

Supplemental Models for Example 1 in Mplus

| <div>TITLE: Model 3 via MLM: Attitudes Predict Intercept, Linear, and Quadratic Age Slopes DATA: FILE = Example1.csv; ! Syntax in same folder as data VARIABLE: ! List of variables in data file NAMES = PersonID occasion risky age18 att4 mon3 agesq; ! Variables to be analyzed in this model USEVARIABLE = age18 agesq att4 risky; MISSING ARE ALL (-999); ! Missing data identifier ! MLM options CLUSTER = PersonID; ! Level-2 ID BETWEEN = att4; ! Observed ONLY level-2 predictors WITHIN = age18 agesq; ! Observed ONLY level-1 predictors ANALYSIS: TYPE = TWOLEVEL RANDOM; ESTIMATOR = ML; MODEL: ! R = risky behavior %WITHIN% risky (Rresvar); ! L1 R: Residual variance (label) Rslp risky ON age18; ! Placeholder for R linear age slope Rquad risky ON agesq; ! Placeholder for R quadratic age slope %BETWEEN% [risky]; ! Fixed intercept risky (Rintvar); ! L2 G: Random intercept variance (label) [Rslp Rquad]; ! Fixed age slopes (as defined earlier) Rslp (Rslpvar); ! L2 G: Random linear age slope variance Rquad@0; ! No quadratic age slope variance risky Rslp Rquad ON att4; ! Att-> R int, linear, quad age slopes risky WITH Rslp (RIntSlp); ! R Int-slope covariance (label)</div> | <div>MODEL FIT INFORMATION Number of Free Parameters10 Loglikelihood H0 Value-3799.718 Information Criteria Akaike (AIC)7619.437 Bayesian (BIC)7671.879 Sample-Size Adjusted BIC7640.113 (n* = (n + 2) / 24) MODEL RESULTS <table><thead><tr><th></th><th>Estimate</th><th>S.E.</th><th>Est./S.E.</th><th>Two-Tailed P-Value</th></tr></thead><tbody><tr><td colspan="5">Within Level</td></tr><tr><td colspan="5">Residual Variances</td></tr><tr><td>RISKY</td><td>8.324</td><td>0.372</td><td>22.353</td><td>0.000</td></tr><tr><td colspan="5">Between Level</td></tr><tr><td>RSLP ON</td><td></td><td></td><td></td><td></td></tr><tr><td>ATT4</td><td>-0.900</td><td>0.242</td><td>-3.721</td><td>0.000</td></tr><tr><td>RQUAD ON</td><td></td><td></td><td></td><td></td></tr><tr><td>ATT4</td><td>-0.064</td><td>0.036</td><td>-1.762</td><td>0.078</td></tr><tr><td>RISKY ON</td><td></td><td></td><td></td><td></td></tr><tr><td>ATT4</td><td>-3.476</td><td>0.580</td><td>-5.989</td><td>0.000</td></tr><tr><td>RISKY WITH</td><td></td><td></td><td></td><td></td></tr><tr><td>RSLP</td><td>1.884</td><td>0.356</td><td>5.286</td><td>0.000</td></tr><tr><td colspan="5">Intercepts</td></tr><tr><td>RISKY</td><td>23.299</td><td>0.350</td><td>66.573</td><td>0.000</td></tr><tr><td>RSLP</td><td>1.948</td><td>0.146</td><td>13.336</td><td>0.000</td></tr><tr><td>RQUAD</td><td>0.142</td><td>0.022</td><td>6.461</td><td>0.000</td></tr><tr><td colspan="5">Residual Variances</td></tr><tr><td>RISKY</td><td>18.083</td><td>2.204</td><td>8.206</td><td>0.000</td></tr><tr><td>RSLP</td><td>0.486</td><td>0.080</td><td>6.087</td><td>0.000</td></tr><tr><td>RQUAD</td><td>0.000</td><td>0.000</td><td>999.000</td><td>999.000</td></tr></tbody></table></div> | | Estimate | S.E. | Est./S.E. | Two-Tailed P-Value | Within Level | | | | | Residual Variances | | | | | RISKY | 8.324 | 0.372 | 22.353 | 0.000 | Between Level | | | | | RSLP ON | | | | | ATT4 | -0.900 | 0.242 | -3.721 | 0.000 | RQUAD ON | | | | | ATT4 | -0.064 | 0.036 | -1.762 | 0.078 | RISKY ON | | | | | ATT4 | -3.476 | 0.580 | -5.989 | 0.000 | RISKY WITH | | | | | RSLP | 1.884 | 0.356 | 5.286 | 0.000 | Intercepts | | | | | RISKY | 23.299 | 0.350 | 66.573 | 0.000 | RSLP | 1.948 | 0.146 | 13.336 | 0.000 | RQUAD | 0.142 | 0.022 | 6.461 | 0.000 | Residual Variances | | | | | RISKY | 18.083 | 2.204 | 8.206 | 0.000 | RSLP | 0.486 | 0.080 | 6.087 | 0.000 | RQUAD | 0.000 | 0.000 | 999.000 | 999.000 |
|--|---|-------|-----------|-----------------------|-----------|-----------------------|--------------|--|--|--|--|--------------------|--|--|--|--|-------|-------|-------|--------|-------|---------------|--|--|--|--|---------|--|--|--|--|------|--------|-------|--------|-------|----------|--|--|--|--|------|--------|-------|--------|-------|----------|--|--|--|--|------|--------|-------|--------|-------|------------|--|--|--|--|------|-------|-------|-------|-------|------------|--|--|--|--|-------|--------|-------|--------|-------|------|-------|-------|--------|-------|-------|-------|-------|-------|-------|--------------------|--|--|--|--|-------|--------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|---------|---------|
| | Estimate | S.E. | Est./S.E. | Two-Tailed P-Value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Within Level | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Residual Variances | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RISKY | 8.324 | 0.372 | 22.353 | 0.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Between Level | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RSLP ON | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ATT4 | -0.900 | 0.242 | -3.721 | 0.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RQUAD ON | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ATT4 | -0.064 | 0.036 | -1.762 | 0.078 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RISKY ON | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ATT4 | -3.476 | 0.580 | -5.989 | 0.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RISKY WITH | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RSLP | 1.884 | 0.356 | 5.286 | 0.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Intercepts | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RISKY | 23.299 | 0.350 | 66.573 | 0.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RSLP | 1.948 | 0.146 | 13.336 | 0.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RQUAD | 0.142 | 0.022 | 6.461 | 0.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Residual Variances | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RISKY | 18.083 | 2.204 | 8.206 | 0.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RSLP | 0.486 | 0.080 | 6.087 | 0.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RQUAD | 0.000 | 0.000 | 999.000 | 999.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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TITLE: Model 3 via SEM:
          Attitudes Predict Intercept, Linear, and Quadratic Age Slopes
DATA: FILE = Example1.csv;    ! Syntax in same folder as data

! Unstacking to multivariate format
DATA LONGTOWIDE:
! Names of old stacked former variables (without numbers)
  LONG = risky|age;
! Names of new multivariate variables (that use numbers)
  WIDE = risky12-risky18|age12-age18;
! Variable with level-2 ID info
  IDVARIABLE = PersonID;
! Old level-1 identifier
  REPETITION = occasion (12 13 14 15 16 17 18);

VARIABLE:
! List of variables in original data file
  NAMES = PersonID occasion risky age att4 mon agesq;
! Variables to be analyzed in this model
  USEVARIABLE = att4 risky12-risky18 age12-age18;
  MISSING ARE ALL (-999);    ! Missing data identifier
  TSCORES = age12-age18;    ! Exact time indicator

ANALYSIS: TYPE = RANDOM; ESTIMATOR = ML; MODEL = NOCOVARIANCES;
MODEL:    ! R = risky behavior
[risky12-risky18@0];          ! All variable intercepts fixed to 0
risky12-risky18 (Rresvar);    ! L1 R: R residual variances held equal

! Risky behavior quadratic growth model using exact age as loadings
  Rint Rslp Rquad | risky12-risky18 AT age12-age18;

! Fixed growth effects
  [Rint Rslp Rquad];
! L2 G: Random int and linear age variances, no quad age variance
  Rint Rslp Rquad@0;
! L2 G: Within-variable random int-slope covariance
  Rint WITH Rslp;
! Attitudes --> risky int, linear slope
  Rint Rslp Rquad ON att4;

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MODEL FIT INFORMATION

Number of Free Parameters 10

Loglikelihood

H0 Value -3799.718

Information Criteria

Akaike (AIC) 7619.437
 Bayesian (BIC) 7652.420
 Sample-Size Adjusted BIC 7620.739
 (n* = (n + 2) / 24)

MODEL RESULTS - INTERCEPTS HELD TO 0 OMITTED FOR BREVITY

| | | Estimate | S.E. | Est./S.E. | Two-Tailed P-Value |
|--------------------|------|----------|-------|-----------|-----------------------|
| RINT | ON | | | | |
| ATT4 | | -3.476 | 0.580 | -5.989 | 0.000 |
| RSLP | ON | | | | |
| ATT4 | | -0.900 | 0.242 | -3.721 | 0.000 |
| RQUAD | ON | | | | |
| ATT4 | | -0.064 | 0.036 | -1.762 | 0.078 |
| RINT | WITH | | | | |
| RSLP | | 1.884 | 0.356 | 5.286 | 0.000 |
| Intercepts | | | | | |
| RINT | | 23.299 | 0.350 | 66.571 | 0.000 |
| RSLP | | 1.948 | 0.146 | 13.336 | 0.000 |
| RQUAD | | 0.142 | 0.022 | 6.462 | 0.000 |
| Residual Variances | | | | | |
| RISKY12 | | 8.324 | 0.372 | 22.353 | 0.000 |
| RISKY13 | | 8.324 | 0.372 | 22.353 | 0.000 |
| RISKY14 | | 8.324 | 0.372 | 22.353 | 0.000 |
| RISKY15 | | 8.324 | 0.372 | 22.353 | 0.000 |
| RISKY16 | | 8.324 | 0.372 | 22.353 | 0.000 |
| RISKY17 | | 8.324 | 0.372 | 22.353 | 0.000 |
| RISKY18 | | 8.324 | 0.372 | 22.353 | 0.000 |
| RINT | | 18.084 | 2.204 | 8.206 | 0.000 |
| RSLP | | 0.486 | 0.080 | 6.087 | 0.000 |
| RQUAD | | 0.000 | 0.000 | 999.000 | 999.000 |