

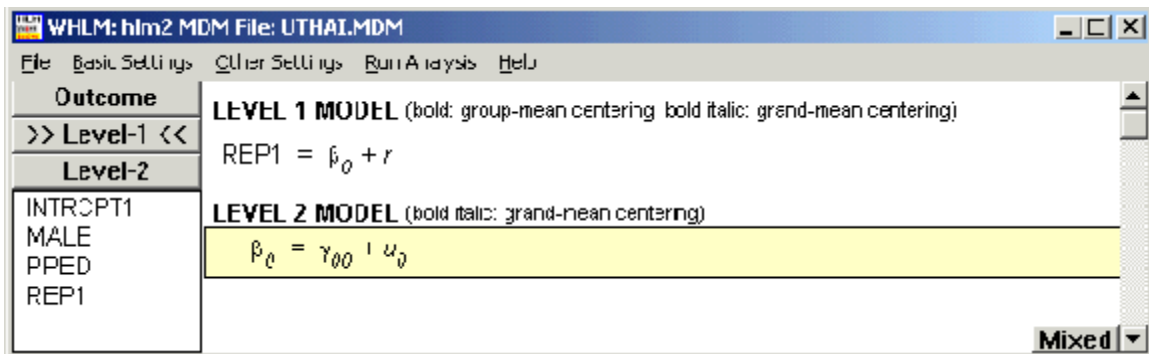
Specify a Poisson model with equal exposure

For a description of the statistical background of this model, please see the model for Poisson data.

Suppose that the outcome variable in Case 1 had been the number of days absent during the previous year rather than grade repetition. This outcome would be a non-negative integer, that is, a count rather than a dichotomy. Thus, the Poisson model with a log link would be a reasonable choice for the model. Notice that the time interval during which the absences could accumulate, that is, one year, would be the same for each student. We call this a case of "equal exposure," meaning that each level-1 case had an "equal opportunity" to accumulate absences. (Case 4 describes an example where exposure varies across level-1 cases.)

This model has exactly the same logic as in the case of the Bernoulli model except that the type of model and therefore the corresponding link function will be different.

After specifying the outcome in the model specification window (REP1 in our example), click the **Outcome** button at the top of the variable list box to the left of the main HLM window to open the **Basic Model Specifications – HLM2** dialog box.



Select **Poisson (constant exposure)** to tell HLM that the level-1 sampling model is Poisson with equal exposure per level-1 case. Click **OK** when done. The Poisson model is now displayed in the main HLM window.

Basic Model Specifications - HLM2

Distribution of Outcome Variable

Normal (Continuous)
 Bernoulli (0 or 1)
 Poisson (constant exposure)
 Binomial (number of trials) TRIAL
 Poisson (variable exposure) TRIAL
 Multinomial Number of categories
 Ordinal

Over dispersion

Level-1 Residual File Level-2 Residual File

Title: no title

Output file name: C:\HLM\Examples\Chapter6\hlm2.txt

Graph file name: C:\HLM\Examples\Chapter6\grapheq.geq

Cancel OK

WHLM: hlm2 MDM File: UTHAI.MDM

File Basic Settings Other Settings Run Analysis Help

Outcome

>> Level-1 <<

Level-2

INTRCPT1
MALE
PPED
REF1

LEVEL 1 MODEL (bold: group-mean centering; bold italic: grand-mean centering)

$E(\text{REF1}|\beta) = \lambda$

$\text{Log}|\lambda| = \eta$

$\eta = \beta_0 + r$

LEVEL 2 MODEL (bold italic: grand-mean centering)

$\beta_0 = \gamma_{00} + u_0$

Mixed

The maximum number of macro and micro iterations is set by selecting the **Iteration Settings** option from the **Other Settings** menu. This is optional, and by default HLM will automatically assign values to both these keywords.

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Other Settings Run Analysis Help

Iteration Settings

Estimation Settings

Hypothesis Testing

Output Settings

Exploratory Analysis (level 2)

Exploratory Analysis (level 3)

Iteration Control - HLM2

Number of (micro) iterations

Number of macro iterations

Frequency of accelerator

% change to stop iterating

How to handle bad Tau(0)

Set off diagonals to 0

Manual reset

Automatic fixup

What to do when maximum number of iterations achieved without convergence

Prompt Continue iterating Stop iterating

OK

Another option is to select the **Over-dispersion** option if appropriate.

The output file will, in addition to the usual estimates, contain a number of references to the type of model selected for the outcome.