

Program: HLM 6 Hierarchical Linear and Nonlinear Modeling  
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Module: HLM3.EXE (6.06.2857.2)  
 Date: 25 November 2008, Tuesday  
 Time: 0: 7:52

# SPECIFICATIONS FOR THIS HLM3 RUN

Problem Title: no title

The data source for this run = acvsall\_pmle\_upper\_R\_Rmob.mdm  
 The command file for this run = C:\Documents and Settings\FSC\My  
 Documents\akademik\WtP\HML\analyses\ACvsALL\Upper\upper\_acvrsall\_acpropnew1.hlm  
 Output file name = c:\\hlm3.txt  
 The maximum number of level-1 units = 14525  
 The maximum number of level-2 units = 4045  
 The maximum number of level-3 units = 115  
 The maximum number of iterations = 100  
 Method of estimation: full maximum likelihood

The outcome variable is RSS

The model specified for the fixed effects was:

| Level-1<br>Coefficients | Level-2<br>Predictors | Level-3<br>Predictors                                                                                                                   |
|-------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| INTRCPT1, P0            | INTRCPT2, B00         | INTRCPT3, G000<br>AC, G001<br>% NEWST1, G002<br>% NEWST2, G003<br>% NEWST3, G004<br>% NEWST5, G005<br>% NEWST6, G006<br>% LOGITPR, G007 |
| TIME3 slope, P1         | INTRCPT2, B10         | INTRCPT3, G100<br>AC, G101<br>% NEWST1, G102<br>% NEWST2, G103<br>% NEWST3, G104<br>% NEWST5, G105<br>% NEWST6, G106<br>% LOGITPR, G107 |
| TIME3SQ slope, P2       | INTRCPT2, B20         | INTRCPT3, G200<br>AC, G201<br>% NEWST1, G202<br>% NEWST2, G203<br>% NEWST3, G204<br>% NEWST5, G205<br>% NEWST6, G206<br>% LOGITPR, G207 |
| # RRETAKE slope, P3     | # INTRCPT2, B30       | INTRCPT3, G300<br>AC, G301<br>% NEWST1, G302<br>% NEWST2, G303                                                                          |

```

% NEWST3, G304
% NEWST5, G305
% NEWST6, G306
% LOGITPR, G307
# ENTRY slope, P4 # INTRCPT2, B40 INTRCPT3, G400
AC, G401
% NEWST1, G402
% NEWST2, G403
% NEWST3, G404
% NEWST5, G405
% NEWST6, G406
% LOGITPR, G407

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'#' - The residual parameter variance for the parameter has been set to zero  
 '%' - This variable has been centered around its grand mean

Summary of the model specified (in equation format)

#### Level-1 Model

$$Y = P0 + P1*(TIME3) + P2*(TIME3SQ) + P3*(RRETAKE) + P4*(ENTRY) + E$$

#### Level-2 Model

```

P0 = B00 + R0
P1 = B10 + R1
P2 = B20 + R2
P3 = B30
P4 = B40

```

#### Level-3 Model

```

B00 = G000 + G001(AC) + G002(NEWST1) + G003(NEWST2) + G004(NEWST3)
      + G005(NEWST5) + G006(NEWST6) + G007(LOGITPR) + U00
B10 = G100 + G101(AC) + G102(NEWST1) + G103(NEWST2) + G104(NEWST3)
      + G105(NEWST5) + G106(NEWST6) + G107(LOGITPR) + U10
B20 = G200 + G201(AC) + G202(NEWST1) + G203(NEWST2) + G204(NEWST3)
      + G205(NEWST5) + G206(NEWST6) + G207(LOGITPR) + U20
B30 = G300 + G301(AC) + G302(NEWST1) + G303(NEWST2) + G304(NEWST3)
      + G305(NEWST5) + G306(NEWST6) + G307(LOGITPR)
B40 = G400 + G401(AC) + G402(NEWST1) + G403(NEWST2) + G404(NEWST3)
      + G405(NEWST5) + G406(NEWST6) + G407(LOGITPR)

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Run-time deletion has reduced the number of level-1 records to 14488

For starting values, data from 11751 level-1 and 2332 level-2 records were used

Iterations stopped due to small change in likelihood function

\*\*\*\*\* ITERATION 13 \*\*\*\*\*

Sigma\_squared = 572.66720

Standard Error of Sigma\_squared = 10.18352

Tau(pi)

|             |            |           |            |
|-------------|------------|-----------|------------|
| INTRCPT1,P0 | 952.54548  | 108.07728 | -110.13146 |
| TIME3,P1    | 108.07728  | 36.41051  | -9.23011   |
| TIME3SQ,P2  | -110.13146 | -9.23011  | 51.41206   |

Tau(pi) (as correlations)

|             |       |       |        |
|-------------|-------|-------|--------|
| INTRCPT1,P0 | 1.000 | 0.580 | -0.498 |
|-------------|-------|-------|--------|

TIME3,P1 0.580 1.000 -0.213  
 TIME3SQ,P2 -0.498 -0.213 1.000

## Standard Errors of Tau(pi)

|             |          |          |          |
|-------------|----------|----------|----------|
| INTRCPT1,P0 | 31.78539 | 12.22623 | 14.99058 |
| TIME3,P1    | 12.22623 | 9.00344  | 7.56254  |
| TIME3SQ,P2  | 14.99058 | 7.56254  | 11.57024 |

| Random level-1 coefficient | Reliability estimate |
|----------------------------|----------------------|
| INTRCPT1, P0               | 0.745                |
| TIME3, P1                  | 0.101                |
| TIME3SQ, P2                | 0.107                |

Note: The reliability estimates reported above are based on only 2332 of 4045 units that had sufficient data for computation. Fixed effects and variance components are based on all the data.

## Tau(beta)

|              |              |              |
|--------------|--------------|--------------|
| INTRCPT1     | TIME3        | TIME3SQ      |
| INTRCPT2,B00 | INTRCPT2,B10 | INTRCPT2,B20 |
| 119.22968    | 3.54524      | -12.92082    |
| 3.54524      | 15.07184     | -6.00623     |
| -12.92082    | -6.00623     | 11.01492     |

## Tau(beta) (as correlations)

|                       |        |        |        |
|-----------------------|--------|--------|--------|
| INTRCPT1/INTRCPT2,B00 | 1.000  | 0.084  | -0.357 |
| TIME3/INTRCPT2,B10    | 0.084  | 1.000  | -0.466 |
| TIME3SQ/INTRCPT2,B20  | -0.357 | -0.466 | 1.000  |

## Standard Errors of Tau(beta)

|              |              |              |
|--------------|--------------|--------------|
| INTRCPT1     | TIME3        | TIME3SQ      |
| INTRCPT2,B00 | INTRCPT2,B10 | INTRCPT2,B20 |
| 21.57830     | 6.48503      | 6.72518      |
| 6.48503      | 3.78121      | 2.84212      |
| 6.72518      | 2.84212      | 3.57253      |

| Random level-2 coefficient | Reliability estimate |
|----------------------------|----------------------|
| INTRCPT1/INTRCPT2, B00     | 0.712                |
| TIME3/INTRCPT2, B10        | 0.498                |
| TIME3SQ/INTRCPT2, B20      | 0.382                |

Note: The reliability estimates reported above are based on only 114 of 115 units that had sufficient data for computation. Fixed effects and variance components are based on all the data.

The value of the likelihood function at iteration 13 = -7.057345E+004

The outcome variable is RSS

## Final estimation of fixed effects:

| Fixed Effect      | Coefficient | Standard Error | T-ratio | Approx. d.f. | P-value |
|-------------------|-------------|----------------|---------|--------------|---------|
| For INTRCPT1, P0  |             |                |         |              |         |
| For INTRCPT2, B00 |             |                |         |              |         |
| INTRCPT3, G000    | 614.051765  | 1.556353       | 394.545 | 107          | 0.000   |

|                       |            |          |        |       |       |
|-----------------------|------------|----------|--------|-------|-------|
| AC, G001              | 1.405799   | 3.554374 | 0.396  | 107   | 0.693 |
| NEWST1, G002          | -24.120213 | 7.236318 | -3.333 | 107   | 0.002 |
| NEWST2, G003          | -9.494211  | 5.630015 | -1.686 | 107   | 0.094 |
| NEWST3, G004          | 1.119693   | 4.551894 | 0.246  | 107   | 0.806 |
| NEWST5, G005          | 3.322245   | 4.403188 | 0.755  | 107   | 0.452 |
| NEWST6, G006          | 15.979566  | 5.099456 | 3.134  | 107   | 0.003 |
| LOGITPR, G007         | 2.197750   | 2.633353 | 0.835  | 107   | 0.406 |
| For TIME3 slope, P1   |            |          |        |       |       |
| For INTRCPT2, B10     |            |          |        |       |       |
| INTRCPT3, G100        | 11.607650  | 0.794758 | 14.605 | 107   | 0.000 |
| AC, G101              | 4.631028   | 1.806642 | 2.563  | 107   | 0.012 |
| NEWST1, G102          | 0.591395   | 3.794191 | 0.156  | 107   | 0.877 |
| NEWST2, G103          | -0.048718  | 2.908100 | -0.017 | 107   | 0.987 |
| NEWST3, G104          | -1.184924  | 2.311218 | -0.513 | 107   | 0.609 |
| NEWST5, G105          | -6.623950  | 2.230624 | -2.970 | 107   | 0.004 |
| NEWST6, G106          | -4.018540  | 2.657251 | -1.512 | 107   | 0.133 |
| LOGITPR, G107         | -2.428866  | 1.431761 | -1.696 | 107   | 0.092 |
| For TIME3SQ slope, P2 |            |          |        |       |       |
| For INTRCPT2, B20     |            |          |        |       |       |
| INTRCPT3, G200        | -1.846184  | 0.702386 | -2.628 | 107   | 0.010 |
| AC, G201              | -2.528202  | 1.574998 | -1.605 | 107   | 0.111 |
| NEWST1, G202          | 4.562954   | 3.317994 | 1.375  | 107   | 0.172 |
| NEWST2, G203          | 2.566376   | 2.548458 | 1.007  | 107   | 0.317 |
| NEWST3, G204          | 2.911627   | 2.036928 | 1.429  | 107   | 0.156 |
| NEWST5, G205          | 3.882768   | 1.976561 | 1.964  | 107   | 0.052 |
| NEWST6, G206          | 1.574367   | 2.340612 | 0.673  | 107   | 0.502 |
| LOGITPR, G207         | -0.078983  | 1.235403 | -0.064 | 107   | 0.950 |
| For RRETAKE slope, P3 |            |          |        |       |       |
| For INTRCPT2, B30     |            |          |        |       |       |
| INTRCPT3, G300        | 7.188104   | 0.667430 | 10.770 | 14448 | 0.000 |
| AC, G301              | 2.727662   | 1.517028 | 1.798  | 14448 | 0.072 |
| NEWST1, G302          | -1.171121  | 3.184527 | -0.368 | 14448 | 0.713 |
| NEWST2, G303          | 1.427240   | 2.460177 | 0.580  | 14448 | 0.561 |
| NEWST3, G304          | 3.708701   | 1.908064 | 1.944  | 14448 | 0.052 |
| NEWST5, G305          | 5.540985   | 1.838764 | 3.013  | 14448 | 0.003 |
| NEWST6, G306          | 5.198886   | 2.226545 | 2.335  | 14448 | 0.020 |
| LOGITPR, G307         | 1.511774   | 1.188870 | 1.272  | 14448 | 0.204 |
| For ENTRY slope, P4   |            |          |        |       |       |
| For INTRCPT2, B40     |            |          |        |       |       |
| INTRCPT3, G400        | 2.076195   | 0.940549 | 2.207  | 14448 | 0.027 |
| AC, G401              | 5.051269   | 2.130410 | 2.371  | 14448 | 0.018 |
| NEWST1, G402          | 5.455430   | 4.472151 | 1.220  | 14448 | 0.223 |
| NEWST2, G403          | 4.232619   | 3.471319 | 1.219  | 14448 | 0.223 |
| NEWST3, G404          | -2.516926  | 2.754787 | -0.914 | 14448 | 0.361 |
| NEWST5, G405          | -4.474901  | 2.637903 | -1.696 | 14448 | 0.089 |
| NEWST6, G406          | -7.281081  | 3.217474 | -2.263 | 14448 | 0.024 |
| LOGITPR, G407         | -3.228210  | 1.759432 | -1.835 | 14448 | 0.066 |

The outcome variable is RSS

Final estimation of fixed effects  
(with robust standard errors)

| Fixed Effect      | Coefficient | Standard Error | T-ratio | Approx. d.f. | P-value |
|-------------------|-------------|----------------|---------|--------------|---------|
| For INTRCPT1, P0  |             |                |         |              |         |
| For INTRCPT2, B00 |             |                |         |              |         |
| INTRCPT3, G000    | 614.051765  | 1.526338       | 402.304 | 107          | 0.000   |
| AC, G001          | 1.405799    | 2.669113       | 0.527   | 107          | 0.599   |
| NEWST1, G002      | -24.120213  | 8.483939       | -2.843  | 107          | 0.006   |
| NEWST2, G003      | -9.494211   | 5.615489       | -1.691  | 107          | 0.093   |
| NEWST3, G004      | 1.119693    | 4.444892       | 0.252   | 107          | 0.802   |
| NEWST5, G005      | 3.322245    | 4.820473       | 0.689   | 107          | 0.492   |

|     |                   |           |          |        |       |       |
|-----|-------------------|-----------|----------|--------|-------|-------|
|     | NEWST6, G006      | 15.979566 | 5.385177 | 2.967  | 107   | 0.004 |
|     | LOGITPR, G007     | 2.197750  | 3.826848 | 0.574  | 107   | 0.567 |
| For | TIME3 slope, P1   |           |          |        |       |       |
| For | INTRCPT2, B10     |           |          |        |       |       |
|     | INTRCPT3, G100    | 11.607650 | 0.778779 | 14.905 | 107   | 0.000 |
|     | AC, G101          | 4.631028  | 1.750248 | 2.646  | 107   | 0.010 |
|     | NEWST1, G102      | 0.591395  | 3.880598 | 0.152  | 107   | 0.880 |
|     | NEWST2, G103      | -0.048718 | 3.073225 | -0.016 | 107   | 0.988 |
|     | NEWST3, G104      | -1.184924 | 2.141708 | -0.553 | 107   | 0.581 |
|     | NEWST5, G105      | -6.623950 | 2.332113 | -2.840 | 107   | 0.006 |
|     | NEWST6, G106      | -4.018540 | 2.512014 | -1.600 | 107   | 0.112 |
|     | LOGITPR, G107     | -2.428866 | 1.620221 | -1.499 | 107   | 0.137 |
| For | TIME3SQ slope, P2 |           |          |        |       |       |
| For | INTRCPT2, B20     |           |          |        |       |       |
|     | INTRCPT3, G200    | -1.846184 | 0.738851 | -2.499 | 107   | 0.014 |
|     | AC, G201          | -2.528202 | 1.632811 | -1.548 | 107   | 0.124 |
|     | NEWST1, G202      | 4.562954  | 3.177986 | 1.436  | 107   | 0.154 |
|     | NEWST2, G203      | 2.566376  | 2.520874 | 1.018  | 107   | 0.311 |
|     | NEWST3, G204      | 2.911627  | 2.027737 | 1.436  | 107   | 0.154 |
|     | NEWST5, G205      | 3.882768  | 1.833293 | 2.118  | 107   | 0.036 |
|     | NEWST6, G206      | 1.574367  | 2.024314 | 0.778  | 107   | 0.438 |
|     | LOGITPR, G207     | -0.078983 | 0.912928 | -0.087 | 107   | 0.932 |
| For | RRETAKE slope, P3 |           |          |        |       |       |
| For | INTRCPT2, B30     |           |          |        |       |       |
|     | INTRCPT3, G300    | 7.188104  | 0.652410 | 11.018 | 14448 | 0.000 |
|     | AC, G301          | 2.727662  | 1.587506 | 1.718  | 14448 | 0.085 |
|     | NEWST1, G302      | -1.171121 | 2.974579 | -0.394 | 14448 | 0.693 |
|     | NEWST2, G303      | 1.427240  | 2.600698 | 0.549  | 14448 | 0.583 |
|     | NEWST3, G304      | 3.708701  | 1.664461 | 2.228  | 14448 | 0.026 |
|     | NEWST5, G305      | 5.540985  | 1.846269 | 3.001  | 14448 | 0.003 |
|     | NEWST6, G306      | 5.198886  | 2.382414 | 2.182  | 14448 | 0.029 |
|     | LOGITPR, G307     | 1.511774  | 1.265993 | 1.194  | 14448 | 0.233 |
| For | ENTRY slope, P4   |           |          |        |       |       |
| For | INTRCPT2, B40     |           |          |        |       |       |
|     | INTRCPT3, G400    | 2.076195  | 0.974819 | 2.130  | 14448 | 0.033 |
|     | AC, G401          | 5.051269  | 2.094256 | 2.412  | 14448 | 0.016 |
|     | NEWST1, G402      | 5.455430  | 4.791890 | 1.138  | 14448 | 0.255 |
|     | NEWST2, G403      | 4.232619  | 3.212457 | 1.318  | 14448 | 0.188 |
|     | NEWST3, G404      | -2.516926 | 3.174189 | -0.793 | 14448 | 0.428 |
|     | NEWST5, G405      | -4.474901 | 2.596078 | -1.724 | 14448 | 0.084 |
|     | NEWST6, G406      | -7.281081 | 3.147422 | -2.313 | 14448 | 0.021 |
|     | LOGITPR, G407     | -3.228210 | 1.705984 | -1.892 | 14448 | 0.058 |

Final estimation of level-1 and level-2 variance components:

| Random Effect     | Standard Deviation | Variance Component | df   | Chi-square | P-value |
|-------------------|--------------------|--------------------|------|------------|---------|
| INTRCPT1, R0      | 30.86334           | 952.54548          | 2217 | 9979.81060 | 0.000   |
| TIME3 slope, R1   | 6.03411            | 36.41051           | 2217 | 2573.12076 | 0.000   |
| TIME3SQ slope, R2 | 7.17022            | 51.41206           | 2217 | 2521.33733 | 0.000   |
| level-1, E        | 23.93047           | 572.66720          |      |            |         |

Note: The chi-square statistics reported above are based on only 2332 of 4045 units that had sufficient data for computation. Fixed effects and variance components are based on all the data.

Final estimation of level-3 variance components:

| Random Effect          | Standard Deviation | Variance Component | df  | Chi-square | P-value |
|------------------------|--------------------|--------------------|-----|------------|---------|
| INTRCPT1/INTRCPT2, U00 | 10.91923           | 119.22968          | 107 | 417.95910  | 0.000   |
| TIME3/INTRCPT2, U10    | 3.88225            | 15.07184           | 107 | 246.62899  | 0.000   |
| TIME3SQ/INTRCPT2, U20  | 3.31887            | 11.01492           | 107 | 194.66926  | 0.000   |

### Statistics for current covariance components model

Deviance = 141146.901577  
 Number of estimated parameters = 53

### Latent Variable Regression Results

$B10 = G100* + G101*(AC) + G102*(NEWST1) + G103*(NEWST2) + G104*(NEWST3) + G105*(NEWST5) + G106*(NEWST6) + G107*(LOGITPR) + G108*(B00) + U10*$

$B20 = G200* + G201*(AC) + G202*(NEWST1) + G203*(NEWST2) + G204*(NEWST3) + G205*(NEWST5) + G206*(NEWST6) + G207*(LOGITPR) + G208*(B00) + U20*$

| Outcome               | Predictor       | Estimated Coefficient | Standard Error | T-ratio | P-value |
|-----------------------|-----------------|-----------------------|----------------|---------|---------|
| TIME3/INTRCPT2, B10   | INTRCPT3, G100* | -6.650909             | 32.85666       | -0.202  | 0.840   |
|                       | AC, G101*       | 4.589227              | 1.80277        | 2.546   | 0.013   |
|                       | NEWST1, G102*   | 1.308599              | 3.99287        | 0.328   | 0.744   |
|                       | NEWST2, G103*   | 0.233588              | 2.94219        | 0.079   | 0.937   |
|                       | NEWST3, G104*   | -1.218218             | 2.30413        | -0.529  | 0.598   |
|                       | NEWST5, G105*   | -6.722736             | 2.22950        | -3.015  | 0.004   |
|                       | NEWST6, G106*   | -4.493686             | 2.78191        | -1.615  | 0.109   |
|                       | LOGITPR, G107*  | -2.494215             | 1.43003        | -1.744  | 0.084   |
| TIME3SQ/INTRCPT2, B20 | B00, G108*      | 0.029735              | 0.05349        | 0.556   | 0.579   |
|                       | INTRCPT3, G200* | 64.698096             | 30.09908       | 2.150   | 0.034   |
|                       | AC, G201*       | -2.375857             | 1.49134        | -1.593  | 0.114   |
|                       | NEWST1, G202*   | 1.949066              | 3.35092        | 0.582   | 0.562   |
|                       | NEWST2, G203*   | 1.537497              | 2.45342        | 0.627   | 0.532   |
|                       | NEWST3, G204*   | 3.032967              | 1.92838        | 1.573   | 0.118   |
|                       | NEWST5, G205*   | 4.242797              | 1.87778        | 2.259   | 0.026   |
|                       | NEWST6, G206*   | 3.306060              | 2.34968        | 1.407   | 0.162   |
|                       | LOGITPR, G207*  | 0.159185              | 1.17039        | 0.136   | 0.893   |
|                       | B00, G208*      | -0.108369             | 0.04901        | -2.211  | 0.029   |

### Latent Variable Regression: Comparison of Original and Adjusted Coefficients

| Outcome               | Predictor | Original Coefficient | Adjusted Coefficient | Difference | Standard Error of Difference |
|-----------------------|-----------|----------------------|----------------------|------------|------------------------------|
| TIME3/INTRCPT2, B10   | INTRCPT3  | 11.60765             | -6.65091             | 18.25856   | 32.84715                     |
|                       | AC        | 4.63103              | 4.58923              | 0.04180    | 0.12971                      |
|                       | NEWST1    | 0.59139              | 1.30860              | -0.71720   | 1.30807                      |
|                       | NEWST2    | -0.04872             | 0.23359              | -0.28231   | 0.53475                      |
|                       | NEWST3    | -1.18492             | -1.21822             | 0.03329    | 0.14801                      |
|                       | NEWST5    | -6.62395             | -6.72274             | 0.09879    | 0.22074                      |
|                       | NEWST6    | -4.01854             | -4.49369             | 0.47515    | 0.86813                      |
|                       | LOGITPR   | -2.42887             | -2.49422             | 0.06535    | 0.14125                      |
| TIME3SQ/INTRCPT2, B20 | INTRCPT3  | -1.84618             | 64.69810             | -66.54428  | 30.09221                     |
|                       | AC        | -2.52820             | -2.37586             | -0.15235   | 0.39130                      |
|                       | NEWST1    | 4.56295              | 1.94907              | 2.61389    | 1.41849                      |
|                       | NEWST2    | 2.56638              | 1.53750              | 1.02888    | 0.76728                      |

|         |          |         |          |         |
|---------|----------|---------|----------|---------|
| NEWST3  | 2.91163  | 3.03297 | -0.12134 | 0.49633 |
| NEWST5  | 3.88277  | 4.24280 | -0.36003 | 0.50418 |
| NEWST6  | 1.57437  | 3.30606 | -1.73169 | 0.95844 |
| LOGITPR | -0.07898 | 0.15919 | -0.23817 | 0.30502 |

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Var(u\*)

|          |          |
|----------|----------|
| TIME3    | TIME3SQ  |
| INTRCPT2 | INTRCPT2 |
| 14.96642 | -5.62204 |
| -5.62204 | 9.61470  |