

## Missing Data Example in Mplus

Mplus VERSION 5.2  
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02/18/2010 2:50 PM

### INPUT INSTRUCTIONS

```

title: Full Structural Model Example: gender, hostility, and negative affect;

data: file=full1.dat; format=free;
      ! note I did not use the 'listwise=on' command;

variable: names = sex neg6 neg26 neg30 neg35 panas6 panas7 panas8 panas9 panas10;
          missing=sex-panas10 (-99);

          ! usevariables = neg6 neg26 neg30 neg35 panas6 panas7 panas8 panas9 panas10;

analysis: type=general;
          ! FIML is now the default estimation in Mplus if the listwise statement is not used;

model: hostile by neg6 neg26 neg30 neg35;
       negaff by panas6 panas7 panas8 panas9 panas10;
       negaff on hostile;
       hostile on sex;

output: stdyx ;

```

### INPUT READING TERMINATED NORMALLY

Full Structural Model Example: gender, hostility, and negative affect;

### SUMMARY OF ANALYSIS

Number of groups	1
Number of observations	275
Number of dependent variables	9
Number of independent variables	1
Number of continuous latent variables	2

### Observed dependent variables

Continuous					
NEG6	NEG26	NEG30	NEG35	PANAS6	PANAS7
PANAS8	PANAS9	PANAS10			

### Observed independent variables

SEX

### Continuous latent variables

HOSTILE NEGAFF

Estimator	ML
Information matrix	OBSERVED
Maximum number of iterations	1000
Convergence criterion	0.500D-04
Maximum number of steepest descent iterations	20
Maximum number of iterations for H1	2000
Convergence criterion for H1	0.100D-03

### Input data file(s)

full1.dat

### Input data format FREE

### SUMMARY OF DATA

Number of missing data patterns

14

COVARIANCE COVERAGE OF DATA

Minimum covariance coverage value 0.100

PROPORTION OF DATA PRESENT

	Covariance Coverage				
	NEG6	NEG26	NEG30	NEG35	PANAS6
NEG6	0.971				
NEG26	0.967	0.996			
NEG30	0.967	0.993	0.996		
NEG35	0.971	0.996	0.996	1.000	
PANAS6	0.960	0.978	0.978	0.982	0.982
PANAS7	0.960	0.982	0.982	0.985	0.978
PANAS8	0.960	0.978	0.978	0.982	0.978
PANAS9	0.960	0.982	0.982	0.985	0.978
PANAS10	0.960	0.978	0.978	0.982	0.975
SEX	0.967	0.993	0.993	0.996	0.978

	Covariance Coverage				
	PANAS7	PANAS8	PANAS9	PANAS10	SEX
PANAS7	0.985				
PANAS8	0.978	0.982			
PANAS9	0.982	0.978	0.985		
PANAS10	0.978	0.975	0.978	0.982	
SEX	0.982	0.978	0.982	0.978	0.996

THE MODEL ESTIMATION TERMINATED NORMALLY

TESTS OF MODEL FIT

Chi-Square Test of Model Fit

Value	57.853
Degrees of Freedom	34
P-Value	0.0065

Chi-Square Test of Model Fit for the Baseline Model

Value	1094.597
Degrees of Freedom	45
P-Value	0.0000

CFI/TLI

CFI	0.977
TLI	0.970

Loglikelihood

H0 Value	-2764.527
H1 Value	-2735.600

Information Criteria

Number of Free Parameters	29
Akaike (AIC)	5587.054
Bayesian (BIC)	5691.940
Sample-Size Adjusted BIC	5599.987
(n* = (n + 2) / 24)	

RMSEA (Root Mean Square Error Of Approximation)

Estimate	0.051
90 Percent C.I.	0.027 0.072
Probability RMSEA <= .05	0.458

SRMR (Standardized Root Mean Square Residual)

Value 0.045

MODEL RESULTS

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
<b>HOSTILE BY</b>				
NEG6	1.000	0.000	999.000	999.000
NEG26	1.356	0.118	11.478	0.000
NEG30	1.305	0.118	11.076	0.000
NEG35	1.062	0.107	9.947	0.000
<b>NEGAFF BY</b>				
PANAS6	1.000	0.000	999.000	999.000
PANAS7	0.872	0.072	12.036	0.000
PANAS8	0.983	0.063	15.592	0.000
PANAS9	0.508	0.059	8.567	0.000
PANAS10	1.019	0.091	11.238	0.000
<b>NEGAFF ON HOSTILE</b>				
	0.504	0.109	4.624	0.000
<b>HOSTILE ON SEX</b>				
	0.018	0.066	0.269	0.788
<b>Intercepts</b>				
NEG6	0.612	0.059	10.296	0.000
NEG26	0.583	0.069	8.453	0.000
NEG30	0.653	0.067	9.681	0.000
NEG35	0.451	0.060	7.513	0.000
PANAS6	1.572	0.057	27.374	0.000
PANAS7	1.857	0.062	29.989	0.000
PANAS8	1.611	0.058	27.623	0.000
PANAS9	1.480	0.046	31.901	0.000
PANAS10	2.143	0.076	28.372	0.000
<b>Residual Variances</b>				
NEG6	0.333	0.032	10.330	0.000
NEG26	0.144	0.023	6.273	0.000
NEG30	0.174	0.023	7.433	0.000
NEG35	0.278	0.028	10.004	0.000
PANAS6	0.206	0.031	6.719	0.000
PANAS7	0.518	0.051	10.130	0.000
PANAS8	0.256	0.033	7.770	0.000
PANAS9	0.406	0.037	10.981	0.000
PANAS10	0.830	0.080	10.324	0.000
HOSTILE	0.251	0.044	5.685	0.000
NEGAFF	0.529	0.065	8.119	0.000

STANDARDIZED MODEL RESULTS

STDYX Standardization

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
<b>HOSTILE BY</b>				
NEG6	0.655	0.040	16.454	0.000
NEG26	0.873	0.023	37.317	0.000
NEG30	0.843	0.025	33.695	0.000
NEG35	0.710	0.035	20.265	0.000
<b>NEGAFF BY</b>				
PANAS6	0.862	0.024	35.999	0.000
PANAS7	0.682	0.038	18.126	0.000
PANAS8	0.831	0.026	32.159	0.000
PANAS9	0.523	0.049	10.713	0.000
PANAS10	0.653	0.040	16.336	0.000

## Newsom, USP 655 SEM, Winter 2010

NEGAFF ON				
HOSTILE	0.328	0.063	5.214	0.000
HOSTILE ON				
SEX	0.018	0.065	0.269	0.788
Intercepts				
NEG6	0.802	0.086	9.365	0.000
NEG26	0.750	0.095	7.906	0.000
NEG30	0.842	0.095	8.894	0.000
NEG35	0.602	0.085	7.123	0.000
PANAS6	1.759	0.099	17.686	0.000
PANAS7	1.887	0.103	18.358	0.000
PANAS8	1.768	0.100	17.761	0.000
PANAS9	1.979	0.105	18.761	0.000
PANAS10	1.782	0.099	17.916	0.000
Residual Variances				
NEG6	0.571	0.052	10.939	0.000
NEG26	0.239	0.041	5.851	0.000
NEG30	0.290	0.042	6.875	0.000
NEG35	0.496	0.050	9.976	0.000
PANAS6	0.257	0.041	6.237	0.000
PANAS7	0.535	0.051	10.415	0.000
PANAS8	0.309	0.043	7.183	0.000
PANAS9	0.727	0.051	14.230	0.000
PANAS10	0.574	0.052	11.000	0.000
HOSTILE	1.000	0.002	437.042	0.000
NEGAFF	0.893	0.041	21.680	0.000

## R-SQUARE

Observed Variable	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
NEG6	0.429	0.052	8.227	0.000
NEG26	0.761	0.041	18.658	0.000
NEG30	0.710	0.042	16.847	0.000
NEG35	0.504	0.050	10.132	0.000
PANAS6	0.743	0.041	17.999	0.000
PANAS7	0.465	0.051	9.063	0.000
PANAS8	0.691	0.043	16.079	0.000
PANAS9	0.273	0.051	5.357	0.000
PANAS10	0.426	0.052	8.168	0.000
Latent Variable	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
HOSTILE	0.000	0.002	0.135	0.893
NEGAFF	0.107	0.041	2.607	0.009

## QUALITY OF NUMERICAL RESULTS

Condition Number for the Information Matrix 0.949E-02  
(ratio of smallest to largest eigenvalue)

Beginning Time: 14:50:36  
Ending Time: 14:50:36  
Elapsed Time: 00:00:00

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