

```
1073 0 OUTPUT ACTIVATE ReliabilityAnalysisforLikertScalesOutput.  
1073 0 M> OUTPUT ACTIVATE ReliabilityAnalysisforLikertScalesOutput.  
1074 0 TITLE 'Reliability Analysis for Likert Scales'.  
1074 0 M> TITLE 'Reliability Analysis for Likert Scales'.
```

Reliability Analysis for Likert Scales

```
1075 0
1075 0 M>
1076 0 GET DATA
1076 0 M> GET DATA
1077 0 /TYPE=TXT /FILE='D:\DATA ANALYSIS\M Survey and Likert Scale Analysis
\Reliability Analysis for Likert Scales\dataset.csv' /
ENCODING='UTF8' /DELCASE=LINE /DELIMITERS=', ' /QUALIFIER='"'
1077 0 M> /TYPE=TXT /FILE='D:\DATA ANALYSIS\M Survey and Likert Scale Analy
sis\Reliability Analysis for Likert Scales\dataset.csv
' /ENCODING='UTF8' /DELCASE=LINE /DELIMITERS=', ' /QUALIFIER='"'
1078 0 /ARRANGEMENT=DELIMITED /FIRSTCASE=2
1078 0 M> /ARRANGEMENT=DELIMITED /FIRSTCASE=2
1079 0 /VARIABLES=
1079 0 M> /VARIABLES=
1080 0 school A8 sex A8 age F8.0 address A8 famsize A8 Pstatus A8 Medu F8.0
Fedu F8.0
1080 0 M> school A8 sex A8 age F8.0 address A8 famsize A8 Pstatus A8 Medu F
8.0 Fedu F8.0
1081 0 Mjob A16 Fjob A16 reason A16 guardian A16 traveltime F8.0 studytime
F8.0 failures F8.0
1081 0 M> Mjob A16 Fjob A16 reason A16 guardian A16 traveltime F8.0 studyti
me F8.0 failures F8.0
1082 0 schoolsup A8 famsup A8 paid A8 activities A8 nursery A8 higher A8 in
ternet A8 romantic A8
1082 0 M> schoolsup A8 famsup A8 paid A8 activities A8 nursery A8 higher A8
internet A8 romantic A8
1083 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.
1083 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.
1084 0 DATASET NAME ReliabilityAnalysisforLikertScalesData.
1084 0 M> DATASET NAME ReliabilityAnalysisforLikertScalesData.
1085 0 COMPUTE subject_id=$CASENUM.
1085 0 M> COMPUTE subject_id=$CASENUM.
1086 0 COMPUTE Dalc_R=6-Dalc.
1086 0 M> COMPUTE Dalc_R=6-Dalc.
1087 0 COMPUTE Walc_R=6-Walc.
1087 0 M> COMPUTE Walc_R=6-Walc.
```

Reliability Analysis for Likert Scales

```
1088 0 COMPUTE scale_score=MEAN.6(famrel,freetime,goout,Dalc_R,Walc_R,health
).
1088 0 M> COMPUTE scale_score=MEAN.6(famrel,freetime,goout,Dalc_R,Walc_R,hea
lth).
1089 0 RECODE sex ('F'=1) ('M'=2) INTO sex_code.
1089 0 M> RECODE sex ('F'=1) ('M'=2) INTO sex_code.
1090 0 RECODE school ('GP'=1) ('MS'=2) INTO school_code.
1090 0 M> RECODE school ('GP'=1) ('MS'=2) INTO school_code.
1091 0 RECODE higher internet ('no'=0) ('yes'=1) INTO higher_code internet_c
ode.
1091 0 M> RECODE higher internet ('no'=0) ('yes'=1) INTO higher_code interne
t_code.
1092 0 EXECUTE.
1092 0 M> EXECUTE.
1093 0
1093 0 M>
1094 0 * BEGIN METHOD-SPECIFIC SPSS WORKFLOW.
1094 0 M> * BEGIN METHOD-SPECIFIC SPSS WORKFLOW.
1095 0 TITLE 'Reliability Analysis for Likert Scales'.
1095 0 M> TITLE 'Reliability Analysis for Likert Scales'.
```

Reliability Analysis for Likert Scales

```
1096 0 SUBTITLE 'Internal consistency of six directionally aligned items'.  
1096 0 M> SUBTITLE 'Internal consistency of six directionally aligned items'  
.
```

Reliability Analysis for Likert Scales
Internal consistency of six directionally aligned items

```

1097  0  RELIABILITY /VARIABLES=famrel freetime goout Dalc_R Walc_R health
1097  0 M> RELIABILITY /VARIABLES=famrel freetime goout Dalc_R Walc_R health
1098  0  /SCALE('Aligned six-item scale') ALL /MODEL=ALPHA
1098  0 M> /SCALE('Aligned six-item scale') ALL /MODEL=ALPHA
1099  0  /STATISTICS=DESCRIPTIVE SCALE CORR /SUMMARY=TOTAL MEANS VARIANCE COV
CORR.
1099  0 M> /STATISTICS=DESCRIPTIVE SCALE CORR /SUMMARY=TOTAL MEANS VARIANCE
COV CORR.

```

Reliability

Notes

Output Created		18-JUL-2026 13:22:08
Comments		
Input	Data	D:\DATA ANALYSIS\M Survey and Likert Scale Analysis\Reliability Analysis for Likert Scales\dataset.csv
	Active Dataset	ReliabilityAnalysisforLikert ScalesData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
	Matrix Input	D:\DATA ANALYSIS\M Survey and Likert Scale Analysis\Reliability Analysis for Likert Scales\reliability_analysis_for_likert_scales_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.

Reliability Analysis for Likert Scales
Internal consistency of six directionally aligned items

Notes

Syntax		RELIABILITY /VARIABLES=famrel freetime goout Dalc_R Walc_R health /SCALE('Aligned six-item scale') ALL /MODEL=ALPHA /STATISTICS=DESCRIPT IVE SCALE CORR /SUMMARY=TOTAL MEANS VARIANCE COV CORR.
Resources	Processor Time	00:00:00.05
	Elapsed Time	00:00:00.04

[ReliabilityAnalysisforLikertScalesData]

Scale: Aligned six-item scale

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
.112	.169	6

Reliability Analysis for Likert Scales
Internal consistency of six directionally aligned items

Item Statistics

	Mean	Std. Deviation	N
famrel	3.9307	.95572	649
freetime	3.1803	1.05109	649
goout	3.1849	1.17577	649
Dalc_R	4.4977	.92483	649
Walc_R	3.7196	1.28438	649
health	3.5362	1.44626	649

Inter-Item Correlation Matrix

	famrel	freetime	goout	Dalc_R	Walc_R	health
famrel	1.000	.129	.090	.076	.094	.110
freetime	.129	1.000	.346	-.110	-.120	.085
goout	.090	.346	1.000	-.245	-.389	-.016
Dalc_R	.076	-.110	-.245	1.000	.617	-.059
Walc_R	.094	-.120	-.389	.617	1.000	-.115
health	.110	.085	-.016	-.059	-.115	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance
Item Means	3.675	3.180	4.498	1.317	1.414	.250
Item Variances	1.333	.855	2.092	1.236	2.445	.227
Inter-Item Covariances	.027	-.587	.732	1.319	-1.248	.090
Inter-Item Correlations	.033	-.389	.617	1.005	-1.586	.055

Summary Item Statistics

	N of Items
Item Means	6
Item Variances	6
Inter-Item Covariances	6
Inter-Item Correlations	6

Reliability Analysis for Likert Scales
Internal consistency of six directionally aligned items

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
famrel	18.1186	6.778	.227	.053	-.056 ^a
freetime	18.8690	6.879	.151	.138	-.002 ^a
goout	18.8644	8.139	-.105	.258	.234
Dalc_R	17.5516	7.269	.139	.382	.022
Walc_R	18.3297	7.400	-.033	.456	.178
health	18.5131	6.806	-.010	.042	.165

a. The value is negative due to a negative average covariance among items. This violates reliability model assumptions. You may want to check item codings.

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
22.0493	8.819	2.96960	6

```
1100 0 FACTOR /VARIABLES=famrel freetime goout Dalc_R Walc_R health /CRITERIA=FACTORS(1) /EXTRACTION=PC /ROTATION=NOROTATE /PRINT=
      INITIAL EXTRACTION.
1100 0 M> FACTOR /VARIABLES=famrel freetime goout Dalc_R Walc_R health /CRITERIA=FACTORS(1) /EXTRACTION=PC /ROTATION=NOROTATE /PRINT=
      INITIAL EXTRACTION.
```

Factor Analysis

Reliability Analysis for Likert Scales
Internal consistency of six directionally aligned items

Notes

Output Created		18-JUL-2026 13:22:08
Comments		
Input	Data	D:\DATA ANALYSIS\ISM Survey and Likert Scale Analysis\Reliability Analysis for Likert Scales\dataset.csv
	Active Dataset	ReliabilityAnalysisforLikert ScalesData
	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.
Syntax		FACTOR /VARIABLES=famrel freetime goout Dalc_R Walc_R health /CRITERIA=FACTORS(1) /EXTRACTION=PC /ROTATION=NOROTATE /PRINT=INITIAL EXTRACTION.
Resources	Processor Time	00:00:00.08
	Elapsed Time	00:00:00.06
	Maximum Memory Required	5704 (5.570K) bytes

Reliability Analysis for Likert Scales
Internal consistency of six directionally aligned items

Communalities

	Initial	Extraction
famrel	1.000	6.851E-6
freetime	1.000	.201
goout	1.000	.466
Dalc_R	1.000	.581
Walc_R	1.000	.693
health	1.000	.030

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Total	Initial Eigenvalues		Extraction Sums of Squared Loadings		
		% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.971	32.854	32.854	1.971	32.854	32.854
2	1.248	20.797	53.651			
3	1.024	17.060	70.711			
4	.807	13.446	84.156			
5	.604	10.064	94.220			
6	.347	5.780	100.000			

Extraction Method: Principal Component Analysis.

Reliability Analysis for Likert Scales
Internal consistency of six directionally aligned items

Component Matrix^a

	Component 1
famrel	-.003
freetime	-.448
goout	-.683
Dalc_R	.762
Walc_R	.833
health	-.173

Extraction Method:
Principal Component
Analysis.

a. 1 components extracted.

```
1101  0  ECHO 'Alpha item-total diagnostics alpha-if-deleted and one-factor ev
idence are reported without significance testing'.
1101  0 M>  ECHO 'Alpha item-total diagnostics alpha-if-deleted and one-factor
evidence are reported without significance testing'.
Alpha item-total diagnostics alpha-if-deleted and one-factor evidence are repo
rtd without significance testing
1102  0  * END METHOD-SPECIFIC SPSS WORKFLOW.
1102  0 M>  * END METHOD-SPECIFIC SPSS WORKFLOW.
1103  0
1103  0 M>
1104  0  SAVE OUTFILE='D:\DATA ANALYSIS\M Survey and Likert Scale Analysis\Rel
iability Analysis for Likert Scales\SPSS_Output\sav\re
liability-analysis-for-likert-scales_spss_ready_data.sav' /COMPRES
SED.
1104  0 M>  SAVE OUTFILE='D:\DATA ANALYSIS\M Survey and Likert Scale Analysis\
Reliability Analysis for Likert Scales\SPSS_Output\sav
\reliability-analysis-for-likert-scales_spss_ready_data.sav' /C
OMPRESSED.
1105  0
1105  0 M>
```

Reliability Analysis for Likert Scales
Internal consistency of six directionally aligned items

```
1106 0 ECHO '=====
====='.
1106 0 M> ECHO '=====
====='.
=====
1107 0 ECHO 'RELIABILITY ANALYSIS FOR LIKERT SCALES'.
1107 0 M> ECHO 'RELIABILITY ANALYSIS FOR LIKERT SCALES'.
RELIABILITY ANALYSIS FOR LIKERT SCALES
1108 0 ECHO 'Method type: reliability_analysis'.
1108 0 M> ECHO 'Method type: reliability_analysis'.
Method type: reliability_analysis
1109 0 ECHO 'Design: Internal-consistency analysis of the six-item direction
ally aligned scale.'.
1109 0 M> ECHO 'Design: Internal-consistency analysis of the six-item direct
ionally aligned scale.'.
Design: Internal-consistency analysis of the six-item directionally aligned sc
ale.
1110 0 ECHO 'Inference scope: No significance test is required; alpha, stand
ardized alpha, omega, item-total correlations, and alp
ha-if-deleted diagnose consistency.'.
1110 0 M> ECHO 'Inference scope: No significance test is required; alpha, st
andardized alpha, omega, item-total correlations, and
alpha-if-deleted diagnose consistency.'.
Inference scope: No significance test is required; alpha, standardized alpha,
omega, item-total correlations, and alpha-if-deleted d
1111 0 ECHO 'Formula:  $\alpha = k / (k - 1) * (1 - \sum(s_i^2) / s_{total}^2)$ ;  $\alpha_{std} = k * r_{bar} / [1 + (k - 1) r_{bar}]$ .'.
1111 0 M> ECHO 'Formula:  $\alpha = k / (k - 1) * (1 - \sum(s_i^2) / s_{total}^2)$ ;  $\alpha_{std} = k * r_{bar} / [1 + (k - 1) r_{bar}]$ .'.
Formula:  $\alpha = k / (k - 1) * (1 - \sum(s_i^2) / s_{total}^2)$ ;  $\alpha_{std} = k * r_{bar} / [1 + (k - 1) r_{bar}]$ .
1112 0 ECHO 'Variables: famrel, freetime, goout, Dalc, Walc, health'.
1112 0 M> ECHO 'Variables: famrel, freetime, goout, Dalc, Walc, health'.
Variables: famrel, freetime, goout, Dalc, Walc, health
1113 0 ECHO 'Rows analyzed: 649'.
1113 0 M> ECHO 'Rows analyzed: 649'.
Rows analyzed: 649
1114 0 ECHO 'cronbach_alpha = 0.1117626312468654'.
1114 0 M> ECHO 'cronbach_alpha = 0.1117626312468654'.
```

Reliability Analysis for Likert Scales
Internal consistency of six directionally aligned items

```
cronbach_alpha = 0.1117626312468654
1115 0 ECHO 'items = 6'.
1115 0 M> ECHO 'items = 6'.
items = 6
1116 0 ECHO 'maximum_alpha_if_deleted = 0.23408718414663743'.
1116 0 M> ECHO 'maximum_alpha_if_deleted = 0.23408718414663743'.
maximum_alpha_if_deleted = 0.23408718414663743
1117 0 ECHO 'minimum_item_total_r = -0.10476993802912485'.
1117 0 M> ECHO 'minimum_item_total_r = -0.10476993802912485'.
minimum_item_total_r = -0.10476993802912485
1118 0 ECHO 'omega_total = 0.020155382121447452'.
1118 0 M> ECHO 'omega_total = 0.020155382121447452'.
omega_total = 0.020155382121447452
1119 0 ECHO 'respondents = 649'.
1119 0 M> ECHO 'respondents = 649'.
respondents = 649
1120 0 ECHO 'standardized_alpha = 0.16890957016106378'.
1120 0 M> ECHO 'standardized_alpha = 0.16890957016106378'.
standardized_alpha = 0.16890957016106378
1121 0 ECHO 'Cross-check status: pass'.
1121 0 M> ECHO 'Cross-check status: pass'.
Cross-check status: pass
1122 0 ECHO '=====
====='.
1122 0 M> ECHO '=====
====='.
=====
1123 0
1123 0 M>
1124 0 OUTPUT SAVE OUTFILE='D:\DATA ANALYSIS\M Survey and Likert Scale Analysis\Reliability Analysis for Likert Scales\SPSS_Output
\spv\reliability-analysis-for-likert-scales_spss_output.spv'.
1124 0 M> OUTPUT SAVE OUTFILE='D:\DATA ANALYSIS\M Survey and Likert Scale Analysis\Reliability Analysis for Likert Scales\SPSS_Output\spv\reliability-analysis-for-likert-scales_spss_output.spv'
.
1125 0 OUTPUT EXPORT /CONTENTS EXPORT=ALL LAYERS=PRINTSETTING MODELVIEWS=PRINTSETTING
```

Reliability Analysis for Likert Scales
Internal consistency of six directionally aligned items

```
1125  0 M>  OUTPUT EXPORT /CONTENTS EXPORT=ALL LAYERS=PRINTSETTING MODELVIEWS=  
PRINTSETTING
```