Supplemental Models for Example 1 in Mplus

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TITLE:   Model 3 via MLM using Unbalanced Time:
         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 Att12 occasion age risky mon roundage
          time att4 timesq mon3;
! Variables to be analyzed in this model
  USEVARIABLE = time timesq att4 risky;
  MISSING ARE ALL (-999);    ! Missing data identifier
! MLM options
  CLUSTER = PersonID;        ! Level-2 ID
  BETWEEN = att4;            ! Observed ONLY level-2 predictors
  WITHIN  = time timesq;     ! Observed ONLY level-1 predictors

ANALYSIS:    TYPE = TWOLEVEL RANDOM; ESTIMATOR = ML;

MODEL:   ! LEVEL-1 = WITHIN, LEVEL-2 = BETWEEN
%WITHIN%
 risky;                     ! L1 R: Residual variance
 lin   | risky ON time;     ! Placeholder for linear age slope
 quad | risky ON timesq     ! Placeholder for quadratic age slope

%BETWEEN%
[risky lin quad];           ! Fixed intercept, linear, quad slopes
 risky lin quad@0;          ! L2 G: Random effects variances (quad=0)
risky WITH lin;             ! L2 G: Random effects covariance
risky lin quad ON att4;     ! Att-> risky int, linear, quad slopes
```

```
MODEL FIT INFORMATION

Number of Free Parameters                       10

Loglikelihood
          H0 Value                      -3799.718

Information Criteria
          Akaike (AIC)                   7619.436
          Bayesian (BIC)                 7671.878
          Sample-Size Adjusted BIC       7640.112
            (n* = (n + 2) / 24)



MODEL RESULTS

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

 Residual Variances → Level-1 residual variance
   RISKY              8.324      0.372     22.353      0.000

Between Level

 LIN        ON
   ATT4              -0.900      0.242     -3.721      0.000 gamma11

 QUAD       ON
   ATT4              -0.064      0.036     -1.761      0.078 gamma21

 RISKY      ON
   ATT4              -3.476      0.580     -5.989      0.000 gamma01

 RISKY    WITH → Level-2 BP random effect covariance
   LIN                1.884      0.356      5.286      0.000

 Intercepts
   RISKY             23.299      0.350     66.573      0.000 gamma00
   LIN                1.948      0.146     13.336      0.000 gamma10
   QUAD               0.142      0.022      6.462      0.000 gamma20

 Residual Variances → Level-2 BP random effect variances remaining
   RISKY             18.083      2.204      8.206      0.000
   LIN                0.486      0.080      6.087      0.000
   QUAD               0.000      0.000    999.000    999.000
```

```
TITLE: Model 3 via SEM using Unbalanced Time:
       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|time;
! 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 = roundage (12 13 14 15 16 17 18);

VARIABLE:
! List of variables in original data file
  NAMES = PersonID Att12 occasion age risky mon roundage
          time att4 timesq mon3;
! 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:
[risky12-risky18@0];         ! All variable intercepts fixed to 0
 risky12-risky18 (Resvar);   ! L1 R residual variances held equal

! Risky behavior quadratic growth model using exact age as loadings
  Int Lin Quad | risky12-risky18 AT age12-age18;

! Fixed intercept, linear, quad slopes
  [Int Lin Quad];
! L2 G: Random effects variances (quad=0)
  Int Lin Quad@0;
! L2 G: Random effects covariance
  Int WITH Lin;
! Attitudes --> risky int, linear, quad slopes
  Int Lin Quad ON att4;
```

MODEL FIT INFORMATION

Number of Free Parameters 10

Loglikelihood

H0 Value -3799.718

Information Criteria

Akaike (AIC) 7619.437
Bayesian (BIC) 7652.419
Sample-Size Adjusted BIC 7620.738
(n* = (n + 2) / 24)

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value	
INT ON					
ATT4	-3.476	0.580	-5.989	0.000	**gamma01**
LIN ON					
ATT4	-0.900	0.242	-3.721	0.000	**gamma11**
QUAD ON					
ATT4	-0.064	0.036	-1.761	0.078	**gamma21**
INT WITH → **L2 BP random effect covariance**					
LIN	1.884	0.356	5.286	0.000	
Intercepts					
RISKY12	0.000	0.000	999.000	999.000	
RISKY13	0.000	0.000	999.000	999.000	
RISKY14	0.000	0.000	999.000	999.000	
RISKY15	0.000	0.000	999.000	999.000	
RISKY16	0.000	0.000	999.000	999.000	
RISKY17	0.000	0.000	999.000	999.000	
RISKY18	0.000	0.000	999.000	999.000	
INT	23.299	0.350	66.571	0.000	**gamma00**
LIN	1.948	0.146	13.336	0.000	**gamma10**
QUAD	0.142	0.022	6.462	0.000	**gamma20**
Residual Variances					
RISKY12	8.324	0.372	22.353	0.000	**L1 res var**
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	
INT	18.084	2.204	8.206	0.000	**L2 BP int var**
LIN	0.486	0.080	6.087	0.000	**L2 BP lin var**
QUAD	0.000	0.000	999.000	999.000	**L2 BP quad var**