

Delete an intercept from a level-1 model

Models without a level-1 intercept

In some circumstances, users may wish to estimate models without a level-1 intercept. Consider, for example, a hypothetical study in which three alternative treatments are implemented within each of J hospitals. One might estimate the following level-1 (within-hospital) model:

$$Y_{ij} = \beta_{1j}X_{1ij} + \beta_{2j}X_{2ij} + \beta_{3j}X_{3ij} + r_{ij},$$

where X_{qij} ($q = 1,2,3$) are indicator variables taking on a value of 1 if patient i in hospital j has received treatment q , 0 otherwise; and β_{qj} is the mean outcome in hospital j of those receiving treatment q . At level-2, the treatment means β_{qj} are predicted by characteristics of the hospitals. Of course, the same data could alternatively be modeled by a level-1 intercept and two treatment contrasts per hospital, but users will sometimes find the no-intercept approach is more convenient.

To see how this type of model is implemented using the command file, let us suppose that the variable names TREAT1, TREAT2, and TREAT3 represent the dummy variables indicating whether a subject received treatment one, treatment two, or treatment three, respectively. The level-1 intercept is deleted from the model. The level-2 predictor, PUBLIC, indicates whether a hospital is public (as opposed to private). We shall model each treatment mean as depending on the public versus private status of the hospital. Also, we wish to estimate the residual variance in these means over hospitals.


An example of a no-intercept model appears on page 174 of *Hierarchical Linear Models*. The vocabulary growth of young children is of interest. Both common sense and the data indicated that children could be expected to have no vocabulary at 12 months of age. Hence, the level-1 model contained no intercept:

$$Y_{it} = \pi_{1it}(AGE_{it} - 12) + \pi_{2it}(AGE_{it} - 12)^2 + e_{it}$$

where AGE_{it} is the age of child i at time t in months and Y_{it} is the size of that child's vocabulary at that time.

To delete an intercept from a level-1 model

Click INTRCPT1 on the >>Level-1<< drop-down list. Click **delete variable from model**.


WHLM: hlm2 MDM File: VOCAB.MDM Command File

File Basic Settings Other Settings Run Analysis Help

Outcome	LEVEL 1 MODEL (bold: group-mean center
>> Level-1 <<	VOCAB = $\pi_0 + \pi_1(\text{AGE12}) + \pi_2(\text{AGE}$
Level-2	LEVEL 2 MODEL (bold: grand-mean c
INTRCPT1	
AGE	
VOCAB	
AGE12	
AGE12SQ	
PERS	

- Outcome variable
- add variable uncentered
- add variable group centered
- add variable grand centered
- Delete variable from model