

```
1490 0 OUTPUT ACTIVATE SpearmanBrownFormulaOutput.  
1490 0 M> OUTPUT ACTIVATE SpearmanBrownFormulaOutput.  
1491 0 TITLE 'Spearman-Brown Prophecy Formula'.  
1491 0 M> TITLE 'Spearman-Brown Prophecy Formula'.
```

Spearman-Brown Prophecy Formula

```

1492 0
1492 0 M>
1493 0 GET DATA
1493 0 M> GET DATA
1494 0 /TYPE=TXT
1494 0 M> /TYPE=TXT
1495 0 /FILE='D:\DATA ANALYSIS\K Reliability and Agreement Tests\Spearman
Brown Formula\dataset.csv'
1495 0 M> /FILE='D:\DATA ANALYSIS\K Reliability and Agreement Tests\Spearman
Brown Formula\dataset.csv'
1496 0 /ENCODING='UTF8'
1496 0 M> /ENCODING='UTF8'
1497 0 /DELCASE=LINE
1497 0 M> /DELCASE=LINE
1498 0 /DELIMITERS=', '
1498 0 M> /DELIMITERS=', '
1499 0 /QUALIFIER='''
1499 0 M> /QUALIFIER='''
1500 0 /ARRANGEMENT=DELIMITED
1500 0 M> /ARRANGEMENT=DELIMITED
1501 0 /FIRSTCASE=2
1501 0 M> /FIRSTCASE=2
1502 0 /VARIABLES=
1502 0 M> /VARIABLES=
1503 0 school A8 sex A8 age F8.0 address A8 famsize A8 Pstatus A8
1503 0 M> school A8 sex A8 age F8.0 address A8 famsize A8 Pstatus A8
1504 0 Medu F8.0 Fedu F8.0 Mjob A16 Fjob A16 reason A16 guardian A16
1504 0 M> Medu F8.0 Fedu F8.0 Mjob A16 Fjob A16 reason A16 guardian A16
1505 0 traveltime F8.0 studytime F8.0 failures F8.0 schoolsup A8 famsup
A8
1505 0 M> traveltime F8.0 studytime F8.0 failures F8.0 schoolsup A8 fams
up A8
1506 0 paid A8 activities A8 nursery A8 higher A8 internet A8 romantic A
8
1506 0 M> paid A8 activities A8 nursery A8 higher A8 internet A8 romanti
c A8
1507 0 famrel F8.0 freetime F8.0 goout F8.0 Dalc F8.0 Walc F8.0 health F
8.0

```

Spearman-Brown Prophecy Formula

```
1507 0 M> famrel F8.0 freetime F8.0 goout F8.0 Dalc F8.0 Walc F8.0 health F8.0
1508 0 absences F8.0 G1 F8.0 G2 F8.0 G3 F8.0.
1508 0 M> absences F8.0 G1 F8.0 G2 F8.0 G3 F8.0.
1509 0 DATASET NAME SpearmanBrownFormulaData.
1509 0 M> DATASET NAME SpearmanBrownFormulaData.
1510 0 EXECUTE.
1510 0 M> EXECUTE.
1511 0
1511 0 M>
1512 0 COMPUTE subject_id=$CASENUM.
1512 0 M> COMPUTE subject_id=$CASENUM.
1513 0 COMPUTE Dalc_R=6-Dalc.
1513 0 M> COMPUTE Dalc_R=6-Dalc.
1514 0 COMPUTE Walc_R=6-Walc.
1514 0 M> COMPUTE Walc_R=6-Walc.
1515 0 RECODE schoolsup famsup paid activities higher internet ('no'=0) ('yes'=1)
1515 0 M> RECODE schoolsup famsup paid activities higher internet ('no'=0) ('yes'=1)
1516 0 INTO schoolsup_b famsup_b paid_b activities_b higher_b internet_b.
1516 0 M> INTO schoolsup_b famsup_b paid_b activities_b higher_b internet_b.
1517 0 RECODE G1 G2 G3 (LO THRU 9=1) (10 THRU 13=2) (14 THRU HI=3)
1517 0 M> RECODE G1 G2 G3 (LO THRU 9=1) (10 THRU 13=2) (14 THRU HI=3)
1518 0 INTO G1_cat3 G2_cat3 G3_cat3.
1518 0 M> INTO G1_cat3 G2_cat3 G3_cat3.
1519 0 RECODE G1 G3 (LO THRU 8=1) (9 THRU 10=2) (11 THRU 12=3) (13 THRU 14=4) (15 THRU HI=5)
1519 0 M> RECODE G1 G3 (LO THRU 8=1) (9 THRU 10=2) (11 THRU 12=3) (13 THRU 14=4) (15 THRU HI=5)
1520 0 INTO G1_cat5 G3_cat5.
1520 0 M> INTO G1_cat5 G3_cat5.
1521 0 VARIABLE LEVEL schoolsup_b famsup_b paid_b activities_b higher_b internet_b G1_cat3 G2_cat3 G3_cat3 G1_cat5 G3_cat5 (NOMINAL).
1521 0 M> VARIABLE LEVEL schoolsup_b famsup_b paid_b activities_b higher_b internet_b G1_cat3 G2_cat3 G3_cat3 G1_cat5 G3_cat5 (NOMINAL).
```

Spearman-Brown Prophecy Formula

```
1522  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).
1522  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).
1523  0  EXECUTE.
1523  0 M> EXECUTE.
1524  0
1524  0 M>
1525  0  * BEGIN METHOD-SPECIFIC SPSS WORKFLOW.
1525  0 M> * BEGIN METHOD-SPECIFIC SPSS WORKFLOW.
1526  0  TITLE 'Spearman Brown Prophecy Formula'.
1526  0 M> TITLE 'Spearman Brown Prophecy Formula'.
```

Spearman Brown Prophecy Formula

```
1527  0  SUBTITLE 'Observed G1 G2 parallel-form correlation and length-change  
scenarios'.
```

```
1527  0 M> SUBTITLE 'Observed G1 G2 parallel-form correlation and length-chan  
ge scenarios'.
```

```
>Warning # 2004 on line 1527.  Command name: SUBTITLE
```

```
>The subtitle given exceeds 60 characters in length.  The first 60 characters  
>will be used.
```

Spearman Brown Prophecy Formula
Observed G1 G2 parallel-form correlation and length-change s

```
1528  0  CORRELATIONS /VARIABLES=G1 G2 /PRINT=TWOTAIL NOSIG /MISSING=PAIRWISE.
1528  0 M> CORRELATIONS /VARIABLES=G1 G2 /PRINT=TWOTAIL NOSIG /MISSING=PAIRWISE.
SE.
```

Correlations

Notes

Output Created		16-JUL-2026 21:10:38
Comments		
Input	Data	D:\DATA ANALYSIS\K Reliability and Agreement Tests\Spearman Brown Formula\dataset.csv
	Active Dataset	SpearmanBrownFormulaData
	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	00:00:00.05
	Elapsed Time	00:00:00.02

[SpearmanBrownFormulaData]

Spearman Brown Prophecy Formula
Observed G1 G2 parallel-form correlation and length-change s

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).

```
1529 0 RELIABILITY /VARIABLES=G1 G2 /SCALE('Parallel forms') ALL /MODEL=ALPHA
A /STATISTICS=DESCRIPTIVE SCALE CORR /SUMMARY=TOTAL.
1529 0 M> RELIABILITY /VARIABLES=G1 G2 /SCALE('Parallel forms') ALL /MODEL=ALPHA
LPHA /STATISTICS=DESCRIPTIVE SCALE CORR /SUMMARY=TOTAL
```

Reliability

Spearman Brown Prophecy Formula
Observed G1 G2 parallel-form correlation and length-change s

Notes

Output Created		16-JUL-2026 21:10:38
Comments		
Input	Data	D:\DATA ANALYSIS\K Reliability and Agreement Tests\Spearman Brown Formula\dataset.csv
	Active Dataset	SpearmanBrownFormulaData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
	Matrix Input	D:\DATA ANALYSIS\K Reliability and Agreement Tests\Spearman Brown Formula\spearman_brown_formula_spss_syntax.sps
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 for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=G1 G2 /SCALE('Parallel forms') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE CORR /SUMMARY=TOTAL.
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.02

Scale: Parallel forms

Spearman Brown Prophecy Formula
Observed G1 G2 parallel-form correlation and length-change s

Case Processing Summary

		N	%
Cases	Valid	649	100.0
	Excluded ^a	0	.0
	Total	649	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.927	.928	2

Item Statistics

	Mean	Std. Deviation	N
G1	11.40	2.745	649
G2	11.57	2.914	649

Inter-Item Correlation Matrix

	G1	G2
G1	1.000	.865
G2	.865	1.000

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
G1	11.57	8.489	.865	.748	.
G2	11.40	7.536	.865	.748	.

Spearman Brown Prophecy Formula
Observed G1 G2 parallel-form correlation and length-change s

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
22.97	29.863	5.465	2

```
1530  0  COMPUTE sb_difference=G2-G1.
1530  0 M> COMPUTE sb_difference=G2-G1.
1531  0  T-TEST PAIRS=G1 WITH G2 (PAIRED) /CRITERIA=CI(.95).
1531  0 M> T-TEST PAIRS=G1 WITH G2 (PAIRED) /CRITERIA=CI(.95).
```

T-Test

Notes

Output Created		16-JUL-2026 21:10:38
Comments		
Input	Data	D:\DATA ANALYSIS\K Reliability and Agreement Tests\Spearman Brown Formula\dataset.csv
	Active Dataset	SpearmanBrownFormulaData
	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.
Syntax		T-TEST PAIRS=G1 WITH G2 (PAIRED) /CRITERIA=CI(.95).
Resources	Processor Time	00:00:00.06
	Elapsed Time	00:00:00.02

Spearman Brown Prophecy Formula
Observed G1 G2 parallel-form correlation and length-change s

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				
			Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference	
						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

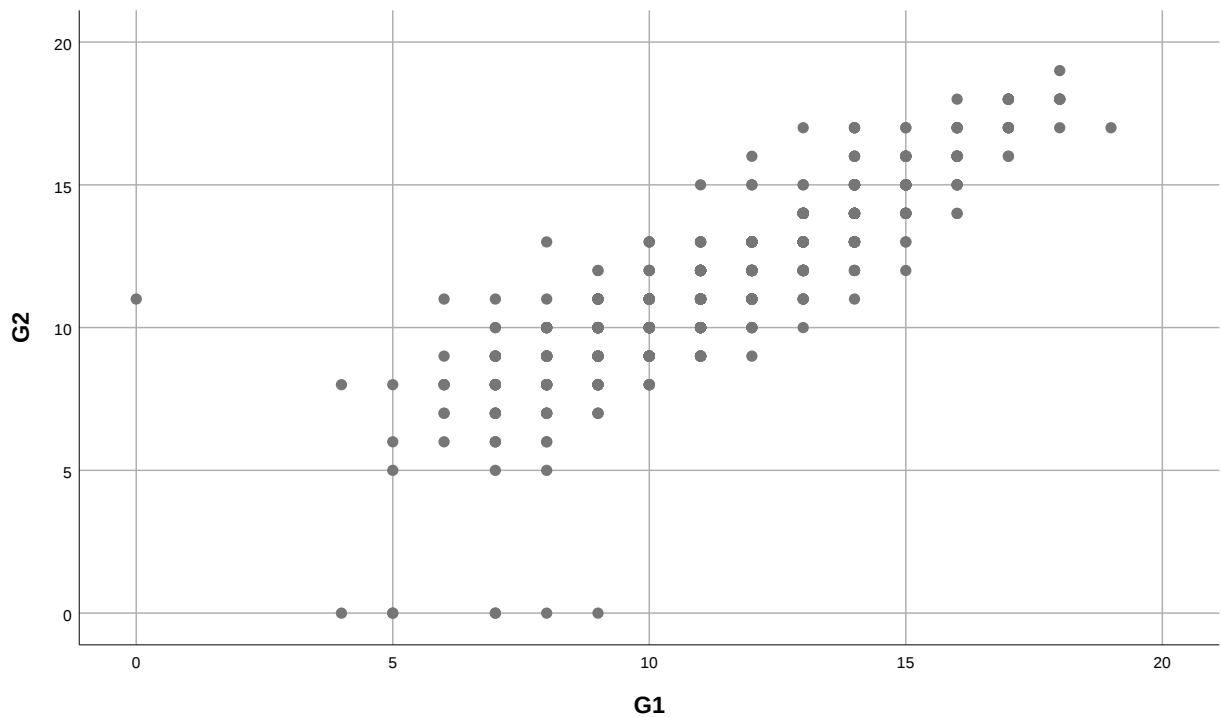
```
1532 0 GRAPH /SCATTERPLOT(BIVAR)=G1 WITH G2.
1532 0 M> GRAPH /SCATTERPLOT(BIVAR)=G1 WITH G2.
```

Graph

Spearman Brown Prophecy Formula
Observed G1 G2 parallel-form correlation and length-change s

Notes

Output Created		16-JUL-2026 21:10:38
Comments		
Input	Data	D:\DATA ANALYSIS\K Reliability and Agreement Tests\Spearman Brown Formula\dataset.csv
	Active Dataset	SpearmanBrownFormulaData
	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	00:00:00.44
	Elapsed Time	00:00:00.36



Spearman Brown Prophecy Formula
Observed G1 G2 parallel-form correlation and length-change s

```

1533 0 ECHO 'Prophecy scenarios use  $r_{new}=(k*r)/(1+(k-1)*r)$ , including k=2 and target reliability 0.90'.
1533 0 M> ECHO 'Prophecy scenarios use  $r_{new}=(k*r)/(1+(k-1)*r)$ , including k=2 and target reliability 0.90'.
Prophecy scenarios use  $r_{new}=(k*r)/(1+(k-1)*r)$ , including k=2 and target reliability 0.90
1534 0 * END METHOD-SPECIFIC SPSS WORKFLOW.
1534 0 M> * END METHOD-SPECIFIC SPSS WORKFLOW.
1535 0
1535 0 M>
1536 0 SAVE OUTFILE='D:\DATA ANALYSIS\K Reliability and Agreement Tests\Spearman Brown Formula\SPSS_Output\sav\spearman-brown-formula_spss_ready_data.sav' /COMPRESSED.
1536 0 M> SAVE OUTFILE='D:\DATA ANALYSIS\K Reliability and Agreement Tests\Spearman Brown Formula\SPSS_Output\sav\spearman-brown-formula_spss_ready_data.sav' /COMPRESSED.

1537 0
1537 0 M>
1538 0 ECHO '=====
====='.
1538 0 M> ECHO '=====
====='.
=====

1539 0 ECHO 'SPEARMAN-BROWN PROPHECY FORMULA'.
1539 0 M> ECHO 'SPEARMAN-BROWN PROPHECY FORMULA'.
SPEARMAN-BROWN PROPHECY FORMULA
1540 0 ECHO 'Design: Reliability predicted after changing test length from the observed G1-G2 correlation.'.
1540 0 M> ECHO 'Design: Reliability predicted after changing test length from the observed G1-G2 correlation.'.
Design: Reliability predicted after changing test length from the observed G1-G2 correlation.
1541 0 ECHO 'Null hypothesis: Changing test length does not alter predicted reliability beyond the observed parallel-form correlation.'.
1541 0 M> ECHO 'Null hypothesis: Changing test length does not alter predicted reliability beyond the observed parallel-form correlation.'.

```

Spearman Brown Prophecy Formula
Observed G1 G2 parallel-form correlation and length-change s

Null hypothesis: Changing test length does not alter predicted reliability bey
ond the observed parallel-form correlation.

```
1542 0 ECHO 'Formula: rho_new=m rho_old/[1+(m-1)rho_old].'.
1542 0 M> ECHO 'Formula: rho_new=m rho_old/[1+(m-1)rho_old].'.
Formula: rho_new=m rho_old/[1+(m-1)rho_old].
1543 0 ECHO 'Variables: G1, G2, length multiplier'.
1543 0 M> ECHO 'Variables: G1, G2, length multiplier'.
Variables: G1, G2, length multiplier
1544 0 ECHO 'Rows analyzed: 649'.
1544 0 M> ECHO 'Rows analyzed: 649'.
Rows analyzed: 649
1545 0 ECHO 'n_pairs = 649'.
1545 0 M> ECHO 'n_pairs = 649'.
n_pairs = 649
1546 0 ECHO 'observed_reliability = 0.8649816303085818'.
1546 0 M> ECHO 'observed_reliability = 0.8649816303085818'.
observed_reliability = 0.8649816303085818
1547 0 ECHO 'predicted_reliability_double_length = 0.9276033782332334'.
1547 0 M> ECHO 'predicted_reliability_double_length = 0.9276033782332334'.
predicted_reliability_double_length = 0.9276033782332334
1548 0 ECHO 'required_multiplier_for_0_90 = 1.4048452413830508'.
1548 0 M> ECHO 'required_multiplier_for_0_90 = 1.4048452413830508'.
required_multiplier_for_0_90 = 1.4048452413830508
1549 0 ECHO 'target_reliability = 0.9'.
1549 0 M> ECHO 'target_reliability = 0.9'.
target_reliability = 0.9
1550 0 ECHO 'n_pairs = 649'.
1550 0 M> ECHO 'n_pairs = 649'.
n_pairs = 649
1551 0 ECHO 'observed_reliability = 0.8649816303085818'.
1551 0 M> ECHO 'observed_reliability = 0.8649816303085818'.
observed_reliability = 0.8649816303085818
1552 0 ECHO 'predicted_reliability_double_length = 0.9276033782332334'.
1552 0 M> ECHO 'predicted_reliability_double_length = 0.9276033782332334'.
predicted_reliability_double_length = 0.9276033782332334
1553 0 ECHO 'required_multiplier_for_0_90 = 1.4048452413830508'.
1553 0 M> ECHO 'required_multiplier_for_0_90 = 1.4048452413830508'.
required_multiplier_for_0_90 = 1.4048452413830508
1554 0 ECHO 'target_reliability = 0.9'.
```

Spearman Brown Prophecy Formula
Observed G1 G2 parallel-form correlation and length-change s

```
1554  0 M>  ECHO 'target_reliability = 0.9'.
target_reliability = 0.9
1555  0  ECHO 'Cross-check status: pass'.
1555  0 M>  ECHO 'Cross-check status: pass'.
Cross-check status: pass
1556  0  ECHO '=====
====='.
1556  0 M>  ECHO '=====
====='.
=====
1557  0
1557  0 M>
1558  0  OUTPUT SAVE OUTFILE='D:\DATA ANALYSIS\K Reliability and Agreement Tests\Spearman Brown Formula\SPSS_Output\spv\spearman-brown-formula_spss_output.spv'.
1558  0 M>  OUTPUT SAVE OUTFILE='D:\DATA ANALYSIS\K Reliability and Agreement Tests\Spearman Brown Formula\SPSS_Output\spv\spearman-brown-formula_spss_output.spv'.
1559  0  OUTPUT EXPORT /CONTENTS EXPORT=ALL LAYERS=PRINTSETTING MODELVIEWS=PRINTSETTING
1559  0 M>  OUTPUT EXPORT /CONTENTS EXPORT=ALL LAYERS=PRINTSETTING MODELVIEWS=PRINTSETTING
```