

```
343 0 OUTPUT ACTIVATE CommunalitiesOutput.  
343 0 M> OUTPUT ACTIVATE CommunalitiesOutput.  
344 0 TITLE 'Common-Factor Communalities'.  
344 0 M> TITLE 'Common-Factor Communalities'.
```

Common-Factor Communalities

```
345 0
345 0 M>
346 0 GET DATA
346 0 M> GET DATA
347 0 /TYPE=TXT /FILE='D:\DATA ANALYSIS\L Validity Factor Analysis and Scale Testing\Communalities\dataset.csv' /ENCODING='UTF8'
      /DELCASE=LINE /DELIMITERS=', ' /QUALIFIER='"'
347 0 M> /TYPE=TXT /FILE='D:\DATA ANALYSIS\L Validity Factor Analysis and Scale Testing\Communalities\dataset.csv' /ENCODING='UTF8' /DELCASE=LINE /DELIMITERS=', ' /QUALIFIER='"'
348 0 /ARRANGEMENT=DELIMITED /FIRSTCASE=2
348 0 M> /ARRANGEMENT=DELIMITED /FIRSTCASE=2
349 0 /VARIABLES=
349 0 M> /VARIABLES=
350 0 school A8 sex A8 age F8.0 address A8 famsize A8 Pstatus A8 Medu F8.0 Fedu F8.0
350 0 M> school A8 sex A8 age F8.0 address A8 famsize A8 Pstatus A8 Medu F8.0 Fedu F8.0
351 0 Mjob A16 Fjob A16 reason A16 guardian A16 traveltime F8.0 studytime F8.0 failures F8.0
351 0 M> Mjob A16 Fjob A16 reason A16 guardian A16 traveltime F8.0 studytime F8.0 failures F8.0
352 0 schoolsup A8 famsup A8 paid A8 activities A8 nursery A8 higher A8 internet A8 romantic A8
352 0 M> schoolsup A8 famsup A8 paid A8 activities A8 nursery A8 higher A8 internet A8 romantic A8
353 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.
353 0 M> 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.
354 0 DATASET NAME CommunalitiesData.
354 0 M> DATASET NAME CommunalitiesData.
355 0 COMPUTE subject_id=$CASENUM.
355 0 M> COMPUTE subject_id=$CASENUM.
356 0 COMPUTE Dalc_R=6-Dalc.
356 0 M> COMPUTE Dalc_R=6-Dalc.
357 0 COMPUTE Walc_R=6-Walc.
357 0 M> COMPUTE Walc_R=6-Walc.
```

Common-Factor Communalities

```
358 0 RECODE schoolsup famsup paid activities higher internet ('no'=0) ('yes'=1)
358 0 M> RECODE schoolsup famsup paid activities higher internet ('no'=0) ('yes'=1)
359 0 INTO schoolsup_b famsup_b paid_b activities_b higher_b internet_b.
359 0 M> INTO schoolsup_b famsup_b paid_b activities_b higher_b internet_b
.
360 0 EXECUTE.
360 0 M> EXECUTE.
361 0
361 0 M>
362 0 * BEGIN METHOD-SPECIFIC SPSS WORKFLOW.
362 0 M> * BEGIN METHOD-SPECIFIC SPSS WORKFLOW.
363 0 TITLE 'Common Factor Communalities'.
363 0 M> TITLE 'Common Factor Communalities'.
```

Common Factor Communalities

```
364 0 SUBTITLE 'Iterated PAF explained variance by item'.  
364 0 M> SUBTITLE 'Iterated PAF explained variance by item'.
```

Common Factor Communalities
Iterated PAF explained variance by item

```

365  0  FACTOR /VARIABLES=G1 G2 G3 famrel freetime goout /MISSING=LISTWISE /A
NALYSIS=G1 G2 G3 famrel freetime goout
365  0 M>  FACTOR /VARIABLES=G1 G2 G3 famrel freetime goout /MISSING=LISTWISE
/ANALYSIS=G1 G2 G3 famrel freetime goout
366  0    /PRINT=INITIAL EXTRACTION KMO CORRELATION /PLOT=EIGEN
366  0 M>    /PRINT=INITIAL EXTRACTION KMO CORRELATION /PLOT=EIGEN
367  0    /CRITERIA=FACTORS(2) ITERATE(500) /EXTRACTION=PAF /ROTATION=NOROTATE
/METHOD=CORRELATION.
367  0 M>    /CRITERIA=FACTORS(2) ITERATE(500) /EXTRACTION=PAF /ROTATION=NOROT
ATE /METHOD=CORRELATION.

```

Factor Analysis

Notes

Output Created		18-JUL-2026 10:54:22
Comments		
Input	Data	D:\DATA ANALYSIS\L Validity Factor Analysis and Scale Testing\Communalities\dat aset.csv
	Active Dataset	CommunalitiesData
	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.

Common Factor Communalities
Iterated PAF explained variance by item

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	00:00:00.53
	Elapsed Time	00:00:00.51
	Maximum Memory Required	5704 (5.570K) bytes

[CommunalitiesData]

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

Common Factor Communalities
Iterated PAF explained variance by item

Communalities

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

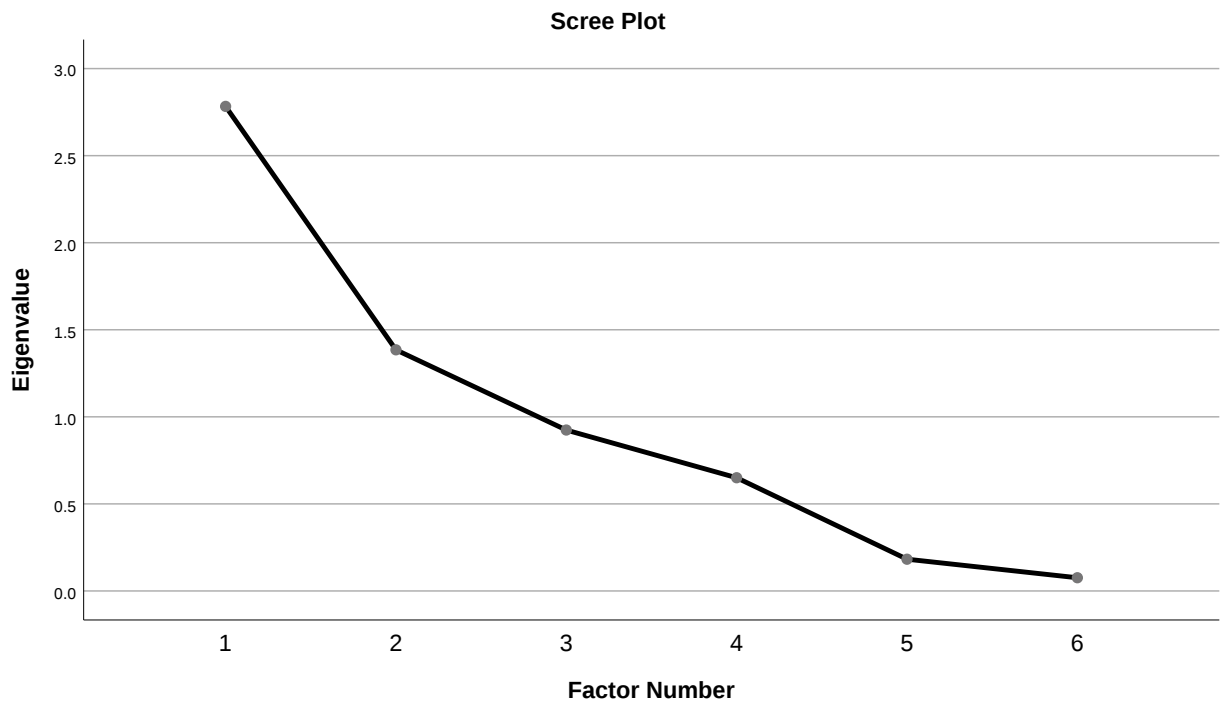
Extraction Method: Principal Axis Factoring.

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.

Common Factor Communalities
Iterated PAF explained variance by item



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.

```

368 0 ECHO 'Final communalities are sums of squared common-factor loadings'
.
368 0 M> ECHO 'Final communalities are sums of squared common-factor loadin
gs'.
```

Common Factor Communalities
Iterated PAF explained variance by item

Final communalities are sums of squared common-factor loadings

```
369  0  DESCRIPTIVES VARIABLES=G1 G2 G3 famrel freetime goout /STATISTICS=MEAN STDDEV MIN MAX.
```

```
369  0 M> DESCRIPTIVES VARIABLES=G1 G2 G3 famrel freetime goout /STATISTICS=MEAN STDDEV MIN MAX.
```

Descriptives

Notes

Output Created		18-JUL-2026 10:54:22
Comments		
Input	Data	D:\DATA ANALYSIS\L Validity Factor Analysis and Scale Testing\Communalities\dat aset.csv
	Active Dataset	CommunalitiesData
	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	All non-missing data are used.
Syntax		DESCRIPTIVES VARIABLES=G1 G2 G3 famrel freetime goout /STATISTICS=MEAN STDDEV MIN MAX.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.05

Common Factor Communalities
Iterated PAF explained variance by item

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
G1	649	0	19	11.40	2.745
G2	649	0	19	11.57	2.914
G3	649	0	19	11.91	3.231
famrel	649	1	5	3.93	.956
freetime	649	1	5	3.18	1.051
goout	649	1	5	3.18	1.176
Valid N (listwise)	649				

```

370 0 * END METHOD-SPECIFIC SPSS WORKFLOW.
370 0 M> * END METHOD-SPECIFIC SPSS WORKFLOW.
371 0
371 0 M>
372 0 SAVE OUTFILE='D:\DATA ANALYSIS\L Validity Factor Analysis and Scale T
esting\Communalities\SPSS_Output\sav\communalities_sps
s_ready_data.sav' /COMPRESSED.
372 0 M> SAVE OUTFILE='D:\DATA ANALYSIS\L Validity Factor Analysis and Scal
e Testing\Communalities\SPSS_Output\sav\communalities_
spss_ready_data.sav' /COMPRESSED.

373 0
373 0 M>
374 0 ECHO '=====
====='.
374 0 M> ECHO '=====
====='.
=====

375 0 ECHO 'COMMON-FACTOR COMMUNALITIES'.
375 0 M> ECHO 'COMMON-FACTOR COMMUNALITIES'.
COMMON-FACTOR COMMUNALITIES
376 0 ECHO 'Design: Principal-axis variance in each item explained by two c
ommon factors.'.
376 0 M> ECHO 'Design: Principal-axis variance in each item explained by tw
o common factors.'.
Design: Principal-axis variance in each item explained by two common factors.
377 0 ECHO 'Null hypothesis: An item's communality is zero.'.
377 0 M> ECHO 'Null hypothesis: An item's communality is zero.'.

```

Common Factor Communalities
Iterated PAF explained variance by item

Null hypothesis: An item's communality is zero.

```
378 0 ECHO 'Formula: h_i^2=sum_j lambda_ij^2; uniqueness=1-h_i^2.'.
378 0 M> ECHO 'Formula: h_i^2=sum_j lambda_ij^2; uniqueness=1-h_i^2.'.
Formula: h_i^2=sum_j lambda_ij^2; uniqueness=1-h_i^2.
379 0 ECHO 'Variables: G1, G2, G3, famrel, freetime, goout'.
379 0 M> ECHO 'Variables: G1, G2, G3, famrel, freetime, goout'.
Variables: G1, G2, G3, famrel, freetime, goout
380 0 ECHO 'Rows analyzed: 649'.
380 0 M> ECHO 'Rows analyzed: 649'.
Rows analyzed: 649
381 0 ECHO 'factors = 2'.
381 0 M> ECHO 'factors = 2'.
factors = 2
382 0 ECHO 'iterations = 500'.
382 0 M> ECHO 'iterations = 500'.
iterations = 500
383 0 ECHO 'maximum_communality = 0.9659050434706113'.
383 0 M> ECHO 'maximum_communality = 0.9659050434706113'.
maximum_communality = 0.9659050434706113
384 0 ECHO 'mean_communality = 0.5668425200713844'.
384 0 M> ECHO 'mean_communality = 0.5668425200713844'.
mean_communality = 0.5668425200713844
385 0 ECHO 'minimum_communality = 0.044644194156506216'.
385 0 M> ECHO 'minimum_communality = 0.044644194156506216'.
minimum_communality = 0.044644194156506216
386 0 ECHO 'Cross-check status: pass'.
386 0 M> ECHO 'Cross-check status: pass'.
Cross-check status: pass
387 0 ECHO '=====
====='.
387 0 M> ECHO '=====
====='.
=====
388 0
388 0 M>
389 0 OUTPUT SAVE OUTFILE='D:\DATA ANALYSIS\L Validity Factor Analysis and
Scale Testing\Communalities\SPSS_Output\spv\communalit
ies_spss_output.spv'.
```

Common Factor Communalities
Iterated PAF explained variance by item

```
389  0 M> OUTPUT SAVE OUTFILE='D:\DATA ANALYSIS\L Validity Factor Analysis a
nd Scale Testing\Communalities\SPSS_Output\spv\communa
        lities_spss_output.spv'.
390  0 OUTPUT EXPORT /CONTENTS EXPORT=ALL LAYERS=PRINTSETTING MODELVIEWS=PRI
NTSETTING
390  0 M> OUTPUT EXPORT /CONTENTS EXPORT=ALL LAYERS=PRINTSETTING MODELVIEWS=
PRINTSETTING
```