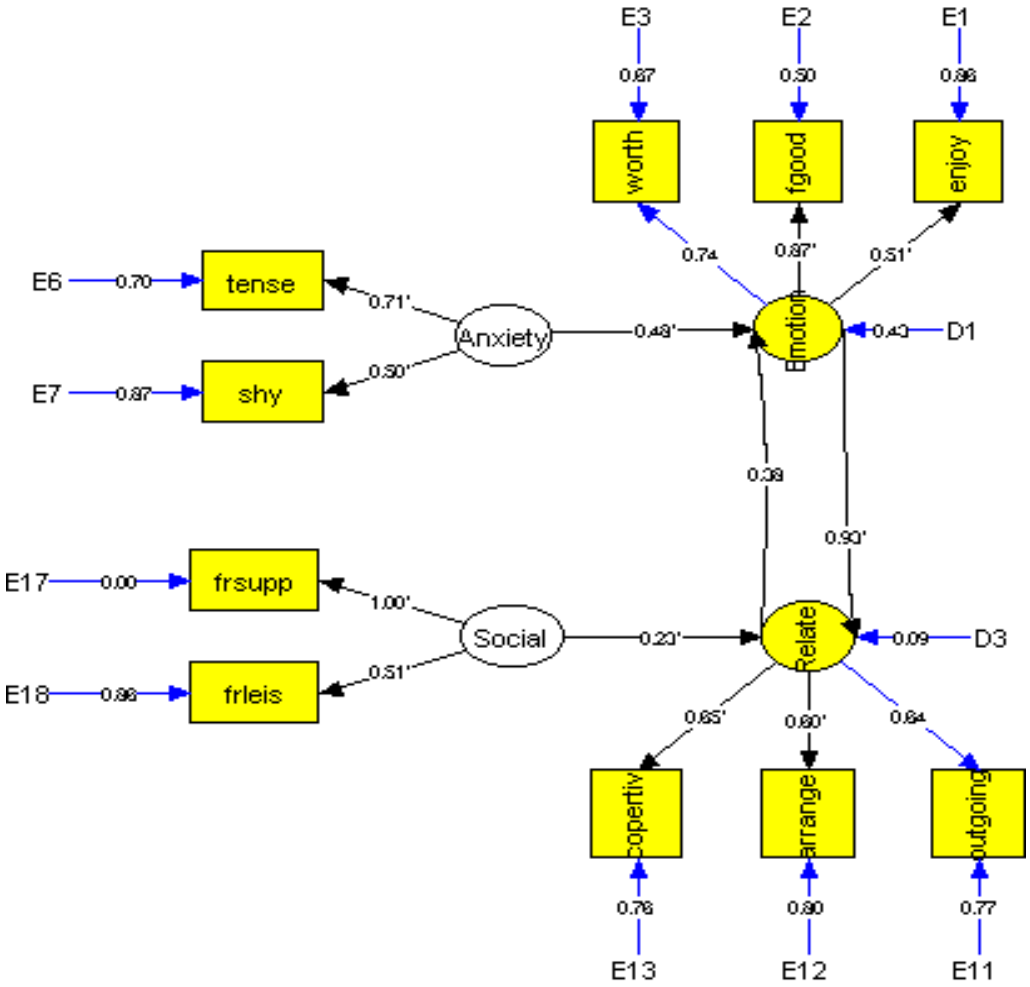
Structural Equation Modeling

Chapter 8

Merle Canfield

The topic of this chapter is reciprocal relationships. Often in psychology one variable may have an effect on another variable and the effected variable may in turn have an effect on the variable that influenced it. For example, if you are nice to someone they may be nice to you. And then you are nice to them. At the same time, if you are rotten to someone they may be rotten to you. And, of course, that gives you every reason to be rotten to them. The following diagram represents a reciprocal relationship.



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 METHODS=ML;
 MATRIX=COVARIANCE;
/LABELS
V1=V1; V2=V2; V3=V3; V4=V4; V5=V5;
V6=V6; V7=V7; V8=V8; V9=V9; V10=V10;
V11=V11; V12=V12; V13=V13; V14=V14; V15=V15;
V16=V16; V17=V17; V18=V18; V19=V19;
/EQUATIONS
V1 =  + *F1  + E1;
V2 =  + *F1  + E2;
V3 =  + 1.0F1  + E3;
V6 =  + *F2  + E6;
V7 =  + *F2  + E7;
V11 =  + 1.0F3  + E11;
V12 =  + *F3  + E12;
V13 =  + *F3  + E13;
V17 =  + *F4  + E17;
V18 =  + *F4  + E18;
F1 =  + *F2  + *F3  + D1;
F3 =  + *F1  + *F4  + D3;
/VARIANCES
F2 = 1.00;
F4 = 1.00;
E1 = *;
E2 = *;
E3 = *;
E6 = *;
E7 = *;
E11 = *;
E12 = *;
E13 = *;
E17 = *;
E18 = *;
D1 = *;
D3 = *;
/COVARIANCES
/OUTPUT
 parameters;
```

```
 standard errors;
 listing;
 data='EQSOUT&.ETS';
/END
```

GOODNESS OF FIT SUMMARY

INDEPENDENCE MODEL CHI-SQUARE = 308.221 ON 45 DEGREES OF FREEDOM

INDEPENDENCE AIC = 218.22135 INDEPENDENCE CAIC = 57.35935
MODEL AIC = -14.44071 MODEL CAIC = -125.25675

CHI-SQUARE = 47.559 BASED ON 31 DEGREES OF FREEDOM
PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS 0.02899
THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION IS 45.339.

BENTLER-BONETT NORMED FIT INDEX= 0.846
BENTLER-BONETT NONNORMED FIT INDEX= 0.909
COMPARATIVE FIT INDEX (CFI) = 0.937

MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS

V1 =V1 = .733*F1 + 1.000 E1
.155
4.738

V2 =V2 = 1.030*F1 + 1.000 E2
.132
7.792

V3 =V3 = 1.000 F1 + 1.000 E3

V6 =V6 = 1.393*F2 + 1.000 E6
.259
5.382

V7 =V7 = .301*F2 + 1.000 E7
.071
4.229

V11 =V11 = 1.000 F3 + 1.000 E11

```
V12   =V12 =    .868*F3    + 1.000 E12
              .172
             5.042

V13   =V13 =    .815*F3    + 1.000 E13
              .152
             5.374

V17   =V17 =   1.856*F4    + 1.000 E17
              .134
            13.856

V18   =V18 =   1.045*F4    + 1.000 E18
              .197
             5.317
```

CONSTRUCT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS

```
 F1   =F1  =    .464*F3    + -.728*F2    + 1.000 D1
              .270          .279
```

```
              1.719        -2.611

  F3   =F3  =    .759*F1    +  .291*F4    + 1.000 D3
               .144          .115
              5.289         2.537
```

VARIANCES OF INDEPENDENT VARIABLES

V		F	
	I F2 - F2		1.000 I
	I		I
	I		I
	I		I
	I F4 - F4		1.000 I
	I		I
	I		I
	I		I

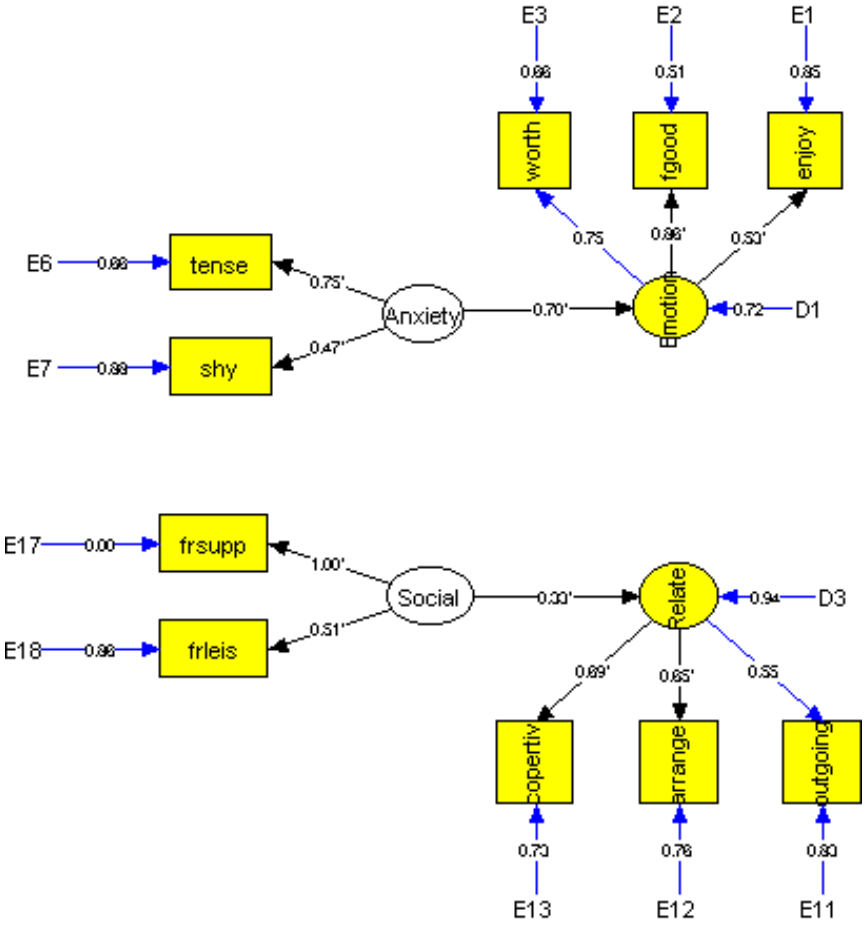
VARIANCES OF INDEPENDENT VARIABLES

E		D	
E1 - V1	3.495*I	D1 - F1	.424*I
	.533 I		.331 I
	6.556 I		1.283 I
	I		I
E2 - V2	.819*I	D3 - F3	.013*I
	.220 I		.146 I
	3.730 I		.089 I
	I		I
E3 - V3	1.923*I		I
	.343 I		I
	5.604 I		I
	I		I
E6 - V6	1.890*I		I
	.603 I		I
	3.134 I		I
	I		I
E7 - V7	.274*I		I
	.047 I		I
	5.852 I		I

```
                        |                        |
E11 -  V11          2.274*|                       |
                     .376 |                        |
                    6.055 |                        |
                        |                        |
E12 -  V12          2.070*|                       |
                     .332 |                        |
                    6.241 |                        |
                        |                        |
E13 -  V13          1.415*|                       |
                     .237 |                        |
                    5.978 |                        |
                        |                        |
E17 -  V17           .000*|                       |
                     .006 |                        |
                     .000 |                        |
                        |                        |
E18 -  V18          3.161*|                       |
                     .456 |                        |
                    6.928 |                        |
                        |                        |
```

STANDARDIZED SOLUTION:

```
V1    =V1  =   .513*F1    + .858 E1
V2    =V2  =   .866*F1    + .500 E2
V3    =V3  =   .740 F1    + .673 E3
V6    =V6  =   .712*F2    + .702 E6
V7    =V7  =   .498*F2    + .867 E7
V11   =V11 =   .636 F3    + .772 E11
V12   =V12 =   .600*F3    + .800 E12
V13   =V13 =   .648*F3    + .762 E13
V17   =V17 =  1.000*F4    + .000 E17
V18   =V18 =   .507*F4    + .862 E18
 F1   =F1  =   .378*F3    +-.478*F2    + .427 D1
 F3   =F3  =   .932*F1    + .234*F4    + .092 D3
```



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 MATRIX=COVARIANCE;
/LABELS
V1=V1; V2=V2; V3=V3; V4=V4; V5=V5;
V6=V6; V7=V7; V8=V8; V9=V9; V10=V10;
V11=V11; V12=V12; V13=V13; V14=V14; V15=V15;
V16=V16; V17=V17; V18=V18; V19=V19;
/EQUATIONS
V1 =  + *F1  + E1;
V2 =  + *F1  + E2;
V3 =  + 1.0F1  + E3;
V6 =  + *F2  + E6;
V7 =  + *F2  + E7;
V11 =  + 1.0F3  + E11;
V12 =  + *F3  + E12;
V13 =  + *F3  + E13;
V17 =  + *F4  + E17;
V18 =  + *F4  + E18;
F1 =  + *F2  + D1;
F3 =  + *F4  + D3;
/VARIANCES
F2 = 1.00;
F4 = 1.00;
E1 = *;
E2 = *;
E3 = *;
E6 = *;
E7 = *;
E11 = *;
E12 = *;
E13 = *;
```

```
E17 = *;
E18 = *;
D1 = *;
D3 = *;
/COVARIANCES
/OUTPUT
 parameters;
 standard errors;
 listing;
 data='EQSOUT&.ETS';
/END
```

GOODNESS OF FIT SUMMARY

INDEPENDENCE MODEL CHI-SQUARE = 308.221 ON 45 DEGREES OF FREEDOM

INDEPENDENCE AIC = 218.22135 INDEPENDENCE CAIC = 57.35935
MODEL AIC = 49.95316 MODEL CAIC = -68.01230

CHI-SQUARE = 115.953 BASED ON 33 DEGREES OF FREEDOM
PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS LESS THAN 0.001
THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION IS 90.638.

BENTLER-BONETT NORMED FIT INDEX= 0.624
BENTLER-BONETT NONNORMED FIT INDEX= 0.570
COMPARATIVE FIT INDEX (CFI) = 0.685

MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS

V1 =V1 = .743*F1 + 1.000 E1
.159
4.675

V2 =V2 = 1.006*F1 + 1.000 E2
.163
6.161

V3 =V3 = 1.000 F1 + 1.000 E3

V6 =V6 = 1.467*F2 + 1.000 E6
.283
5.179

V7 =V7 = .286*F2 + 1.000 E7
.073
3.916

V11 =V11 = 1.000 F3 + 1.000 E11

```
V12   =V12 =   1.086*F3    + 1.000 E12
              .295
             3.675

V13   =V13 =    .989*F3    + 1.000 E13
              .271
             3.654

V17   =V17 =   1.856*F4    + 1.000 E17
              .134
            13.856

V18   =V18 =   1.045*F4    + 1.000 E18
              .197
             5.317
```

CONSTRUCT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS

```
 F1   =F1  =  -1.071*F2    + 1.000 D1
              .256
```

-4.181

F3 =F3 = .353*F4 + 1.000 D3
.147
2.401

VARIANCES OF INDEPENDENT VARIABLES

V		F	
	I F2 - F2		1.000 I
	I		I
	I		I
	I		I
	I F4 - F4		1.000 I
	I		I
	I		I

VARIANCES OF INDEPENDENT VARIABLES

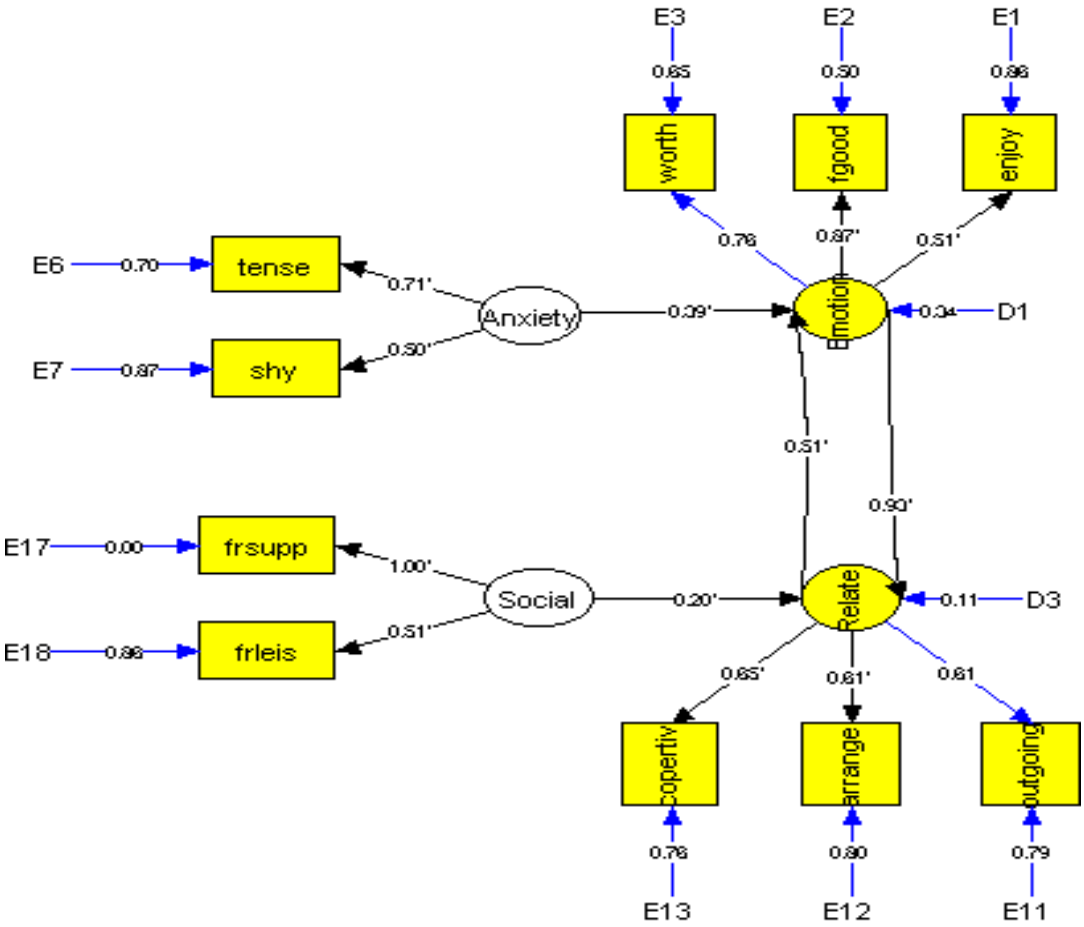
E		D	
E1 - V1	3.423*I	D1 - F1	1.222*I
	.540 I		.494 I
	6.340 I		2.473 I
	I		I
E2 - V2	.861*I	D3 - F3	1.036*I
	.335 I		.445 I
	2.567 I		2.329 I
	I		I
E3 - V3	1.853*I		I
	.413 I		I
	4.484 I		I
	I		I
E6 - V6	1.680*I		I
	.709 I		I
	2.371 I		I
	I		I
E7 - V7	.283*I		I
	.048 I		I
	5.890 I		I
	I		I

```
E11 -  V11          2.617*I                    I
                    .482 I                     I
                   5.434 I                     I
                        I                     I
E12 -  V12          1.833*I                    I
                    .429 I                     I
                   4.277 I                     I
                        I                     I
E13 -  V13          1.277*I                    I
                    .333 I                     I
                   3.831 I                     I
                        I                     I
E17 -  V17           .000*I                    I
                    .005 I                     I
                    .000 I                     I
                        I                     I
E18 -  V18          3.161*I                    I
                    .456 I                     I
                   6.928 I                     I
                        I                     I
```

STANDARDIZED SOLUTION:

```
 V1    =V1  =   .526*F1    + .851 E1
 V2    =V2  =   .858*F1    + .514 E2
 V3    =V3  =   .749 F1    + .662 E3
 V6    =V6  =   .749*F2    + .662 E6
 V7    =V7  =   .473*F2    + .881 E7
 V11   =V11 =   .554 F3    + .832 E11
 V12   =V12 =   .654*F3    + .757 E12
 V13   =V13 =   .686*F3    + .727 E13
 V17   =V17 =  1.000*F4    + .000 E17
 V18   =V18 =   .507*F4    + .862 E18
  F1   =F1  =  -.696*F2    + .718 D1
  F3   =F3  =   .328*F4    + .945 D3
```

The model no longer fits. The percent of variance accounted of Relate in the first model was 99%, while in the second model it was 12%. The amount of variance accounted for of Emotion in the first model was 82% and in the second model 48%.



This model tests whether the reciprocal relationships are significantly different from each other. The test is accomplished by constraining the regression equations to be equal and noting wheher the Chi Square is differnt for the two models. The Chi Square in the first model was 47.559 and the present model 48.339. The difference of .78 with one degree of freedom is not significant. Consequently, the two regression coefficients are not different.

File Name = recreg3.eqs

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recreg3
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 DATA='D:\EQSW\LSQCOR1.ESS'; VARIABLES= 19; CASES=   97;
 METHODS=ML;
 MATRIX=COVARIANCE;
/LABELS
V1=V1; V2=V2; V3=V3; V4=V4; V5=V5;
V6=V6; V7=V7; V8=V8; V9=V9; V10=V10;
V11=V11; V12=V12; V13=V13; V14=V14; V15=V15;
V16=V16; V17=V17; V18=V18; V19=V19;
/EQUATIONS
V1 =  + *F1  + E1;
V2 =  + *F1  + E2;
V3 =  + 1.0F1  + E3;
V6 =  + *F2  + E6;
V7 =  + *F2  + E7;
V11 =  + 1.0F3  + E11;
V12 =  + *F3  + E12;
V13 =  + *F3  + E13;
V17 =  + *F4  + E17;
V18 =  + *F4  + E18;
F1 =  + *F2  + *F3  + D1;
F3 =  + *F1  + *F4  + D3;
/VARIANCES
F2 = 1.00;
F4 = 1.00;
E1 = *;
E2 = *;
E3 = *;
E6 = *;
E7 = *;
E11 = *;
```

```
E12 = *;
E13 = *;
E17 = *;
E18 = *;
D1 = *;
D3 = *;
/COVARIANCES
/CONSTRAINTS
(F1,F3)=(F3,F1);
/OUTPUT
 parameters;
 standard errors;
 listing;
 data='EQSOUT&.ETS';
/END
```

```
 GOODNESS OF FIT SUMMARY

 INDEPENDENCE MODEL CHI-SQUARE =        308.221 ON    45 DEGREES OF FREEDOM

 INDEPENDENCE AIC =   218.22135   INDEPENDENCE CAIC =    57.35935
       MODEL AIC =   -15.66147          MODEL CAIC =  -130.05222

 CHI-SQUARE =       48.339 BASED ON    32 DEGREES OF FREEDOM
 PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS     0.03201
 THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION IS          45.872.

 BENTLER-BONETT NORMED     FIT INDEX=       0.843
 BENTLER-BONETT NONNORMED FIT INDEX=       0.913
 COMPARATIVE FIT INDEX (CFI)       =       0.938


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS



  V1    =V1  =    .703*F1    + 1.000 E1
                   .144
                  4.867

  V2    =V2  =    .995*F1    + 1.000 E2
```

.117
8.521

V3 =V3 = 1.000 F1 + 1.000 E3

V6 =V6 = 1.388*F2 + 1.000 E6
.258
5.382

V7 =V7 = .302*F2 + 1.000 E7
.071
4.247

V11 =V11 = 1.000 F3 + 1.000 E11

V12 =V12 = .932*F3 + 1.000 E12
.174
5.360

V13 =V13 = .873*F3 + 1.000 E13
.152
5.746

V17 =V17 = 1.856*F4 + 1.000 E17
.134
13.856

V18 =V18 = 1.045*F4 + 1.000 E18
.197
5.317

CONSTRUCT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS

F1 =F1 = .685*F3 + -.620*F2 + 1.000 D1
.110 .238
6.242 -2.603

```
F3   =F3  =    .685*F1    +  .232*F4    + 1.000 D3
              .110          .090
             6.242         2.585
```

EQS/EM 386 Licensee:

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

VARIANCES OF INDEPENDENT VARIABLES

V		F	
	I	F2 - F2	1.000 I
	I		I
	I		I
	I		I
	I	F4 - F4	1.000 I
	I		I
	I		I
	I		I

VARIANCES OF INDEPENDENT VARIABLES

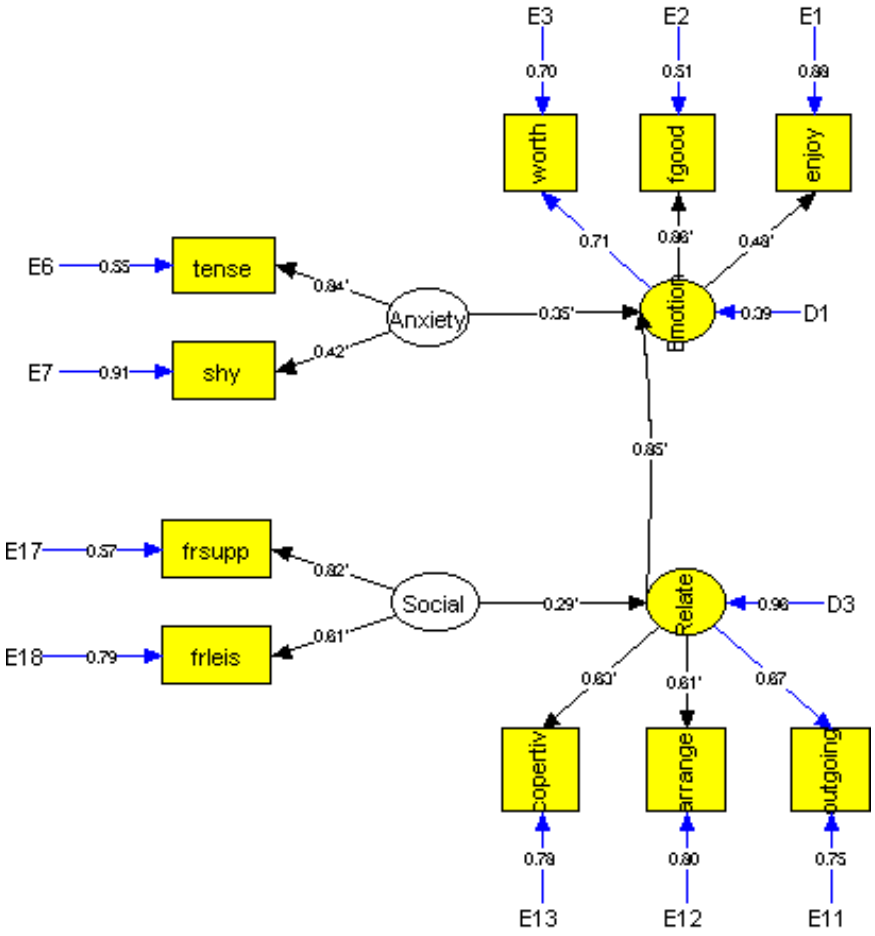
E		D	
E1 - V1	3.513*	D1 - F1	.295*
	.535		.221
	6.567		1.336
	I		I
E2 - V2	.820*	D3 - F3	.016*
	.217		.112
	3.778		.140
	I		I
E3 - V3	1.899*		I
	.344		I
	5.527		I
	I		I
E6 - V6	1.904*		I
	.598		I
	3.182		I
	I		I
E7 - V7	.273*		I
	.047		I
	5.842		I
	I		I

```
E11 -  V11          2.301*|                    |
                     .371 |                    |
                    6.208 |                    |
                          |                    |
E12 -  V12          2.063*|                    |
                     .331 |                    |
                    6.241 |                    |
                          |                    |
E13 -  V13          1.413*|                    |
                     .236 |                    |
                    5.991 |                    |
                          |                    |
E17 -  V17           .000*|                    |
                     .006 |                    |
                     .000 |                    |
                          |                    |
E18 -  V18          3.161*|                    |
                     .456 |                    |
                    6.928 |                    |
                          |                    |
```

STANDARDIZED SOLUTION:

```
 V1    =V1  =   .512*F1    + .859 E1
 V2    =V2  =   .868*F1    + .497 E2
 V3    =V3  =   .756 F1    + .655 E3
 V6    =V6  =   .709*F2    + .705 E6
 V7    =V7  =   .500*F2    + .866 E7
 V11   =V11 =   .612 F3    + .791 E11
 V12   =V12 =   .606*F3    + .796 E12
 V13   =V13 =   .653*F3    + .757 E13
 V17   =V17 =  1.000*F4    + .000 E17
 V18   =V18 =   .507*F4    + .862 E18
  F1   =F1  =   .506*F3    +-.390*F2    + .342 D1
  F3   =F3  =   .928*F1    + .197*F4    + .107 D3
```

Even though the regression coefficients are not different from each other do they account for differing amounts of variance of each other and what is the relationship to the overall fit. The next to models attempt to answer these questions.



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 METHODS=ML;
 MATRIX=COVARIANCE;
/LABELS
V1=V1; V2=V2; V3=V3; V4=V4; V5=V5;
V6=V6; V7=V7; V8=V8; V9=V9; V10=V10;
V11=V11; V12=V12; V13=V13; V14=V14; V15=V15;
V16=V16; V17=V17; V18=V18; V19=V19;
/EQUATIONS
V1 =  + *F1  + E1;
V2 =  + *F1  + E2;
V3 =  + 1.0F1  + E3;
V6 =  + *F2  + E6;
V7 =  + *F2  + E7;
V11 =  + 1.0F3  + E11;
V12 =  + *F3  + E12;
V13 =  + *F3  + E13;
V17 =  + *F4  + E17;
V18 =  + *F4  + E18;
F1 =  + *F2  + *F3  + D1;
F3 =  + *F4  + D3;
/VARIANCES
F2 = 1.00;
F4 = 1.00;
E1 = *;
E2 = *;
E3 = *;
E6 = *;
E7 = *;
E11 = *;
E12 = *;
E13 = *;
E17 = *;
E18 = *;
D1 = *;
D3 = *;
/COVARIANCES
/OUTPUT
 parameters;
```

```
standard errors;
listing;
data='EQSOUT&.ETS';
/END
```

GOODNESS OF FIT SUMMARY

INDEPENDENCE MODEL CHI-SQUARE = 308.221 ON 45 DEGREES OF FREEDOM

INDEPENDENCE AIC = 218.22135 INDEPENDENCE CAIC = 57.35935
MODEL AIC = 8.57617 MODEL CAIC = -105.81458

CHI-SQUARE = 72.576 BASED ON 32 DEGREES OF FREEDOM
PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS LESS THAN 0.001
THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION IS 65.172.

BENTLER-BONETT NORMED FIT INDEX= 0.765
BENTLER-BONETT NONNORMED FIT INDEX= 0.783
COMPARATIVE FIT INDEX (CFI) = 0.846

MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS

V1 =V1 = .732*F1 +1.000 E1
.171
4.290

V2 =V2 = 1.044*F1 +1.000 E2
.154
6.803

V3 =V3 = 1.000 F1 +1.000 E3

V6 =V6 = 1.640*F2 +1.000 E6
.464
3.533

V7 =V7 = .256*F2 +1.000 E7
.090

2.847

V11 =V11 = 1.000 F3 +1.000 E11

V12 =V12 = .837*F3 +1.000 E12
.175
4.783

V13 =V13 = .757*F3 +1.000 E13
.153
4.937

V17 =V17 = 1.529*F4 +1.000 E17
.456
3.352

V18 =V18 = 1.268*F4 +1.000 E18
.403
3.143

CONSTRUCT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS

F1 =F1 = .921*F3 +-.495*F2 +1.000 D1
.195 .185
4.716 -2.676

F3 =F3 = .378*F4 +1.000 D3
.187
2.020

VARIANCES OF INDEPENDENT VARIABLES

V F
--- ---
I F2 - F2 1.000 I
I I
I I

```
                        I                        I
                        I F4  -   F4          1.000 I
                        I                        I
                        I                        I
                        I                        I
```

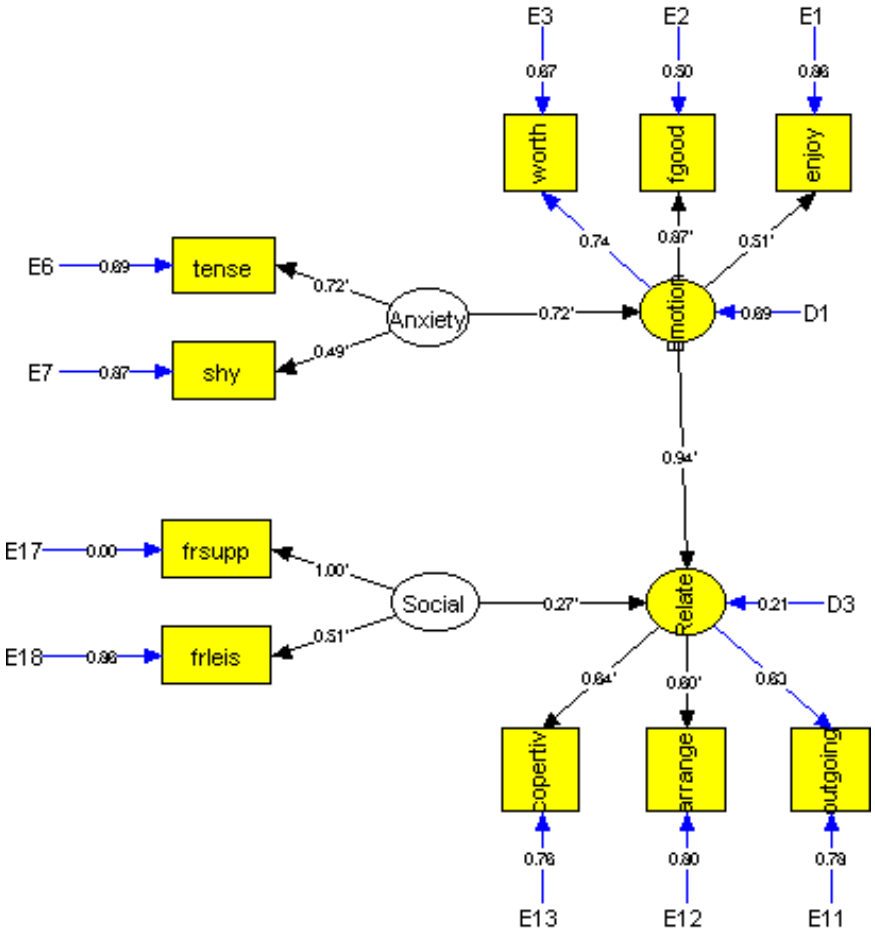
VARIANCES OF INDEPENDENT VARIABLES

```
             E                        D
            ---                      ---
E1  -  V1          3.497*I D1  -   F1          .306*I
                   .535 I                   .275 I
                  6.540 I                  1.112 I
                       I                        I
E2  -  V2           .748*I D3  -   F3         1.536*I
                   .245 I                   .484 I
                  3.057 I                  3.176 I
                       I                        I
E3  -  V3          1.922*I                       I
                   .350 I                        I
                  5.487 I                        I
                       I                        I
E6  -  V6          1.143*I                       I
                  1.437 I                        I
                   .795 I                        I
                       I                        I
E7  -  V7           .299*I                       I
                   .055 I                        I
                  5.400 I                        I
                       I                        I
E11 -  V11         2.100*I                       I
                   .393 I                        I
                  5.341 I                        I
                       I                        I
E12 -  V12         2.026*I                       I
                   .349 I                        I
                  5.805 I                        I
                       I                        I
E13 -  V13         1.451*I                       I
                   .258 I                        I
                  5.633 I                        I
                       I                        I
E17 -  V17         1.105*I                       I
```

```
                    1.323 I                          I
                     .835 I                          I
                          I                          I
E18 -  V18           2.645*I                             I
                     .980 I                          I
                    2.698 I                          I
                          I                          I
```

STANDARDIZED SOLUTION:

```
 V1    =V1  =   .482*F1    + .876 E1
 V2    =V2  =   .861*F1    + .508 E2
 V3    =V3  =   .712 F1    + .702 E3
 V6    =V6  =   .838*F2    + .546 E6
 V7    =V7  =   .423*F2    + .906 E7
 V11   =V11 =   .667 F3    + .745 E11
 V12   =V12 =   .606*F3    + .795 E12
 V13   =V13 =   .631*F3    + .775 E13
 V17   =V17 =   .824*F4    + .566 E17
 V18   =V18 =   .615*F4    + .789 E18
  F1   =F1  =   .849*F3    +-.353*F2    + .394 D1
  F3   =F3  =   .291*F4    + .957 D3
```


E3
E2
E1
0.87
0.50
0.86
worth
fgood
enjoy
0.74
0.87*
0.51*
E6
0.89
tense
0.72*
Anxiety
0.72*
Emotion
0.89
D1
E7
0.87
shy
0.49*
0.94*
E17
0.00
frsupp
1.00*
Social
0.27*
Relate
0.21
D3
E18
0.86
frleis
0.51*
0.84*
0.80*
0.83
Copertiv
arrange
outgoing
0.78
0.80
0.78
E13
E12
E11

File Name = recreg5.eqs

```
/TITLE
recreg5
/SPECIFICATIONS
 DATA='D:\EQSW\LSQCOR1.ESS'; VARIABLES= 19; CASES=   97;
 METHODS=ML;
 MATRIX=COVARIANCE;
/LABELS
V1=V1; V2=V2; V3=V3; V4=V4; V5=V5;
V6=V6; V7=V7; V8=V8; V9=V9; V10=V10;
V11=V11; V12=V12; V13=V13; V14=V14; V15=V15;
V16=V16; V17=V17; V18=V18; V19=V19;
/EQUATIONS
V1 =  + *F1  + E1;
V2 =  + *F1  + E2;
V3 =  + 1.0F1  + E3;
V6 =  + *F2  + E6;
V7 =  + *F2  + E7;
V11 =  + 1.0F3  + E11;
V12 =  + *F3  + E12;
V13 =  + *F3  + E13;
V17 =  + *F4  + E17;
V18 =  + *F4  + E18;
F1 =  + *F2  + D1;
F3 =  + *F1  + *F4  + D3;
/VARIANCES
F2 = 1.00;
F4 = 1.00;
E1 = *;
E2 = *;
E3 = *;
E6 = *;
E7 = *;
E11 = *;
E12 = *;
E13 = *;
E17 = *;
E18 = *;
D1 = *;
```

```
D3 = *;
/COVARIANCES
/OUTPUT
 parameters;
 standard errors;
 listing;
 data='EQSOUT&.ETS';
/END
```

GOODNESS OF FIT SUMMARY

INDEPENDENCE MODEL CHI-SQUARE = 308.221 ON 45 DEGREES OF FREEDOM

INDEPENDENCE AIC = 218.22135 INDEPENDENCE CAIC = 57.35935
MODEL AIC = -14.54445 MODEL CAIC = -128.93521

CHI-SQUARE = 49.456 BASED ON 32 DEGREES OF FREEDOM
PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS 0.02514
THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION IS 47.595.

BENTLER-BONETT NORMED FIT INDEX= 0.840
BENTLER-BONETT NONNORMED FIT INDEX= 0.907
COMPARATIVE FIT INDEX (CFI) = 0.934

MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS

V1 =V1 = .736*F1 + 1.000 E1
.156
4.732

V2 =V2 = 1.030*F1 + 1.000 E2
.134
7.685

V3 =V3 = 1.000 F1 + 1.000 E3

```
V6    =V6  =   1.417*F2    + 1.000 E6
              .266
             5.333

V7    =V7  =    .296*F2    + 1.000 E7
              .072
             4.128

V11   =V11 =   1.000 F3    + 1.000 E11



V12   =V12 =    .873*F3    + 1.000 E12
              .179
             4.892

V13   =V13 =    .818*F3    + 1.000 E13
              .157
             5.200

V17   =V17 =   1.856*F4    + 1.000 E17
              .134
            13.856

V18   =V18 =   1.045*F4    + 1.000 E18
              .197
             5.317
```

CONSTRUCT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS

```
 F1   =F1  =  -1.098*F2    + 1.000 D1
              .239
            -4.585

 F3   =F3  =    .751*F1    +  .327*F4    + 1.000 D3
              .134          .114
             5.593         2.884
```

VARIANCES OF INDEPENDENT VARIABLES

V		F	
	I F2 - F2		1.000 I
	I		I
	I		I
	I		I
	I F4 - F4		1.000 I
	I		I
	I		I
	I		I

VARIANCES OF INDEPENDENT VARIABLES

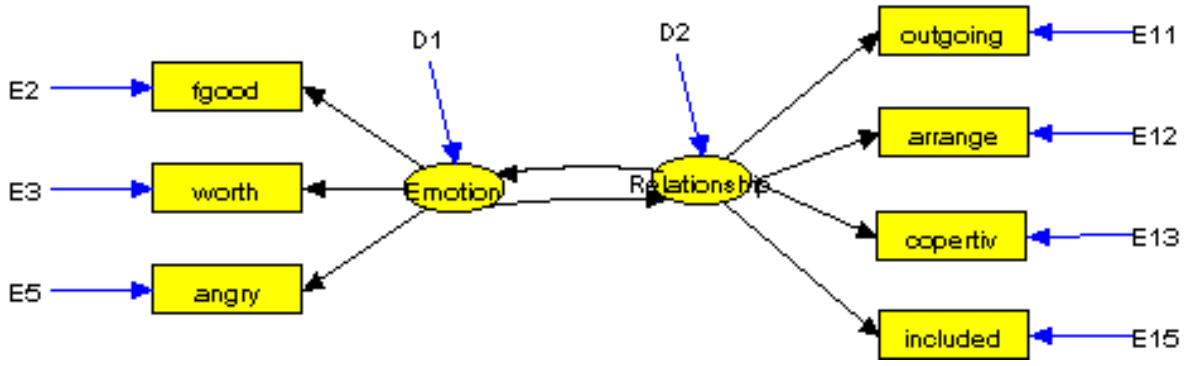
E		D	
E1 - V1	3.480*I	D1 - F1	1.103*I
	.532 I		.455 I
	6.542 I		2.422 I
	I		I
E2 - V2	.811*I	D3 - F3	.068*I
	.228 I		.183 I
	3.551 I		.370 I
	I		I
E3 - V3	1.915*I		I
	.345 I		I
	5.555 I		I
	I		I
E6 - V6	1.823*I		I
	.632 I		I
	2.882 I		I
	I		I
E7 - V7	.277*I		I
	.047 I		I
	5.871 I		I
	I		I
E11 - V11	2.252*I		I
	.379 I		I
	5.948 I		I
	I		I
E12 - V12	2.037*I		I

```
                    .332 I                          I
                   6.135 I                          I
                        I                          I
E13 -  V13           1.392*I                           I
                    .238 I                          I
                   5.845 I                          I
                        I                          I
E17 -  V17           .000*I                            I
                    .006 I                          I
                    .000 I                          I
                        I                          I
E18 -  V18           3.161*I                           I
                    .456 I                          I
                   6.928 I                          I
                        I                          I
```

STANDARDIZED SOLUTION:

```
 V1    =V1  =   .514*F1    + .858 E1
 V2    =V2  =   .867*F1    + .499 E2
 V3    =V3  =   .739 F1    + .673 E3
 V6    =V6  =   .724*F2    + .690 E6
 V7    =V7  =   .490*F2    + .872 E7
 V11   =V11 =   .629 F3    + .777 E11
 V12   =V12 =   .597*F3    + .802 E12
 V13   =V13 =   .644*F3    + .765 E13
 V17   =V17 =  1.000*F4    + .000 E17
 V18   =V18 =   .507*F4    + .862 E18
  F1   =F1  =  -.723*F2    + .691 D1
  F3   =F3  =   .939*F1    + .269*F4    + .214 D3
```

When both reciprocal arrows are removed the Emotion factor has 52% of its variance accounted for by Anxiety, and Relate has 12% of its variance accounted for by Social. When the arrow from Relate to Emotion is added the amount of vairance accounted for in Emotion increases to 85% (a difference of 33%). At the same time when both reciprocal arrows are removed the amount of the Relate factor accunted for by Social is 12%. When the arrow from Emotion to Relate is added the amount of variance accounted for in Relate is 96% (a difference of 82%).



The jobstream follows:

File Name = recreg9.eqs

```
/TITLE
  multiple regression model 17
/SPE
  CASE=97; VAR = 19;  ME=ML;
DA='\eqsw\lsqcor1.cv1';
/LABELS
  v1=ENJOY;    v2=FGOOD;    v3=WORTH;    v4=FEARFUL;  v5=ANGRY;
  v6=TENSE;    v7=SHY;      v8=FUN;      v9=SORRY;    v10=SUSPICIS;
  v11=OUTGOING; v12=arrange;  v13=copertiv; v14=PEOPLE;  v15=INCLUDED;
  v16=CONFRONT; v17=frsupp;   v18=FRLEIS;   v19=TTALK;
/wtest
/lmtest
/tec
  itr=100;
/EQU
  V2 = F1      + E2;
  V3 =*F1      + E3;
  V5 =*F1      + E5;
  v11=*f3      + e11;
  v12=*f3      + e12;
  v13= f3      + e13;
  v15=*f3      + e15;
  f1=*f3 + d1;
  F3=*F1 + D3;
/VAR
```

```
  d1=*;
  d3=*;
  e11, E12, e13,e15, E2, E3, E5 = *;
/END
```

```
 PARAMETER         CONDITION CODE
   D1,D1           LINEARLY DEPENDENT ON OTHER PARAMETERS
 GOODNESS OF FIT SUMMARY

 INDEPENDENCE MODEL CHI-SQUARE =        236.653 ON     21 DEGREES OF FREEDOM

 INDEPENDENCE AIC =   194.65285   INDEPENDENCE CAIC =   119.58392
       MODEL AIC =   -11.17425          MODEL CAIC =   -54.07078

 CHI-SQUARE =        12.826 BASED ON     12 DEGREES OF FREEDOM
 PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS      0.38183
 THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION IS          12.814.
 BENTLER-BONETT NORMED     FIT INDEX=        0.946
 BENTLER-BONETT NONNORMED FIT INDEX=        0.993
 COMPARATIVE FIT INDEX               =        0.996

 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS


FGOOD    =V2  =         1.000 F1    +       1.000 E2



WORTH    =V3  =         1.001*F1    +       1.000 E3
                         .128
                        7.810

ANGRY    =V5  =         -.734*F1    +       1.000 E5
                         .121
                       -6.089

OUTGOING=V11 =         1.377*F3    +       1.000 E11
                         .263
                        5.235
```

```
ARRANGE =V12 =        1.167*F3    +       1.000 E12
                     .236
                    4.937

COPERTIV=V13 =        1.000 F3    +       1.000 E13



INCLUDED=V15 =         .983*F3    +       1.000 E15
                     .216
                    4.543
```

CONSTRUCT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS

```
  F1   =F1  =         .053*F3    +       1.000 D1
                     .186
                     .287

  F3   =F3  =         .542*F1    +       1.000 D3
                     .106
                    5.104
```

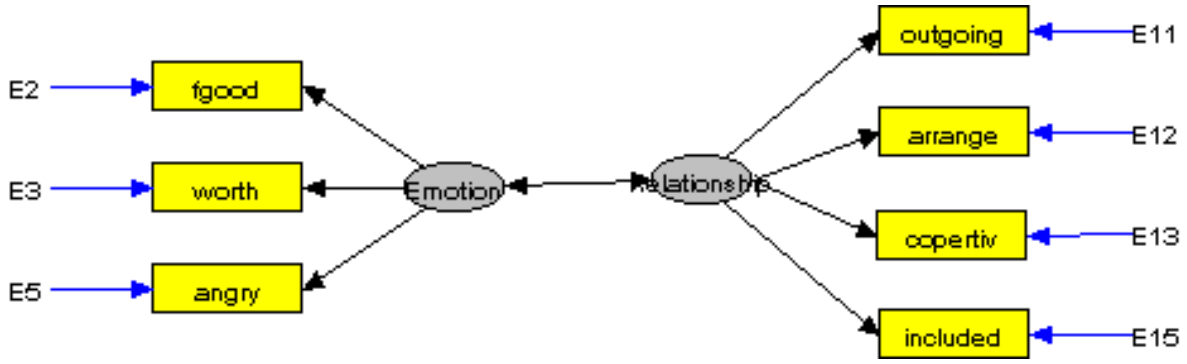
VARIANCES OF INDEPENDENT VARIABLES

```
                E                          D
               ---                        ---
E2  -FGOOD              .803*I D1  -   F1             2.314*I
                       .239 I                       .000 I
                      3.366 I                :0000000.000 I
                            I                           I
E3  -WORTH              1.764*I D3  -   F3              .217*I
                       .338 I                       .123 I
                      5.220 I                      1.771 I
                            I                           I
E5  -ANGRY             2.192*I                          I
                       .351 I                           I
                      6.240 I                           I
                            I                           I
```

```
E11 -OUTGOING          1.973*I                        I
                        .362 I                         I
                       5.450 I                         I
                            I                         I
E12 -ARRANGE           1.905*I                         I
                        .326 I                         I
                       5.847 I                         I
                            I                         I
E13 -COPERTIV          1.461*I                         I
                        .248 I                         I
                       5.895 I                         I
                            I                         I
E15 -INCLUDED          1.899*I                         I
                        .308 I                         I
                       6.169 I                         I
                            I                         I
```

STANDARDIZED SOLUTION:

```
FGOOD    =V2  =   .868 F1    + .497 E2
WORTH    =V3  =   .763*F1    + .646 E3
ANGRY    =V5  =  -.613*F1    + .790 E5
OUTGOING=V11 =   .691*F3     + .723 E11
ARRANGE =V12 =   .636*F3     + .771 E12
COPERTIV=V13 =   .628 F3     + .778 E13
INCLUDED=V15 =   .571*F3     + .821 E15
   F1    =F1  =   .033*F3     + .971 D1
   F3    =F3  =   .871*F1     + .478 D3
```



File Name = recreg10.eqs

```
/TITLE
  multiple regression model 17
/SPE
  CASE=97; VAR = 19;  ME=ML;
DA='\eqsw\lsqcor1.cv1';
/LABELS
  v1=ENJOY;    v2=FGOOD;    v3=WORTH;    v4=FEARFUL;  v5=ANGRY;
  v6=TENSE;    v7=SHY;      v8=FUN;      v9=SORRY;    v10=SUSPICIS;
  v11=OUTGOING; v12=arrange;  v13=copertiv; v14=PEOPLE;  v15=INCLUDED;
  v16=CONFRONT; v17=frsupp;   v18=FRLEIS;   v19=TTALK;
/wtest
/lmtest
/tec
  itr=100;
/EQU
  V2 =*F1      + E2;
  V3 =*F1      + E3;
  V5 =*F1      + E5;
  v11=*f3      + e11;
  v12=*f3      + e12;
  v13=*f3      + e13;
  v15=*f3      + e15;
/VAR
  f1=1;
  f3=1;
  e11, E12, e13,e15, E2, E3, E5 = *;
/cov
f1,f3=*;
/END
```

1

PARAMETER ESTIMATES APPEAR IN ORDER,
NO SPECIAL PROBLEMS WERE ENCOUNTERED DURING OPTIMIZATION.

GOODNESS OF FIT SUMMARY

INDEPENDENCE MODEL CHI-SQUARE = 236.653 ON 21 DEGREES OF FREEDOM

INDEPENDENCE AIC = 194.65285 INDEPENDENCE CAIC = 119.58392
MODEL AIC = -13.17423 MODEL CAIC = -59.64547
CHI-SQUARE = 12.826 BASED ON 13 DEGREES OF FREEDOM
PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS 0.46136
THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION IS 12.821.

BENTLER-BONETT NORMED FIT INDEX= 0.946
BENTLER-BONETT NONNORMED FIT INDEX= 1.001
COMPARATIVE FIT INDEX = 1.000

MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS

FGOOD =V2 = 1.567*F1 + 1.000 E2
.160
9.794

WORTH =V3 = 1.568*F1 + 1.000 E3
.190
8.243

ANGRY =V5 = -1.150*F1 + 1.000 E5
.185
-6.225

OUTGOING=V11 = 1.344*F3 + 1.000 E11
.192
7.003

```
ARRANGE =V12 =   1.139*F3    + 1.000 E12
               .180
              6.316

COPERTIV=V13 =    .975*F3    + 1.000 E13
               .157
              6.214

INCLUDED=V15 =    .960*F3    + 1.000 E15
               .173
              5.550


 VARIANCES OF INDEPENDENT VARIABLES
 ----------------------------------

              V                          F
             ---                        ---
                        I F1  -   F1            1.000 I
                        I                         I
                        I                         I
                        I                         I
                        I F3  -   F3            1.000 I
                        I                         I
                        I                         I
                        I                         I

 VARIANCES OF INDEPENDENT VARIABLES
 ----------------------------------

              E                          D
             ---                        ---
E2  -FGOOD              .803*I                        I
                      .239 I                          I
                     3.366 I                          I
                           I                         I
E3  -WORTH             1.763*I                            I
                      .338 I                          I
                     5.219 I                          I
                           I                         I
E5  -ANGRY            2.192*I                            I
                      .351 I                          I
                     6.240 I                          I
                           I                         I
```

```
E11 -OUTGOING          1.971*I                          I
                        .362 I                           I
                       5.447 I                           I
                            I                           I
E12 -ARRANGE           1.905*I                           I
                        .326 I                           I
                       5.847 I                           I
                            I                           I
E13 -COPERTIV          1.462*I                           I
                        .248 I                           I
                       5.896 I                           I
                            I                           I
E15 -INCLUDED          1.898*I                           I
                        .308 I                           I
                       6.167 I                           I
                            I                           I
```

COVARIANCES AMONG INDEPENDENT VARIABLES

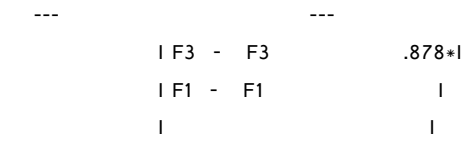
```
              V                         F
             ---                       ---
                        I F3  -   F3              .878*I
                        I F1  -   F1              .061 I
                        I                       14.319 I
                        I                            I
```

STANDARDIZED SOLUTION:

```
FGOOD   =V2  =   .868*F1    + .497 E2
WORTH   =V3  =   .763*F1    + .646 E3
ANGRY   =V5  =  -.613*F1    + .790 E5
OUTGOING=V11 =   .692*F3    + .722 E11
ARRANGE =V12 =   .636*F3    + .771 E12
COPERTIV=V13 =   .628*F3    + .778 E13
INCLUDED=V15 =   .572*F3    + .820 E15
```

CORRELATIONS AMONG INDEPENDENT VARIABLES

```
              V                         F
```



File Name =

```
/TITLE
  multiple regression model 17
/SPE
 CASE=97; VAR = 19;  ME=ML;
DA='\eqsw\lsqcor1.cv1';
/LABELS
 v1=ENJOY;    v2=FGOOD;    v3=WORTH;    v4=FEARFUL;  v5=ANGRY;
 v6=TENSE;    v7=SHY;      v8=FUN;      v9=SORRY;    v10=SUSPICIS;
 v11=OUTGOING; v12=arrange;  v13=copertiv; v14=PEOPLE;   v15=INCLUDED;
 v16=CONFRONT; v17=frsupp;   v18=FRLEIS;   v19=TTALK;
/wtest
/lmtest
/tec
 itr=100;
/EQU
 V2 = F1      + E2;
 V3 =*F1      + E3;
 V5 =*F1      + E5;
 v11=*f3      + e11;
 v12=*f3      + e12;
 v13= f3      + e13;
 v15=*f3      + e15;
 f1=*f3 + d1;
 F3=*F1 + D3;
/VAR
 d1=*;
 d3=*;
 e11, E12, e13,e15, E2, E3, E5 = *;
/con
 (f1,f3)=(f3,f1);
/END
```

1 PARAMETER ESTIMATES APPEAR IN ORDER,
NO SPECIAL PROBLEMS WERE ENCOUNTERED DURING OPTIMIZATION.

ALL EQUALITY CONSTRAINTS WERE CORRECTLY IMPOSED

GOODNESS OF FIT SUMMARY

INDEPENDENCE MODEL CHI-SQUARE = 236.653 ON 21 DEGREES OF FREEDOM

INDEPENDENCE AIC = 194.65285 INDEPENDENCE CAIC = 119.58392
MODEL AIC = -13.17422 MODEL CAIC = -59.64547

CHI-SQUARE = 12.826 BASED ON 13 DEGREES OF FREEDOM
PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS 0.46136
THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION IS 12.811.

BENTLER-BONETT NORMED FIT INDEX= 0.946
BENTLER-BONETT NONNORMED FIT INDEX= 1.001
COMPARATIVE FIT INDEX = 1.000

MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS

FGOOD =V2 = 1.000 F1 +1.000 E2

WORTH =V3 = 1.001*F1 +1.000 E3
.128
7.810

ANGRY =V5 = -.734*F1 +1.000 E5
.121
-6.089

OUTGOING=V11 = 1.377*F3 +1.000 E11
.263
5.236

ARRANGE =V12 = 1.167*F3 +1.000 E12
.236
4.938

COPERTIV=V13 = 1.000 F3 +1.000 E13

INCLUDED=V15 = .983*F3 +1.000 E15
.216
4.543

CONSTRUCT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS

F1 =F1 = .488*F3 +1.000 D1
.080
6.072

F3 =F3 = .488*F1 +1.000 D3
.080
6.072

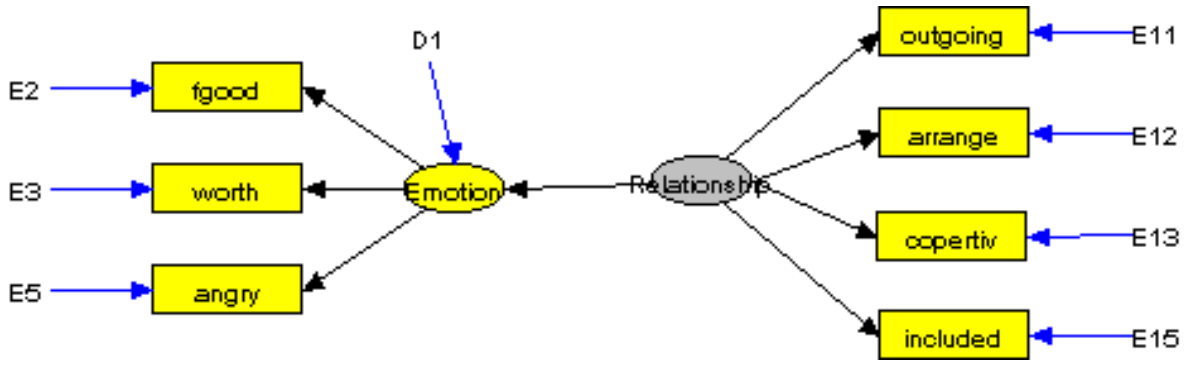
VARIANCES OF INDEPENDENT VARIABLES

	E		D	
E2 -FGOOD	.803*I	D1 - F1	1.370*I	
	.239 I		.469 I	
	3.365 I		2.920 I	
	I		I	
E3 -WORTH	1.764*I	D3 - F3	.226*I	
	.338 I		.132 I	
	5.221 I		1.716 I	
	I		I	
E5 -ANGRY	2.192*I		I	
	.351 I		I	
	6.241 I		I	
	I		I	
E11 -OUTGOING	1.973*I		I	
	.362 I		I	
	5.451 I		I	

```
                          I                          I
E12 -ARRANGE            1.905*I                       I
                       .326 I                         I
                      5.846 I                         I
                          I                          I
E13 -COPERTIV           1.461*I                       I
                       .248 I                         I
                      5.895 I                         I
                          I                          I
E15 -INCLUDED           1.900*I                       I
                       .308 I                         I
                      6.169 I                         I
                          I                          I
```

STANDARDIZED SOLUTION:

FGOOD =V2 = .868 F1 + .496 E2
WORTH =V3 = .763*F1 + .646 E3
ANGRY =V5 = -.613*F1 + .790 E5
OUTGOING=V11 = .691*F3 + .723 E11
ARRANGE =V12 = .636*F3 + .771 E12
COPERTIV=V13 = .628 F3 + .778 E13
INCLUDED=V15 = .571*F3 + .821 E15
F1 =F1 = .304*F3 + .747 D1
F3 =F3 = .784*F1 + .487 D3



Fi

File Name = recreg15.eqs

```
/TITLE
  multiple regression model 17
/SPE
  CASE=97; VAR = 19;  ME=ML;
DA='\teqs\lsqcor1.cv1';
/LABELS
  v1=ENJOY;    v2=FGOOD;    v3=WORTH;    v4=FEARFUL;  v5=ANGRY;
  v6=TENSE;    v7=SHY;      v8=FUN;      v9=SORRY;    v10=SUSPICIS;
  v11=OUTGOING; v12=arrange;  v13=copertiv; v14=PEOPLE;  v15=INCLUDED;
  v16=CONFRONT; v17=frsupp;   v18=FRLEIS;   v19=TTALK;
/wtest
/lmtest
/tec
  itr=100;
/EQU
  V2 = F1      + E2;
  V3 =*F1      + E3;
  V5 =*F1      + E5;
  v11=*f3      + e11;
  v12=*f3      + e12;
  v13= f3      + e13;
  v15=*f3      + e15;
  f1=*f3 + d1;
/VAR
  d1=*;d3=*;

  e11, E12, e13,e15, E2, E3, E5 = *;
/END
```

1

PARAMETER CONDITION CODE

D3,D3 LINEARLY DEPENDENT ON OTHER PARAMETERS

GOODNESS OF FIT SUMMARY

INDEPENDENCE MODEL CHI-SQUARE = 236.653 ON 21 DEGREES OF FREEDOM

INDEPENDENCE AIC = 194.65285 INDEPENDENCE CAIC = 119.58392
MODEL AIC = -11.17426 MODEL CAIC = -54.07079

CHI-SQUARE = 12.826 BASED ON 12 DEGREES OF FREEDOM
PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS 0.38183
THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION IS 12.817.

BENTLER-BONETT NORMED FIT INDEX= 0.946
BENTLER-BONETT NONNORMED FIT INDEX= 0.993
COMPARATIVE FIT INDEX = 0.996

MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS

FGOOD =V2 = 1.000 F1 + 1.000 E2

WORTH =V3 = 1.001*F1 + 1.000 E3
.128
7.809

ANGRY =V5 = -.734*F1 + 1.000 E5
.121
-6.089

OUTGOING=V11 = 1.378*F3 + 1.000 E11
.263
5.235

ARRANGE =V12 = 1.167*F3 + 1.000 E12
.236
4.936

COPERTIV=V13 = 1.000 F3 + 1.000 E13

INCLUDED=V15 = .983*F3 + 1.000 E15

.216
4.544

EQS is not installed or unauthorized copy

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

CONSTRUCT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS

```
F1    =F1  =        1.411*F3    +       1.000 D1
                     .258
                    5.474
```

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MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

VARIANCES OF INDEPENDENT VARIABLES

V		F	
	I F3 -	F3	.952*I
	I		.306 I
	I		3.108 I
	I		I

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MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

VARIANCES OF INDEPENDENT VARIABLES

	E		D	
E2 -FGOOD	.803*I	D1 - F1	.561*I	
	.239 I		.282 I	
	3.366 I		1.988 I	
	I		I	
E3 -WORTH	1.764*I	D3 -	1.000*I	
	.338 I		.000 I	
	5.220 I		:0000000.000 I	
	I		I	
E5 -ANGRY	2.192*I		I	
	.351 I		I	
	6.240 I		I	
	I		I	
E11 -OUTGOING	1.972*I		I	
	.362 I		I	
	5.448 I		I	
	I		I	
E12 -ARRANGE	1.905*I		I	
	.326 I		I	
	5.847 I		I	
	I		I	
E13 -COPERTIV	1.461*I		I	
	.248 I		I	
	5.896 I		I	
	I		I	
E15 -INCLUDED	1.899*I		I	
	.308 I		I	
	6.168 I		I	
	I		I	

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MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

STANDARDIZED SOLUTION:

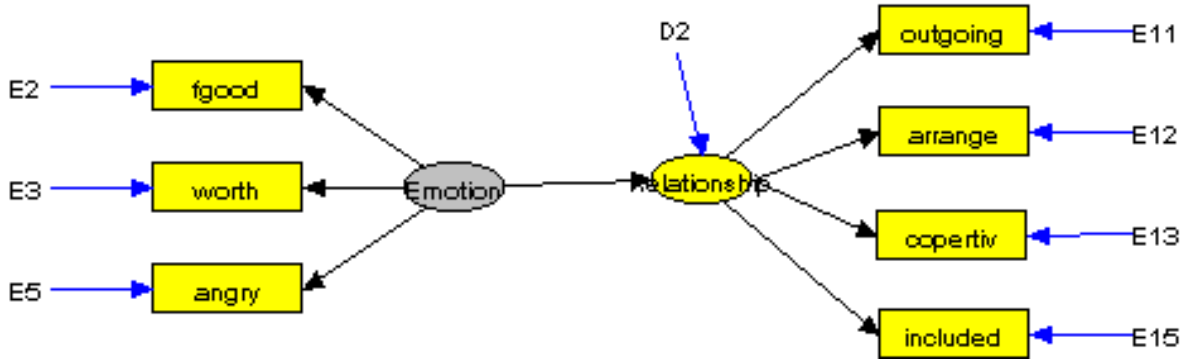
```
FGOOD   =V2  =   .868 F1    + .497 E2
WORTH   =V3  =   .763*F1    + .646 E3
ANGRY   =V5  =  -.613*F1    + .790 E5
OUTGOING=V11 =   .692*F3    + .722 E11
ARRANGE =V12 =   .636*F3    + .771 E12
COPERTIV=V13 =   .628 F3    + .778 E13
INCLUDED=V15 =   .571*F3    + .821 E15
  F1    =F1  =   .878*F3    + .478 D1
```

File Name = recreg16.eqs

```
/TITLE
  multiple regression model 17
/SPE
  CASE=97; VAR = 19;  ME=ML;
DA='\teqs\lsqcor1.cv1';
/LABELS
  v1=ENJOY;    v2=FGOOD;    v3=WORTH;    v4=FEARFUL;  v5=ANGRY;
  v6=TENSE;    v7=SHY;      v8=FUN;      v9=SORRY;    v10=SUSPICIS;
  v11=OUTGOING; v12=arrange;  v13=copertiv; v14=PEOPLE;  v15=INCLUDED;
  v16=CONFRONT; v17=frsupp;   v18=FRLEIS;   v19=TTALK;
/wtest
/lmtest
/tec
  itr=100;
/EQU
  V2 = F1      + E2;
  V3 =*F1      + E3;
  V5 =*F1      + E5;
  v11=*f3      + e11;
```

```
  v12=*f3       + e12;
  v13= f3       + e13;
  v15=*f3       + e15;
  f3=*f1 + d3;
/VAR
  d1=*;d3=*;

  e11, E12, e13,e15, E2, E3, E5 = *;
/END
```



1

PARAMETER CONDITION CODE
D1,D1 LINEARLY DEPENDENT ON OTHER PARAMETERS

GOODNESS OF FIT SUMMARY

INDEPENDENCE MODEL CHI-SQUARE = 236.653 ON 21 DEGREES OF FREEDOM

INDEPENDENCE AIC = 194.65285 INDEPENDENCE CAIC = 119.58392
MODEL AIC = -11.17423 MODEL CAIC = -54.07076

CHI-SQUARE = 12.826 BASED ON 12 DEGREES OF FREEDOM
PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS 0.38183
THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION IS 12.812.

BENTLER-BONETT NORMED FIT INDEX= 0.946
BENTLER-BONETT NONNORMED FIT INDEX= 0.993
COMPARATIVE FIT INDEX = 0.996

MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS

FGOOD =V2 = 1.000 F1 + 1.000 E2

WORTH =V3 = 1.001*F1 + 1.000 E3
.128
7.810

ANGRY =V5 = -.734*F1 + 1.000 E5
.121
-6.089

OUTGOING=V11 = 1.377*F3 + 1.000 E11
.263
5.236

ARRANGE =V12 = 1.167*F3 + 1.000 E12
.236
4.938

COPERTIV=V13 = 1.000 F3 + 1.000 E13

INCLUDED=V15 = .983*F3 + 1.000 E15
.216
4.543

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MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

CONSTRUCT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS

F3 =F3 = .547*F1 + 1.000 D3
.099
5.514

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MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

VARIANCES OF INDEPENDENT VARIABLES

V		F	
	I F1 -	F1	2.455*I
	I		.501 I
	I		4.898 I
	I		I

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MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

VARIANCES OF INDEPENDENT VARIABLES

	E	D
E2 -FGOOD	.803∗I D1 -	1.000∗I
	.239 I	.000 I
	3.365 I	:0000000.000 I
	I	I
E3 -WORTH	1.764∗I D3 -	.217∗I
	.338 I	.123 I
	5.221 I	1.771 I
	I	I
E5 -ANGRY	2.192∗I	I
	.351 I	I
	6.241 I	I
	I	I
E11 -OUTGOING	1.973∗I	I
	.362 I	I
	5.451 I	I
	I	I
E12 -ARRANGE	1.905∗I	I
	.326 I	I
	5.846 I	I
	I	I
E13 -COPERTIV	1.461∗I	I
	.248 I	I
	5.895 I	I
	I	I
E15 -INCLUDED	1.900∗I	I
	.308 I	I
	6.169 I	I
	I	I

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MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

STANDARDIZED SOLUTION:

```
FGOOD   =V2  =   .868 F1    + .496 E2
WORTH   =V3  =   .763*F1    + .646 E3
ANGRY   =V5  =  -.613*F1    + .790 E5
OUTGOING=V11 =   .691*F3    + .723 E11
ARRANGE =V12 =   .636*F3    + .771 E12
COPERTIV=V13 =   .628 F3    + .778 E13
INCLUDED=V15 =   .571*F3    + .821 E15
  F3    =F3  =   .879*F1    + .478 D3
```