

```
2377 0 OUTPUT ACTIVATE SRMROutput.  
2377 0 M> OUTPUT ACTIVATE SRMROutput.  
2378 0 TITLE 'Standardized Root Mean Square Residual'.  
2378 0 M> TITLE 'Standardized Root Mean Square Residual'.
```

Standardized Root Mean Square Residual

```

2379 0
2379 0 M>
2380 0 GET DATA
2380 0 M> GET DATA
2381 0 /TYPE=TXT /FILE='D:\DATA ANALYSIS\L Validity Factor Analysis and Sca
le Testing\SRMR\dataset.csv' /ENCODING='UTF8' /DELCASE
=LINE /DELIMITERS=', ' /QUALIFIER='"'
2381 0 M> /TYPE=TXT /FILE='D:\DATA ANALYSIS\L Validity Factor Analysis and
Scale Testing\SRMR\dataset.csv' /ENCODING='UTF8' /DELC
ASE=LINE /DELIMITERS=', ' /QUALIFIER='"'
2382 0 /ARRANGEMENT=DELIMITED /FIRSTCASE=2
2382 0 M> /ARRANGEMENT=DELIMITED /FIRSTCASE=2
2383 0 /VARIABLES=
2383 0 M> /VARIABLES=
2384 0 school A8 sex A8 age F8.0 address A8 famsize A8 Pstatus A8 Medu F8.0
Fedu F8.0
2384 0 M> school A8 sex A8 age F8.0 address A8 famsize A8 Pstatus A8 Medu F
8.0 Fedu F8.0
2385 0 Mjob A16 Fjob A16 reason A16 guardian A16 traveltime F8.0 studytime
F8.0 failures F8.0
2385 0 M> Mjob A16 Fjob A16 reason A16 guardian A16 traveltime F8.0 studyti
me F8.0 failures F8.0
2386 0 schoolsup A8 famsup A8 paid A8 activities A8 nursery A8 higher A8 in
ternet A8 romantic A8
2386 0 M> schoolsup A8 famsup A8 paid A8 activities A8 nursery A8 higher A8
internet A8 romantic A8
2387 0 famrel F8.0 freetime F8.0 goout F8.0 Dalc F8.0 Walc F8.0 health F8.0
absences F8.0 G1 F8.0 G2 F8.0 G3 F8.0.
2387 0 M> famrel F8.0 freetime F8.0 goout F8.0 Dalc F8.0 Walc F8.0 health F
8.0 absences F8.0 G1 F8.0 G2 F8.0 G3 F8.0.
2388 0 DATASET NAME SRMRData.
2388 0 M> DATASET NAME SRMRData.
2389 0 COMPUTE subject_id=$CASENUM.
2389 0 M> COMPUTE subject_id=$CASENUM.
2390 0 COMPUTE Dalc_R=6-Dalc.
2390 0 M> COMPUTE Dalc_R=6-Dalc.
2391 0 COMPUTE Walc_R=6-Walc.
2391 0 M> COMPUTE Walc_R=6-Walc.

```

Standardized Root Mean Square Residual

```
2392  0  RECODE schoolsup famsup paid activities higher internet ('no'=0) ('yes'=1)
2392  0 M> RECODE schoolsup famsup paid activities higher internet ('no'=0) ('yes'=1)
2393  0  INTO schoolsup_b famsup_b paid_b activities_b higher_b internet_b.
2393  0 M> INTO schoolsup_b famsup_b paid_b activities_b higher_b internet_b
.
2394  0  EXECUTE.
2394  0 M> EXECUTE.
2395  0
2395  0 M>
2396  0  * BEGIN METHOD-SPECIFIC SPSS WORKFLOW.
2396  0 M> * BEGIN METHOD-SPECIFIC SPSS WORKFLOW.
2397  0  TITLE 'Standardized Root Mean Square Residual'.
2397  0 M> TITLE 'Standardized Root Mean Square Residual'.
```

Standardized Root Mean Square Residual

```
2398 0 SUBTITLE 'Root mean square standardized covariance residual'.  
2398 0 M> SUBTITLE 'Root mean square standardized covariance residual'.
```

Standardized Root Mean Square Residual
Root mean square standardized covariance residual

```

2399  0  FACTOR /VARIABLES=G1 G2 G3 famrel freetime goout /MISSING=LISTWISE /A
NALYSIS=G1 G2 G3 famrel freetime goout
2399  0 M>  FACTOR /VARIABLES=G1 G2 G3 famrel freetime goout /MISSING=LISTWISE
 /ANALYSIS=G1 G2 G3 famrel freetime goout
2400  0  /PRINT=INITIAL EXTRACTION KMO CORRELATION /PLOT=EIGEN
2400  0 M>  /PRINT=INITIAL EXTRACTION KMO CORRELATION /PLOT=EIGEN
2401  0  /CRITERIA=FACTORS(2) ITERATE(500) /EXTRACTION=PAF /ROTATION=NOROTATE
 /METHOD=CORRELATION.
2401  0 M>  /CRITERIA=FACTORS(2) ITERATE(500) /EXTRACTION=PAF /ROTATION=NOROT
ATE /METHOD=CORRELATION.

```

Factor Analysis

Notes

Output Created		18-JUL-2026 10:57:59
Comments		
Input	Data	D:\DATA ANALYSIS\L Validity Factor Analysis and Scale Testing\SRMR\dataset.csv
	Active Dataset	SRMRData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Missing Value Handling	Definition of Missing	MISSING=EXCLUDE: User-defined missing values are treated as missing.
	Cases Used	LISTWISE: Statistics are based on cases with no missing values for any variable used.

Standardized Root Mean Square Residual
Root mean square standardized covariance residual

Notes

Syntax		FACTOR /VARIABLES=G1 G2 G3 famrel freetime goout /MISSING=LISTWISE /ANALYSIS=G1 G2 G3 famrel freetime goout /PRINT=INITIAL EXTRACTION KMO CORRELATION /PLOT=EIGEN /CRITERIA=FACTORS(2) ITERATE(500) /EXTRACTION=PAF /ROTATION=NOROTATE /METHOD=CORRELATIO N.
Resources	Processor Time	00:00:00.28
	Elapsed Time	00:00:00.33
	Maximum Memory Required	5704 (5.570K) bytes

[SRMRData]

Correlation Matrix

		G1	G2	G3	famrel	freetime	goout
Correlation	G1	1.000	.865	.826	.049	-.094	-.074
	G2	.865	1.000	.919	.090	-.107	-.079
	G3	.826	.919	1.000	.063	-.123	-.088
	famrel	.049	.090	.063	1.000	.129	.090
	freetime	-.094	-.107	-.123	.129	1.000	.346
	goout	-.074	-.079	-.088	.090	.346	1.000

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.732
Bartlett's Test of Sphericity	Approx. Chi-Square	2220.632
	df	15
	Sig.	.000

Standardized Root Mean Square Residual
Root mean square standardized covariance residual

Communalities

	Initial	Extraction
G1	.755	.775
G2	.880	.966
G3	.849	.878
famrel	.034	.045
freetime	.140	.474
goout	.125	.252

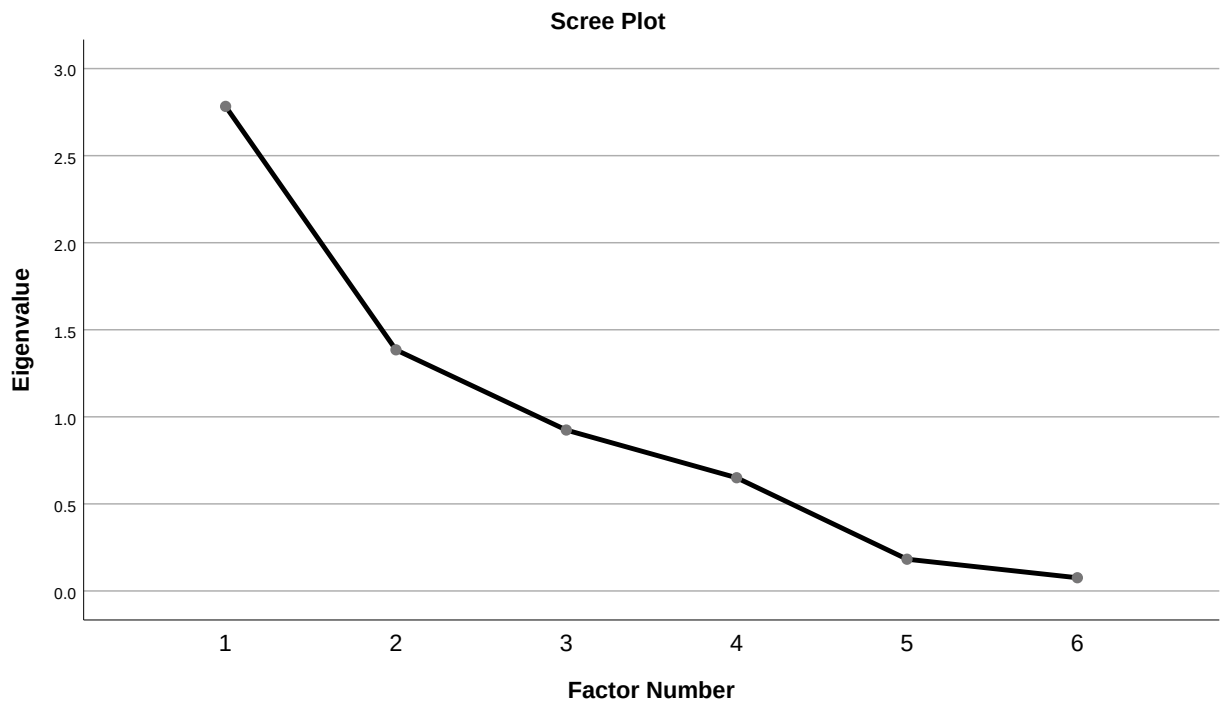
Extraction Method: Principal Axis Factoring.

Total Variance Explained

Factor	Total	Initial Eigenvalues		Extraction Sums of Squared Loadings		
		% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.783	46.381	46.381	2.650	44.166	44.166
2	1.385	23.080	69.461	.740	12.337	56.503
3	.924	15.402	84.863			
4	.650	10.835	95.698			
5	.182	3.038	98.736			
6	.076	1.264	100.000			

Extraction Method: Principal Axis Factoring.

Standardized Root Mean Square Residual
Root mean square standardized covariance residual



Factor Matrix^a

	Factor	
	1	2
G1	.879	.053
G2	.980	.070
G3	.936	.033
famrel	.061	.204
freetime	-.153	.671
goout	-.114	.489

Extraction Method: Principal Axis Factoring.

a. 2 factors extracted. 41 iterations required.

```
2402  0  RELIABILITY /VARIABLES=G1 G2 G3 /SCALE('Academic measurement block')
ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE CORR.
2402  0  M> RELIABILITY /VARIABLES=G1 G2 G3 /SCALE('Academic measurement block
') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE CORR
```


Standardized Root Mean Square Residual
Root mean square standardized covariance residual

Reliability

Notes

Output Created		18-JUL-2026 10:57:59
Comments		
Input	Data	D:\DATA ANALYSIS\L Validity Factor Analysis and Scale Testing\SRMR\dataset.csv
	Active Dataset	SRMRData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
	Matrix Input	D:\DATA ANALYSIS\L Validity Factor Analysis and Scale Testing\SRMR\srmr_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 G3 /SCALE('Academic measurement block') ALL /MODEL=ALPHA /STATISTICS=DESCRIPT IVE SCALE CORR.
Resources	Processor Time	00:00:00.06
	Elapsed Time	00:00:00.05

Scale: Academic measurement block

Standardized Root Mean Square Residual
Root mean square standardized covariance residual

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
.951	.953	3

Item Statistics

	Mean	Std. Deviation	N
G1	11.40	2.745	649
G2	11.57	2.914	649
G3	11.91	3.231	649

Inter-Item Correlation Matrix

	G1	G2	G3
G1	1.000	.865	.826
G2	.865	1.000	.919
G3	.826	.919	1.000

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
34.88	72.251	8.500	3

```
2403 0 RELIABILITY /VARIABLES=famrel freetime goout /SCALE('Social measureme
nt block') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SC
ALE CORR.
```

Standardized Root Mean Square Residual
Root mean square standardized covariance residual

```
2403 0 M> RELIABILITY /VARIABLES=famrel freetime goout /SCALE('Social measur
ement block') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE
SCALE CORR.
```

Reliability

Notes

Output Created		18-JUL-2026 10:57:59
Comments		
Input	Data	D:\DATA ANALYSIS\L Validity Factor Analysis and Scale Testing\SRMR\dataset.csv
	Active Dataset	SRMRData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
	Matrix Input	D:\DATA ANALYSIS\L Validity Factor Analysis and Scale Testing\SRMR\srmr_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=famrel freetime goout /SCALE ('Social measurement block') ALL /MODEL=ALPHA /STATISTICS=DESCRIPT IVE SCALE CORR.
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.06

Standardized Root Mean Square Residual
Root mean square standardized covariance residual

Scale: Social measurement block

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
.419	.411	3

Item Statistics

	Mean	Std. Deviation	N
famrel	3.93	.956	649
freetime	3.18	1.051	649
goout	3.18	1.176	649

Inter-Item Correlation Matrix

	famrel	freetime	goout
famrel	1.000	.129	.090
freetime	.129	1.000	.346
goout	.090	.346	1.000

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
10.30	4.718	2.172	3

2404 0 ECHO 'SRMR averages the lower triangle including variances'.

Standardized Root Mean Square Residual
Root mean square standardized covariance residual

```

2404  0 M> ECHO 'SRMR averages the lower triangle including variances'.
SRMR averages the lower triangle including variances
2405  0 * END METHOD-SPECIFIC SPSS WORKFLOW.
2405  0 M> * END METHOD-SPECIFIC SPSS WORKFLOW.
2406  0
2406  0 M>
2407  0 SAVE OUTFILE='D:\DATA ANALYSIS\L Validity Factor Analysis and Scale T
esting\SRMR\SPSS_Output\sav\srmr_spss_ready_data.sav'
      /COMPRESSED.
2407  0 M> SAVE OUTFILE='D:\DATA ANALYSIS\L Validity Factor Analysis and Scal
e Testing\SRMR\SPSS_Output\sav\srmr_spss_ready_data.sa
      v' /COMPRESSED.

2408  0
2408  0 M>
2409  0 ECHO '=====
====='.
2409  0 M> ECHO '=====
====='.
=====
2410  0 ECHO 'STANDARDIZED ROOT MEAN SQUARE RESIDUAL'.
2410  0 M> ECHO 'STANDARDIZED ROOT MEAN SQUARE RESIDUAL'.
STANDARDIZED ROOT MEAN SQUARE RESIDUAL
2411  0 ECHO 'Design: Average magnitude of standardized covariance residuals
for the CFA.'.
2411  0 M> ECHO 'Design: Average magnitude of standardized covariance residua
ls for the CFA.'.
Design: Average magnitude of standardized covariance residuals for the CFA.
2412  0 ECHO 'Null hypothesis: The standardized residual covariance matrix is
zero.'.
2412  0 M> ECHO 'Null hypothesis: The standardized residual covariance matrix
is zero.'.
Null hypothesis: The standardized residual covariance matrix is zero.
2413  0 ECHO 'Formula: SRMR=sqrt(mean_{i>=j}[(s_ij-sigma_ij)/sqrt(s_ii s_jj)]
^2)'.
2413  0 M> ECHO 'Formula: SRMR=sqrt(mean_{i>=j}[(s_ij-sigma_ij)/sqrt(s_ii s_j
j)]^2)'.
Formula: SRMR=sqrt(mean_{i>=j}[(s_ij-sigma_ij)/sqrt(s_ii s_jj)]^2).
2414  0 ECHO 'Variables: G1, G2, G3, famrel, freetime, goout'.
2414  0 M> ECHO 'Variables: G1, G2, G3, famrel, freetime, goout'.

```

Standardized Root Mean Square Residual
Root mean square standardized covariance residual

Variables: G1, G2, G3, famrel, freetime, goout

2415 0 ECHO 'Rows analyzed: 649'.

2415 0 M> ECHO 'Rows analyzed: 649'.

Rows analyzed: 649

2416 0 ECHO 'maximum_standardized_residual = 0.11318873562601585'.

2416 0 M> ECHO 'maximum_standardized_residual = 0.11318873562601585'.

maximum_standardized_residual = 0.11318873562601585

2417 0 ECHO 'mean_absolute_residual = 0.01734476662495954'.

2417 0 M> ECHO 'mean_absolute_residual = 0.01734476662495954'.

mean_absolute_residual = 0.01734476662495954

2418 0 ECHO 'residual_elements = 21'.

2418 0 M> ECHO 'residual_elements = 21'.

residual_elements = 21

2419 0 ECHO 'srmr = 0.03566318315739957'.

2419 0 M> ECHO 'srmr = 0.03566318315739957'.

srmr = 0.03566318315739957

2420 0 ECHO 'Cross-check status: pass'.

2420 0 M> ECHO 'Cross-check status: pass'.

Cross-check status: pass

2421 0 ECHO '=====
====='

2421 0 M> ECHO '=====
====='

=====

2422 0

2422 0 M>

2423 0 OUTPUT SAVE OUTFILE='D:\DATA ANALYSIS\L Validity Factor Analysis and
Scale Testing\SRMR\SPSS_Output\spv\srmr_spss_output.sp
v'.

2423 0 M> OUTPUT SAVE OUTFILE='D:\DATA ANALYSIS\L Validity Factor Analysis a
nd Scale Testing\SRMR\SPSS_Output\spv\srmr_spss_output
.spv'.

2424 0 OUTPUT EXPORT /CONTENTS EXPORT=ALL LAYERS=PRINTSETTING MODELVIEWS=PRI
NTSETTING

2424 0 M> OUTPUT EXPORT /CONTENTS EXPORT=ALL LAYERS=PRINTSETTING MODELVIEWS=
PRINTSETTING