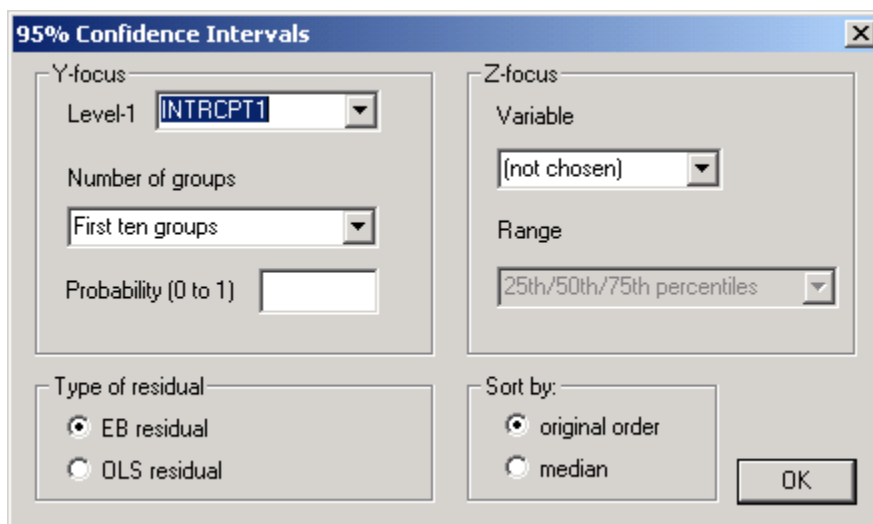# Level-1 EB/OLS coefficient confidence intervals

We can also look at graphs of the estimated empirical Bayes (EB) or OLS estimates of randomly varying level-1 coefficient (see *Hierarchical Linear Models*, p. 47 and p. 49 for their computational formulae). This enables us to compare level-2 units with respect to these two types of estimates.

To prepare level-2 EB estimates of randomly varying level-1 coefficient confidence intervals

1. After the model is run, select **Graph Equations...Level-2 EB/OLS coefficient confidence intervals** from the **File** menu, which will give us the following dialog box:

Figure 31   95% Confidence Intervals dialog box

2. Choose the randomly varying level-1 coefficient of interest. We will look at the coefficient for the quadratic term or acceleration rate of vocabulary growth in this example. Choose AGE12S from the **Y-focus** drop-down list box.
3. Select **All groups (n=22)** in the **Number of groups** to include all the 22 children in the display.

4. Click the **EB residual** button in the **Type of residual** section to select the empirical Bayes estimates.
5. Click **OK**. The following graph will appear.

The graph suggests that there is significant variation in the rate of acceleration in vocabulary growth in children during the second year of life. For instance, the confidence intervals of the EB estimates of the AGE12S coefficients for the last four children from the left did not overlap with those of the first eleven children.

6. Users can look at the actual empirical Bayes estimates and their 95% confidence intervals of individual level-2 units by clicking on the confidence interval plots.
7. (Optional) Users can choose to include a level-2 classification variable when examining the confidence interval plots.
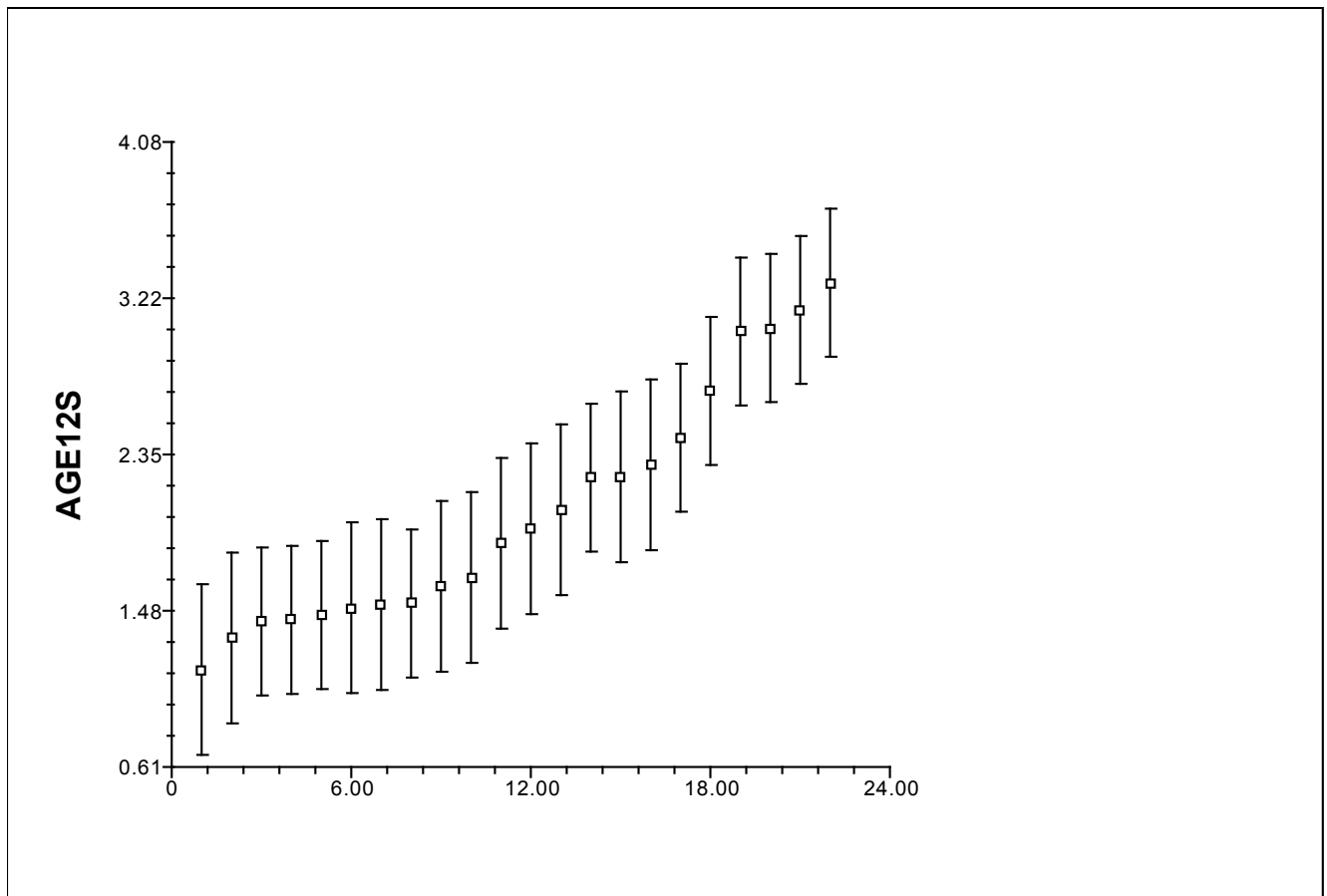

Figure 32   Confidence intervals of empirical Bayes estimates of the AGE12S coefficients