Example of Second-Order Factor Model

```
  title:  Second Order Factor Model - Class Example;

  data:  file=c:\jason\mplus\semclass\cfa2nd.dat;  format=20f1.0;
      listwise=on;

  variable:  names = rcesde1 rcesdf1 rcesdg1 rcesdh1 rcesdl1 rcesdm1 rcesds1
                   rcesdc1 rcesdk1 rcesdn1 rcesdp1
                   rcesda1 rcesdb1 rcesdd1 rcesdi1 rcesdj1 rcesdo1 rcesdr1
                   rcesdq1 rcesdt1 ;

             missing=blank;

  analysis:  type=general; estimator=mlm;

  model: depaff by rcesde1-rcesds1;
         posaff by rcesdc1-rcesdp1;
         physical by rcesda1-rcesdr1;
         ipjudge by rcesdq1-rcesdt1;
         depress by depaff*1 posaff physical ipjudge;
         depress@1;

  output:  modindices (3.84) stdyx;



INPUT READING TERMINATED NORMALLY
Second Order Factor Model - Class Example;

SUMMARY OF ANALYSIS

Number of groups                                                 1
Number of observations                                         294

   DEPAFF      POSAFF      PHYSICAL    IPJUDGE     DEPRESS


Estimator                                                      MLM
Information matrix                                        EXPECTED
Maximum number of iterations                                 1000
Convergence criterion                                   0.500D-04
Maximum number of steepest descent iterations                  20

Input data file(s)
  c:\jason\mplus\semclass\cfa2nd.dat

Input data format
  (20F1.0)



THE MODEL ESTIMATION TERMINATED NORMALLY



MODEL FIT INFORMATION

Number of Free Parameters                       64

Loglikelihood

          H0 Value                       -6396.520
          H1 Value                       -6225.553

Information Criteria

          Akaike (AIC)                   12921.040
          Bayesian (BIC)                 13156.790
          Sample-Size Adjusted BIC       12953.828
            (n* = (n + 2) / 24)

Chi-Square Test of Model Fit

          Value                            280.889*
          Degrees of Freedom                   166
```

P-Value	0.0000
Scaling Correction Factor for MLM	1.2173

* The chi-square value for MLM, MLMV, MLR, ULSMV, WLSM and WLSMV cannot be used for chi-square difference testing in the regular way. MLM, MLR and WLSM chi-square difference testing is described on the Mplus website. MLMV, WLSMV, and ULSMV difference testing is done using the DIFFTEST option.

RMSEA (Root Mean Square Error Of Approximation)

Estimate	0.049	
90 Percent C.I.	0.039	0.058
Probability RMSEA <= .05	0.587	

CFI/TLI

CFI	0.903
TLI	0.890

Chi-Square Test of Model Fit for the Baseline Model

Value	1380.240
Degrees of Freedom	190
P-Value	0.0000

SRMR (Standardized Root Mean Square Residual)

Value	0.049

WRMR (Weighted Root Mean Square Residual)

Value	1.042

MODEL RESULTS

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
DEPAFF BY				
RCESDE1	1.000	0.000	999.000	999.000
RCESDF1	0.327	0.074	4.447	0.000
RCESDG1	0.867	0.079	10.963	0.000
RCESDH1	0.741	0.086	8.610	0.000
RCESDL1	0.858	0.081	10.623	0.000
RCESDM1	0.147	0.058	2.525	0.012
RCESDS1	0.880	0.075	11.809	0.000
POSAFF BY				
RCESDC1	1.000	0.000	999.000	999.000
RCESDK1	4.209	1.503	2.800	0.005
RCESDN1	4.489	1.569	2.862	0.004
RCESDP1	3.961	1.349	2.937	0.003
PHYSICAL BY				
RCESDA1	1.000	0.000	999.000	999.000
RCESDB1	1.398	0.181	7.742	0.000
RCESDD1	0.997	0.155	6.413	0.000
RCESDI1	0.802	0.125	6.406	0.000
RCESDJ1	0.941	0.169	5.576	0.000
RCESDO1	0.846	0.161	5.246	0.000
RCESDR1	0.953	0.153	6.217	0.000
IPJUDGE BY				
RCESDQ1	1.000	0.000	999.000	999.000
RCESDT1	2.883	2.080	1.386	0.166
DEPRESS BY				
DEPAFF	0.738	0.052	14.231	0.000
POSAFF	0.118	0.043	2.760	0.006
PHYSICAL	0.417	0.060	6.941	0.000
IPJUDGE	0.024	0.018	1.327	0.184
Variances				

DEPRESS	1.000	0.000	999.000	999.000

STANDARDIZED MODEL RESULTS

STDYX Standardization

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
DEPAFF BY				
RCESDE1	0.766	0.029	26.231	0.000
RCESDF1	0.323	0.065	4.960	0.000
RCESDG1	0.614	0.046	13.483	0.000
RCESDH1	0.610	0.049	12.406	0.000
RCESDL1	0.768	0.032	24.110	0.000
RCESDM1	0.252	0.083	3.042	0.002
RCESDS1	0.785	0.033	23.449	0.000
POSAFF BY				
RCESDC1	0.208	0.072	2.881	0.004
RCESDK1	0.738	0.050	14.634	0.000
RCESDN1	0.746	0.047	16.025	0.000
RCESDP1	0.586	0.053	11.048	0.000
PHYSICAL BY				
RCESDA1	0.554	0.056	9.904	0.000
RCESDB1	0.674	0.037	18.147	0.000
RCESDD1	0.484	0.054	8.914	0.000
RCESDI1	0.546	0.067	8.137	0.000
RCESDJ1	0.420	0.060	7.037	0.000
RCESDO1	0.449	0.058	7.812	0.000
RCESDR1	0.521	0.061	8.526	0.000
IPJUDGE BY				
RCESDQ1	0.214	0.113	1.897	0.058
RCESDT1	0.749	0.266	2.818	0.005
DEPRESS BY				
DEPAFF	0.957	0.039	24.409	0.000
POSAFF	0.782	0.051	15.489	0.000
PHYSICAL	0.806	0.049	16.614	0.000
IPJUDGE	0.332	0.135	2.459	0.014
Intercepts				
RCESDE1	1.233	0.058	21.114	0.000
RCESDF1	0.544	0.038	14.160	0.000
RCESDG1	1.071	0.054	19.871	0.000
RCESDH1	0.658	0.041	16.054	0.000
RCESDL1	0.501	0.034	14.874	0.000
RCESDM1	0.250	0.035	7.177	0.000
RCESDS1	0.791	0.042	18.688	0.000
RCESDC1	0.373	0.035	10.750	0.000
RCESDK1	0.606	0.037	16.481	0.000
RCESDN1	0.668	0.041	16.148	0.000
RCESDP1	0.702	0.039	17.765	0.000
RCESDA1	0.641	0.040	16.009	0.000
RCESDB1	0.864	0.046	18.764	0.000
RCESDD1	0.919	0.048	19.263	0.000
RCESDI1	0.483	0.035	13.887	0.000
RCESDJ1	1.007	0.051	19.758	0.000
RCESDO1	0.928	0.049	18.798	0.000
RCESDR1	0.535	0.036	14.675	0.000
RCESDQ1	0.198	0.029	6.788	0.000
RCESDT1	0.253	0.034	7.435	0.000
Variances				
DEPRESS	1.000	0.000	999.000	999.000

R-SQUARE

Observed Variable	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
RCESDE1	0.587	0.045	13.116	0.000
RCESDF1	0.104	0.042	2.480	0.013
RCESDG1	0.377	0.056	6.741	0.000

RCESDH1	0.372	0.060	6.203	0.000
RCESDL1	0.589	0.049	12.055	0.000
RCESDM1	0.064	0.042	1.521	0.128
RCESDS1	0.617	0.053	11.725	0.000
RCESDC1	0.043	0.030	1.440	0.150
RCESDK1	0.544	0.074	7.317	0.000
RCESDN1	0.556	0.069	8.013	0.000
RCESDP1	0.344	0.062	5.524	0.000
RCESDA1	0.307	0.062	4.952	0.000
RCESDB1	0.454	0.050	9.074	0.000
RCESDD1	0.235	0.053	4.457	0.000
RCESDI1	0.298	0.073	4.068	0.000
RCESDJ1	0.177	0.050	3.518	0.000
RCESDO1	0.202	0.052	3.906	0.000
RCESDR1	0.272	0.064	4.263	0.000
RCESDQ1	0.046	0.048	0.948	0.343
RCESDT1	0.561	0.398	1.409	0.159

Latent Variable	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
DEPAFF	0.916	0.075	12.205	0.000
POSAFF	0.612	0.079	7.744	0.000
PHYSICAL	0.650	0.078	8.307	0.000
IPJUDGE	0.110	0.090	1.229	0.219

Minimum M.I. value for printing the modification index 3.840

		M.I.	E.P.C.	Std E.P.C.	StdYX E.P.C.
BY Statements					
DEPAFF	BY RCESDI1	4.534	0.284	0.219	0.288
POSAFF	BY RCESDG1	5.708	-1.979	-0.300	-0.275
POSAFF	BY RCESDL1	5.341	1.372	0.208	0.241
POSAFF	BY RCESDS1	4.971	1.316	0.199	0.230
IPJUDGE	BY RCESDA1	4.421	2.131	0.156	0.167
DEPRESS	BY RCESDG1	8.360	-1.832	-1.832	-1.682
DEPRESS	BY RCESDL1	4.695	1.014	1.014	1.177
DEPRESS	BY RCESDS1	4.136	0.952	0.952	1.102
DEPRESS	BY RCESDI1	4.141	0.246	0.246	0.323
WITH Statements					
RCESDG1	WITH RCESDE1	16.759	0.177	0.177	0.319
RCESDH1	WITH RCESDF1	6.102	-0.092	-0.092	-0.168
RCESDH1	WITH RCESDG1	7.830	0.127	0.127	0.199
RCESDL1	WITH RCESDE1	3.919	-0.063	-0.063	-0.177
RCESDL1	WITH RCESDG1	8.979	-0.111	-0.111	-0.234
RCESDM1	WITH RCESDE1	7.161	-0.054	-0.054	-0.194
RCESDM1	WITH RCESDG1	10.471	-0.082	-0.082	-0.219
RCESDM1	WITH RCESDL1	9.943	0.055	0.055	0.228
RCESDS1	WITH RCESDH1	14.044	-0.118	-0.118	-0.298
RCESDC1	WITH RCESDE1	5.376	-0.076	-0.076	-0.165
RCESDN1	WITH RCESDF1	3.958	-0.067	-0.067	-0.149
RCESDN1	WITH RCESDH1	12.384	-0.123	-0.123	-0.274
RCESDN1	WITH RCESDS1	3.861	0.054	0.054	0.167
RCESDN1	WITH RCESDK1	4.155	0.106	0.106	0.300
RCESDA1	WITH RCESDS1	4.947	-0.070	-0.070	-0.169
RCESDB1	WITH RCESDA1	4.902	0.112	0.112	0.181
RCESDI1	WITH RCESDH1	5.198	0.076	0.076	0.160
RCESDI1	WITH RCESDL1	3.992	0.053	0.053	0.149
RCESDI1	WITH RCESDP1	5.584	-0.089	-0.089	-0.169
RCESDI1	WITH RCESDB1	4.826	-0.090	-0.090	-0.178
RCESDO1	WITH RCESDH1	8.998	-0.133	-0.133	-0.206
RCESDO1	WITH RCESDS1	5.220	0.079	0.079	0.169
RCESDO1	WITH RCESDA1	6.761	-0.126	-0.126	-0.186
RCESDO1	WITH RCESDB1	12.028	0.185	0.185	0.268
RCESDR1	WITH RCESDI1	4.415	0.079	0.079	0.154
RCESDR1	WITH RCESDJ1	6.138	0.148	0.148	0.174
RCESDT1	WITH RCESDM1	4.253	0.016	0.016	0.194