CHAPTER 8 ASDA ANALYSIS EXAMPLES REPLICATION-MPLUS 5.21

GENERAL NOTES ABOUT ANALYSIS EXAMPLES REPLICATION

These examples are intended to provide guidance on how to use the commands/procedures for analysis of complex sample survey data and assume all data management and other preliminary work is done. The relevant syntax for the procedure of interest is shown first along with the associated output for that procedure(s). In some examples, there may be more than one block of syntax and in this case all syntax is first presented followed by the output produced.

In some software packages certain procedures or options are not available but we have made every attempt to demonstrate how to match the output produced by Stata 10+ in the textbook. Check the ASDA website for updates to the various software tools we cover.

NOTES ABOUT LOGISTIC REGRESSION ANALYSIS IN MPLUS 5.21

The analysis replication examples were all run using Mplus 5.21. Mplus is an advanced modeling tool and offers the ability to correctly account for complex sample survey data for all analytic techniques.

Mplus can perform nearly all of the modeling tasks presented in Chapter 8 of ASDA including logit and probit regression but not the Clog-log option. Some of the fine points of this tool are use of a unique cluster variable with a different value for each person in the data set, use of a SUBPOPULATION statement for subpopulation analyses, use of TYPE=COMPLEX and ESTIMATOR=MLR on the ANALYSIS command, and a MODELTEST statement for linear contrasts providing a Wald ChiSq test for selected parameter estimates. Please see the Mplus User’s Guide for additional detail.

ANALYSIS EXAMPLE 8.1 BIVARIATE TESTING LOGISTIC REGRESSION

Mplus VERSION 5.21
MUTHEN & MUTHEN
04/09/2010   8:56 AM

INPUT INSTRUCTIONS

```
  TITLE:  ANALYSIS EXAMPLE 8.1 NCSR DATA BIVARIATE TEST: AGE
  DATA:
    FILE IS "F:\applied_analysis_book\Mplus\ncsr.txt";

  VARIABLE:
    NAMES ARE MAR3CAT ED4CAT NCSRWTSH NCSRWTLG SEX HHINC WKSTAT3C
    SESTRAT SECLUSTR bmi mde sexf sexm ald
      racecat povcat agecentered age29 ag4cat ed011 ed12 ed1315 ed16 black white hispanic
      asianother age51 agecat revworkstatus numsecu ag29 ag44 ag59 ag60 prevmar nevmar  ;

   USEVARIABLES ARE NCSRWTLG SESTRAT NUMSECU mde ag44 ag59 ag60 ;
   missing are . ;
   WEIGHT IS NCSRWTlg ;
   stratification is sestrat ;
   cluster is numsecu  ;
   categorical are mde ;


  ANALYSIS:
    type is complex;
    estimator is mlr ;


  Model:
    mde on
      ag44 (pag44)
      ag59 (pag59)
      ag60 (pag60) ;

  Model test:
      pag44=0 ;
      pag59=0 ;
      pag60=0 ;
```

ANALYSIS EXAMPLE 8.1 NCSR DATA BIVARIATE TEST: AGE

SUMMARY OF ANALYSIS

Number of groups 1
Number of observations 9282

Number of dependent variables 1
Number of independent variables 3
Number of continuous latent variables 0

Observed dependent variables

  Binary and ordered categorical (ordinal)
   MDE

Observed independent variables
   AG44   AG59   AG60

Variables with special functions

  Stratification   SESTRAT
  Cluster variable   NUMSECU
  Weight variable   NCSRWTLG

Estimator MLR
Information matrix OBSERVED
Optimization Specifications for the Quasi-Newton Algorithm for
Continuous Outcomes
  Maximum number of iterations 100
  Convergence criterion 0.100D-05
Optimization Specifications for the EM Algorithm
  Maximum number of iterations 500
  Convergence criteria
    Loglikelihood change 0.100D-02
    Relative loglikelihood change 0.100D-05
    Derivative 0.100D-02
Optimization Specifications for the M step of the EM Algorithm for
Categorical Latent variables
  Number of M step iterations 1
  M step convergence criterion 0.100D-02
  Basis for M step termination ITERATION
Optimization Specifications for the M step of the EM Algorithm for
Censored, Binary or Ordered Categorical (Ordinal), Unordered
Categorical (Nominal) and Count Outcomes
  Number of M step iterations 1
  M step convergence criterion 0.100D-02
  Basis for M step termination ITERATION
  Maximum value for logit thresholds 15
  Minimum value for logit thresholds -15
  Minimum expected cell size for chi-square 0.100D-01
Maximum number of iterations for H1 2000
Convergence criterion for H1 0.100D-03
Optimization algorithm EMA
Integration Specifications
  Type STANDARD
  Number of integration points 15
  Dimensions of numerical integration 0
  Adaptive quadrature ON
Link LOGIT
Cholesky OFF

Input data file(s)
  F:\applied_analysis_book\Mplus\ncsr.txt
Input data format FREE

SUMMARY OF DATA

```
     Number of missing data patterns             1
     Number of strata            42
     Number of clusters          84
```

COVARIANCE COVERAGE OF DATA

Minimum covariance coverage value   0.100

SUMMARY OF CATEGORICAL DATA PROPORTIONS

```
    MDE
      Category 1    0.808
      Category 2    0.192
```

THE MODEL ESTIMATION TERMINATED NORMALLY

TESTS OF MODEL FIT

Wald Test of Parameter Constraints

```
          Value                             60.871
          Degrees of Freedom                    3
          P-Value                           0.0000
```

Loglikelihood

```
          H0 Value                       -4469.780
          H0 Scaling Correction Factor       1.767
            for MLR
```

Information Criteria

```
          Number of Free Parameters              4
          Akaike (AIC)                    8947.560
          Bayesian (BIC)                  8976.103
          Sample-Size Adjusted BIC        8963.392
            (n* = (n + 2) / 24)
```

MODEL RESULTS

		Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
MDE	ON				
AG44		0.274	0.074	3.692	0.000
AG59		0.243	0.092	2.648	0.008
AG60		-0.595	0.107	-5.542	0.000
Thresholds					
MDE$1		1.490	0.059	25.259	0.000

LOGISTIC REGRESSION ODDS RATIO RESULTS

MDE	ON	
AG44		1.316

AG59	1.275
AG60	0.552

QUALITY OF NUMERICAL RESULTS

Condition Number for the Information Matrix (ratio of smallest to largest eigenvalue)	0.382E-01

Beginning Time:	08:56:53
Ending Time:	08:56:54
Elapsed Time:	00:00:01

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```
INPUT INSTRUCTIONS

  TITLE:  ANALYSIS EXAMPLE 8.1 NCSR DATA BIVARIATE TEST: SEX
  DATA:
    FILE IS "F:\applied_analysis_book\Mplus\ncsr.txt";

  VARIABLE:
    NAMES ARE MAR3CAT ED4CAT NCSRWTSH NCSRWTLG SEX HHINC WKSTAT3C
    SESTRAT SECLUSTR bmi mde sexf sexm ald
      racecat povcat agecentered age29 ag4cat ed011 ed12 ed1315 ed16 black white hispanic
      asianother age51 agecat revworkstatus numsecu ag29 ag44 ag59 ag60 prevmar nevmar  ;

   USEVARIABLES ARE NCSRWTLG SESTRAT NUMSECU mde sexm ;
   missing are . ;
   WEIGHT IS NCSRWTlg ;
   stratification is sestrat ;
   cluster is numsecu  ;
   categorical are mde ;


  ANALYSIS:
    type is complex;
    estimator is mlr ;


  Model:
    mde on
      sexm (p1) ;

  Model test:
      p1=0 ;

ANALYSIS EXAMPLE 8.1 NCSR DATA BIVARIATE TEST: SEX

SUMMARY OF ANALYSIS

Number of groups                                                 1
Number of observations                                        9282

Number of dependent variables                                    1
Number of independent variables                                  1
Number of continuous latent variables                            0

Observed dependent variables

  Binary and ordered categorical (ordinal)
   MDE

Observed independent variables
   SEXM

Variables with special functions

  Stratification        SESTRAT
  Cluster variable      NUMSECU
  Weight variable       NCSRWTLG

Estimator                                                      MLR
Information matrix                                        OBSERVED
Optimization Specifications for the Quasi-Newton Algorithm for
Continuous Outcomes
  Maximum number of iterations                                 100
  Convergence criterion                                 0.100D-05
Optimization Specifications for the EM Algorithm
  Maximum number of iterations                                 500
  Convergence criteria
```

```
    Loglikelihood change                                    0.100D-02
    Relative loglikelihood change                           0.100D-05
    Derivative                                              0.100D-02
Optimization Specifications for the M step of the EM Algorithm for
Categorical Latent variables
  Number of M step iterations                                       1
  M step convergence criterion                              0.100D-02
  Basis for M step termination                              ITERATION
Optimization Specifications for the M step of the EM Algorithm for
Censored, Binary or Ordered Categorical (Ordinal), Unordered
Categorical (Nominal) and Count Outcomes
  Number of M step iterations                                       1
  M step convergence criterion                              0.100D-02
  Basis for M step termination                              ITERATION
  Maximum value for logit thresholds                               15
  Minimum value for logit thresholds                              -15
  Minimum expected cell size for chi-square                 0.100D-01
Maximum number of iterations for H1                              2000
Convergence criterion for H1                                0.100D-03
Optimization algorithm                                           EMA
Integration Specifications
  Type                                                     STANDARD
  Number of integration points                                     15
  Dimensions of numerical integration                               0
  Adaptive quadrature                                              ON
Link                                                            LOGIT
Cholesky                                                          OFF

Input data file(s)
  F:\applied_analysis_book\Mplus\ncsr.txt
Input data format  FREE


SUMMARY OF DATA

     Number of missing data patterns             1
     Number of strata            42
     Number of clusters          84


COVARIANCE COVERAGE OF DATA

Minimum covariance coverage value   0.100


SUMMARY OF CATEGORICAL DATA PROPORTIONS

    MDE
      Category 1    0.808
      Category 2    0.192



THE MODEL ESTIMATION TERMINATED NORMALLY



TESTS OF MODEL FIT

Wald Test of Parameter Constraints

          Value                             44.359
          Degrees of Freedom                    1
          P-Value                           0.0000

Loglikelihood
```

```
          H0 Value                        -4496.281
          H0 Scaling Correction Factor       2.041
            for MLR

Information Criteria

          Number of Free Parameters              2
          Akaike (AIC)                    8996.561
          Bayesian (BIC)                  9010.833
          Sample-Size Adjusted BIC        9004.477
            (n* = (n + 2) / 24)



MODEL RESULTS

                                                    Two-Tailed
                    Estimate       S.E.  Est./S.E.    P-Value

 MDE        ON
    SEXM              -0.482      0.072     -6.660      0.000

 Thresholds
    MDE$1              1.230      0.038     32.000      0.000


LOGISTIC REGRESSION ODDS RATIO RESULTS

 MDE        ON
    SEXM               0.618


QUALITY OF NUMERICAL RESULTS

     Condition Number for the Information Matrix              0.167E+00
       (ratio of smallest to largest eigenvalue)


     Beginning Time:  09:00:43
        Ending Time:  09:00:44
       Elapsed Time:  00:00:01



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```

```
INPUT INSTRUCTIONS

  TITLE:  ANALYSIS EXAMPLE 8.1 NCSR DATA BIVARIATE TEST: ALC DEPENDENCE
  DATA:
    FILE IS "F:\applied_analysis_book\Mplus\ncsr.txt";

  VARIABLE:
    NAMES ARE MAR3CAT ED4CAT NCSRWTSH NCSRWTLG SEX HHINC WKSTAT3C
    SESTRAT SECLUSTR bmi mde sexf sexm ald
      racecat povcat agecentered age29 ag4cat ed011 ed12 ed1315 ed16 black white hispanic
      asianother age51 agecat revworkstatus numsecu ag29 ag44 ag59 ag60 prevmar nevmar  ;

   USEVARIABLES ARE NCSRWTLG SESTRAT NUMSECU mde ald ;
   missing are . ;
   WEIGHT IS NCSRWTlg ;
   stratification is sestrat ;
   cluster is numsecu  ;
   categorical are mde ;


  ANALYSIS:
    type is complex;
    estimator is mlr ;


  Model:
    mde on
      ald (p1) ;

  Model test:
      p1=0 ;


ANALYSIS EXAMPLE 8.1 NCSR DATA BIVARIATE TEST: ALC DEPENDENCE

SUMMARY OF ANALYSIS

Number of groups                                                 1
Number of observations                                        9282

Number of dependent variables                                    1
Number of independent variables                                  1
Number of continuous latent variables                            0

Observed dependent variables

  Binary and ordered categorical (ordinal)
   MDE

Observed independent variables
   ALD

Variables with special functions

  Stratification        SESTRAT
  Cluster variable      NUMSECU
  Weight variable       NCSRWTLG

Estimator                                                      MLR
Information matrix                                        OBSERVED
Optimization Specifications for the Quasi-Newton Algorithm for
Continuous Outcomes
  Maximum number of iterations                                 100
  Convergence criterion                                 0.100D-05
Optimization Specifications for the EM Algorithm
  Maximum number of iterations                                 500
```

```
  Convergence criteria
    Loglikelihood change                                    0.100D-02
    Relative loglikelihood change                           0.100D-05
    Derivative                                              0.100D-02
Optimization Specifications for the M step of the EM Algorithm for
Categorical Latent variables
  Number of M step iterations                                       1
  M step convergence criterion                              0.100D-02
  Basis for M step termination                              ITERATION
Optimization Specifications for the M step of the EM Algorithm for
Censored, Binary or Ordered Categorical (Ordinal), Unordered
Categorical (Nominal) and Count Outcomes
  Number of M step iterations                                       1
  M step convergence criterion                              0.100D-02
  Basis for M step termination                              ITERATION
  Maximum value for logit thresholds                               15
  Minimum value for logit thresholds                              -15
  Minimum expected cell size for chi-square                 0.100D-01
Maximum number of iterations for H1                              2000
Convergence criterion for H1                                0.100D-03
Optimization algorithm                                           EMA
Integration Specifications
  Type                                                     STANDARD
  Number of integration points                                     15
  Dimensions of numerical integration                               0
  Adaptive quadrature                                              ON
Link                                                            LOGIT
Cholesky                                                          OFF

Input data file(s)
  F:\applied_analysis_book\Mplus\ncsr.txt
Input data format  FREE


SUMMARY OF DATA

     Number of missing data patterns             1
     Number of strata            42
     Number of clusters          84


COVARIANCE COVERAGE OF DATA

Minimum covariance coverage value   0.100


SUMMARY OF CATEGORICAL DATA PROPORTIONS

    MDE
      Category 1    0.808
      Category 2    0.192



THE MODEL ESTIMATION TERMINATED NORMALLY



TESTS OF MODEL FIT

Wald Test of Parameter Constraints

          Value                            106.144
          Degrees of Freedom                     1
          P-Value                           0.0000
```

Loglikelihood

H0 Value	-4443.031
H0 Scaling Correction Factor for MLR	2.130

Information Criteria

Number of Free Parameters	2
Akaike (AIC)	8890.062
Bayesian (BIC)	8904.333
Sample-Size Adjusted BIC (n* = (n + 2) / 24)	8897.978

MODEL RESULTS

		Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
MDE	ON				
ALD		1.343	0.130	10.303	0.000
Thresholds					
MDE$1		1.537	0.045	34.405	0.000

LOGISTIC REGRESSION ODDS RATIO RESULTS

MDE	ON	
ALD		3.831

QUALITY OF NUMERICAL RESULTS

Condition Number for the Information Matrix (ratio of smallest to largest eigenvalue) 0.794E-01

Beginning Time: 09:02:35
Ending Time: 09:02:36
Elapsed Time: 00:00:01

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```
INPUT INSTRUCTIONS

  TITLE:  ANALYSIS EXAMPLE 8.1 NCSR DATA BIVARIATE TEST: EDUCATION
  DATA:
    FILE IS "F:\applied_analysis_book\Mplus\ncsr.txt";

  VARIABLE:
    NAMES ARE MAR3CAT ED4CAT NCSRWTSH NCSRWTLG SEX HHINC WKSTAT3C
    SESTRAT SECLUSTR bmi mde sexf sexm ald
      racecat povcat agecentered age29 ag4cat ed011 ed12 ed1315 ed16 black white hispanic
      asianother age51 agecat revworkstatus numsecu ag29 ag44 ag59 ag60 prevmar nevmar  ;

   USEVARIABLES ARE NCSRWTLG SESTRAT NUMSECU mde ed12 ed1315 ed16 ;
   missing are . ;
   WEIGHT IS NCSRWTlg ;
   stratification is sestrat ;
   cluster is numsecu  ;
   categorical are mde ;


  ANALYSIS:
    type is complex;
    estimator is mlr ;


  Model:
    mde on
      ed12 (p1)
      ed1315 (p2)
      ed16 (p3) ;

  Model test:
      p1=0 ;
      p2=0 ;
      p3=0 ;


ANALYSIS EXAMPLE 8.1 NCSR DATA BIVARIATE TEST: EDUCATION

SUMMARY OF ANALYSIS

Number of groups                                                 1
Number of observations                                        9282

Number of dependent variables                                    1
Number of independent variables                                  3
Number of continuous latent variables                            0

Observed dependent variables

  Binary and ordered categorical (ordinal)
   MDE

Observed independent variables
   ED12        ED1315      ED16

Variables with special functions

  Stratification        SESTRAT
  Cluster variable      NUMSECU
  Weight variable       NCSRWTLG

Estimator                                                      MLR
Information matrix                                        OBSERVED
Optimization Specifications for the Quasi-Newton Algorithm for
Continuous Outcomes
```

```
  Maximum number of iterations                                100
  Convergence criterion                                0.100D-05
Optimization Specifications for the EM Algorithm
  Maximum number of iterations                                500
  Convergence criteria
    Loglikelihood change                               0.100D-02
    Relative loglikelihood change                      0.100D-05
    Derivative                                         0.100D-02
Optimization Specifications for the M step of the EM Algorithm for
Categorical Latent variables
  Number of M step iterations                                   1
  M step convergence criterion                         0.100D-02
  Basis for M step termination                         ITERATION
Optimization Specifications for the M step of the EM Algorithm for
Censored, Binary or Ordered Categorical (Ordinal), Unordered
Categorical (Nominal) and Count Outcomes
  Number of M step iterations                                   1
  M step convergence criterion                         0.100D-02
  Basis for M step termination                         ITERATION
  Maximum value for logit thresholds                          15
  Minimum value for logit thresholds                         -15
  Minimum expected cell size for chi-square            0.100D-01
Maximum number of iterations for H1                         2000
Convergence criterion for H1                           0.100D-03
Optimization algorithm                                       EMA
Integration Specifications
  Type                                                  STANDARD
  Number of integration points                                15
  Dimensions of numerical integration                          0
  Adaptive quadrature                                         ON
Link                                                       LOGIT
Cholesky                                                     OFF

Input data file(s)
  F:\applied_analysis_book\Mplus\ncsr.txt
Input data format  FREE


SUMMARY OF DATA

     Number of missing data patterns             1
     Number of strata            42
     Number of clusters          84


COVARIANCE COVERAGE OF DATA

Minimum covariance coverage value   0.100


SUMMARY OF CATEGORICAL DATA PROPORTIONS

    MDE
      Category 1    0.808
      Category 2    0.192



THE MODEL ESTIMATION TERMINATED NORMALLY



TESTS OF MODEL FIT

Wald Test of Parameter Constraints
```

Value	12.090
Degrees of Freedom	3
P-Value	0.0071

Loglikelihood

H0 Value	-4528.475
H0 Scaling Correction Factor for MLR	1.579

Information Criteria

Number of Free Parameters	4
Akaike (AIC)	9064.951
Bayesian (BIC)	9093.494
Sample-Size Adjusted BIC (n* = (n + 2) / 24)	9080.783

MODEL RESULTS

		Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
MDE	ON				
ED12		0.156	0.088	1.775	0.076
ED1315		0.325	0.095	3.435	0.001
ED16		0.228	0.100	2.280	0.023
Thresholds					
MDE$1		1.635	0.089	18.416	0.000

LOGISTIC REGRESSION ODDS RATIO RESULTS

MDE	ON	
ED12		1.169
ED1315		1.385
ED16		1.256

QUALITY OF NUMERICAL RESULTS

Condition Number for the Information Matrix (ratio of smallest to largest eigenvalue)	0.267E-01

Beginning Time: 09:04:05
Ending Time: 09:04:06
Elapsed Time: 00:00:01

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CHAPTER 8 ANALYSIS EXAMPLES

ANALYSIS EXAMPLE 8.1 LOGISTIC REGRESSION NCS-R DATA

Mplus VERSION 5.21
MUTHEN & MUTHEN
04/07/2010 11:32 AM

INPUT INSTRUCTIONS

```
  TITLE:  ANALYSIS EXAMPLE 8.1 NCSR DATA LOGISTIC REGRESSION
  DATA:
    FILE IS "F:\applied_analysis_book\Mplus\ncsr.txt";

  VARIABLE:
    NAMES ARE MAR3CAT ED4CAT NCSRWTSH NCSRWTLG SEX HHINC WKSTAT3C
    SESTRAT SECLUSTR bmi mde sexf sexm ald
      racecat povcat agecentered age29 ag4cat ed011 ed12 ed1315 ed16 black white hispanic
      asianother age51 agecat revworkstatus numsecu ag29 ag44 ag59 ag60 prevmar nevmar  ;

   USEVARIABLES ARE  NCSRWTSH sexm sestrat numsecu ald mde ag44 ag59 ag60
    ed12 ed1315 ed16 prevmar nevmar ;
   missing are . ;
   WEIGHT IS NCSRWTlg ;
   stratification is sestrat ;
   cluster is numsecu  ;
   categorical are mde ;

  ANALYSIS:
    type is complex;
    estimator is mlr ;

  Model:
    mde on ag44 ag59 ag60 sexm ald ed12 ed1315 ed16 prevmar nevmar ;

  Output:
   cint ;
```

ANALYSIS EXAMPLE 8.1 NCSR DATA LOGISTIC REGRESSION

SUMMARY OF ANALYSIS

Number of groups	1
Number of observations	9282
Number of dependent variables	2
Number of independent variables	10
Number of continuous latent variables	0

Observed dependent variables

Continuous
NCSRWTSH

Binary and ordered categorical (ordinal)
MDE

Observed independent variables

SEXM	ALD	AG44	AG59	AG60	ED12
ED1315	ED16	PREVMAR	NEVMAR		

Variables with special functions

Stratification	SESTRAT
Cluster variable	NUMSECU
Weight variable	NCSRWTLG

Estimator	MLR
Information matrix	OBSERVED
Optimization Specifications for the Quasi-Newton Algorithm for Continuous Outcomes	
Maximum number of iterations	100
Convergence criterion	0.100D-05
Optimization Specifications for the EM Algorithm	
Maximum number of iterations	500
Convergence criteria	
Loglikelihood change	0.100D-02
Relative loglikelihood change	0.100D-05
Derivative	0.100D-02
Optimization Specifications for the M step of the EM Algorithm for Categorical Latent variables	
Number of M step iterations	1
M step convergence criterion	0.100D-02
Basis for M step termination	ITERATION
Optimization Specifications for the M step of the EM Algorithm for Censored, Binary or Ordered Categorical (Ordinal), Unordered Categorical (Nominal) and Count Outcomes	
Number of M step iterations	1
M step convergence criterion	0.100D-02
Basis for M step termination	ITERATION
Maximum value for logit thresholds	15
Minimum value for logit thresholds	-15
Minimum expected cell size for chi-square	0.100D-01
Maximum number of iterations for H1	2000
Convergence criterion for H1	0.100D-03
Optimization algorithm	EMA
Integration Specifications	
Type	STANDARD
Number of integration points	15
Dimensions of numerical integration	0
Adaptive quadrature	ON
Link	LOGIT
Cholesky	OFF

```
Input data file(s)
  F:\applied_analysis_book\Mplus\ncsr.txt
Input data format  FREE


SUMMARY OF DATA

     Number of missing data patterns             1
     Number of strata            42
     Number of clusters          84


COVARIANCE COVERAGE OF DATA

Minimum covariance coverage value   0.100


     PROPORTION OF DATA PRESENT FOR Y


           Covariance Coverage
              NCSRWTSH      SEXM          ALD           AG44          AG59
              ________      ________      ________      ________      ________
 NCSRWTSH       1.000
 SEXM           1.000         1.000
 ALD            1.000         1.000         1.000
 AG44           1.000         1.000         1.000         1.000
 AG59           1.000         1.000         1.000         1.000         1.000
 AG60           1.000         1.000         1.000         1.000         1.000
 ED12           1.000         1.000         1.000         1.000         1.000
 ED1315         1.000         1.000         1.000         1.000         1.000
 ED16           1.000         1.000         1.000         1.000         1.000
 PREVMAR        1.000         1.000         1.000         1.000         1.000
 NEVMAR         1.000         1.000         1.000         1.000         1.000


           Covariance Coverage
              AG60          ED12          ED1315        ED16          PREVMAR
              ________      ________      ________      ________      ________
 AG60           1.000
 ED12           1.000         1.000
 ED1315         1.000         1.000         1.000
 ED16           1.000         1.000         1.000         1.000
 PREVMAR        1.000         1.000         1.000         1.000         1.000
 NEVMAR         1.000         1.000         1.000         1.000         1.000


           Covariance Coverage
              NEVMAR
              ________
 NEVMAR         1.000


SUMMARY OF CATEGORICAL DATA PROPORTIONS

    MDE
      Category 1    0.808
      Category 2    0.192



THE MODEL ESTIMATION TERMINATED NORMALLY



TESTS OF MODEL FIT
```

Loglikelihood

H0 Value	-15288.769
H0 Scaling Correction Factor for MLR	62.326

Information Criteria

Number of Free Parameters	13
Akaike (AIC)	30603.538
Bayesian (BIC)	30696.304
Sample-Size Adjusted BIC (n* = (n + 2) / 24)	30654.992

MODEL RESULTS

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
MDE ON				
AG44	0.256	0.094	2.708	0.007
AG59	0.206	0.092	2.256	0.024
AG60	-0.676	0.141	-4.783	0.000
SEXM	-0.577	0.077	-7.477	0.000
ALD	1.424	0.154	9.235	0.000
ED12	0.079	0.097	0.818	0.413
ED1315	0.231	0.093	2.477	0.013
ED16	0.163	0.111	1.473	0.141
PREVMAR	0.486	0.085	5.695	0.000
NEVMAR	0.116	0.108	1.071	0.284
Means				
NCSRWTSH	1.261	0.107	11.827	0.000
Thresholds				
MDE$1	1.583	0.121	13.120	0.000
Variances				
NCSRWTSH	0.626	0.229	2.728	0.006

LOGISTIC REGRESSION ODDS RATIO RESULTS

MDE ON	
AG44	1.291
AG59	1.229
AG60	0.509
SEXM	0.561
ALD	4.152
ED12	1.082
ED1315	1.259
ED16	1.177
PREVMAR	1.626
NEVMAR	1.123

QUALITY OF NUMERICAL RESULTS

Condition Number for the Information Matrix (ratio of smallest to largest eigenvalue)	0.215E-02

CONFIDENCE INTERVALS OF MODEL RESULTS

	Lower .5%	Lower 2.5%	Estimate	Upper 2.5%	Upper .5%
MDE ON					
AG44	0.013	0.071	0.256	0.441	0.499
AG59	-0.029	0.027	0.206	0.386	0.442
AG60	-1.040	-0.953	-0.676	-0.399	-0.312
SEXM	-0.776	-0.729	-0.577	-0.426	-0.378
ALD	1.027	1.122	1.424	1.726	1.821
ED12	-0.170	-0.111	0.079	0.269	0.329
ED1315	-0.009	0.048	0.231	0.413	0.470
ED16	-0.122	-0.054	0.163	0.380	0.448
PREVMAR	0.266	0.319	0.486	0.654	0.706
NEVMAR	-0.162	-0.096	0.116	0.327	0.393
Means					
NCSRWTSH	0.986	1.052	1.261	1.470	1.535
Thresholds					
MDE$1	1.272	1.347	1.583	1.820	1.894
Variances					
NCSRWTSH	0.035	0.176	0.626	1.075	1.216

CONFIDENCE INTERVALS FOR THE LOGISTIC REGRESSION ODDS RATIO RESULTS

MDE ON					
AG44	1.013	1.073	1.291	1.554	1.647
AG59	0.971	1.027	1.229	1.471	1.556
AG60	0.354	0.386	0.509	0.671	0.732
SEXM	0.460	0.483	0.561	0.653	0.685
ALD	2.792	3.070	4.152	5.617	6.177
ED12	0.843	0.895	1.082	1.309	1.389
ED1315	0.991	1.049	1.259	1.511	1.600
ED16	0.885	0.948	1.177	1.462	1.565
PREVMAR	1.305	1.376	1.626	1.923	2.027
NEVMAR	0.850	0.909	1.123	1.387	1.482

Beginning Time: 11:32:27
Ending Time: 11:32:29
Elapsed Time: 00:00:02

MUTHEN & MUTHEN
3463 Stoner Ave.
Los Angeles, CA 90066

Tel: (310) 391-9971
Fax: (310) 391-8971
Web: www.StatModel.com
Support: Support@StatModel.com

*NOTE NO GOF TEST IN MPLUS (NOT INCLUDED)

```
ANALYSIS EXAMPLE 8.1 INTERACTION TESTING OF SEX*OTHER PREDICTORS IN MODEL:

Mplus VERSION 5.21
MUTHEN & MUTHEN
04/09/2010   9:22 AM
INPUT INSTRUCTIONS
  TITLE:  ANALYSIS EXAMPLE 8.1 NCSR DATA LOGISTIC REGRESSION
  DATA:
    FILE IS "F:\applied_analysis_book\Mplus\ncsr.txt";
  VARIABLE:
    NAMES ARE MAR3CAT ED4CAT NCSRWTSH NCSRWTLG SEX HHINC WKSTAT3C
    SESTRAT SECLUSTR bmi mde sexf sexm ald
      racecat povcat agecentered age29 ag4cat ed011 ed12 ed1315 ed16 black white hispanic
      asianother age51 agecat revworkstatus numsecu ag29 ag44 ag59 ag60 prevmar nevmar  ;

   USEVARIABLES ARE  NCSRWTSH sexm sestrat numsecu ald mde ag44 ag59 ag60
    ed12 ed1315 ed16 prevmar nevmar SAG44 SAG59 SAG60 SALD SED12 SED1315
    SED16 SPREVMAR SNEVMAR ;
   missing are . ;
   WEIGHT IS NCSRWTlg ;
   stratification is sestrat ;
   cluster is numsecu  ;
   categorical are mde ;
  DEFINE:
      SAG44=SEXM*AG44 ;
      SAG59=SEXM*AG59 ;
      SAG60=SEXM*AG60 ;
      SALD=SEXM*ALD ;
      SED12=SEXM*ED12 ;
      SED1315=SEXM*ED1315 ;
      SED16=SEXM*ED16 ;
      SPREVMAR=SEXM*PREVMAR ;
      SNEVMAR=SEXM*NEVMAR ;
  ANALYSIS:
    type is complex;
    estimator is mlr ;

  Model:
    mde on ag44 ag59 ag60 sexm ald ed12 ed1315 ed16 prevmar nevmar
    SAG44 (P1)
    SAG59 (P2)
    SAG60 (P3)
    SALD (P4)
    SED12 (P5)
    SED1315 (P6)
    SED16 (P7)
    SPREVMAR (P8)
    SNEVMAR (P9) ;
  MODEL TEST :
      P1=0 ;
      P2=0 ;
      P3=0 ;
TESTS OF MODEL FIT
Wald Test of Parameter Constraints
          Value                             0.780
          Degrees of Freedom                    3
          P-Value                           0.8543
Loglikelihood
          H0 Value                     -15285.778
          H0 Scaling Correction Factor      37.553
            for MLR
Information Criteria
          Number of Free Parameters             22
          Akaike (AIC)                   30615.555
          Bayesian (BIC)                 30772.544
          Sample-Size Adjusted BIC       30702.631
```

```
            (n* = (n + 2) / 24)
INPUT INSTRUCTIONS
  TITLE:  ANALYSIS EXAMPLE 8.1 NCSR DATA LOGISTIC REGRESSION
  DATA:
    FILE IS "F:\applied_analysis_book\Mplus\ncsr.txt";
  VARIABLE:
    NAMES ARE MAR3CAT ED4CAT NCSRWTSH NCSRWTLG SEX HHINC WKSTAT3C
    SESTRAT SECLUSTR bmi mde sexf sexm ald
      racecat povcat agecentered age29 ag4cat ed011 ed12 ed1315 ed16 black white hispanic
      asianother age51 agecat revworkstatus numsecu ag29 ag44 ag59 ag60 prevmar nevmar  ;
   USEVARIABLES ARE  NCSRWTSH sexm sestrat numsecu ald mde ag44 ag59 ag60
    ed12 ed1315 ed16 prevmar nevmar SAG44 SAG59 SAG60 SALD SED12 SED1315
    SED16 SPREVMAR SNEVMAR ;
   missing are . ;
   WEIGHT IS NCSRWTlg ;
   stratification is sestrat ;
   cluster is numsecu  ;
   categorical are mde ;
  DEFINE:
      SAG44=SEXM*AG44 ;
      SAG59=SEXM*AG59 ;
      SAG60=SEXM*AG60 ;
      SALD=SEXM*ALD ;
      SED12=SEXM*ED12 ;
      SED1315=SEXM*ED1315 ;
      SED16=SEXM*ED16 ;
      SPREVMAR=SEXM*PREVMAR ;
      SNEVMAR=SEXM*NEVMAR ;
  ANALYSIS:
    type is complex;
    estimator is mlr ;

  Model:
    mde on ag44 ag59 ag60 sexm ald ed12 ed1315 ed16 prevmar nevmar
    SAG44 (P1)
    SAG59 (P2)
    SAG60 (P3)
    SALD (P4)
    SED12 (P5)
    SED1315 (P6)
    SED16 (P7)
    SPREVMAR (P8)
    SNEVMAR (P9) ;
  MODEL TEST:
    P4=0 ;

TESTS OF MODEL FIT
Wald Test of Parameter Constraints

          Value                             0.684
          Degrees of Freedom                    1
          P-Value                           0.4080
Loglikelihood

          H0 Value                     -15285.778
          H0 Scaling Correction Factor      37.553
            for MLR
Information Criteria

          Number of Free Parameters             22
          Akaike (AIC)                   30615.555
          Bayesian (BIC)                 30772.544
          Sample-Size Adjusted BIC       30702.631
            (n* = (n + 2) / 24)
```

```
INPUT INSTRUCTIONS

  TITLE:  ANALYSIS EXAMPLE 8.1 NCSR DATA LOGISTIC REGRESSION
  DATA:
    FILE IS "F:\applied_analysis_book\Mplus\ncsr.txt";

  VARIABLE:
    NAMES ARE MAR3CAT ED4CAT NCSRWTSH NCSRWTLG SEX HHINC WKSTAT3C
    SESTRAT SECLUSTR bmi mde sexf sexm ald
      racecat povcat agecentered age29 ag4cat ed011 ed12 ed1315 ed16 black white hispanic
      asianother age51 agecat revworkstatus numsecu ag29 ag44 ag59 ag60 prevmar nevmar  ;

   USEVARIABLES ARE  NCSRWTSH sexm sestrat numsecu ald mde ag44 ag59 ag60
    ed12 ed1315 ed16 prevmar nevmar SAG44 SAG59 SAG60 SALD SED12 SED1315
    SED16 SPREVMAR SNEVMAR ;
   missing are . ;
   WEIGHT IS NCSRWTlg ;
   stratification is sestrat ;
   cluster is numsecu  ;
   categorical are mde ;
  DEFINE:
      SAG44=SEXM*AG44 ;
      SAG59=SEXM*AG59 ;
      SAG60=SEXM*AG60 ;
      SALD=SEXM*ALD ;
      SED12=SEXM*ED12 ;
      SED1315=SEXM*ED1315 ;
      SED16=SEXM*ED16 ;
      SPREVMAR=SEXM*PREVMAR ;
      SNEVMAR=SEXM*NEVMAR ;
  ANALYSIS:
    type is complex;
    estimator is mlr ;
  Model:
    mde on ag44 ag59 ag60 sexm ald ed12 ed1315 ed16 prevmar nevmar
    SAG44 (P1)
    SAG59 (P2)
    SAG60 (P3)
    SALD (P4)
    SED12 (P5)
    SED1315 (P6)
    SED16 (P7)
    SPREVMAR (P8)
    SNEVMAR (P9) ;
  MODEL TEST:
    P5=0 ;
    P6=0 ;
    P7=0 ;

TESTS OF MODEL FIT
Wald Test of Parameter Constraints
          Value                             0.395
          Degrees of Freedom                    3
          P-Value                           0.9412
Loglikelihood

          H0 Value                     -15285.778
          H0 Scaling Correction Factor      37.553
            for MLR
Information Criteria
          Number of Free Parameters             22
          Akaike (AIC)                   30615.555
          Bayesian (BIC)                 30772.544
          Sample-Size Adjusted BIC       30702.631
            (n* = (n + 2) / 24)
```

```
INPUT INSTRUCTIONS
  TITLE:  ANALYSIS EXAMPLE 8.1 NCSR DATA LOGISTIC REGRESSION
  DATA:
    FILE IS "F:\applied_analysis_book\Mplus\ncsr.txt";
  VARIABLE:
    NAMES ARE MAR3CAT ED4CAT NCSRWTSH NCSRWTLG SEX HHINC WKSTAT3C
    SESTRAT SECLUSTR bmi mde sexf sexm ald
      racecat povcat agecentered age29 ag4cat ed011 ed12 ed1315 ed16 black white hispanic
      asianother age51 agecat revworkstatus numsecu ag29 ag44 ag59 ag60 prevmar nevmar  ;

   USEVARIABLES ARE  NCSRWTSH sexm sestrat numsecu ald mde ag44 ag59 ag60
    ed12 ed1315 ed16 prevmar nevmar SAG44 SAG59 SAG60 SALD SED12 SED1315
    SED16 SPREVMAR SNEVMAR ;
   missing are . ;
   WEIGHT IS NCSRWTlg ;
   stratification is sestrat ;
   cluster is numsecu  ;
   categorical are mde ;
  DEFINE:
      SAG44=SEXM*AG44 ;
      SAG59=SEXM*AG59 ;
      SAG60=SEXM*AG60 ;
      SALD=SEXM*ALD ;
      SED12=SEXM*ED12 ;
      SED1315=SEXM*ED1315 ;
      SED16=SEXM*ED16 ;
      SPREVMAR=SEXM*PREVMAR ;
      SNEVMAR=SEXM*NEVMAR ;
  ANALYSIS:
    type is complex;
    estimator is mlr ;
  Model:
    mde on ag44 ag59 ag60 sexm ald ed12 ed1315 ed16 prevmar nevmar
    SAG44 (P1)
    SAG59 (P2)
    SAG60 (P3)
    SALD (P4)
    SED12 (P5)
    SED1315 (P6)
    SED16 (P7)
    SPREVMAR (P8)
    SNEVMAR (P9) ;
  MODEL TEST:
    P8=0 ;
    P9=0 ;

TESTS OF MODEL FIT
Wald Test of Parameter Constraints
          Value                             1.567
          Degrees of Freedom                    2
          P-Value                           0.4567
Loglikelihood

          H0 Value                     -15285.778
          H0 Scaling Correction Factor      37.553
            for MLR
Information Criteria

          Number of Free Parameters             22
          Akaike (AIC)                   30615.555
          Bayesian (BIC)                 30772.544
          Sample-Size Adjusted BIC       30702.631
            (n* = (n + 2) / 24)
```

ANALYSIS EXAMPLE 8.2 COMPARISON OF LOGIT, PROBIT AND CLOG-LOG (CLOG-LOG NOT AVAILABLE IN MPLUS BUT PROBIT IS)

LOGIT MODEL

Mplus VERSION 5.21
MUTHEN & MUTHEN
04/07/2010 11:57 AM

INPUT INSTRUCTIONS

```
  TITLE:  ANALYSIS EXAMPLE 8.2 NCSR DATA LOGIT REGRESSION
  DATA:
    FILE IS "F:\applied_analysis_book\Mplus\ncsr.txt";

  VARIABLE:
    NAMES ARE MAR3CAT ED4CAT NCSRWTSH NCSRWTLG SEX HHINC WKSTAT3C
    SESTRAT SECLUSTR bmi mde sexf sexm ald
      racecat povcat agecentered age29 ag4cat ed011 ed12 ed1315 ed16 black white hispanic
      asianother age51 agecat revworkstatus numsecu ag29 ag44 ag59 ag60 prevmar nevmar  ;

   USEVARIABLES ARE  NCSRWTLG sexm sestrat numsecu ald ag44 ag59 ag60
    ed12 ed1315 ed16 prevmar nevmar ;
   missing are . ;
   WEIGHT IS NCSRWTlg ;
   stratification is sestrat;
   cluster is numsecu ;
   categorical are ald ;

  ANALYSIS:
    type is complex;
    estimator is mlr ;

  Model:
    ald on ag44 ag59 ag60 sexm ed12 ed1315 ed16 prevmar nevmar ;
```

ANALYSIS EXAMPLE 8.2 NCSR DATA LOGIT REGRESSION

SUMMARY OF ANALYSIS

Number of groups	1
Number of observations	9282
Number of dependent variables	1
Number of independent variables	9
Number of continuous latent variables	0

Observed dependent variables

  Binary and ordered categorical (ordinal)
   ALD

Observed independent variables
   SEXM   AG44   AG59   AG60   ED12   ED1315
   ED16   PREVMAR   NEVMAR

Variables with special functions

Stratification	SESTRAT
Cluster variable	NUMSECU
Weight variable	NCSRWTLG

Estimator	MLR
Information matrix	OBSERVED

Optimization Specifications for the Quasi-Newton Algorithm for

```
Continuous Outcomes
  Maximum number of iterations                                100
  Convergence criterion                                0.100D-05
Optimization Specifications for the EM Algorithm
  Maximum number of iterations                                500
  Convergence criteria
    Loglikelihood change                               0.100D-02
    Relative loglikelihood change                      0.100D-05
    Derivative                                         0.100D-02
Optimization Specifications for the M step of the EM Algorithm for
Categorical Latent variables
  Number of M step iterations                                   1
  M step convergence criterion                         0.100D-02
  Basis for M step termination                         ITERATION
Optimization Specifications for the M step of the EM Algorithm for
Censored, Binary or Ordered Categorical (Ordinal), Unordered
Categorical (Nominal) and Count Outcomes
  Number of M step iterations                                   1
  M step convergence criterion                         0.100D-02
  Basis for M step termination                         ITERATION
  Maximum value for logit thresholds                          15
  Minimum value for logit thresholds                         -15
  Minimum expected cell size for chi-square            0.100D-01
Maximum number of iterations for H1                         2000
Convergence criterion for H1                           0.100D-03
Optimization algorithm                                       EMA
Integration Specifications
  Type                                                  STANDARD
  Number of integration points                                15
  Dimensions of numerical integration                          0
  Adaptive quadrature                                         ON
Link                                                       LOGIT
Cholesky                                                     OFF

Input data file(s)
  F:\applied_analysis_book\Mplus\ncsr.txt
Input data format  FREE


SUMMARY OF DATA

     Number of missing data patterns             1
     Number of strata            42
     Number of clusters          84


COVARIANCE COVERAGE OF DATA

Minimum covariance coverage value   0.100


SUMMARY OF CATEGORICAL DATA PROPORTIONS

    ALD
      Category 1    0.946
      Category 2    0.054



THE MODEL ESTIMATION TERMINATED NORMALLY



TESTS OF MODEL FIT

Loglikelihood
```

H0 Value	-1849.961
H0 Scaling Correction Factor for MLR	1.651

Information Criteria

Number of Free Parameters	10
Akaike (AIC)	3719.921
Bayesian (BIC)	3791.279
Sample-Size Adjusted BIC (n* = (n + 2) / 24)	3759.501

MODEL RESULTS

		Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
ALD	ON				
	AG44	0.146	0.178	0.821	0.412
	AG59	-0.051	0.144	-0.352	0.725
	AG60	-1.120	0.212	-5.273	0.000
	SEXM	0.998	0.119	8.379	0.000
	ED12	-0.268	0.194	-1.386	0.166
	ED1315	-0.264	0.176	-1.502	0.133
	ED16	-0.736	0.197	-3.734	0.000
	PREVMAR	0.518	0.142	3.645	0.000
	NEVMAR	0.065	0.169	0.387	0.699
Thresholds					
	ALD$1	3.124	0.225	13.869	0.000

LOGISTIC REGRESSION ODDS RATIO RESULTS

ALD	ON	
	AG44	1.158
	AG59	0.951
	AG60	0.326
	SEXM	2.713
	ED12	0.765
	ED1315	0.768
	ED16	0.479
	PREVMAR	1.678
	NEVMAR	1.067

QUALITY OF NUMERICAL RESULTS

Condition Number for the Information Matrix (ratio of smallest to largest eigenvalue)	0.120E-01

Beginning Time:	11:57:56
Ending Time:	11:57:58
Elapsed Time:	00:00:02

PROBIT MODEL

Mplus VERSION 5.21
MUTHEN & MUTHEN
04/07/2010 11:59 AM

INPUT INSTRUCTIONS

```
  TITLE:  ANALYSIS EXAMPLE 8.2 NCSR DATA PROBIT REGRESSION
  DATA:
    FILE IS "F:\applied_analysis_book\Mplus\ncsr.txt";

  VARIABLE:
    NAMES ARE MAR3CAT ED4CAT NCSRWTSH NCSRWTLG SEX HHINC WKSTAT3C
    SESTRAT SECLUSTR bmi mde sexf sexm ald
      racecat povcat agecentered age29 ag4cat ed011 ed12 ed1315 ed16 black white hispanic
      asianother age51 agecat revworkstatus numsecu ag29 ag44 ag59 ag60 prevmar nevmar  ;

   USEVARIABLES ARE  NCSRWTLG sexm sestrat numsecu ald ag44 ag59 ag60
    ed12 ed1315 ed16 prevmar nevmar ;
   missing are . ;
   WEIGHT IS NCSRWTlg ;
   stratification is sestrat;
   cluster is numsecu ;
   categorical are ald ;

  ANALYSIS:
    type is complex;

  Model:
    ald on ag44 ag59 ag60 sexm ed12 ed1315 ed16 prevmar nevmar ;
```

ANALYSIS EXAMPLE 8.2 NCSR DATA PROBIT REGRESSION

SUMMARY OF ANALYSIS

Number of groups	1
Number of observations	9282
Number of dependent variables	1
Number of independent variables	9
Number of continuous latent variables	0

Observed dependent variables

  Binary and ordered categorical (ordinal)
   ALD

Observed independent variables
   SEXM   AG44   AG59   AG60   ED12   ED1315
   ED16   PREVMAR   NEVMAR

Variables with special functions

Stratification	SESTRAT
Cluster variable	NUMSECU
Weight variable	NCSRWTLG

Estimator	WLSMV
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
Parameterization	DELTA

```
Input data file(s)
  F:\applied_analysis_book\Mplus\ncsr.txt

Input data format  FREE


SUMMARY OF DATA

     Number of missing data patterns             1
     Number of strata            42
     Number of clusters          84


COVARIANCE COVERAGE OF DATA

Minimum covariance coverage value   0.100


     PROPORTION OF DATA PRESENT


           Covariance Coverage
              ALD
              ________
 ALD            1.000


SUMMARY OF CATEGORICAL DATA PROPORTIONS

    ALD
      Category 1    0.946
      Category 2    0.054



THE MODEL ESTIMATION TERMINATED NORMALLY
TESTS OF MODEL FIT
Chi-Square Test of Model Fit

          Value                             0.000*
          Degrees of Freedom                    0**
          P-Value                           0.0000

*   The chi-square value for MLM, MLMV, MLR, ULSMV, WLSM and WLSMV cannot be used
    for chi-square difference tests.  MLM, MLR and WLSM chi-square difference
    testing is described in the Mplus Technical Appendices at www.statmodel.com.
    See chi-square difference testing in the index of the Mplus User's Guide.

**  The degrees of freedom for MLMV, ULSMV and WLSMV are estimated according to
    a formula given in the Mplus Technical Appendices at www.statmodel.com.
    See degrees of freedom in the index of the Mplus User's Guide.

Chi-Square Test of Model Fit for the Baseline Model

          Value                           132.792
          Degrees of Freedom                    9
          P-Value                           0.0000

CFI/TLI

          CFI                               1.000
          TLI                               1.000

Number of Free Parameters                       10
```

RMSEA (Root Mean Square Error Of Approximation)

Estimate	0.000

WRMR (Weighted Root Mean Square Residual)

Value	0.013

MODEL RESULTS

		Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
ALD	ON				
	AG44	0.065	0.080	0.810	0.418
	AG59	-0.034	0.066	-0.517	0.605
	AG60	-0.529	0.095	-5.563	0.000
	SEXM	0.472	0.056	8.434	0.000
	ED12	-0.123	0.097	-1.263	0.207
	ED1315	-0.124	0.087	-1.427	0.154
	ED16	-0.338	0.096	-3.505	0.000
	PREVMAR	0.255	0.070	3.658	0.000
	NEVMAR	0.039	0.074	0.525	0.600
Thresholds					
	ALD$1	1.718	0.101	16.997	0.000

R-SQUARE

Observed Variable	Estimate	Residual Variance
ALD	0.100	1.000

QUALITY OF NUMERICAL RESULTS

Condition Number for the Information Matrix (ratio of smallest to largest eigenvalue)	0.306E+00

Beginning Time:	11:59:51
Ending Time:	11:59:53
Elapsed Time:	00:00:02

*NOTE THAT CLOG-LOG MODEL IS NOT AVAILABLE IN MPLUS