

The CORR Procedure

ms=0

4	Variables:	y7	y8	y9	y10
	Freq Variable:	count			

Simple Statistics						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
y7	350	0.16000	0.36713	56.00000	0	1.00000
y8	350	0.14857	0.35617	52.00000	0	1.00000
y9	350	0.14286	0.35043	50.00000	0	1.00000
y10	350	0.10571	0.30791	37.00000	0	1.00000

Pearson Correlation Coefficients, N = 350				
	y7	y8	y9	y10
y7	1.00000	0.34359	0.28953	0.30619
y8	0.34359	1.00000	0.42634	0.32666
y9	0.28953	0.42634	1.00000	0.39074
y10	0.30619	0.32666	0.39074	1.00000

The CORR Procedure

ms=1

4	Variables:	y7	y8	y9	y10
	Freq Variable:	count			

Simple Statistics						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
y7	187	0.16578	0.37288	31.00000	0	1.00000
y8	187	0.20856	0.40737	39.00000	0	1.00000
y9	187	0.18717	0.39109	35.00000	0	1.00000
y10	187	0.13904	0.34691	26.00000	0	1.00000

Pearson Correlation Coefficients, N = 187				
	y7	y8	y9	y10
y7	1.00000	0.37287	0.33910	0.36117
y8	0.37287	1.00000	0.46234	0.32632
y9	0.33910	0.46234	1.00000	0.36194
y10	0.36117	0.32632	0.36194	1.00000

1. GEE: 1 + MS + age + MSxAge, independence working correlation

The GENMOD Procedure

Model Information		
Data Set	WORK.B	
Distribution	Binomial	
Link Function	Logit	
Response Variable (Events)	y	Respiratory illness 0=no 1=yes
Response Variable (Trials)	one	
Frequency Weight Variable	count	Number with this pattern

Number of Observations Read	128
Number of Observations Used	128
Sum of Frequencies Read	2148
Sum of Frequencies Used	2148
Number of Events	326
Number of Trials	2148

Class Level Information		
Class	Levels	Values
id	32	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
agefactor	4	-2 -1 0 1

Response Profile		
Ordered Value	Binary Outcome	Total Frequency
1	Event	326
2	Nonevent	1822

Parameter Information	
Parameter	Effect
Prm1	Intercept
Prm2	ms
Prm3	age
Prm4	msxage

Algorithm converged.

The GENMOD Procedure

GEE Model Information	
Correlation Structure	Independent
Within-Subject Effect	agefactor (4 levels)
Subject Effect	id (32 levels)
Number of Clusters	32
Correlation Matrix Dimension	4
Maximum Cluster Size	4
Minimum Cluster Size	4

Algorithm converged.

Working Correlation Matrix				
	Col1	Col2	Col3	Col4
Row1	1.0000	0.0000	0.0000	0.0000
Row2	0.0000	1.0000	0.0000	0.0000
Row3	0.0000	0.0000	1.0000	0.0000
Row4	0.0000	0.0000	0.0000	1.0000

GEE Fit Criteria	
QIC	1830.3467
QICu	1827.4800

Analysis Of GEE Parameter Estimates						
Empirical Standard Error Estimates						
Parameter	Estimate	Standard Error	95% Confidence Limits		Z	Pr > |Z|
Intercept	-1.9008	0.1191	-2.1342	-1.6675	-15.96	<.0001
ms	0.3140	0.1878	-0.0542	0.6821	1.67	0.0946
age	-0.1413	0.0582	-0.2554	-0.0272	-2.43	0.0152
msxage	0.0708	0.0883	-0.1022	0.2439	0.80	0.4223

The GENMOD Procedure

Model Information		
Data Set	WORK.B	
Distribution	Binomial	
Link Function	Logit	
Response Variable (Events)	y	Respiratory illness 0=no 1=yes
Response Variable (Trials)	one	
Frequency Weight Variable	count	Number with this pattern

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agefactor	4	-2 -1 0 1

Response Profile		
Ordered Value	Binary Outcome	Total Frequency
1	Event	326
2	Nonevent	1822

Parameter Information	
Parameter	Effect
Prm1	Intercept
Prm2	ms
Prm3	age
Prm4	msxage

Algorithm converged.

2. GEE: 1 + MS + age + MSxAge, exchangeable working correlation

The GENMOD Procedure

GEE Model Information	
Correlation Structure	Exchangeable
Within-Subject Effect	agefactor (4 levels)
Subject Effect	id (32 levels)
Number of Clusters	32
Correlation Matrix Dimension	4
Maximum Cluster Size	4
Minimum Cluster Size	4

Algorithm converged.

Working Correlation Matrix				
	Col1	Col2	Col3	Col4
Row1	1.0000	0.3544	0.3544	0.3544
Row2	0.3544	1.0000	0.3544	0.3544
Row3	0.3544	0.3544	1.0000	0.3544
Row4	0.3544	0.3544	0.3544	1.0000

Exchangeable Working Correlation	
Correlation	0.3543845936

GEE Fit Criteria	
QIC	1830.3483
QICu	1827.4800

Analysis Of GEE Parameter Estimates						
Empirical Standard Error Estimates						
Parameter	Estimate	Standard Error	95% Confidence Limits		Z	Pr > |Z|
Intercept	-1.9005	0.1191	-2.1339	-1.6671	-15.96	<.0001
ms	0.3138	0.1878	-0.0543	0.6820	1.67	0.0948
age	-0.1412	0.0582	-0.2553	-0.0272	-2.43	0.0152
msxage	0.0708	0.0883	-0.1022	0.2439	0.80	0.4223

3. GEE: 1 + MS + age + MSxAge, 1st-order autoregressive working correlation

The GENMOD Procedure

Model Information		
Data Set	WORK.B	
Distribution	Binomial	
Link Function	Logit	
Response Variable (Events)	y	Respiratory illness 0=no 1=yes
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Frequency Weight Variable	count	Number with this pattern

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Response Profile		
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Parameter Information	
Parameter	Effect
Prm1	Intercept
Prm2	ms
Prm3	age
Prm4	msxage

Algorithm converged.

The GENMOD Procedure

GEE Model Information	
Correlation Structure	AR(1)
Within-Subject Effect	agefactor (4 levels)
Subject Effect	id (32 levels)
Number of Clusters	32
Correlation Matrix Dimension	4
Maximum Cluster Size	4
Minimum Cluster Size	4

Algorithm converged.

Working Correlation Matrix				
	Col1	Col2	Col3	Col4
Row1	1.0000	0.3997	0.1597	0.0638
Row2	0.3997	1.0000	0.3997	0.1597
Row3	0.1597	0.3997	1.0000	0.3997
Row4	0.0638	0.1597	0.3997	1.0000

GEE Fit Criteria	
QIC	1830.6690
QICu	1827.7008

Analysis Of GEE Parameter Estimates						
Empirical Standard Error Estimates						
Parameter	Estimate	Standard Error	95% Confidence Limits		Z	Pr > |Z|
Intercept	-1.9195	0.1200	-2.1547	-1.6843	-15.99	<.0001
ms	0.2953	0.1900	-0.0771	0.6676	1.55	0.1201
age	-0.1468	0.0593	-0.2631	-0.0305	-2.47	0.0134
msxage	0.0815	0.0907	-0.0962	0.2592	0.90	0.3688

4. GEE: 1 + MS + age + MSxAge, unstructured working correlation

The GENMOD Procedure

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Data Set	WORK.B	
Distribution	Binomial	
Link Function	Logit	
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Response Variable (Trials)	one	
Frequency Weight Variable	count	Number with this pattern

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Response Profile		
Ordered Value	Binary Outcome	Total Frequency
1	Event	326
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Parameter Information	
Parameter	Effect
Prm1	Intercept
Prm2	ms
Prm3	age
Prm4	msxage

Algorithm converged.

The GENMOD Procedure

GEE Model Information	
Correlation Structure	Unstructured
Within-Subject Effect	agefactor (4 levels)
Subject Effect	id (32 levels)
Number of Clusters	32
Correlation Matrix Dimension	4
Maximum Cluster Size	4
Minimum Cluster Size	4

ERROR: Error in estimation routine.

Working Correlation Matrix				
	Col1	Col2	Col3	Col4
Row1	10405.5	17031.1	30838.6	58153.6
Row2	17031.1	34819.0	58112.0	107514
Row3	30838.6	58112.0	115734	198315
Row4	58153.6	107514	198315	398681

GEE Fit Criteria	
QIC	0.0000
QICu	0.0000

Analysis Of GEE Parameter Estimates					
Empirical Standard Error Estimates					
Parameter	Estimate	Standard Error	95% Confidence Limits		Z Pr > |Z|
Intercept	5.9553	.	.	.	.
ms	1131.447	.	.	.	.
age	1.1945	.	.	.	.
msxage	142.3661	.	.	.	.