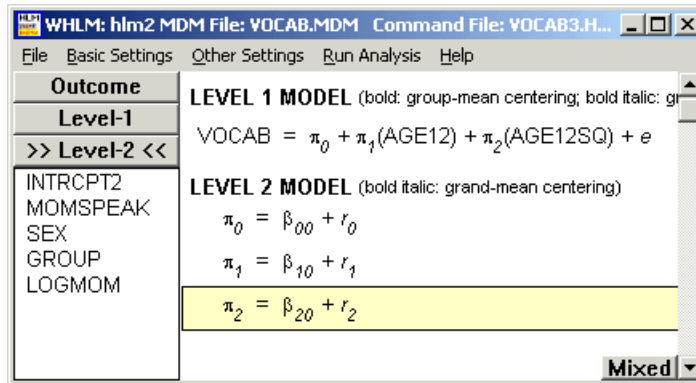


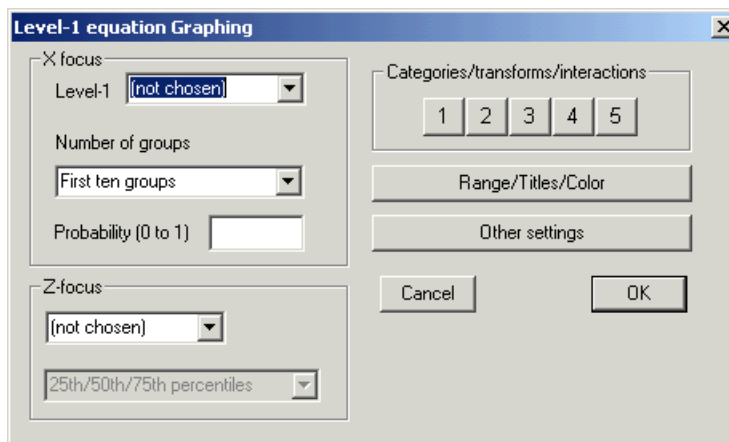
Model based graphs: Level-1 equation modeling

WHLM will also let us examine plots for individual level-2 units by just using the level-1 equation instead of the entire model. For this example, we will be using the vocabulary data, **vocab.mdm**, and have run the following model:



To perform level-1 equation graphing

After the model is run, select **Graph Equations...Level-1 equation graphing** from the **File** menu, which will give us the following dialog box.



There are three options for the number of groups: (a) **First ten groups**; (b) **Random sample of spec'd prob** (specified probability) and (c) **All groups** ($n =$ total number of groups) for users to choose from in the **Number of groups** drop-down list box. The selection of option (b) requires the user to specify the proportion or percent of the level-2 units to be included.

Select an X focus variable. In our example, we want the age of the child in months minus 12 to be the X focus. Choose AGE12 from the **X focus** drop-down list box.

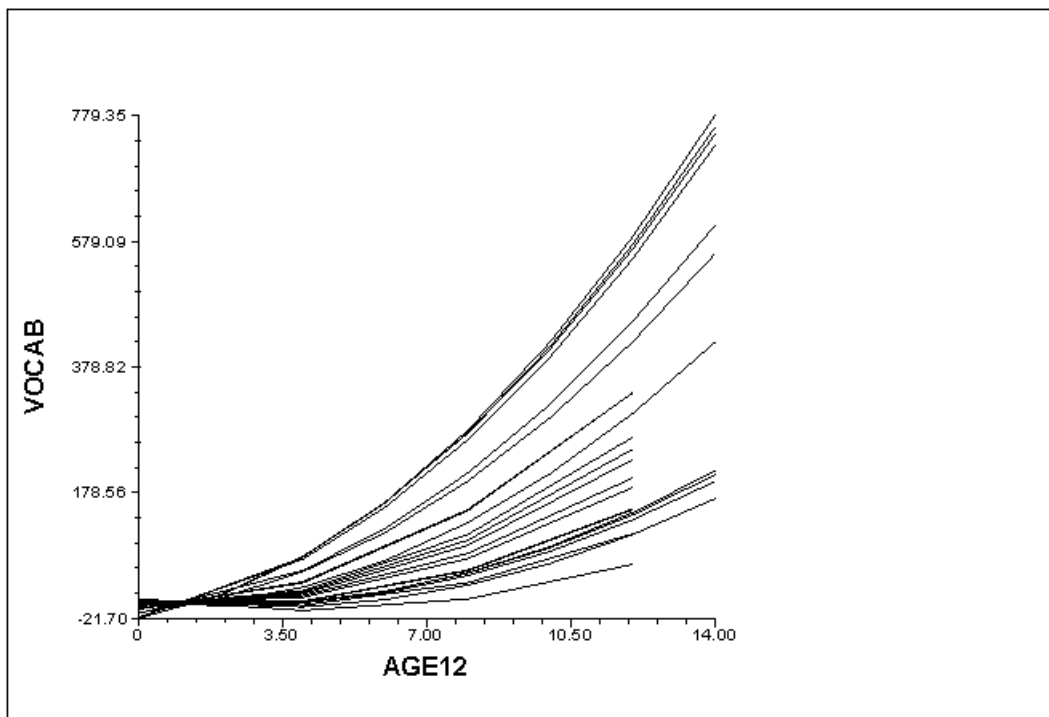
Select the number of groups. We will include all the children. Choose **All groups (n=22)** in the **Number of groups** drop-down list box.

Specify the relationship between the transformed and the original variable. The transformed variable is AGE12S and the original variable is AGE12. Click 1 in the **Categories/ transforms/interactions** section and select **power of x/z** for polynomial relationships. A **Equation Graphing - power** dialog box will open. Select AGE12S from the drop-down list box to the left of the equal sign. AGE12 will appear in the drop-down list box as it is the only level-1 variable left. Enter 2 in the text box for the power to be raised. Click **OK**.

The ranges for x- and y-axis (the default values are those computed from the data), legend and graph titles, and selection of screen color can be changed by clicking **Range/Legend/Color** to obtain the **Range/Legend/Color** dialog box.

Click the **Other settings** button and click the selection button for **Smooth** in **For continuous x** section to display a set of smooth curves. Click **OK**.

Click **OK** and we get the following figure that shows vocabulary size accelerates during the second year of life. Note that the individual trajectories, as expected, are “smoother” than in comparable data-based graphs.



To include a level-2 classification variable

Click **Graph Settings** on the menu bar to open the **Level-1 equation Graphing**

dialog box. Choose MALE from the **Z-focus** drop-down list box as the level-2 classification variable and click **OK**.

A colored version of the graph indicates that girls on average have a greater acceleration rate in vocabulary growth over the course of the study.

