change-score error.
1705  0  ECHO 'Null hypothesis: The test and retest scores have zero linear st
ability.'.
1705  0 M>  ECHO 'Null hypothesis: The test and retest scores have zero linear
 stability.'.
Null hypothesis: The test and retest scores have zero linear stability.
1706  0  ECHO 'Formula: r_tt=cor(G1,G2); SEM_change=SD(G2-G1)/sqrt(2).'.
1706  0 M>  ECHO 'Formula: r_tt=cor(G1,G2); SEM_change=SD(G2-G1)/sqrt(2).'.
Formula: r_tt=cor(G1,G2); SEM_change=SD(G2-G1)/sqrt(2).
1707  0  ECHO 'Variables: G1, G2'.
1707  0 M>  ECHO 'Variables: G1, G2'.
Variables: G1, G2
1708  0  ECHO 'Rows analyzed: 649'.
1708  0 M>  ECHO 'Rows analyzed: 649'.
Rows analyzed: 649
1709  0  ECHO 'mean_change = 0.17103235747303544'.
1709  0 M>  ECHO 'mean_change = 0.17103235747303544'.
mean_change = 0.17103235747303544
1710  0  ECHO 'n_pairs = 649'.
1710  0 M>  ECHO 'n_pairs = 649'.
n_pairs = 649
1711  0  ECHO 'p_value = 6.3737947807967775e-196'.
1711  0 M>  ECHO 'p_value = 6.3737947807967775e-196'.
p_value = 6.3737947807967775e-196
1712  0  ECHO 'pearson_r = 0.8649816303085818'.
1712  0 M>  ECHO 'pearson_r = 0.8649816303085818'.
pearson_r = 0.8649816303085818
1713  0  ECHO 'sd_change = 1.4792888099389643'.
1713  0 M>  ECHO 'sd_change = 1.4792888099389643'.
sd_change = 1.4792888099389643
1714  0  ECHO 'standard_error_measurement = 1.0460151488412195'.
1714  0 M>  ECHO 'standard_error_measurement = 1.0460151488412195'.
standard_error_measurement = 1.0460151488412195
1715  0  ECHO 'mean_change = 0.17103235747303544'.
```

```
1715  0 M>  ECHO 'mean_change = 0.17103235747303544'.
mean_change = 0.17103235747303544
1716  0  ECHO 'n_pairs = 649'.
1716  0 M>  ECHO 'n_pairs = 649'.
n_pairs = 649
1717  0  ECHO 'p_value = 6.3737947807967775e-196'.
1717  0 M>  ECHO 'p_value = 6.3737947807967775e-196'.
p_value = 6.3737947807967775e-196
1718  0  ECHO 'pearson_r = 0.8649816303085818'.
1718  0 M>  ECHO 'pearson_r = 0.8649816303085818'.
pearson_r = 0.8649816303085818
1719  0  ECHO 'sd_change = 1.4792888099389643'.
1719  0 M>  ECHO 'sd_change = 1.4792888099389643'.
sd_change = 1.4792888099389643
1720  0  ECHO 'standard_error_measurement = 1.0460151488412195'.
1720  0 M>  ECHO 'standard_error_measurement = 1.0460151488412195'.
standard_error_measurement = 1.0460151488412195
1721  0  ECHO 'Cross-check status: pass'.
1721  0 M>  ECHO 'Cross-check status: pass'.
Cross-check status: pass
1722  0  ECHO '================================================================
=========='.
1722  0 M>  ECHO '================================================================
============'.
================================================================================
1723  0
1723  0 M>
1724  0  OUTPUT SAVE OUTFILE='D:\DATA ANALYSIS\K Reliability and Agreement Tes
ts\Test Retest Reliability\SPSS_Output\spv\test-retest
            -reliability_spss_output.spv'.
1724  0 M>  OUTPUT SAVE OUTFILE='D:\DATA ANALYSIS\K Reliability and Agreement
Tests\Test Retest Reliability\SPSS_Output\spv\test-ret
               est-reliability_spss_output.spv'.
1725  0  OUTPUT EXPORT /CONTENTS EXPORT=ALL LAYERS=PRINTSETTING MODELVIEWS=PRI
NTSETTING
1725  0 M>  OUTPUT EXPORT /CONTENTS EXPORT=ALL LAYERS=PRINTSETTING MODELVIEWS=
PRINTSETTING
```