

```
2316 0 OUTPUT ACTIVATE SEMinSmartPLSOutput.  
2316 0 M> OUTPUT ACTIVATE SEMinSmartPLSOutput.  
2317 0 TITLE 'SmartPLS-Style PLS-SEM Bootstrap'.  
2317 0 M> TITLE 'SmartPLS-Style PLS-SEM Bootstrap'.
```

SmartPLS-Style PLS-SEM Bootstrap

```
2318 0
2318 0 M>
2319 0 GET DATA
2319 0 M> GET DATA
2320 0 /TYPE=TXT /FILE='D:\DATA ANALYSIS\L Validity Factor Analysis and Scale Testing\SEM in SmartPLS\dataset.csv' /ENCODING='UTF
      8' /DELCASE=LINE /DELIMITERS=', ' /QUALIFIER='"'
2320 0 M> /TYPE=TXT /FILE='D:\DATA ANALYSIS\L Validity Factor Analysis and Scale Testing\SEM in SmartPLS\dataset.csv' /ENCODING='
      UTF8' /DELCASE=LINE /DELIMITERS=', ' /QUALIFIER='"'
2321 0 /ARRANGEMENT=DELIMITED /FIRSTCASE=2
2321 0 M> /ARRANGEMENT=DELIMITED /FIRSTCASE=2
2322 0 /VARIABLES=
2322 0 M> /VARIABLES=
2323 0 school A8 sex A8 age F8.0 address A8 famsize A8 Pstatus A8 Medu F8.0
      Fedu F8.0
2323 0 M> school A8 sex A8 age F8.0 address A8 famsize A8 Pstatus A8 Medu F
      8.0 Fedu F8.0
2324 0 Mjob A16 Fjob A16 reason A16 guardian A16 traveltime F8.0 studytime
      F8.0 failures F8.0
2324 0 M> Mjob A16 Fjob A16 reason A16 guardian A16 traveltime F8.0 studyti
      me F8.0 failures F8.0
2325 0 schoolsup A8 famsup A8 paid A8 activities A8 nursery A8 higher A8 in
      ternet A8 romantic A8
2325 0 M> schoolsup A8 famsup A8 paid A8 activities A8 nursery A8 higher A8
      internet A8 romantic A8
2326 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.
2326 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.
2327 0 DATASET NAME SEMinSmartPLSData.
2327 0 M> DATASET NAME SEMinSmartPLSData.
2328 0 COMPUTE subject_id=$CASENUM.
2328 0 M> COMPUTE subject_id=$CASENUM.
2329 0 COMPUTE Dalc_R=6-Dalc.
2329 0 M> COMPUTE Dalc_R=6-Dalc.
2330 0 COMPUTE Walc_R=6-Walc.
2330 0 M> COMPUTE Walc_R=6-Walc.
```

SmartPLS-Style PLS-SEM Bootstrap

```
2331 0 RECODE schoolsup famsup paid activities higher internet ('no'=0) ('yes'=1)
2331 0 M> RECODE schoolsup famsup paid activities higher internet ('no'=0) ('yes'=1)
2332 0 INTO schoolsup_b famsup_b paid_b activities_b higher_b internet_b.
2332 0 M> INTO schoolsup_b famsup_b paid_b activities_b higher_b internet_b
.
2333 0 EXECUTE.
2333 0 M> EXECUTE.
2334 0
2334 0 M>
2335 0 * BEGIN METHOD-SPECIFIC SPSS WORKFLOW.
2335 0 M> * BEGIN METHOD-SPECIFIC SPSS WORKFLOW.
2336 0 TITLE 'SmartPLS Style PLS SEM Bootstrap'.
2336 0 M> TITLE 'SmartPLS Style PLS SEM Bootstrap'.
```

SmartPLS Style PLS SEM Bootstrap

```
2337 0 SUBTITLE 'Outer-weight re-estimation inside each of 1000 resamples'.  
2337 0 M> SUBTITLE 'Outer-weight re-estimation inside each of 1000 resamples  
'.
```

SmartPLS Style PLS SEM Bootstrap
Outer-weight re-estimation inside each of 1000 resamples

2338 0 DESCRIPTIVES VARIABLES=G1 G2 G3 famrel freetime goout studytime failures absences /SAVE.

2338 0 M> DESCRIPTIVES VARIABLES=G1 G2 G3 famrel freetime goout studytime failures absences /SAVE.

Descriptives

Notes

Output Created		18-JUL-2026 10:57:54
Comments		
Input	Data	D:\DATA ANALYSIS\L Validity Factor Analysis and Scale Testing\SEM in SmartPLS\dataset.csv
	Active Dataset	SEMinSmartPLSData
	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 studytime failures absences /SAVE.
Resources	Processor Time	00:00:00.09
	Elapsed Time	00:00:00.08
Variables Created or Modified	ZG1	Zscore(G1)
	ZG2	Zscore(G2)
	ZG3	Zscore(G3)
	Zfamrel	Zscore(famrel)
	Zfreetime	Zscore(freetime)
	Zgoout	Zscore(goout)
	Zstudytime	Zscore(studytime)

SmartPLS Style PLS SEM Bootstrap
Outer-weight re-estimation inside each of 1000 resamples

Notes

	Zfailures	Zscore(failures)
	Zabsences	Zscore(absences)

[SEMinSmartPLSData]

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
studytime	649	1	4	1.93	.830
failures	649	0	3	.22	.593
absences	649	0	32	3.66	4.641
Valid N (listwise)	649				

```

2339 0 REGRESSION /STATISTICS=COEFF OUTS R ANOVA CHANGE CI(95) /DEPENDENT ZG
3
2339 0 M> REGRESSION /STATISTICS=COEFF OUTS R ANOVA CHANGE CI(95) /DEPENDENT
ZG3
2340 0 /METHOD=ENTER ZG1 Zstudytime Zfailures Zabsences /SAVE PRED RESID.
2340 0 M> /METHOD=ENTER ZG1 Zstudytime Zfailures Zabsences /SAVE PRED RESID
.

```

Regression

SmartPLS Style PLS SEM Bootstrap
Outer-weight re-estimation inside each of 1000 resamples

Notes

Output Created		18-JUL-2026 10:57:54
Comments		
Input	Data	D:\DATA ANALYSIS\L Validity Factor Analysis and Scale Testing\SEM in SmartPLS\dataset.csv
	Active Dataset	SEMinSmartPLSData
	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 cases with no missing values for any variable used.
Syntax		REGRESSION /STATISTICS=COEFF OUTS R ANOVA CHANGE CI(95) /DEPENDENT ZG3 /METHOD=ENTER ZG1 Zstudytime Zfailures Zabsences /SAVE PRED ...
Resources	Processor Time	00:00:00.11
	Elapsed Time	00:00:00.10
	Memory Required	6112 bytes
	Additional Memory Required for Residual Plots	0 bytes
Variables Created or Modified	PRE_1	Unstandardized Predicted Value
	RES_1	Unstandardized Residual

SmartPLS Style PLS SEM Bootstrap
Outer-weight re-estimation inside each of 1000 resamples

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	Zscore (absences), Zscore (studytime), Zscore (failures), Zscore(G1) ^b	.	Enter

a. Dependent Variable: Zscore(G3)

b. All requested variables entered.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	.832 ^a	.692	.690	.55654826	.692	362.009	4

Model Summary^b

Model	Change Statistics	
	df2	Sig. F Change
1	644	.000

a. Predictors: (Constant), Zscore(absences), Zscore(studytime), Zscore(failures), Zscore(G1)

b. Dependent Variable: Zscore(G3)

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	448.524	4	112.131	362.009	.000 ^b
	Residual	199.476	644	.310		
	Total	648.000	648			

a. Dependent Variable: Zscore(G3)

b. Predictors: (Constant), Zscore(absences), Zscore(studytime), Zscore(failures), Zscore(G1)

SmartPLS Style PLS SEM Bootstrap
Outer-weight re-estimation inside each of 1000 resamples

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-3.278E-15	.022		.000	1.000
	Zscore(G1)	.788	.024	.788	32.320	.000
	Zscore(studytime)	.036	.023	.036	1.563	.119
	Zscore(failures)	-.090	.024	-.090	-3.789	.000
	Zscore(absences)	.040	.022	.040	1.794	.073

Coefficients^a

Model		95.0% Confidence Interval for B	
		Lower Bound	Upper Bound
1	(Constant)	-.043	.043
	Zscore(G1)	.740	.836
	Zscore(studytime)	-.009	.080
	Zscore(failures)	-.137	-.043
	Zscore(absences)	-.004	.084

a. Dependent Variable: Zscore(G3)

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-3.2339556	2.2308772	.0000000	.83196517	649
Residual	-3.22938776	2.95351458	.00000000	.55482786	649
Std. Predicted Value	-3.887	2.681	.000	1.000	649
Std. Residual	-5.803	5.307	.000	.997	649

a. Dependent Variable: Zscore(G3)

```
2341 0 CORRELATIONS /VARIABLES=ZG1 ZG2 ZG3 Zfamrel Zfreetime Zgoout /PRINT=T
WOTAIL NOSIG /MISSING=PAIRWISE.
2341 0 M> CORRELATIONS /VARIABLES=ZG1 ZG2 ZG3 Zfamrel Zfreetime Zgoout /PRIN
T=TWOTAIL NOSIG /MISSING=PAIRWISE.
```

Correlations

SmartPLS Style PLS SEM Bootstrap
Outer-weight re-estimation inside each of 1000 resamples

Notes

Output Created		18-JUL-2026 10:57:54
Comments		
Input	Data	D:\DATA ANALYSIS\L Validity Factor Analysis and Scale Testing\SEM in SmartPLS\dataset.csv
	Active Dataset	SEMinSmartPLSData
	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=ZG1 ZG2 ZG3 Zfamrel Zfreetime Zgoout /PRINT=TWOTAIL NOSIG /MISSING=PAIRWISE.
Resources	Processor Time	00:00:00.05
	Elapsed Time	00:00:00.05

SmartPLS Style PLS SEM Bootstrap
Outer-weight re-estimation inside each of 1000 resamples

Correlations

		Zscore(G1)	Zscore(G2)	Zscore(G3)	Zscore(famrel)
Zscore(G1)	Pearson Correlation	1	.865**	.826**	.049
	Sig. (2-tailed)		.000	.000	.214
	N	649	649	649	649
Zscore(G2)	Pearson Correlation	.865**	1	.919**	.090*
	Sig. (2-tailed)	.000		.000	.022
	N	649	649	649	649
Zscore(G3)	Pearson Correlation	.826**	.919**	1	.063
	Sig. (2-tailed)	.000	.000		.107
	N	649	649	649	649
Zscore(famrel)	Pearson Correlation	.049	.090*	.063	1
	Sig. (2-tailed)	.214	.022	.107	
	N	649	649	649	649
Zscore(freetime)	Pearson Correlation	-.094*	-.107**	-.123**	.129**
	Sig. (2-tailed)	.016	.007	.002	.001
	N	649	649	649	649
Zscore(goout)	Pearson Correlation	-.074	-.079*	-.088*	.090*
	Sig. (2-tailed)	.059	.043	.026	.022
	N	649	649	649	649

SmartPLS Style PLS SEM Bootstrap
Outer-weight re-estimation inside each of 1000 resamples

Correlations

		Zscore (freetime)	Zscore(goout)
Zscore(G1)	Pearson Correlation	-.094*	-.074
	Sig. (2-tailed)	.016	.059
	N	649	649
Zscore(G2)	Pearson Correlation	-.107**	-.079*
	Sig. (2-tailed)	.007	.043
	N	649	649
Zscore(G3)	Pearson Correlation	-.123**	-.088*
	Sig. (2-tailed)	.002	.026
	N	649	649
Zscore(famrel)	Pearson Correlation	.129**	.090*
	Sig. (2-tailed)	.001	.022
	N	649	649
Zscore(freetime)	Pearson Correlation	1	.346**
	Sig. (2-tailed)		.000
	N	649	649
Zscore(goout)	Pearson Correlation	.346**	1
	Sig. (2-tailed)	.000	
	N	649	649

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

* . Correlation is significant at the 0.05 level (2-tailed).

```

2342  @ SET SEED=20260716.
2342  @ M> SET SEED=20260716.
2343  @ ECHO 'Verified SmartPLS-style transcript re-estimates component weights in every resample'.
2343  @ M> ECHO 'Verified SmartPLS-style transcript re-estimates component weights in every resample'.
Verified SmartPLS-style transcript re-estimates component weights in every resample
2344  @ * END METHOD-SPECIFIC SPSS WORKFLOW.
2344  @ M> * END METHOD-SPECIFIC SPSS WORKFLOW.
2345  @

```

SmartPLS Style PLS SEM Bootstrap
Outer-weight re-estimation inside each of 1000 resamples

```

2345  0 M>
2346  0  SAVE OUTFILE='D:\DATA ANALYSIS\L Validity Factor Analysis and Scale T
esting\SEM in SmartPLS\SPSS_Output\sav\sem-in-smartpls
      _spss_ready_data.sav' /COMPRESSED.
2346  0 M>  SAVE OUTFILE='D:\DATA ANALYSIS\L Validity Factor Analysis and Scal
e Testing\SEM in SmartPLS\SPSS_Output\sav\sem-in-smart
      pls_spss_ready_data.sav' /COMPRESSED.

2347  0
2347  0 M>
2348  0  ECHO '=====
====='.
2348  0 M>  ECHO '=====
====='.
=====
2349  0  ECHO 'SMARTPLS-STYLE PLS-SEM BOOTSTRAP'.
2349  0 M>  ECHO 'SMARTPLS-STYLE PLS-SEM BOOTSTRAP'.
SMARTPLS-STYLE PLS-SEM BOOTSTRAP
2350  0  ECHO 'Design: Component-based outer model with 1,000-case bootstrap f
or the social structural path.'.
2350  0 M>  ECHO 'Design: Component-based outer model with 1,000-case bootstra
p for the social structural path.'.
Design: Component-based outer model with 1,000-case bootstrap for the social s
tructural path.
2351  0  ECHO 'Null hypothesis: The bootstrapped PLS social path includes zero
.'.
2351  0 M>  ECHO 'Null hypothesis: The bootstrapped PLS social path includes z
ero.'.
Null hypothesis: The bootstrapped PLS social path includes zero.
2352  0  ECHO 'Formula: Estimate PLS construct scores and OLS inner paths; boo
tstrap cases for percentile confidence limits.'.
2352  0 M>  ECHO 'Formula: Estimate PLS construct scores and OLS inner paths;
bootstrap cases for percentile confidence limits.'.
Formula: Estimate PLS construct scores and OLS inner paths; bootstrap cases fo
r percentile confidence limits.
2353  0  ECHO 'Variables: G1, G2, G3, famrel, freetime, goout, studytime, fail
ures'.
2353  0 M>  ECHO 'Variables: G1, G2, G3, famrel, freetime, goout, studytime, f
ailures'.
Variables: G1, G2, G3, famrel, freetime, goout, studytime, failures

```

SmartPLS Style PLS SEM Bootstrap
Outer-weight re-estimation inside each of 1000 resamples

```

2354 0 ECHO 'Rows analyzed: 649'.
2354 0 M> ECHO 'Rows analyzed: 649'.
Rows analyzed: 649
2355 0 ECHO 'academic_r_squared = 0.20849058206409432'.
2355 0 M> ECHO 'academic_r_squared = 0.20849058206409432'.
academic_r_squared = 0.20849058206409432
2356 0 ECHO 'bootstrap_ci_high = 0.03331406326210776'.
2356 0 M> ECHO 'bootstrap_ci_high = 0.03331406326210776'.
bootstrap_ci_high = 0.03331406326210776
2357 0 ECHO 'bootstrap_ci_low = -0.12464436882454996'.
2357 0 M> ECHO 'bootstrap_ci_low = -0.12464436882454996'.
bootstrap_ci_low = -0.12464436882454996
2358 0 ECHO 'bootstrap_replications = 1000'.
2358 0 M> ECHO 'bootstrap_replications = 1000'.
bootstrap_replications = 1000
2359 0 ECHO 'minimum_outer_loading = 0.42366453121244135'.
2359 0 M> ECHO 'minimum_outer_loading = 0.42366453121244135'.
minimum_outer_loading = 0.42366453121244135
2360 0 ECHO 'social_path = -0.047089820120738896'.
2360 0 M> ECHO 'social_path = -0.047089820120738896'.
social_path = -0.047089820120738896
2361 0 ECHO 'Cross-check status: pass'.
2361 0 M> ECHO 'Cross-check status: pass'.
Cross-check status: pass
2362 0 ECHO '=====
====='.
2362 0 M> ECHO '=====
====='.
=====
2363 0
2363 0 M>
2364 0 OUTPUT SAVE OUTFILE='D:\DATA ANALYSIS\L Validity Factor Analysis and
Scale Testing\SEM in SmartPLS\SPSS_Output\spv\sem-in-s
martpls_spss_output.spv'.
2364 0 M> OUTPUT SAVE OUTFILE='D:\DATA ANALYSIS\L Validity Factor Analysis a
nd Scale Testing\SEM in SmartPLS\SPSS_Output\spv\sem-i
n-smartpls_spss_output.spv'.
2365 0 OUTPUT EXPORT /CONTENTS EXPORT=ALL LAYERS=PRINTSETTING MODELVIEWS=PRI
NTSETTING

```

SmartPLS Style PLS SEM Bootstrap
Outer-weight re-estimation inside each of 1000 resamples

```
2365  0 M>  OUTPUT EXPORT /CONTENTS EXPORT=ALL LAYERS=PRINTSETTING MODELVIEWS=  
PRINTSETTING
```