

Create two new variables **loggulf** and **logglt** for the logged variables

*Diabetes.sav [DataSet1] - SPSS Data Editor

File Edit View Data Transform Analyze Graphs Utilities Window Help

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	id	Numeric	11	0	Patient ID	None	None	8	Right	Scale
2	relwt	Numeric	11	2	Relative Weight	None	None	8	Right	Scale
3	glufast	Numeric	11	0	Fasting Plasma Glucose	None	None	8	Right	Scale
4	glutest	Numeric	11	0	Test Plasma Glucose	None	None	8	Right	Scale
5	instest	Numeric	11	0	Plasma Insulin during Test	None	None	8	Right	Scale
6	sspg	Numeric	11	0	Steady State Plasma Glucose	None	None	8	Right	Scale
7	group	Numeric	11	0	Clinical Group	(1, Overt Diabe	None	14	Right	Ordinal
8	loggulf	Numeric	8	2	Log(GluFast)	None	None	8	Right	Scale
9	logglt	Numeric	8	2	Log(GluTest)	None	None	8	Right	Scale
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Data View Variable View

SPSS Processor is ready

Use the *Compute* pulldown menu to compute the log transform

SPSS Data Editor window showing the *Compute* pulldown menu open. The menu options include: Recode, Visual Bander..., Count..., Rank Cases..., Automatic Recode..., Date/Time..., Create Time Series..., Replace Missing Values..., Random Number Generators..., and Run Pending Transforms.

The data table below shows the first 64 rows of the dataset, with columns: id, test, sspg, group, loggluf, logglut, and 20 unlabeled 'var' columns.

id	test	sspg	group	loggluf	logglut	var	var	var	var	var	var	var	var	var	var	var	var	var	var	var	
10	10																				
11	11																				
12	12																				
13	13																				
14	14																				
15	15																				
16	16																				
17	17																				
18	18																				
19	19	.83	85	296	116	60	Normal	.	.												
20	20	.93	90	345	123	50	Normal	.	.												
21	21	.95	90	378	136	47	Normal	.	.												
22	22	.74	88	304	134	50	Normal	.	.												
23	23	.95	95	347	184	91	Normal	.	.												
24	24	.97	90	327	192	124	Normal	.	.												
25	25	.72	92	386	279	74	Normal	.	.												
26	26	1.11	74	365	228	235	Normal	.	.												
27	27	1.20	98	365	145	158	Normal	.	.												
28	28	1.13	100	352	172	140	Normal	.	.												
29	29	1.00	86	325	179	145	Normal	.	.												
30	30	.78	98	321	222	99	Normal	.	.												
31	31	1.00	70	360	134	90	Normal	.	.												
32	32	1.00	99	336	143	105	Normal	.	.												
33	33	.71	75	352	169	32	Normal	.	.												
34	34	.76	90	353	263	165	Normal	.	.												
35	35	.89	85	373	174	78	Normal	.	.												
36	36	.88	99	376	134	80	Normal	.	.												
37	37	1.17	100	367	182	54	Normal	.	.												
38	38	.85	78	335	241	175	Normal	.	.												
39	39	.97	106	396	128	80	Normal	.	.												
40	40	1.00	98	277	222	186	Normal	.	.												
41	41	1.00	102	378	165	117	Normal	.	.												
42	42	.89	90	360	282	160	Normal	.	.												
43	43	.98	94	291	94	71	Normal	.	.												
44	44	.78	80	269	121	29	Normal	.	.												
45	45	.74	93	318	73	42	Normal	.	.												
46	46	.91	86	328	106	56	Normal	.	.												
47	47	.95	85	334	118	122	Normal	.	.												
48	48	.95	96	356	112	73	Normal	.	.												
49	49	1.03	88	291	157	122	Normal	.	.												
50	50	.87	87	360	292	128	Normal	.	.												
51	51	.87	94	313	200	233	Normal	.	.												
52	52	1.17	93	306	220	132	Normal	.	.												
53	53	.83	86	319	144	138	Normal	.	.												
54	54	.82	86	349	109	83	Normal	.	.												
55	55	.86	96	332	151	109	Normal	.	.												
56	56	1.01	86	323	158	96	Normal	.	.												
57	57	.88	89	323	73	52	Normal	.	.												
58	58	.75	83	351	81	42	Normal	.	.												
59	59	.99	98	478	151	122	Chemically Diabetic	.	.												
60	60	1.12	100	398	122	176	Normal	.	.												
61	61	1.09	110	426	117	118	Normal	.	.												
62	62	1.02	88	439	208	244	Chemically Diabetic	.	.												
63	63	1.19	100	429	201	194	Chemically Diabetic	.	.												
64	64	1.06	80	333	131	136	Normal	.	.												

SPSS Processor is ready

In *Target Variable* insert **loggluf**, and in *Numeric Expression* type **Ln(glufast)**, and click OK

The screenshot shows the SPSS Data Editor interface with the 'Compute Variable' dialog box open. The dialog box is titled 'Compute Variable' and has a close button (X) in the top right corner. The 'Target Variable' field contains 'loggluf'. The 'Numeric Expression' field contains 'Ln(glufast)'. The 'Function group' is set to 'All'. The 'Functions and Special Variables' list is open, showing 'Ln' selected. The 'If...' field is empty. The dialog box has 'OK', 'Reset', 'Cancel', and 'Help' buttons at the bottom.

The background data grid shows the following data:

Case #	Patient ID [id]	Relative Weight [relwt]	Fasting Plasma Glucose [glufast]	Test Plasma Glucose [glut]	Plasma Insulin during [insulin]	Steady State Plasma [ssplasma]	Clinical Group [group]	Log(GluFast) [loggluf]	Log(GluEst) [logglut]
24	24	.97	90	327	192	124	Normal		
25	25	.72	92	386	279	74	Normal		
26	26	1.11	74	365	228	235	Normal		
27	27	1.20	98	365	145	158	Normal		
28	28	1.13	100	352	172	140	Normal		
29	29	1.00	86	325	179	145	Normal		
30	30	.78	98	321	222	99	Normal		
31	31	1.00	70	360	134	90	Normal		
32	32	1.00	99	336	143	105	Normal		
33	33	.71	75	352	169	32	Normal		
34	34	.76	90	353	263	165	Normal		
35	35	.89	85	373	174	78	Normal		
36	36	.88	99	376	134	80	Normal		
37	37	1.17	100	367	182	54	Normal		
38	38	.85	78	335	241	175	Normal		
39	39	.97	106	396	128	80	Normal		
40	40	1.00	98	277	222	186	Normal		
41	41	1.00	102	378	165	117	Normal		
42	42	.89	90	360	282	160	Normal		
43	43	.98	94	291	94	71	Normal		
44	44	.78	80	269	121	29	Normal		
45	45	.74	93	318	73	42	Normal		
46	46	.91	86	328	106	56	Normal		
47	47	.95	85	334	118	122	Normal		
48	48	.95	96	356	112	73	Normal		
49	49	1.03	88	291	157	122	Normal		
50	50	.87	87	360	292	128	Normal		
51	51	.87	94	313	200	233	Normal		
52	52	1.17	93	306	220	132	Normal		
53	53	.83	86	319	144	138	Normal		
54	54	.82	86	349	109	83	Normal		
55	55	.86	96	332	151	109	Normal		

The log transformed variable **logg1uf** is computed.

The screenshot shows the SPSS Data Editor interface for a file named "Diabetes.sav". The main window displays a data grid with 56 rows and 28 columns. The columns are: id, relwt, glufast, glutest, instest, sspg, group, loggluf, logglut, and 19 empty columns labeled "var". The data is as follows:

	id	relwt	glufast	glutest	instest	sspg	group	logg1uf	logglut	var																	
1	1	.81	80	356	124	55	Normal	4.38	.																		
2	2	.95	97	289	117	76	Normal	4.57	.																		
3	3	.94	105	319	143	105	Normal	4.65	.																		
4	4	1.04	90	356	199	108	Normal	4.50	.																		
5	5	1.00	90	323	240	143	Normal	4.50	.																		
6	6	.76	86	381	157	165	Normal	4.45	.																		
7	7	.91	100	350	221	119	Normal	4.61	.																		
8	8	1.10	85	301	186	105	Normal	4.44	.																		
9	9	.99	97	379	142	98	Normal	4.57	.																		
10	10	.78	97	296	131	94	Normal	4.57	.																		
11	11	.90	91	353	221	53	Normal	4.51	.																		
12	12	.73	87	306	178	66	Normal	4.47	.																		
13	13	.96	78	290	136	142	Normal	4.36	.																		
14	14	.84	90	371	200	93	Normal	4.50	.																		
15	15	.74	86	312	208	68	Normal	4.45	.																		
16	16	.98	80	393	202	102	Normal	4.38	.																		
17	17	1.10	90	364	152	76	Normal	4.50	.																		
18	18	.85	99	359	185	37	Normal	4.60	.																		
19	19	.83	85	296	116	60	Normal	4.44	.																		
20	20	.93	90	345	123	50	Normal	4.50	.																		
21	21	.95	90	378	136	47	Normal	4.50	.																		
22	22	.74	88	304	134	50	Normal	4.48	.																		
23	23	.95	95	347	184	91	Normal	4.55	.																		
24	24	.97	90	327	192	124	Normal	4.50	.																		
25	25	.72	92	386	279	74	Normal	4.52	.																		
26	26	1.11	74	365	228	235	Normal	4.30	.																		
27	27	1.20	98	365	145	158	Normal	4.58	.																		
28	28	1.13	100	352	172	140	Normal	4.61	.																		
29	29	1.00	86	325	179	145	Normal	4.45	.																		
30	30	.78	98	321	222	99	Normal	4.58	.																		
31	31	1.00	70	360	134	90	Normal	4.25	.																		
32	32	1.00	99	336	143	105	Normal	4.60	.																		
33	33	.71	75	352	169	32	Normal	4.32	.																		
34	34	.76	90	353	263	165	Normal	4.50	.																		
35	35	.89	85	373	174	78	Normal	4.44	.																		
36	36	.88	99	376	134	80	Normal	4.60	.																		
37	37	1.17	100	367	182	54	Normal	4.61	.																		
38	38	.85	78	335	241	175	Normal	4.36	.																		
39	39	.97	106	396	128	80	Normal	4.66	.																		
40	40	1.00	98	277	222	186	Normal	4.58	.																		
41	41	1.00	102	378	165	117	Normal	4.62	.																		
42	42	.89	90	360	282	160	Normal	4.50	.																		
43	43	.98	94	291	94	71	Normal	4.54	.																		
44	44	.78	80	269	121	29	Normal	4.38	.																		
45	45	.74	93	318	73	42	Normal	4.53	.																		
46	46	.91	86	328	106	56	Normal	4.45	.																		
47	47	.95	85	334	118	122	Normal	4.44	.																		
48	48	.95	96	356	112	73	Normal	4.56	.																		
49	49	1.03	88	291	157	122	Normal	4.48	.																		
50	50	.87	87	360	292	128	Normal	4.47	.																		
51	51	.87	94	313	200	233	Normal	4.54	.																		
52	52	1.17	93	306	220	132	Normal	4.53	.																		
53	53	.83	86	319	144	138	Normal	4.45	.																		
54	54	.82	86	349	109	83	Normal	4.45	.																		
55	55	.86	96	332	151	109	Normal	4.56	.																		

The same procedure computes the log transformed variable **loggltut**; we log transform the glutest variable using the *Compute* pulldown

The screenshot shows the SPSS Data Editor window for a file named "Diabetes.sav". The interface includes a menu bar (File, Edit, View, Data, Transform, Analyze, Graphs, Utilities, Window, Help) and a toolbar with various icons. The main data grid contains 56 rows and 20 columns. The first 10 columns are labeled: id, rehwt, glufast, glutest, instest, sspg, group, loggluf, and loggltut. The remaining 10 columns are labeled "var". The data shows individual patient records with various clinical and demographic values. The "group" column contains the word "Normal" for all entries. The "loggltut" column contains log-transformed values of the "glutest" variable.

	id	rehwt	glufast	glutest	instest	sspg	group	loggluf	loggltut	var	var	var	var	var	var	var	var	var	var
1	1	.81	80	356	124	55	Normal	4.38	5.87										
2	2	.95	97	289	117	76	Normal	4.57	5.67										
3	3	.94	105	319	143	105	Normal	4.65	5.77										
4	4	1.04	90	356	199	108	Normal	4.50	5.87										
5	5	1.00	90	323	240	143	Normal	4.50	5.78										
6	6	.76	86	381	157	165	Normal	4.45	5.94										
7	7	.91	100	350	221	119	Normal	4.61	5.86										
8	8	1.10	85	301	186	105	Normal	4.44	5.71										
9	9	.99	97	379	142	98	Normal	4.57	5.94										
10	10	.78	97	296	131	94	Normal	4.57	5.69										
11	11	.90	91	353	221	53	Normal	4.51	5.87										
12	12	.73	87	306	178	66	Normal	4.47	5.72										
13	13	.96	78	290	136	142	Normal	4.36	5.67										
14	14	.84	90	371	200	93	Normal	4.50	5.92										
15	15	.74	86	312	208	68	Normal	4.45	5.74										
16	16	.98	80	393	202	102	Normal	4.38	5.97										
17	17	1.10	90	364	152	76	Normal	4.50	5.90										
18	18	.85	99	359	185	37	Normal	4.60	5.88										
19	19	.83	85	296	116	60	Normal	4.44	5.69										
20	20	.93	90	345	123	50	Normal	4.50	5.84										
21	21	.95	90	378	136	47	Normal	4.50	5.93										
22	22	.74	88	304	134	50	Normal	4.48	5.72										
23	23	.95	95	347	184	91	Normal	4.55	5.85										
24	24	.97	90	327	192	124	Normal	4.50	5.79										
25	25	.72	92	386	279	74	Normal	4.52	5.96										
26	26	1.11	74	365	228	235	Normal	4.30	5.90										
27	27	1.20	98	365	145	158	Normal	4.58	5.90										
28	28	1.13	100	352	172	140	Normal	4.61	5.86										
29	29	1.00	86	325	179	145	Normal	4.45	5.78										
30	30	.78	98	321	222	99	Normal	4.58	5.77										
31	31	1.00	70	360	134	90	Normal	4.25	5.89										
32	32	1.00	99	336	143	105	Normal	4.60	5.82										
33	33	.71	75	352	169	32	Normal	4.32	5.86										
34	34	.76	90	353	263	165	Normal	4.50	5.87										
35	35	.89	85	373	174	78	Normal	4.44	5.92										
36	36	.88	99	376	134	80	Normal	4.60	5.93										
37	37	1.17	100	367	182	54	Normal	4.61	5.91										
38	38	.85	78	335	241	175	Normal	4.36	5.81										
39	39	.97	106	396	128	80	Normal	4.66	5.98										
40	40	1.00	98	277	222	186	Normal	4.58	5.62										
41	41	1.00	102	378	165	117	Normal	4.62	5.93										
42	42	.89	90	360	282	160	Normal	4.50	5.89										
43	43	.98	94	291	94	71	Normal	4.54	5.67										
44	44	.78	80	269	121	29	Normal	4.38	5.59										
45	45	.74	93	318	73	42	Normal	4.53	5.76										
46	46	.91	86	328	106	56	Normal	4.45	5.79										
47	47	.95	85	334	118	122	Normal	4.44	5.81										
48	48	.95	96	356	112	73	Normal	4.56	5.87										
49	49	1.03	88	291	157	122	Normal	4.48	5.67										
50	50	.87	87	360	292	128	Normal	4.47	5.89										
51	51	.87	94	313	200	233	Normal	4.54	5.75										
52	52	1.17	93	306	220	132	Normal	4.53	5.72										
53	53	.83	86	319	144	138	Normal	4.45	5.77										
54	54	.82	86	349	109	83	Normal	4.45	5.86										
55	55	.86	96	332	151	109	Normal	4.56	5.81										

We now perform the linear regression using the *General Linear Model* pulldown. ⁸

The screenshot shows the SPSS Data Editor interface for a file named 'Diabetes.sav'. The 'Analyze' menu is open, and the 'General Linear Model' option is selected, which has opened a sub-menu with 'Univariate...' highlighted. The main data table is visible in the background, with columns 'id', 'relwt', 'gl', 'group', 'loggluf', and 'logglut'. The 'gl' column contains values ranging from .81 to 1.10, and the 'logglut' column contains values ranging from 5.71 to 5.88. The status bar at the bottom indicates 'SPSS Processor is ready'.

	id	relwt	gl	group	loggluf	logglut
1	1	.81				
2	2	.95				
3	3	.94				
4	4	1.04				
5	5	1.00				
6	6	.76				
7	7	.91				
8	8	1.10				
9	9	.99	97	379	142	98
10	10	.78	97	296	131	94
11	11	.90	91	353	221	53
12	12	.73	87	306	178	66
13	13	.96	78	290	136	142
14	14	.84	90	371	200	93
15	15	.74	86	312	208	68
16	16	.98	80	393	202	102
17	17	1.10	90	364	152	76
18	18	.85	99	359	185	37
19	19	.83	85	296	116	60
20	20	.93	90	345	123	50
21	21	.95	90	378	136	47
22	22	.74	88	304	134	50
23	23	.95	95	347	184	91
24	24	.97	90	327	192	124
25	25	.72	92	386	279	74
26	26	1.11	74	365	228	235
27	27	1.20	98	365	145	158
28	28	1.13	100	352	172	140
29	29	1.00	86	325	179	145
30	30	.78	98	321	222	99
31	31	1.00	70	360	134	90
32	32	1.00	99	336	143	105
33	33	.71	75	352	169	32
34	34	.76	90	353	263	165
35	35	.89	85	373	174	78
36	36	.88	99	376	134	80
37	37	1.17	100	367	182	54
38	38	.85	78	335	241	175
39	39	.97	106	396	128	80
40	40	1.00	98	277	222	186
41	41	1.00	102	378	165	117
42	42	.89	90	360	282	160
43	43	.98	94	291	94	71
44	44	.78	80	269	121	29
45	45	.74	93	318	73	42
46	46	.91	86	328	106	56
47	47	.95	85	334	118	122
48	48	.95	96	356	112	73
49	49	1.03	88	291	157	122
50	50	.87	87	360	292	128
51	51	.87	94	313	200	233
52	52	1.17	93	306	220	132
53	53	.83	86	319	144	138
54	54	.82	86	349	109	83
55	55	.86	96	332	151	109

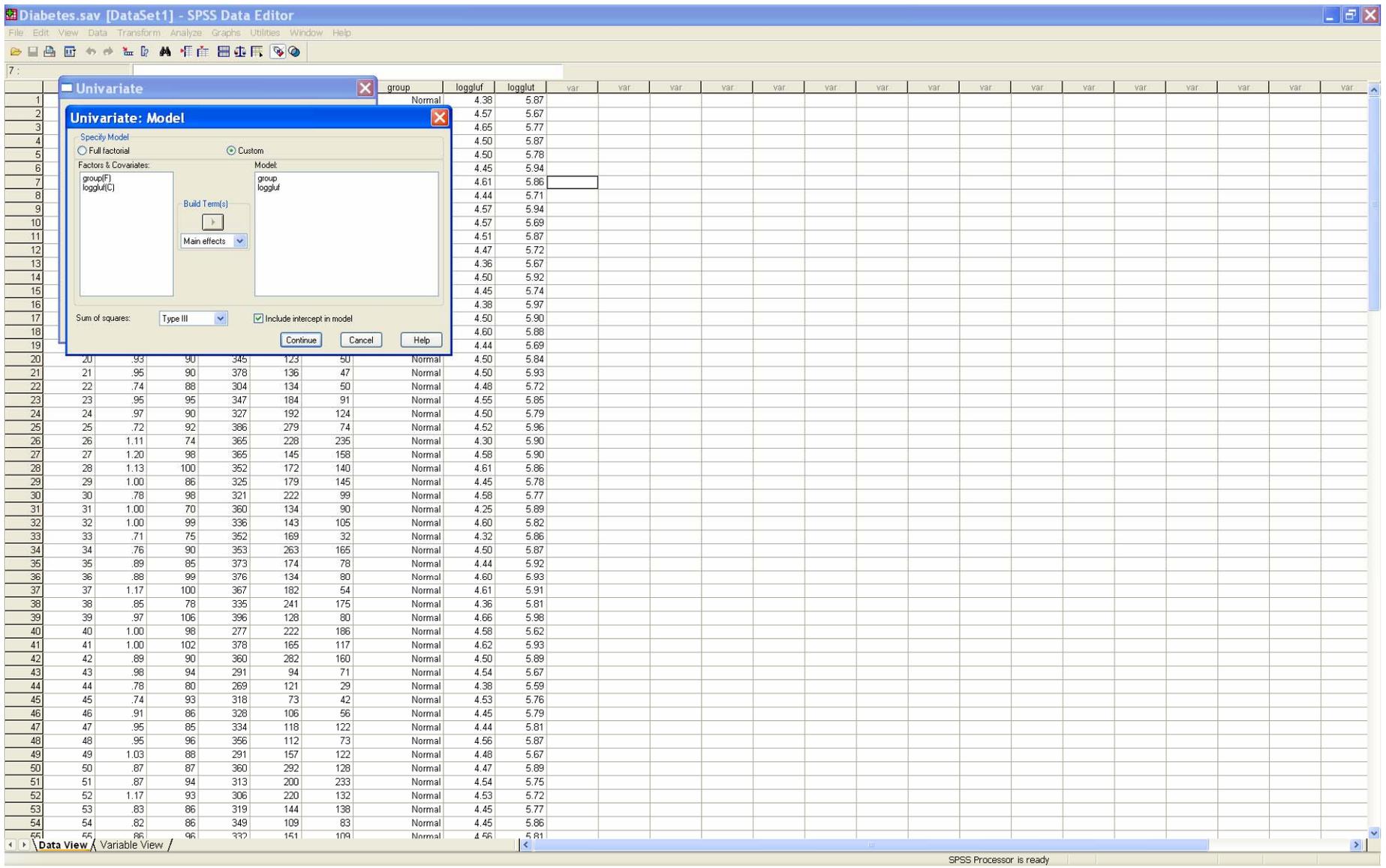
To specify the model, click the *Model* button to get the *Model Dialog*.

We wish to specify a *Custom* main effects plus interaction model.

The image shows the SPSS Data Editor window for a file named 'Diabetes.sav'. The main window displays a data table with columns: 'group', 'loggluf', 'logglut', and a series of 'var' columns. The 'Univariate: Model' dialog box is open, showing the 'Specify Model' section with 'Custom' selected. Under 'Build Term(s)', 'Main effects' and 'Interaction' are chosen. The 'Sum of squares' is set to 'Type III' and 'Include intercept in model' is checked. The background data table contains 56 rows of data.

row	group	loggluf	logglut	var	var	var	var	var	var	var	var	var	var	var	var	var	var	var	var	var
1	Normal	4.38	5.87																	
2	Normal	4.57	5.67																	
3	Normal	4.65	5.77																	
4	Normal	4.50	5.87																	
5	Normal	4.50	5.78																	
6	Normal	4.45	5.94																	
7	Normal	4.61	5.86																	
8	Normal	4.44	5.71																	
9	Normal	4.57	5.94																	
10	Normal	4.57	5.69																	
11	Normal	4.51	5.87																	
12	Normal	4.47	5.72																	
13	Normal	4.36	5.67																	
14	Normal	4.50	5.92																	
15	Normal	4.45	5.74																	
16	Normal	4.38	5.97																	
17	Normal	4.50	5.90																	
18	Normal	4.60	5.88																	
19	Normal	4.44	5.69																	
20	Normal	4.50	5.84																	
21	Normal	4.50	5.93																	
22	Normal	4.48	5.72																	
23	Normal	4.55	5.85																	
24	Normal	4.50	5.79																	
25	Normal	4.52	5.96																	
26	Normal	4.30	5.90																	
27	Normal	4.58	5.90																	
28	Normal	4.61	5.86																	
29	Normal	4.45	5.78																	
30	Normal	4.58	5.77																	
31	Normal	4.25	5.89																	
32	Normal	4.60	5.82																	
33	Normal	4.32	5.86																	
34	Normal	4.50	5.87																	
35	Normal	4.44	5.92																	
36	Normal	4.60	5.93																	
37	Normal	4.61	5.91																	
38	Normal	4.36	5.81																	
39	Normal	4.66	5.98																	
40	Normal	4.58	5.62																	
41	Normal	4.62	5.93																	
42	Normal	4.50	5.89																	
43	Normal	4.54	5.67																	
44	Normal	4.38	5.59																	
45	Normal	4.53	5.76																	
46	Normal	4.45	5.79																	
47	Normal	4.44	5.81																	
48	Normal	4.56	5.87																	
49	Normal	4.48	5.67																	
50	Normal	4.47	5.89																	
51	Normal	4.54	5.75																	
52	Normal	4.53	5.72																	
53	Normal	4.45	5.77																	
54	Normal	4.45	5.86																	
55	Normal	4.56	5.81																	

We select the factor and covariate as main effects.



The image shows the SPSS Data Editor window for a file named 'Diabetes.sav'. The main window displays a data grid with columns for 'group', 'loggluf', 'logglut', and several 'var' columns. A dialog box titled 'Univariate: Model' is open, showing the 'Specify Model' section with 'Custom' selected. Under 'Factors & Covariates', 'group(F)' and 'logglut(C)' are listed. The 'Model' list contains 'group' and 'logglut'. The 'Sum of squares' is set to 'Type III', and 'Include intercept in model' is checked. The 'Main effects' dropdown is also visible.

Case #	group	loggluf	logglut	var	var	var	var	var	var	var	var	var	var	var	var	var	var	var	var	var
1	Normal	4.38	5.87																	
2	Normal	4.57	5.67																	
3	Normal	4.65	5.77																	
4	Normal	4.50	5.87																	
5	Normal	4.50	5.78																	
6	Normal	4.45	5.94																	
7	Normal	4.61	5.86																	
8	Normal	4.44	5.71																	
9	Normal	4.57	5.94																	
10	Normal	4.57	5.69																	
11	Normal	4.51	5.87																	
12	Normal	4.47	5.72																	
13	Normal	4.36	5.67																	
14	Normal	4.50	5.92																	
15	Normal	4.45	5.74																	
16	Normal	4.38	5.97																	
17	Normal	4.50	5.90																	
18	Normal	4.60	5.88																	
19	Normal	4.44	5.69																	
20	Normal	4.50	5.84																	
21	Normal	4.50	5.93																	
22	Normal	4.48	5.72																	
23	Normal	4.55	5.85																	
24	Normal	4.50	5.79																	
25	Normal	4.52	5.96																	
26	Normal	4.30	5.90																	
27	Normal	4.58	5.90																	
28	Normal	4.61	5.86																	
29	Normal	4.45	5.78																	
30	Normal	4.58	5.77																	
31	Normal	4.25	5.89																	
32	Normal	4.60	5.82																	
33	Normal	4.32	5.86																	
34	Normal	4.50	5.87																	
35	Normal	4.44	5.92																	
36	Normal	4.60	5.93																	
37	Normal	4.61	5.91																	
38	Normal	4.36	5.81																	
39	Normal	4.66	5.98																	
40	Normal	4.58	5.62																	
41	Normal	4.62	5.93																	
42	Normal	4.50	5.89																	
43	Normal	4.54	5.67																	
44	Normal	4.38	5.59																	
45	Normal	4.53	5.76																	
46	Normal	4.45	5.79																	
47	Normal	4.44	5.81																	
48	Normal	4.56	5.87																	
49	Normal	4.48	5.67																	
50	Normal	4.47	5.89																	
51	Normal	4.54	5.75																	
52	Normal	4.53	5.72																	
53	Normal	4.45	5.77																	
54	Normal	4.45	5.86																	
55	Normal	4.56	5.81																	

Select *Interaction* from the *Build Terms* pulldown.

Diabetes.sav [DataSet1] - SPSS Data Editor

File Edit View Data Transform Analyze Graphs Utilities Window Help

7:

	group	logg1uf	logg1ut	var	var	var	var	var	var	var	var	var	var	var	var	var	var	var	var	var
1	Normal	4.38	5.87																	
2		4.57	5.67																	
3		4.65	5.77																	
4		4.50	5.87																	
5		4.50	5.78																	
6		4.45	5.94																	
7		4.61	5.86																	
8		4.44	5.71																	
9		4.57	5.94																	
10		4.57	5.69																	
11		4.51	5.87																	
12		4.47	5.72																	
13		4.36	5.67																	
14		4.50	5.92																	
15		4.45	5.74																	
16		4.38	5.97																	
17		4.50	5.90																	
18		4.60	5.88																	
19		4.44	5.69																	
20	20	.93	90	345	123	50	Normal	4.50	5.84											
21	21	.95	90	378	136	47	Normal	4.50	5.93											
22	22	.74	88	304	134	50	Normal	4.48	5.72											
23	23	.95	95	347	184	91	Normal	4.55	5.85											
24	24	.97	90	327	192	124	Normal	4.50	5.79											
25	25	.72	92	386	279	74	Normal	4.52	5.96											
26	26	1.11	74	365	228	235	Normal	4.30	5.90											
27	27	1.20	98	365	145	158	Normal	4.58	5.90											
28	28	1.13	100	352	172	140	Normal	4.61	5.86											
29	29	1.00	86	325	179	145	Normal	4.45	5.78											
30	30	.78	98	321	222	99	Normal	4.58	5.77											
31	31	1.00	70	360	134	90	Normal	4.25	5.89											
32	32	1.00	99	336	143	105	Normal	4.60	5.82											
33	33	.71	75	352	169	32	Normal	4.32	5.86											
34	34	.76	90	353	263	165	Normal	4.50	5.87											
35	35	.89	85	373	174	78	Normal	4.44	5.92											
36	36	.88	99	376	134	80	Normal	4.60	5.93											
37	37	1.17	100	367	182	54	Normal	4.61	5.91											
38	38	.85	78	335	241	175	Normal	4.36	5.81											
39	39	.97	106	396	128	80	Normal	4.66	5.98											
40	40	1.00	98	277	222	186	Normal	4.58	5.62											
41	41	1.00	102	378	165	117	Normal	4.62	5.93											
42	42	.89	90	360	282	160	Normal	4.50	5.89											
43	43	.98	94	291	94	71	Normal	4.54	5.67											
44	44	.78	80	269	121	29	Normal	4.38	5.59											
45	45	.74	93	318	73	42	Normal	4.53	5.76											
46	46	.91	86	328	106	56	Normal	4.45	5.79											
47	47	.95	85	334	118	122	Normal	4.44	5.81											
48	48	.95	96	356	112	73	Normal	4.56	5.87											
49	49	1.03	88	291	157	122	Normal	4.48	5.67											
50	50	.87	87	360	292	128	Normal	4.47	5.89											
51	51	.87	94	313	200	233	Normal	4.54	5.75											
52	52	1.17	93	306	220	132	Normal	4.53	5.72											
53	53	.83	86	319	144	138	Normal	4.45	5.77											
54	54	.82	86	349	109	83	Normal	4.45	5.86											
55	55	.86	96	332	151	109	Normal	4.56	5.81											

Univariate: Model

Specify Model

Full factorial Custom

Factors & Covariates:

group(F)
logg1uf(C)

Build Term(s)

Main effects
Interaction
Main effects
All 2-way
All 3-way
All 4-way
All 5-way

Model

group
logg1uf

Sum of squares: Type III Include intercept in model

Continue Cancel Help

Data View Variable View

SPSS Processor is ready

Highlight the two variables, and click the *Build Terms* arrow.

Diabetes.sav [DataSet1] - SPSS Data Editor

File Edit View Data Transform Analyze Graphs Utilities Window Help

7:

	group	loggluf	logglut	var	var	var	var	var	var	var	var	var	var	var	var	var	var	var	var	var
1	Normal	4.38	5.87																	
2		4.57	5.67																	
3		4.65	5.77																	
4		4.50	5.87																	
5		4.50	5.78																	
6		4.45	5.94																	
7		4.61	5.86																	
8		4.44	5.71																	
9		4.57	5.94																	
10		4.57	5.69																	
11		4.51	5.87																	
12		4.47	5.72																	
13		4.36	5.67																	
14		4.50	5.92																	
15		4.45	5.74																	
16		4.38	5.97																	
17		4.50	5.90																	
18		4.60	5.88																	
19		4.44	5.69																	
20	20	.93	90	345	123	50	Normal	4.50	5.84											
21	21	.95	90	378	136	47	Normal	4.50	5.93											
22	22	.74	88	304	134	50	Normal	4.48	5.72											
23	23	.95	95	347	184	91	Normal	4.55	5.85											
24	24	.97	90	327	192	124	Normal	4.50	5.79											
25	25	.72	92	386	279	74	Normal	4.52	5.96											
26	26	1.11	74	365	228	235	Normal	4.30	5.90											
27	27	1.20	98	365	145	158	Normal	4.58	5.90											
28	28	1.13	100	352	172	140	Normal	4.61	5.86											
29	29	1.00	86	325	179	145	Normal	4.45	5.78											
30	30	.78	98	321	222	99	Normal	4.58	5.77											
31	31	1.00	70	360	134	90	Normal	4.25	5.89											
32	32	1.00	99	336	143	105	Normal	4.60	5.82											
33	33	.71	75	352	169	32	Normal	4.32	5.86											
34	34	.76	90	353	263	165	Normal	4.50	5.87											
35	35	.89	85	373	174	78	Normal	4.44	5.92											
36	36	.88	99	376	134	80	Normal	4.60	5.93											
37	37	1.17	100	367	182	54	Normal	4.61	5.91											
38	38	.85	78	335	241	175	Normal	4.36	5.81											
39	39	.97	106	396	128	80	Normal	4.66	5.98											
40	40	1.00	98	277	222	186	Normal	4.58	5.62											
41	41	1.00	102	378	165	117	Normal	4.62	5.93											
42	42	.89	90	360	282	160	Normal	4.50	5.89											
43	43	.98	94	291	94	71	Normal	4.54	5.67											
44	44	.78	80	269	121	29	Normal	4.38	5.59											
45	45	.74	93	318	73	42	Normal	4.53	5.76											
46	46	.91	86	328	106	56	Normal	4.45	5.79											
47	47	.95	85	334	118	122	Normal	4.44	5.81											
48	48	.95	96	356	112	73	Normal	4.56	5.87											
49	49	1.03	88	291	157	122	Normal	4.48	5.67											
50	50	.87	87	360	292	128	Normal	4.47	5.89											
51	51	.87	94	313	200	233	Normal	4.54	5.75											
52	52	1.17	93	306	220	132	Normal	4.53	5.72											
53	53	.83	86	319	144	138	Normal	4.45	5.77											
54	54	.82	86	349	109	83	Normal	4.45	5.86											
55	55	.86	96	332	151	109	Normal	4.56	5.81											

Univariate: Model

Specify Model

Full factorial Custom

Factors & Covariables:

group(F)
loggluf(C)

Model

group
loggluf

Build Term(s)

Interaction

Sum of squares: Type III Include intercept in model

Continue Cancel Help

Data View Variable View

SPSS Processor is ready

The *Custom* model has been built. Click *Continue*.

Diabetes.sav [DataSet1] - SPSS Data Editor

File Edit View Data Transform Analyze Graphs Utilities Window Help

7:

	group	loggluf	logglut	var	var	var	var	var	var	var	var	var	var	var	var	var	var	var	var	var
1	Normal	4.38	5.87																	
2		4.57	5.67																	
3		4.65	5.77																	
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7		4.61	5.86																	
8		4.44	5.71																	
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13		4.36	5.67																	
14		4.50	5.92																	
15		4.45	5.74																	
16		4.38	5.97																	
17		4.50	5.90																	
18		4.60	5.88																	
19		4.44	5.69																	
20	20	.93	90	345	123	50	Normal	4.50	5.84											
21	21	.95	90	378	136	47	Normal	4.50	5.93											
22	22	.74	88	304	134	50	Normal	4.48	5.72											
23	23	.95	95	347	184	91	Normal	4.55	5.85											
24	24	.97	90	327	192	124	Normal	4.50	5.79											
25	25	.72	92	386	279	74	Normal	4.52	5.96											
26	26	1.11	74	365	228	235	Normal	4.30	5.90											
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30	30	.78	98	321	222	99	Normal	4.58	5.77											
31	31	1.00	70	360	134	90	Normal	4.25	5.89											
32	32	1.00	99	336	143	105	Normal	4.60	5.82											
33	33	.71	75	352	169	32	Normal	4.32	5.86											
34	34	.76	90	353	263	165	Normal	4.50	5.87											
35	35	.89	85	373	174	78	Normal	4.44	5.92											
36	36	.88	99	376	134	80	Normal	4.60	5.93											
37	37	1.17	100	367	182	54	Normal	4.61	5.91											
38	38	.85	78	335	241	175	Normal	4.36	5.81											
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40	40	1.00	98	277	222	186	Normal	4.58	5.62											
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42	42	.89	90	360	282	160	Normal	4.50	5.89											
43	43	.98	94	291	94	71	Normal	4.54	5.67											
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47	47	.95	85	334	118	122	Normal	4.44	5.81											
48	48	.95	96	356	112	73	Normal	4.56	5.87											
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50	50	.87	87	360	292	128	Normal	4.47	5.89											
51	51	.87	94	313	200	233	Normal	4.54	5.75											
52	52	1.17	93	306	220	132	Normal	4.53	5.72											
53	53	.83	86	319	144	138	Normal	4.45	5.77											
54	54	.82	86	349	109	83	Normal	4.45	5.86											
55	55	.86	96	332	151	109	Normal	4.56	5.81											

Univariate: Model

Specify Model

Full factorial Custom

Factors & Covariates:

group(F)
loggluf(C)

Build Term(s)

Interaction

Model

group
loggluf
group*loggluf

Sum of squares: Type III Include intercept in model

Continue Cancel Help

Data View Variable View

SPSS Processor is ready

The model is now built. On the *General Linear Model* dialog, click *Options*.

Select *Parameter Estimates* and *Residual plot*

The screenshot shows the SPSS Data Editor interface with a data table and an open 'Univariate: Options' dialog box. The dialog box is configured as follows:

- Estimated Marginal Means:** Factor(s) and Factor Interactions: (OVERALL), group. Display Means for: (empty).
- Display:**
 - Descriptive statistics
 - Estimates of effect size
 - Observed power
 - Parameter estimates
 - Contrast coefficient matrix
 - Homogeneity tests
 - Spread vs. level plot
 - Residual plot
 - Lack of fit
 - General estimable function
- Significance level:** .05. **Confidence intervals are 95%.**
- Buttons: Continue, Cancel, Help.

The background data table contains the following columns: group, loggluf, logglut, and 18 empty 'var' columns. The data rows are numbered 1 through 55.

The ANOVA table describes the results. It can be read in the same way as an ordinary ANOVA table. We note significant main effects and interaction.

Tests of Between-Subjects Effects

Dependent Variable: Log(GluTest)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	27.187^a	5	5.437	569.463	.000
Intercept	.973	1	.973	101.906	.000
group	.104	2	.052	5.447	.005
loggluf	.675	1	.675	70.702	.000
group * loggluf	.155	2	.077	8.099	.000
Error	1.318	138	.010		
Total	5509.040	144			
Corrected Total	28.504	143			

a. R Squared = .954 (Adjusted R Squared = .952)

The high R squared value means that the model fit is quite good overall.

The parameter estimates/standard errors are also computed.

The SPSS parameterization of the model is used.

Parameter Estimates

Dependent Variable: Log(GluTest)

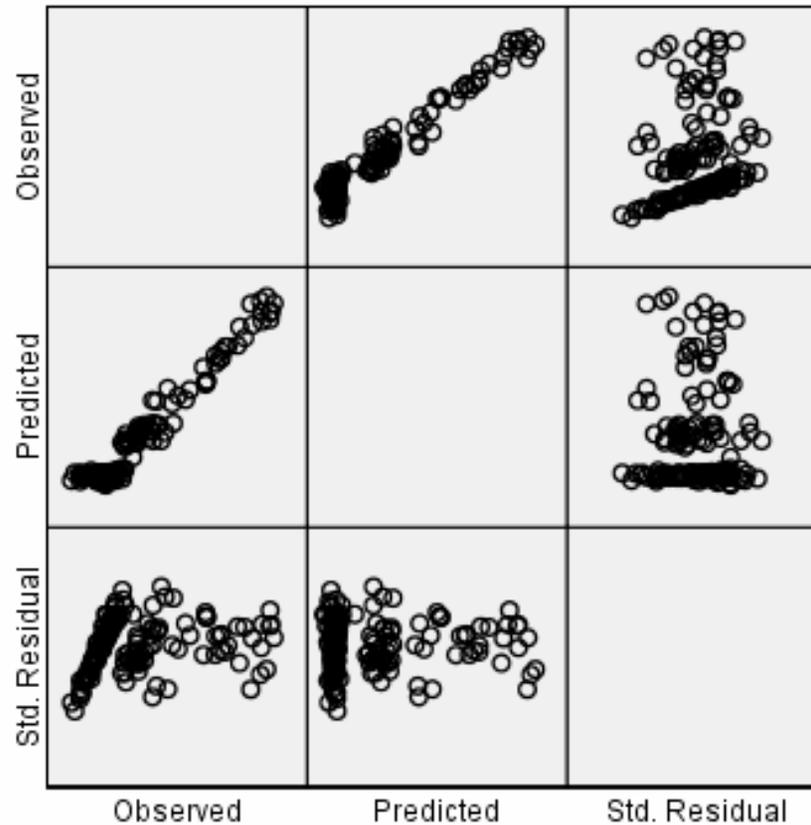
Parameter	B	Std. Error	t	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Intercept	4.504	.559	8.060	.000	3.399	5.608
[group=1]	-2.037	.619	-3.289	.001	-3.262	-.813
[group=2]	-1.436	.958	-1.499	.136	-3.330	.458
[group=3]	0 ^a	.	.	.	.	.
loggluf	.299	.124	2.414	.017	.054	.544
[group=1] * loggluf	.535	.134	4.001	.000	.270	.799
[group=2] * loggluf	.382	.210	1.820	.071	-.033	.797
[group=3] * loggluf	0 ^a	.	.	.	.	.

a. This parameter is set to zero because it is redundant.

In the main effects plus interaction model, there are six parameters; we are fitting three separate straight lines to the three subgroups, and there are two parameters in each straight line.

The residual plots demonstrate no significant pattern.

Dependent Variable: Log(GluTest)



No real pattern in the residuals indicates a reasonable fit.

However, there is mild evidence that the residual variance is not constant.

Model: Intercept + group + loggluf + loggluf