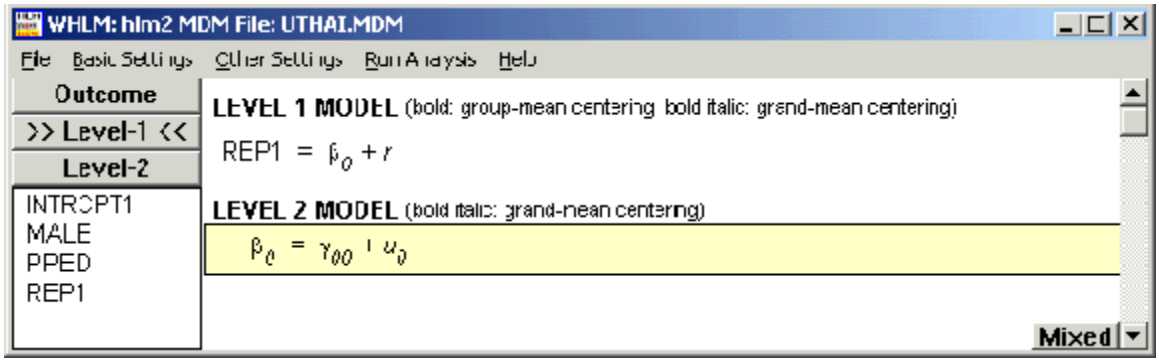
Specify a Poisson model with variable exposure

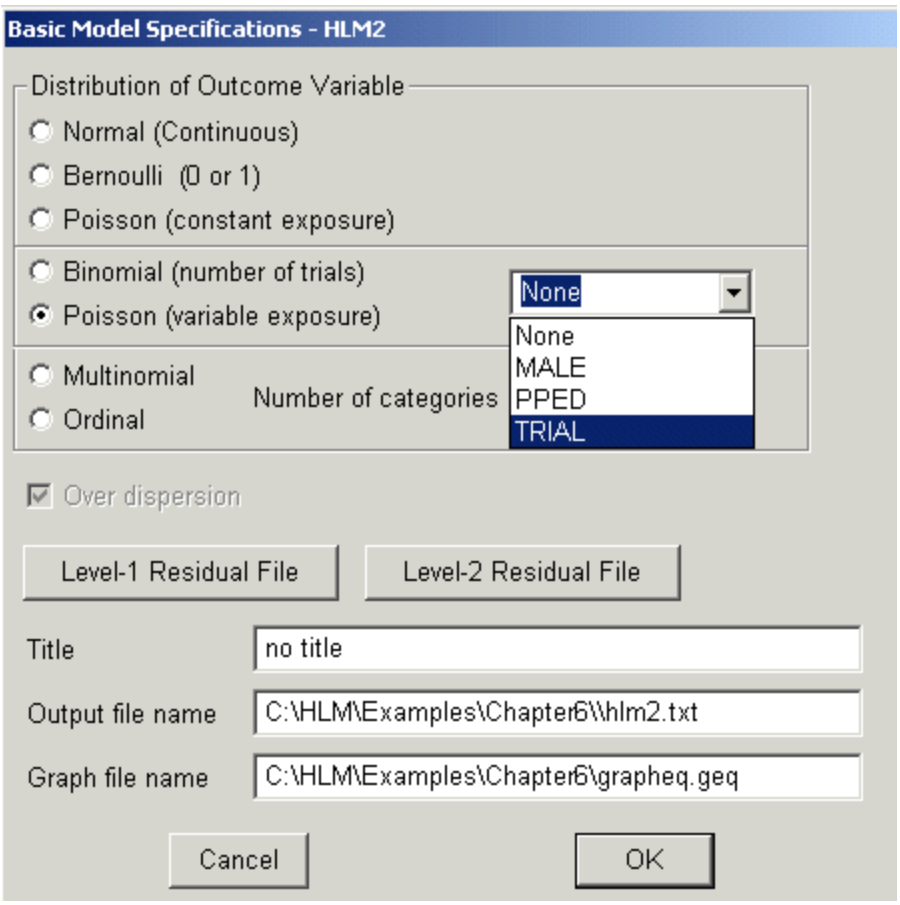
For a description of the statistical background of the Poisson model, please see the model for count data.

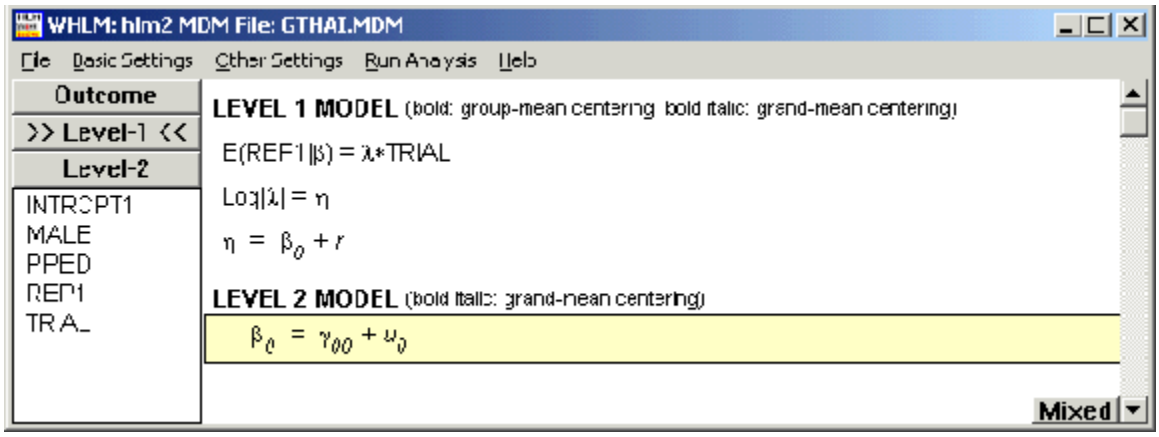
Suppose that the frequency of a given kind of cancer were tabulated for each of many counties. For example, with five age-groups, the data could be organized so that each county had five counts, with Y_{ij} being the number of cancers in age-group *i* of county *j* and m_{ij} being the population size of that age group in that county. A Poisson model with variable exposure would be appropriate, with m_{ij} the variable measuring exposure. Here we use the Thai data described elsewhere to illustrate the process.

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.

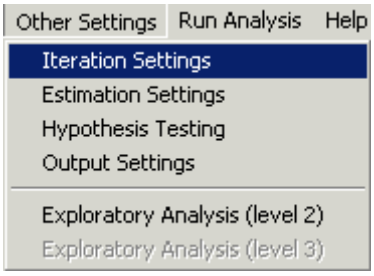


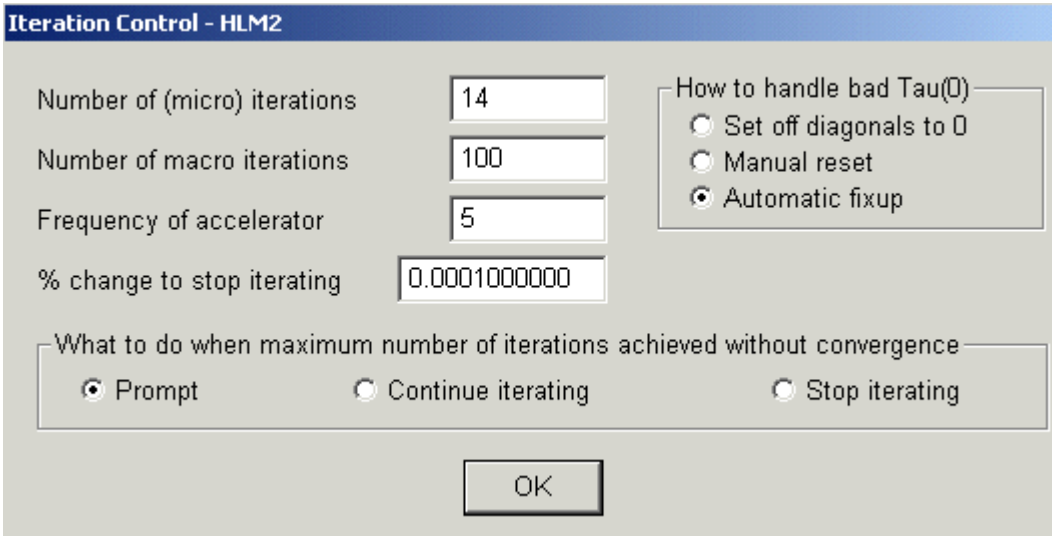
Select **Poisson (variable exposure)** to tell HLM that the level-1 sampling model is Poisson with variable exposure per level-1 case. Next, select the variable that indicates variable exposure from the drop-down list box. For illustrative purposes, we use TRIAL as the variable indicating exposure. Click **OK** when done. The Poisson model is now displayed in the main WHLM window.





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.





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.