fat002.sas: MIT Growth and Development Study, mixed models
0. Random Intercept

The Mixed Procedure

Model Information	
Data Set	WORK.A
Dependent Variable	pbf
Covariance Structure	Unstructured
Subject Effect	id
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Model-Based
Degrees of Freedom Method	Containment

Class Level Information		
Class	Levels	Values
id	162	not printed

Dimensions	
Covariance Parameters	2
Columns in X	3
Columns in Z per Subject	1
Subjects	162
Max Obs per Subject	10

Number of Observations	
Number of Observations Read	1049
Number of Observations Used	1049
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	7088.98892521	
1	2	6189.89180313	0.00000000

Convergence criteria met.

Estimated G Matrix			
Row	Effect	Subject ID	Col1
1	Intercept	1	36.6723

The Mixed Procedure

				Estimated V Matrix for id 20				
Row	Col1	Col2	Col3	Col4	Col5	Col6	Col7	Col8
1	50.2720	36.6723	36.6723	36.6723	36.6723	36.6723	36.6723	36.6723
2	36.6723	50.2720	36.6723	36.6723	36.6723	36.6723	36.6723	36.6723
3	36.6723	36.6723	50.2720	36.6723	36.6723	36.6723	36.6723	36.6723
4	36.6723	36.6723	36.6723	50.2720	36.6723	36.6723	36.6723	36.6723
5	36.6723	36.6723	36.6723	36.6723	50.2720	36.6723	36.6723	36.6723
6	36.6723	36.6723	36.6723	36.6723	36.6723	50.2720	36.6723	36.6723
7	36.6723	36.6723	36.6723	36.6723	36.6723	36.6723	50.2720	36.6723
8	36.6723	36.6723	36.6723	36.6723	36.6723	36.6723	36.6723	50.2720

				Estimated V Correlation Matrix for id 20				
Row	Col1	Col2	Col3	Col4	Col5	Col6	Col7	Col8
1	1.0000	0.7295	0.7295	0.7295	0.7295	0.7295	0.7295	0.7295
2	0.7295	1.0000	0.7295	0.7295	0.7295	0.7295	0.7295	0.7295
3	0.7295	0.7295	1.0000	0.7295	0.7295	0.7295	0.7295	0.7295
4	0.7295	0.7295	0.7295	1.0000	0.7295	0.7295	0.7295	0.7295
5	0.7295	0.7295	0.7295	0.7295	1.0000	0.7295	0.7295	0.7295
6	0.7295	0.7295	0.7295	0.7295	0.7295	1.0000	0.7295	0.7295
7	0.7295	0.7295	0.7295	0.7295	0.7295	0.7295	1.0000	0.7295
8	0.7295	0.7295	0.7295	0.7295	0.7295	0.7295	0.7295	1.0000

				Estimated V Matrix for id 30				
Row	Col1	Col2	Col3	Col4	Col5	Col6	Col7	Col8
1	50.2720	36.6723	36.6723	36.6723	36.6723	36.6723	36.6723	36.6723
2	36.6723	50.2720	36.6723	36.6723	36.6723	36.6723	36.6723	36.6723
3	36.6723	36.6723	50.2720	36.6723	36.6723	36.6723	36.6723	36.6723
4	36.6723	36.6723	36.6723	50.2720	36.6723	36.6723	36.6723	36.6723
5	36.6723	36.6723	36.6723	36.6723	50.2720	36.6723	36.6723	36.6723
6	36.6723	36.6723	36.6723	36.6723	36.6723	50.2720	36.6723	36.6723
7	36.6723	36.6723	36.6723	36.6723	36.6723	36.6723	50.2720	36.6723
8	36.6723	36.6723	36.6723	36.6723	36.6723	36.6723	36.6723	50.2720

The Mixed Procedure

Estimated V Correlation Matrix for id 30								
Row	Col1	Col2	Col3	Col4	Col5	Col6	Col7	Col8
1	1.0000	0.7295	0.7295	0.7295	0.7295	0.7295	0.7295	0.7295
2	0.7295	1.0000	0.7295	0.7295	0.7295	0.7295	0.7295	0.7295
3	0.7295	0.7295	1.0000	0.7295	0.7295	0.7295	0.7295	0.7295
4	0.7295	0.7295	0.7295	1.0000	0.7295	0.7295	0.7295	0.7295
5	0.7295	0.7295	0.7295	0.7295	1.0000	0.7295	0.7295	0.7295
6	0.7295	0.7295	0.7295	0.7295	0.7295	1.0000	0.7295	0.7295
7	0.7295	0.7295	0.7295	0.7295	0.7295	0.7295	1.0000	0.7295
8	0.7295	0.7295	0.7295	0.7295	0.7295	0.7295	0.7295	1.0000

Covariance Parameter Estimates		
Cov Parm	Subject	Estimate
UN(1,1)	id	36.6723
Residual		13.5997

Fit Statistics	
-2 Res Log Likelihood	6189.9
AIC (Smaller is Better)	6193.9
AICC (Smaller is Better)	6193.9
BIC (Smaller is Better)	6200.1

Null Model Likelihood Ratio Test		
DF	Chi-Square	Pr > ChiSq
1	899.10	<.0001

Solution for Fixed Effects					
Effect	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept	22.2866	0.5016	161	44.43	<.0001
time	1.4491	0.05456	885	26.56	<.0001
time*time	0.2002	0.02015	885	9.94	<.0001

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
time	1	885	705.51	<.0001
time*time	1	885	98.76	<.0001

The Mixed Procedure

Model Information	
Data Set	WORK.A
Dependent Variable	pbf
Covariance Structure	Unstructured
Subject Effect	id
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Model-Based
Degrees of Freedom Method	Containment

Class Level Information		
Class	Levels	Values
id	162	not printed

Dimensions	
Covariance Parameters	4
Columns in X	3
Columns in Z per Subject	2
Subjects	162
Max Obs per Subject	10

Number of Observations	
Number of Observations Read	1049
Number of Observations Used	1049
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	7088.98892521	
1	2	6124.43761963	0.00002616
2	1	6124.38079931	0.00000007
3	1	6124.38064334	0.00000000

Convergence criteria met.

The Mixed Procedure

Estimated G Matrix				
Row	Effect	Subject ID	Col1	Col2
1	Intercept	1	37.9946	-1.1893
2	time	1	-1.1893	0.5259

Estimated V Matrix for id 20								
Row	Col1	Col2	Col3	Col4	Col5	Col6	Col7	Col8
1	57.8470	44.0858	41.5887	39.2646	37.0147	34.5423	32.0452	31.0810
2	44.0858	52.8560	40.0517	38.2961	36.5966	34.7289	32.8426	32.1142
3	41.5887	40.0517	49.6198	37.4455	36.2293	34.8928	33.5429	33.0217
4	39.2646	38.2961	37.4455	47.5718	35.8875	35.0453	34.1947	33.8662
5	37.0147	36.5966	36.2293	35.8875	46.4745	35.1929	34.8257	34.6838
6	34.5423	34.7289	34.8928	35.0453	35.1929	46.2731	35.5191	35.5823
7	32.0452	32.8426	33.5429	34.1947	34.8257	35.5191	47.1373	36.4898
8	31.0810	32.1142	33.0217	33.8662	34.6838	35.5823	36.4898	47.7582

Estimated V Correlation Matrix for id 20								
Row	Col1	Col2	Col3	Col4	Col5	Col6	Col7	Col8
1	1.0000	0.7973	0.7763	0.7485	0.7139	0.6676	0.6137	0.5913
2	0.7973	1.0000	0.7821	0.7637	0.7384	0.7022	0.6580	0.6392
3	0.7763	0.7821	1.0000	0.7707	0.7544	0.7282	0.6936	0.6783
4	0.7485	0.7637	0.7707	1.0000	0.7632	0.7469	0.7221	0.7105
5	0.7139	0.7384	0.7544	0.7632	1.0000	0.7589	0.7441	0.7362
6	0.6676	0.7022	0.7282	0.7469	0.7589	1.0000	0.7605	0.7569
7	0.6137	0.6580	0.6936	0.7221	0.7441	0.7605	1.0000	0.7691
8	0.5913	0.6392	0.6783	0.7105	0.7362	0.7569	0.7691	1.0000

Estimated V Matrix for id 30								
Row	Col1	Col2	Col3	Col4	Col5	Col6	Col7	Col8
1	84.8595	69.6594	65.1518	60.6443	56.5424	52.0348	47.1216	43.0197
2	69.6594	76.7698	61.8438	57.8359	54.1886	50.1806	45.8119	42.1647
3	65.1518	61.8438	69.2797	54.8796	51.7109	48.2288	44.4334	41.2646
4	60.6443	57.8359	54.8796	62.8414	49.2333	46.2770	43.0548	40.3646
5	56.5424	54.1886	51.7109	49.2333	57.8965	44.5009	41.8003	39.5456
6	52.0348	50.1806	48.2288	46.2770	44.5009	53.4671	40.4217	38.6456
7	47.1216	45.8119	44.4334	43.0548	41.8003	40.4217	49.8370	37.6645
8	43.0197	42.1647	41.2646	40.3646	39.5456	38.6456	37.6645	47.7635

The Mixed Procedure

Estimated V Correlation Matrix for id 30								
Row	Col1	Col2	Col3	Col4	Col5	Col6	Col7	Col8
1	1.0000	0.8630	0.8497	0.8305	0.8067	0.7725	0.7246	0.6757
2	0.8630	1.0000	0.8480	0.8327	0.8128	0.7832	0.7406	0.6963
3	0.8497	0.8480	1.0000	0.8317	0.8165	0.7924	0.7562	0.7173
4	0.8305	0.8327	0.8317	1.0000	0.8162	0.7984	0.7693	0.7368
5	0.8067	0.8128	0.8165	0.8162	1.0000	0.7998	0.7782	0.7520
6	0.7725	0.7832	0.7924	0.7984	0.7998	1.0000	0.7831	0.7647
7	0.7246	0.7406	0.7562	0.7693	0.7782	0.7831	1.0000	0.7720
8	0.6757	0.6963	0.7173	0.7368	0.7520	0.7647	0.7720	1.0000

Covariance Parameter Estimates		
Cov Parm	Subject	Estimate
UN(1,1)	id	37.9946
UN(2,1)	id	-1.1893
UN(2,2)	id	0.5259
Residual		10.9180

Fit Statistics	
-2 Res Log Likelihood	6124.4
AIC (Smaller is Better)	6132.4
AICC (Smaller is Better)	6132.4
BIC (Smaller is Better)	6144.7

Null Model Likelihood Ratio Test		
DF	Chi-Square	Pr > ChiSq
3	964.61	<.0001

Solution for Fixed Effects					
Effect	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept	22.2594	0.5055	161	44.04	<.0001
time	1.4595	0.07777	161	18.77	<.0001
time*time	0.1961	0.02153	724	9.11	<.0001

1. Random Intercept and Slope

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	**Num DF**	**Den DF**	**F Value**	**Pr > F**
time	1	161	352.16	<.0001
time*time	1	724	82.99	<.0001

The Mixed Procedure

Model Information	
Data Set	WORK.A
Dependent Variable	pbf
Covariance Structure	Unstructured
Subject Effect	id
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Model-Based
Degrees of Freedom Method	Containment

Class Level Information		
Class	Levels	Values
id	162	not printed

Dimensions	
Covariance Parameters	7
Columns in X	3
Columns in Z per Subject	3
Subjects	162
Max Obs per Subject	10

Number of Observations	
Number of Observations Read	1049
Number of Observations Used	1049
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	7088.98892521	
1	2	6115.10725736	0.00102445
2	1	6112.59364539	0.00010806
3	1	6112.35036901	0.00000165
4	1	6112.34687049	0.00000000

Convergence criteria met.

The Mixed Procedure

	Estimated G Matrix				
Row	Effect	Subject ID	Col1	Col2	Col3
1	Intercept	1	41.8280	-0.7901	-0.5293
2	time	1	-0.7901	0.5603	-0.02665
3	time*time	1	-0.5293	-0.02665	0.02206

	Estimated V Matrix for id 20							
Row	Col1	Col2	Col3	Col4	Col5	Col6	Col7	Col8
1	54.5983	43.0378	41.2268	38.9310	36.1481	32.4540	28.0471	26.1636
2	43.0378	53.5380	42.3665	40.7391	38.3922	34.9380	30.5191	28.5625
3	41.2268	42.3665	52.5581	41.1548	39.2357	36.1334	31.9441	30.0424
4	38.9310	40.7391	41.1548	50.8824	39.0735	36.4172	32.6435	30.8930
5	36.1481	38.3922	39.2357	39.0735	48.3720	35.9309	32.7450	31.2326
6	32.4540	34.9380	36.1334	36.4172	35.9309	44.8584	32.2033	31.0568
7	28.0471	30.5191	31.9441	32.6435	32.7450	32.2033	41.2874	30.2959
8	26.1636	28.5625	30.0424	30.8930	31.2326	31.0568	30.2959	40.1706

	Estimated V Correlation Matrix for id 20							
Row	Col1	Col2	Col3	Col4	Col5	Col6	Col7	Col8
1	1.0000	0.7960	0.7696	0.7386	0.7034	0.6558	0.5907	0.5587
2	0.7960	1.0000	0.7987	0.7805	0.7544	0.7129	0.6491	0.6159
3	0.7696	0.7987	1.0000	0.7958	0.7782	0.7442	0.6857	0.6538
4	0.7386	0.7805	0.7958	1.0000	0.7876	0.7623	0.7122	0.6833
5	0.7034	0.7544	0.7782	0.7876	1.0000	0.7713	0.7327	0.7085
6	0.6558	0.7129	0.7442	0.7623	0.7713	1.0000	0.7483	0.7316
7	0.5907	0.6491	0.6857	0.7122	0.7327	0.7483	1.0000	0.7439
8	0.5587	0.6159	0.6538	0.6833	0.7085	0.7316	0.7439	1.0000

	Estimated V Matrix for id 30							
Row	Col1	Col2	Col3	Col4	Col5	Col6	Col7	Col8
1	90.6524	69.4739	59.0584	49.6777	42.0405	34.6362	27.7441	22.9318
2	69.4739	72.7252	55.4358	48.9668	43.5100	37.9862	32.5289	28.4232
3	59.0584	55.4358	61.9603	47.8466	44.4103	40.6461	36.5576	33.1558
4	49.6777	48.9668	47.8466	56.6705	44.6473	42.4175	39.5526	36.8138
5	42.0405	43.5100	44.4103	44.6473	54.6122	43.2572	41.3797	39.2087
6	34.6362	37.9862	40.6461	42.4175	43.2572	53.6569	42.4002	40.8142

The Mixed Procedure

Estimated V Matrix for id 30								
Row	Col1	Col2	Col3	Col4	Col5	Col6	Col7	Col8
7	27.7441	32.5289	36.5576	39.5526	41.3797	42.4002	52.6606	41.3402
8	22.9318	28.4232	33.1558	36.8138	39.2087	40.8142	41.3402	51.1268

Estimated V Correlation Matrix for id 30								
Row	Col1	Col2	Col3	Col4	Col5	Col6	Col7	Col8
1	1.0000	0.8556	0.7880	0.6931	0.5975	0.4966	0.4015	0.3368
2	0.8556	1.0000	0.8258	0.7627	0.6904	0.6081	0.5256	0.4661
3	0.7880	0.8258	1.0000	0.8075	0.7635	0.7049	0.6400	0.5891
4	0.6931	0.7627	0.8075	1.0000	0.8025	0.7692	0.7240	0.6839
5	0.5975	0.6904	0.7635	0.8025	1.0000	0.7991	0.7716	0.7420
6	0.4966	0.6081	0.7049	0.7692	0.7991	1.0000	0.7977	0.7792
7	0.4015	0.5256	0.6400	0.7240	0.7716	0.7977	1.0000	0.7967
8	0.3368	0.4661	0.5891	0.6839	0.7420	0.7792	0.7967	1.0000

Covariance Parameter Estimates		
Cov Parm	Subject	Estimate
UN(1,1)	id	41.8280
UN(2,1)	id	-0.7901
UN(2,2)	id	0.5603
UN(3,1)	id	-0.5293
UN(3,2)	id	-0.02665
UN(3,3)	id	0.02206
Residual		10.3254

Fit Statistics	
-2 Res Log Likelihood	6112.3
AIC (Smaller is Better)	6126.3
AICC (Smaller is Better)	6126.5
BIC (Smaller is Better)	6148.0

Null Model Likelihood Ratio Test		
DF	Chi-Square	Pr > ChiSq
6	976.64	<.0001

The Mixed Procedure

Solution for Fixed Effects					
Effect	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept	22.2786	0.5279	161	42.20	<.0001
time	1.4757	0.08055	161	18.32	<.0001
time*time	0.1894	0.02512	161	7.54	<.0001

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
time	1	161	335.61	<.0001
time*time	1	161	56.86	<.0001