

```

GET
  FILE='D:\Surfdrive\PhD Research\#2\R_chapter_03\02\spss_main_data.sav'.
DATASET NAME DataSet1 WINDOW=FRONT.
DATASET ACTIVATE DataSet1.
SAVE OUTFILE='D:\Surfdrive\PhD Research\#2\R_chapter_03\02\spss_main_data.sav'
/COMPRESSED.
GLM sud_starting_avg up_sud_75 up_sud_100 up_sud_50a down_sud_25 down_sud_0 down_sud_50a hr_sta
down_speak_50a BY SIAS_LowHi_check
  /WSFACTOR=negativity_ratio 7 Polynomial
  /MEASURE=sud heart_rate audio
  /METHOD=SSTYPE(3)
  /PRINT=DESCRIPTIVE ETASQ
  /CRITERIA=ALPHA(.05)
  /WSDSIGN=negativity_ratio
  /DESIGN=SIAS_LowHi_check.

```

## General Linear Model

### Notes

Output Created		08-JUN-2018 20:15:47
Comments		
Input	Data	D:\Surfdrive\PhD Research\#2\R_chapter_03\02\spss_main_data.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	24
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 model.

## Notes

Syntax	GLM sud_starting_avg up_sud_75 up_sud_100 up_sud_50a down_sud_25 down_sud_0 down_sud_50a hr_starting_avg up_hr_75 up_hr_100 up_hr_50a down_hr_25 down_hr_0 down_hr_50a speak_starting_avg up_speak_75 up_speak_100 up_speak_50a down_speak_25 down_speak_0 down_speak_50a BY SIAS_LowHi_check  /WSFACTOR=negativity_r atio 7 Polynomial /MEASURE=sud heart_rate audio /METHOD=SSTYPE(3) /PRINT=DESCRIPTIVE ETASQ /CRITERIA=ALPHA(.05)  /WSDESIGN=negativity_ra tio  /DESIGN=SIAS_LowHi_ch eck.		
Resources	Processor Time	00:00:00.02	
	Elapsed Time	00:00:00.02	

[DataSet1] D:\Surfdrive\PhD Research\#2\R\_chapter\_03\02\spss\_main\_data.sav

### Within-Subjects Factors

Measure	negativity ratio	Dependent Variable
sud	1	sud_starting_avg
	2	up_sud_75
	3	up_sud_100
	4	up_sud_50a
	5	down_sud_25
	6	down_sud_0
	7	down_sud_50a
heart_rate	1	hr_starting_avg
	2	up_hr_75
	3	up_hr_100
	4	up_hr_50a
	5	down_hr_25
	6	down_hr_0
	7	down_hr_50a
audio	1	speak_starting_avg
	2	up_speak_75
	3	up_speak_100
	4	up_speak_50a
	5	down_speak_25
	6	down_speak_0
	7	down_speak_50a

### Between-Subjects Factors

	N
SIAS_LowHi_check 0	18
1	6

### Descriptive Statistics

	SIAS LowHi check	Mean	Std. Deviation	N
sud_starting_avg	0	3.389	.6314	18
	1	4.333	1.0328	6
	Total	3.625	.8373	24
up_sud_75	0	4.17	.985	18
	1	5.17	1.169	6
	Total	4.42	1.100	24
up_sud_100	0	5.06	.802	18
	1	6.50	1.225	6
	Total	5.42	1.100	24
up_sud_50a	0	3.72	.752	18
	1	5.83	1.169	6
	Total	4.25	1.260	24
down_sud_25	0	3.56	.922	18
	1	4.00	.894	6
	Total	3.67	.917	24
down_sud_0	0	3.00	1.328	18
	1	3.17	1.169	6
	Total	3.04	1.268	24
down_sud_50a	0	3.94	.802	18
	1	3.67	.516	6
	Total	3.88	.741	24
hr_starting_avg	0	84.54056	4.616053	18
	1	89.70833	11.747582	6
	Total	85.83250	7.139724	24
up_hr_75	0	88.2522	6.26741	18
	1	96.1283	15.68652	6
	Total	90.2213	9.72949	24
up_hr_100	0	90.5056	6.18043	18
	1	98.7317	17.05193	6
	Total	92.5621	10.23148	24
up_hr_50a	0	90.5094	6.23325	18
	1	98.3633	16.36397	6
	Total	92.4729	9.94983	24
down_hr_25	0	83.6906	3.85774	18
	1	86.7933	8.73789	6
	Total	84.4663	5.42968	24
down_hr_0	0	82.1233	2.54999	18
	1	82.8717	6.46424	6
	Total	82.3104	3.74162	24

### Descriptive Statistics

	SIAS LowHi check	Mean	Std. Deviation	N
down_hr_50a	0	81.6956	2.60179	18
	1	85.2717	8.07410	6
	Total	82.5896	4.65591	24
speak_starting_avg	0	105.222	10.3145	18
	1	90.583	18.8691	6
	Total	101.563	14.0699	24
up_speak_75	0	74.22	19.080	18
	1	62.50	17.190	6
	Total	71.29	18.979	24
up_speak_100	0	54.50	8.699	18
	1	39.00	19.990	6
	Total	50.63	13.777	24
up_speak_50a	0	84.28	16.135	18
	1	77.83	17.452	6
	Total	82.67	16.333	24
down_speak_25	0	122.17	14.131	18
	1	113.33	5.820	6
	Total	119.96	13.047	24
down_speak_0	0	184.94	17.956	18
	1	156.00	17.065	6
	Total	177.71	21.576	24
down_speak_50a	0	138.28	25.920	18
	1	121.17	23.481	6
	Total	134.00	25.956	24

**Multivariate Tests<sup>a</sup>**

Effect			Value	F
Between Subjects	Intercept	Pillai's Trace	.998	3536.251 <sup>b</sup>
		Wilks' Lambda	.002	3536.251 <sup>b</sup>
		Hotelling's Trace	530.438	3536.251 <sup>b</sup>
		Roy's Largest Root	530.438	3536.251 <sup>b</sup>
	SIAS_LowHi_check	Pillai's Trace	.301	2.866 <sup>b</sup>
		Wilks' Lambda	.699	2.866 <sup>b</sup>
		Hotelling's Trace	.430	2.866 <sup>b</sup>
		Roy's Largest Root	.430	2.866 <sup>b</sup>
Within Subjects	negativity_ratio	Pillai's Trace	.997	106.005 <sup>b</sup>
		Wilks' Lambda	.003	106.005 <sup>b</sup>
		Hotelling's Trace	381.618	106.005 <sup>b</sup>
		Roy's Largest Root	381.618	106.005 <sup>b</sup>
	negativity_ratio * SIAS_LowHi_check	Pillai's Trace	.894	2.343 <sup>b</sup>
		Wilks' Lambda	.106	2.343 <sup>b</sup>
		Hotelling's Trace	8.435	2.343 <sup>b</sup>
		Roy's Largest Root	8.435	2.343 <sup>b</sup>

**Multivariate Tests<sup>a</sup>**

Effect			Hypothesis df	Error df
Between Subjects	Intercept	Pillai's Trace	3.000	20.000
		Wilks' Lambda	3.000	20.000
		Hotelling's Trace	3.000	20.000
		Roy's Largest Root	3.000	20.000
	SIAS_LowHi_check	Pillai's Trace	3.000	20.000
		Wilks' Lambda	3.000	20.000
		Hotelling's Trace	3.000	20.000
		Roy's Largest Root	3.000	20.000
Within Subjects	negativity_ratio	Pillai's Trace	18.000	5.000
		Wilks' Lambda	18.000	5.000
		Hotelling's Trace	18.000	5.000
		Roy's Largest Root	18.000	5.000
	negativity_ratio * SIAS_LowHi_check	Pillai's Trace	18.000	5.000
		Wilks' Lambda	18.000	5.000
		Hotelling's Trace	18.000	5.000
		Roy's Largest Root	18.000	5.000

### Multivariate Tests<sup>a</sup>

Effect			Sig.	Partial Eta Squared
Between Subjects	Intercept	Pillai's Trace	.000	.998
		Wilks' Lambda	.000	.998
		Hotelling's Trace	.000	.998
		Roy's Largest Root	.000	.998
	SIAS_LowHi_check	Pillai's Trace	.062	.301
		Wilks' Lambda	.062	.301
		Hotelling's Trace	.062	.301
		Roy's Largest Root	.062	.301
Within Subjects	negativity_ratio	Pillai's Trace	.000	.997
		Wilks' Lambda	.000	.997
		Hotelling's Trace	.000	.997
		Roy's Largest Root	.000	.997
	negativity_ratio * SIAS_LowHi_check	Pillai's Trace	.176	.894
		Wilks' Lambda	.176	.894
		Hotelling's Trace	.176	.894
		Roy's Largest Root	.176	.894

a. Design: Intercept + SIAS\_LowHi\_check  
Within Subjects Design: negativity\_ratio

b. Exact statistic

### Mauchly's Test of Sphericity<sup>a</sup>

Within Subjects Effect Measure		Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon <sup>b</sup>
						Greenhouse-Geisser
negativity_ratio	sud	.094	46.849	20	.001	.611
	heart_rate	.000	200.930	20	.000	.211
	audio	.049	59.688	20	.000	.478

### Mauchly's Test of Sphericity<sup>a</sup>

Within Subjects Effect Measure		Epsilon <sup>b</sup>	
		Huynh-Feldt	Lower-bound
negativity_ratio	sud	.781	.167
	heart_rate	.228	.167
	audio	.582	.167

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

- a. Design: Intercept + SIAS\_LowHi\_check  
Within Subjects Design: negativity\_ratio
- b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

## Tests of Within-Subjects Effects

### Multivariate<sup>a,b</sup>

Within Subjects Effect		Value	F	Hypothesis df	Error df
negativity_ratio	Pillai's Trace	1.240	15.503	18.000	396.000
	Wilks' Lambda	.054	36.870	18.000	368.181
	Hotelling's Trace	12.401	88.641	18.000	386.000
	Roy's Largest Root	12.015	264.341 <sup>c</sup>	6.000	132.000
negativity_ratio * SIAS_LowHi_check	Pillai's Trace	.334	2.757	18.000	396.000
	Wilks' Lambda	.689	2.883	18.000	368.181
	Hotelling's Trace	.419	2.998	18.000	386.000
	Roy's Largest Root	.328	7.218 <sup>c</sup>	6.000	132.000

### Multivariate<sup>a,b</sup>

Within Subjects Effect		Sig.	Partial Eta Squared
negativity_ratio	Pillai's Trace	.000	.413
	Wilks' Lambda	.000	.622
	Hotelling's Trace	.000	.805
	Roy's Largest Root	.000	.923
negativity_ratio * SIAS_LowHi_check	Pillai's Trace	.000	.111
	Wilks' Lambda	.000	.117
	Hotelling's Trace	.000	.123
	Roy's Largest Root	.000	.247

- a. Design: Intercept + SIAS\_LowHi\_check  
Within Subjects Design: negativity\_ratio
- b. Tests are based on averaged variables.
- c. The statistic is an upper bound on F that yields a lower bound on the significance level.



### Univariate Tests

Source	Measure		Type III Sum of Squares	df
negativity_ratio	sud	Sphericity Assumed	84.944	6
		Greenhouse-Geisser	84.944	3.664
		Huynh-Feldt	84.944	4.687
		Lower-bound	84.944	1.000
	heart_rate	Sphericity Assumed	2879.933	6
		Greenhouse-Geisser	2879.933	1.266
		Huynh-Feldt	2879.933	1.369
		Lower-bound	2879.933	1.000
	audio	Sphericity Assumed	186193.082	6
		Greenhouse-Geisser	186193.082	2.867
		Huynh-Feldt	186193.082	3.492
		Lower-bound	186193.082	1.000
negativity_ratio * SIAS_LowHi_check	sud	Sphericity Assumed	17.444	6
		Greenhouse-Geisser	17.444	3.664
		Huynh-Feldt	17.444	4.687
		Lower-bound	17.444	1.000
	heart_rate	Sphericity Assumed	225.956	6
		Greenhouse-Geisser	225.956	1.266
		Huynh-Feldt	225.956	1.369
		Lower-bound	225.956	1.000
	audio	Sphericity Assumed	1443.547	6
		Greenhouse-Geisser	1443.547	2.867
		Huynh-Feldt	1443.547	3.492
		Lower-bound	1443.547	1.000
Error(negativity_ratio)	sud	Sphericity Assumed	67.556	132
		Greenhouse-Geisser	67.556	80.605
		Huynh-Feldt	67.556	103.103
		Lower-bound	67.556	22.000
	heart_rate	Sphericity Assumed	1201.107	132
		Greenhouse-Geisser	1201.107	27.853
		Huynh-Feldt	1201.107	30.118
		Lower-bound	1201.107	22.000
	audio	Sphericity Assumed	24371.885	132
		Greenhouse-Geisser	24371.885	63.071
		Huynh-Feldt	24371.885	76.815
		Lower-bound	24371.885	22.000

# Univariate Tests

Source	Measure		Mean Square	F	Sig.
negativity_ratio	sud	Sphericity Assumed	14.157	27.663	.000
		Greenhouse-Geisser	23.184	27.663	.000
		Huynh-Feldt	18.125	27.663	.000
		Lower-bound	84.944	27.663	.000
	heart_rate	Sphericity Assumed	479.989	52.750	.000
		Greenhouse-Geisser	2274.760	52.750	.000
		Huynh-Feldt	2103.667	52.750	.000
		Lower-bound	2879.933	52.750	.000
	audio	Sphericity Assumed	31032.180	168.073	.000
		Greenhouse-Geisser	64946.603	168.073	.000
		Huynh-Feldt	53326.420	168.073	.000
		Lower-bound	186193.082	168.073	.000
negativity_ratio * SIAS_LowHi_check	sud	Sphericity Assumed	2.907	5.681	.000
		Greenhouse-Geisser	4.761	5.681	.001
		Huynh-Feldt	3.722	5.681	.000
		Lower-bound	17.444	5.681	.026
	heart_rate	Sphericity Assumed	37.659	4.139	.001
		Greenhouse-Geisser	178.475	4.139	.043
		Huynh-Feldt	165.051	4.139	.039
		Lower-bound	225.956	4.139	.054
	audio	Sphericity Assumed	240.591	1.303	.260
		Greenhouse-Geisser	503.528	1.303	.281
		Huynh-Feldt	413.437	1.303	.278
		Lower-bound	1443.547	1.303	.266
Error(negativity_ratio)	sud	Sphericity Assumed	.512		
		Greenhouse-Geisser	.838		
		Huynh-Feldt	.655		
		Lower-bound	3.071		
	heart_rate	Sphericity Assumed	9.099		
		Greenhouse-Geisser	43.123		
		Huynh-Feldt	39.880		
		Lower-bound	54.596		
	audio	Sphericity Assumed	184.635		
		Greenhouse-Geisser	386.420		
		Huynh-Feldt	317.282		
		Lower-bound	1107.813		

### Univariate Tests

Source	Measure		Partial Eta Squared
negativity_ratio	sud	Sphericity Assumed	.557
		Greenhouse-Geisser	.557
		Huynh-Feldt	.557
		Lower-bound	.557
	heart_rate	Sphericity Assumed	.706
		Greenhouse-Geisser	.706
		Huynh-Feldt	.706
		Lower-bound	.706
	audio	Sphericity Assumed	.884
		Greenhouse-Geisser	.884
		Huynh-Feldt	.884
		Lower-bound	.884
negativity_ratio * SIAS_LowHi_check	sud	Sphericity Assumed	.205
		Greenhouse-Geisser	.205
		Huynh-Feldt	.205
		Lower-bound	.205
	heart_rate	Sphericity Assumed	.158
		Greenhouse-Geisser	.158
		Huynh-Feldt	.158
		Lower-bound	.158
	audio	Sphericity Assumed	.056
		Greenhouse-Geisser	.056
		Huynh-Feldt	.056
		Lower-bound	.056
Error(negativity_ratio)	sud	Sphericity Assumed	
		Greenhouse-Geisser	
		Huynh-Feldt	
		Lower-bound	
	heart_rate	Sphericity Assumed	
		Greenhouse-Geisser	
		Huynh-Feldt	
		Lower-bound	
	audio	Sphericity Assumed	
		Greenhouse-Geisser	
		Huynh-Feldt	
		Lower-bound	

### Tests of Within-Subjects Contrasts

Source	Measure	negativity_ratio	Type III Sum of Squares	df	Mean Square
negativity_ratio	sud	Linear	18.286	1	18.286
		Quadratic	19.114	1	19.114
		Cubic	37.336	1	37.336
		Order 4	5.682	1	5.682
		Order 5	2.969	1	2.969
		Order 6	1.559	1	1.559
	heart_rate	Linear	1012.421	1	1012.421
		Quadratic	885.602	1	885.602
		Cubic	714.126	1	714.126
		Order 4	147.207	1	147.207
		Order 5	29.600	1	29.600
		Order 6	90.976	1	90.976
	audio	Linear	88331.191	1	88331.191
		Quadratic	21998.130	1	21998.130
		Cubic	59890.005	1	59890.005
		Order 4	13363.073	1	13363.073
		Order 5	100.209	1	100.209
		Order 6	2510.475	1	2510.475
negativity_ratio * SIAS_LowHi_check	sud	Linear	6.446	1	6.446
		Quadratic	6.223	1	6.223
		Cubic	.280	1	.280
		Order 4	2.056	1	2.056
		Order 5	.447	1	.447
		Order 6	1.992	1	1.992
	heart_rate	Linear	93.762	1	93.762
		Quadratic	25.186	1	25.186
		Cubic	85.218	1	85.218
		Order 4	17.273	1	17.273
		Order 5	.091	1	.091
		Order 6	4.426	1	4.426
	audio	Linear	199.069	1	199.069
		Quadratic	192.679	1	192.679
		Cubic	49.005	1	49.005
		Order 4	466.982	1	466.982
		Order 5	533.039	1	533.039
		Order 6	2.773	1	2.773
Error(negativity_ratio)	sud	Linear	18.554	22	.843
		Quadratic	9.015	22	.410

### Tests of Within-Subjects Contrasts

Source	Measure	negativity ratio	F	Sig.	Partial Eta Squared
negativity_ratio	sud	Linear	21.682	.000	.496
		Quadratic	46.644	.000	.680
		Cubic	77.679	.000	.779
		Order 4	9.784	.005	.308
		Order 5	6.365	.019	.224
		Order 6	5.378	.030	.196
	heart_rate	Linear	40.399	.000	.647
		Quadratic	72.486	.000	.767
		Cubic	59.297	.000	.729
		Order 4	62.218	.000	.739
		Order 5	26.641	.000	.548
		Order 6	50.621	.000	.697
	audio	Linear	223.088	.000	.910
		Quadratic	107.914	.000	.831
		Cubic	574.052	.000	.963
		Order 4	71.469	.000	.765
		Order 5	1.034	.320	.045
		Order 6	20.955	.000	.488
negativity_ratio * SIAS_LowHi_check	sud	Linear	7.644	.011	.258
		Quadratic	15.186	.001	.408
		Cubic	.583	.453	.026
		Order 4	3.541	.073	.139
		Order 5	.959	.338	.042
		Order 6	6.872	.016	.238
	heart_rate	Linear	3.741	.066	.145
		Quadratic	2.061	.165	.086
		Cubic	7.076	.014	.243
		Order 4	7.300	.013	.249
		Order 5	.082	.778	.004
		Order 6	2.463	.131	.101
	audio	Linear	.503	.486	.022
		Quadratic	.945	.342	.041
		Cubic	.470	.500	.021
		Order 4	2.498	.128	.102
		Order 5	5.500	.028	.200
		Order 6	.023	.880	.001
Error(negativity_ratio)	sud	Linear			
		Quadratic			

**Tests of Within-Subjects Contrasts**

Source	Measure	negativity ratio	Type III Sum of Squares	df	Mean Square
	heart_rate	Cubic	10.574	22	.481
		Order 4	12.776	22	.581
		Order 5	10.261	22	.466
		Order 6	6.376	22	.290
		Linear	551.338	22	25.061
		Quadratic	268.787	22	12.218
		Cubic	264.949	22	12.043
		Order 4	52.052	22	2.366
		Order 5	24.444	22	1.111
		Order 6	39.538	22	1.797
	audio	Linear	8710.833	22	395.947
		Quadratic	4484.690	22	203.850
		Cubic	2295.229	22	104.329
		Order 4	4113.492	22	186.977
		Order 5	2131.987	22	96.908
		Order 6	2635.654	22	119.802

**Tests of Within-Subjects Contrasts**

Source	Measure	negativity ratio	F	Sig.	Partial Eta Squared
	heart_rate	Cubic			
		Order 4			
		Order 5			
		Order 6			
		Linear			
		Quadratic			
		Cubic			
		Order 4			
		Order 5			
		Order 6			
	audio	Linear			
		Quadratic			
		Cubic			
		Order 4			
		Order 5			
		Order 6			

### Tests of Between-Subjects Effects

Transformed Variable: Average

Source	Measure	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	sud	2275.875	1	2275.875	711.885	.000
	heart_rate	987159.112	1	987159.112	2996.707	.000
	audio	1303621.143	1	1303621.143	1379.114	.000
SIAS_LowHi_check	sud	21.875	1	21.875	6.842	.016
	heart_rate	858.847	1	858.847	2.607	.121
	audio	6845.846	1	6845.846	7.242	.013
Error	sud	70.333	22	3.197		
	heart_rate	7247.122	22	329.415		
	audio	20795.712	22	945.260		

### Tests of Between-Subjects Effects

Transformed Variable: Average

Source	Measure	Partial Eta Squared
Intercept	sud	.970
	heart_rate	.993
	audio	.984
SIAS_LowHi_check	sud	.237
	heart_rate	.106
	audio	.248
Error	sud	
	heart_rate	
	audio	