|  |  |
| --- | --- |
| Program: | HLM 7 Hierarchical Linear and Nonlinear Modeling |
| Authors: | Stephen Raudenbush, Tony Bryk, & Richard Congdon |
| Publisher: | Scientific Software International, Inc. (c) 2010 |
|  | techsupport@ssicentral.com www.ssicentral.com |

|  |  |
| --- | --- |
| Module: | HMLM2.EXE (7.00.21105.10001) |
| Date: | 15 May 2013, Wednesday |
| Time: | 12:13:19 |

## Specifications for this HMLM2 run

Problem Title: no title  
  
The data source for this run = Kashy\_Overtime\_13  
The command file for this run = C:\Users\NSOE-CTC\AppData\Local\Temp\whlmtemp.hlm  
Output file name = C:\Users\NSOE-CTC\Desktop\DATIC Madura\hmlm2.html  
The maximum number of level-1 units = 2866  
The maximum number of level-2 units = 1438  
The maximum number of level-3 units = 103  
The maximum number of iterations = 100  
  
The outcome variable is ASATISF   
  
The model specified for the fixed effects was:

#### The model specified for the fixed effects

|  |  |  |
| --- | --- | --- |
| Level-1 | Level-2 | Level-3 |
| WOMAN slope, *π1* | INTRCPT2, B10 | INTRCPT3 ,*γ100* |
|  | TIME, B11 | INTRCPT3 ,*γ110* |
| MAN slope, *π2* | INTRCPT2, B20 | INTRCPT3 ,*γ200* |
|  | TIME, B21 | INTRCPT3 ,*γ210* |

## Output for the Unrestricted Model

### Summary of the model specified

#### Level-1 Model

*ASATISFmij* = (*WOMANmij*)\**ASATISF1ij*\* + (*MANmij*)\**ASATISF2ij*\*  
  
    *ASATISFtij*\* = *π1ij*\*(*WOMANtij*) + *π2ij*\*(*MANtij*)

#### Level-2 Model

*π1ij* = *β10j* + *β11j*\*(*TIMEij*) + u*1ij*  
        *π2ij* = *β20j* + *β21j*\*(*TIMEij*) + u*2ij*

#### Level-3 Model

*β*<small*10j* = *γ*<small*100* + *u10j*  
        *β*<small*11j* = *γ*<small*110* + *u11j*  
        *β*<small*20j* = *γ*<small*200* + *u20j*  
        *β*<small*21j* = *γ*<small*210* + *u21j*  
  
  
Var(u*ε*) = ij  
  
**Δ***(0)*

|  |  |  |
| --- | --- | --- |
| WOMAN | 0.34606 | 0.13485 |
| MAN | 0.13485 | 0.28174 |

τβ*(0)*

|  |  |  |  |
| --- | --- | --- | --- |
| WOMAN | WOMAN | MAN | MAN |
| INTRCPT2 ,*β10* | TIME ,*β11* | INTRCPT2 ,*β20* | TIME ,*β21* |
| 0.33343 | 0.00410 | 0.31843 | 0.00151 |
| 0.00410 | 0.00405 | -0.00049 | 0.00178 |
| 0.31843 | -0.00049 | 0.49480 | -0.00192 |
| 0.00151 | 0.00178 | -0.00192 | 0.00389 |

The value of the log-likelihood function at iteration 1 = -2.831533E+003  
The value of the log-likelihood function at iteration 2 = -2.812851E+003  
The value of the log-likelihood function at iteration 3 = -2.811238E+003  
The value of the log-likelihood function at iteration 4 = -2.810741E+003  
The value of the log-likelihood function at iteration 5 = -2.810544E+003  
**Iterations stopped due to small change in likelihood function**

### Final Results - Iteration 7

**Δ**

|  |  |  |
| --- | --- | --- |
| WOMAN | 0.40469 | 0.15820 |
| MAN | 0.15820 | 0.33052 |

Standard errors of **Δ**

|  |  |  |
| --- | --- | --- |
| WOMAN | 0.01632 | 0.01138 |
| MAN | 0.01138 | 0.01335 |

**Δ** (as correlations)

|  |  |  |
| --- | --- | --- |
| WOMAN ,*π1* | 1.000 | 0.433 |
| MAN ,*π2* | 0.433 | 1.000 |

τβ

|  |  |  |  |
| --- | --- | --- | --- |
| WOMAN | WOMAN | MAN | MAN |
| INTRCPT2 ,*β10* | TIME ,*β11* | INTRCPT2 ,*β20* | TIME ,*β21* |
| 0.30512 | 0.00393 | 0.30723 | 0.00146 |
| 0.00393 | 0.00225 | -0.00056 | 0.00109 |
| 0.30723 | -0.00056 | 0.47042 | -0.00197 |
| 0.00146 | 0.00109 | -0.00197 | 0.00246 |

Standard Errors of τβ

|  |  |  |  |
| --- | --- | --- | --- |
| WOMAN | WOMAN | MAN | MAN |
| INTRCPT2 ,*β10* | TIME ,*β11* | INTRCPT2 ,*β20* | TIME ,*β21* |
| 0.04658 | 0.00365 | 0.00358 | 0.00043 |
| 0.00365 | 0.05089 | 0.00057 | 0.06888 |
| 0.00358 | 0.00057 | 0.00441 | 0.00435 |
| 0.00043 | 0.06888 | 0.00435 | 0.00055 |

τβ (as correlations)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| WOMAN/INTRCPT2,*β10* | 1.000 | 0.150 | 0.811 | 0.053 |
| WOMAN/ TIME,*β11* | 0.150 | 1.000 | -0.017 | 0.462 |
| MAN/INTRCPT2,*β20* | 0.811 | -0.017 | 1.000 | -0.058 |
| MAN/ TIME,*β21* | 0.053 | 0.462 | -0.058 | 1.000 |

The value of the log-likelihood function at iteration 7 = -2.810383E+003

#### Final estimation of fixed effects:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Fixed Effect | Coefficient | Standard error | *t*-ratio | Approx. *d.f.* | *p*-value |
| For WOMAN slope, *π1* | | | | | |
| For INTRCPT2, B10 | | | | | |
| INTRCPT3 ,*γ100* | 6.388408 | 0.056962 | 112.153 | 102 | <0.001 |
| For TIME, B11 | | | | | |
| INTRCPT3 ,*γ110* | 0.009855 | 0.006271 | 1.572 | 102 | 0.116 |
| For MAN slope, *π2* | | | | | |
| For INTRCPT2, B20 | | | | | |
| INTRCPT3 ,*γ200* | 6.259150 | 0.069273 | 90.354 | 102 | <0.001 |
| For TIME, B21 | | | | | |
| INTRCPT3 ,*γ210* | 0.019184 | 0.006183 | 3.103 | 102 | 0.002 |

#### Statistics for the current model

Deviance = 5620.766019  
Number of estimated parameters = 17

## Output for Random Effects Model with Homogeneous Level-1 Variance

The number of random effects cannot be less than or equal to the number of timepoints!

### Summary of the model specified

#### Level-1 Model

*ASATISFmij* = (*WOMANmij*)\**ASATISF1ij*\* + (*MANmij*)\**ASATISF2ij*\*  
  
    *ASATISFtij*\* = *π1ij*\*(*WOMANtij*) + *π2ij*\*(*MANtij*) + *εtij*

#### Level-2 Model

*π1ij* = *β10j* + *β11j*\*(*TIMEij*) + *r1ij*  
        *π2ij* = *β20j* + *β21j*\*(*TIMEij*) + *r2ij*

#### Level-3 Model

*β*<small*10j* = *γ*<small*100* + *u10j*  
        *β*<small*11j* = *γ*<small*110* + *u11j*  
        *β*<small*20j* = *γ*<small*200* + *u20j*  
        *β*<small*21j* = *γ*<small*210* + *u21j*  
  
  
Var(*εij*) = Var(**A*r****ij* + e*ij*) = **Δ** = **AτπA'** + σ2**I**  
  
**A**

|  |  |  |
| --- | --- | --- |
| WOMAN | 1.00000 | 0.00000 |
| MAN | 0.00000 | 1.00000 |

Unable to compute valid new phi.   
**Δ**

|  |  |  |
| --- | --- | --- |
| WOMAN | 0.36347 | 0.14013 |
| MAN | 0.14013 | 0.29220 |

**Δ** (as correlations)

|  |  |  |
| --- | --- | --- |
| WOMAN ,*π1* | 1.000 | 0.430 |
| MAN ,*π2* | 0.430 | 1.000 |

τβ

|  |  |  |  |
| --- | --- | --- | --- |
| WOMAN | WOMAN | MAN | MAN |
| INTRCPT2 ,*β10* | TIME ,*β11* | INTRCPT2 ,*β20* | TIME ,*β21* |
| 0.30512 | 0.00393 | 0.30723 | 0.00146 |
| 0.00393 | 0.00225 | -0.00056 | 0.00109 |
| 0.30723 | -0.00056 | 0.47042 | -0.00197 |
| 0.00146 | 0.00109 | -0.00197 | 0.00246 |

τβ (as correlations)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| WOMAN/INTRCPT2,*β10* | 1.000 | 0.150 | 0.811 | 0.053 |
| WOMAN/ TIME,*β11* | 0.150 | 1.000 | -0.017 | 0.462 |
| MAN/INTRCPT2,*β20* | 0.811 | -0.017 | 1.000 | -0.058 |
| MAN/ TIME,*β21* | 0.053 | 0.462 | -0.058 | 1.000 |