Construct the MDM file for a HMLM model using SPSS input

The procedures for constructing the MDM file are similar to the one for HLM2 with one major difference: the user has to create and input indicator variables for the outcome(s) while constructing the MDM file. The range of options for data input are the same as for HLM2.

Below we illustrate the procedure of constructing the MDM file using data sets from the first cohort of the National Youth Survey (Elliot, Huizinga & Menard, 1989; Raudenbush, 1999) with the time-series observations on 1,721 students nested within 60 public primary schools. Here we take the SPSS file as input.

Level-1 file

The level-1 file, **nys1.sav**, has 1,079 observations collected from interviewing annually eleven-year-old youths beginning at 1976 for five consecutive years. Therefore, $T = 5$. The variables and the T indicator variables are:

ATTIT   a 9-item scale assessing attitudes favorable to deviant behavior.

Subjects were asked how wrong (very wrong, wrong, a little bit wrong, not wrong at all) they believe it is for someone their age to, for example, damage and destroy property, use marijuana, use alcohol, sell hard drugs, or steal.

The measure was positively skewed, so a logarithmic transformation was performed to reduce the skewness.

EXPO   Exposure to deviant peers.

Subjects were asked how many of their friends engaged in the nine deviant behaviors surveyed in the ATTIT scale.

AGE   age of the participant

AGE11   age of participant at a specific time minus 11

AGE13   age of participant at a specific time minus 13

AGE11s   AGE11* AGE11

AGE13s   AGE13* AGE13

IND1   indicator for measure at time 1

IND2   indicator for measure at time 2

IND3   indicator for measure at time 3

IND4   indicator for measure at time 4

IND5   indicator for measure at time 5

The five indicators were created to facilitate use of HMLM. Data for the first two children are shown below. Child 15 had data at all five years. Child 33, however, did not have data for the fourth year.

Indicators for the repeated measures

	id	attit	age	age11	age13	age11s	age13s	ind1	ind2	ind3	ind4	ind5
16	15	.44	11.00	.00	-2.00	.00	4.00	1.0	.00	.00	.00	.00
17	15	.44	12.00	1.00	-1.00	1.00	1.00	.00	1.0	.00	.00	.00
18	15	.89	13.00	2.00	.00	4.00	.00	.00	.00	1.0	.00	.00
19	15	.75	14.00	3.00	1.00	9.00	1.00	.00	.00	.00	1.0	.00
20	15	.80	15.00	4.00	2.00	16.00	4.00	.00	.00	.00	.00	1.0
21	33	.20	11.00	.00	-2.00	.00	4.00	1.0	.00	.00	.00	.00
22	33	.64	12.00	1.00	-1.00	1.00	1.00	.00	1.0	.00	.00	.00
23	33	.69	13.00	2.00	.00	4.00	.00	.00	.00	1.0	.00	.00
24	33	.11	15.00	4.00	2.00	16.00	4.00	.00	.00	.00	.00	1.0

Level-2 file

The level-2 data file, **nysb.sav**, consists of three variables on 241 youths. The file has the same structure as that for HLM2. The variables are:

FEMALE: an indicator for gender (1 = female, 0 = male)
MINORITY: an indicator for ethnicity (1 = minority, 0 = other)
INCOME: income

The construction of the MDM involves three major steps:

Select type of input data.
Supply the program with the appropriate data-defining information.

Check whether the data have been properly read into the program.

Select **HMLM** as the MDM type at the **Select MDM type** dialog box.
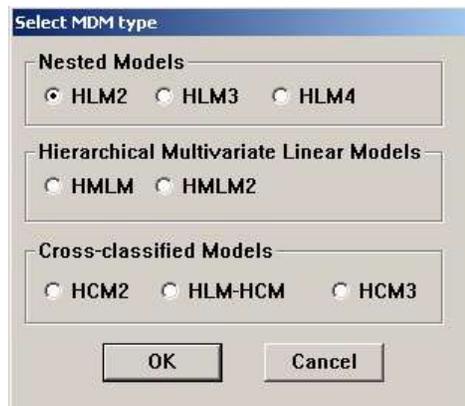
While the structure of HMLM input files is almost the same as in HLM2, there is one important difference: the indicator variables. In order to create these, one first needs to know the maximum number of level-1 records per level-2 group; this determines the number of indicators. We shall call them the number of "occasions." (This is the number of time points in a repeated measures study or the number of outcome variables in a cross-sectional multivariate study. Also note that each group does not need to have this number of occasions.) Then create the indicator variables so that a given variable takes on the value of 1.0 if the given case is at this time point, 0.0 otherwise. Looking at the first figure shown, we see that IND1 is 1 if AGE11 is 0, IND2 is 1 if AGE11 is 1, IND3 is 1 if AGE11 is 2, and so on.

The figure below shows the **Choose variables – HMLM** dialog box where the indicator variables are checked before the MDM file is created. This dialog box can be opened from the **Level-1 specification** section in the **Make MDM – HMLM** dialog box.

Click here to tell HMLM that IND1 is an indicator

Note the five indicators for the measures

Choose variables - HMLM

Variable	ID	in SSM	indicator
ID	☑ ID	☐ in SSM	☐ indicator
ATTIT	☐ ID	☑ in SSM	☐ indicator
AGE	☐ ID	☑ in SSM	☐ indicator
AGE11	☐ ID	☑ in SSM	☐ indicator
AGE13	☐ ID	☑ in SSM	☐ indicator
AGE11S	☐ ID	☑ in SSM	☐ indicator
AGE13S	☐ ID	☑ in SSM	☐ indicator
IND1	☐ ID	☑ in SSM	☑ indicator
IND2	☐ ID	☑ in SSM	☑ indicator
IND3	☐ ID	☑ in SSM	☑ indicator
IND4	☐ ID	☑ in SSM	☑ indicator
IND5	☐ ID	☑ in SSM	☑ indicator

Page 1 of 1

OK   Cancel