Only X out of Y units used in analysis

This message may appear at various places in the output file, and only applies to the specific section of the output where it appears. It is important to realize no cases are really "dropped".

Certain statistics printed by HLM require the least squares estimator to exist for a unit to be included. These include the univariate chi-square tests, reliabilities and least-squares estimates. For these statistics and these only, some cases are omitted. However, the main results (fixed effects, that is- the gammas), variance and covariance components (the tau's) and empirical Bayes estimates, as well as tests for all coefficients and all standard errors- are based on all the data.

In the example below, an example is given for a level-2 unit with 5 level-1 units nested within the level-2 unit. The first column represents the intercept term, which is by default included in any HLM model. The second column represents the scores of the 5 respondents from this level-2 unit. As the scores of all 5 respondents are very similar, the second column is almost a multiple of the first.

```
Intercept Score
1 20
1 20
1 20
1 20
1 21
```

Groups that passed the various checks on X'X (X = level-1 data), invertibility, positive determinant, condition number < 1E6, will have the OLS coefficients printed out. Groups that fail either of the first two checks will not appear and will be counted as insufficient data. Groups that fail the condition check will be counted, and produce the message noted above. The level-1 coefficients for all "acceptable" units can be requested from the **Output Settings** dialog box (accessible from the **Other Settings** menu) by setting that field to the number of level-2 groups (or some large number). The results for "acceptable" groups will be printed. Note that this option is only available for HLM2.

This can also be caused by a lack of sufficient data for certain groups. For example, let's say we have a model with 3 random effects. Groups with less than 3 level-1 records per level-2 unit (using HLM2 as an example) will cause this error, and probably at least some of the groups with three records will as well.

To address this problem, check the variability of level-1 predictor values within each level-2 unit. Level-2 units that have time-varying covariates but that are actually constant are the most likely cause for the display of the above warning.