The CORR Procedure

ms=0

4 Variables:	y7 y8 y9 y10

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

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	

Number of Observations Read	2148
Number of Observations Used	2148
Number of Events	326
Number of Trials	2148

Class Level Information		
Class	**Levels**	**Values**
id	537	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 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 ...
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.

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

The GENMOD Procedure

GEE Model Information	
Correlation Structure	Independent
Within-Subject Effect	agefactor (4 levels)
Subject Effect	id (537 levels)
Number of Clusters	537
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	

Number of Observations Read	2148
Number of Observations Used	2148
Number of Events	326
Number of Trials	2148

Class Level Information		
Class	**Levels**	**Values**
id	537	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 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 ...
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	Exchangeable
Within-Subject Effect	agefactor (4 levels)
Subject Effect	id (537 levels)
Number of Clusters	537
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
Response Variable (Trials)	one	

Number of Observations Read	2148
Number of Observations Used	2148
Number of Events	326
Number of Trials	2148

Class Level Information		
Class	**Levels**	**Values**
id	537	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 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 ...
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.

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

The GENMOD Procedure

GEE Model Information	
Correlation Structure	AR(1)
Within-Subject Effect	agefactor (4 levels)
Subject Effect	id (537 levels)
Number of Clusters	537
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

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	

Number of Observations Read	2148
Number of Observations Used	2148
Number of Events	326
Number of Trials	2148

Class Level Information		
Class	**Levels**	**Values**
id	537	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 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 ...
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	Unstructured
Within-Subject Effect	agefactor (4 levels)
Subject Effect	id (537 levels)
Number of Clusters	537
Correlation Matrix Dimension	4
Maximum Cluster Size	4
Minimum Cluster Size	4

Algorithm converged.

Working Correlation Matrix				
	Col1	**Col2**	**Col3**	**Col4**
Row1	1.0000	0.3520	0.3102	0.3053
Row2	0.3520	1.0000	0.4720	0.3203
Row3	0.3102	0.4720	1.0000	0.3801
Row4	0.3053	0.3203	0.3801	1.0000

GEE Fit Criteria	
QIC	1830.3828
QICu	1827.5262

Analysis Of GEE Parameter Estimates						
Empirical Standard Error Estimates						
Parameter	**Estimate**	**Standard Error**	**95% Confidence Limits**		**Z**	**Pr > |Z|**
Intercept	-1.9084	0.1191	-2.1419	-1.6749	-16.02	<.0001
ms	0.3015	0.1885	-0.0679	0.6710	1.60	0.1097
age	-0.1418	0.0585	-0.2565	-0.0272	-2.42	0.0154
msxage	0.0684	0.0892	-0.1064	0.2432	0.77	0.4429