

# Practical Statistical Methods: Multilevel Analysis

Tom A.B. Snijders  
Department of Statistics  
University of Oxford

Week 6, HT 2012

## Non-assessed Part

The practical uses a data set that can be downloaded as <http://www.stats.ox.ac.uk/~snijders/mlbook2m.zip> . It has to be unzipped before you can use it.

This is a data set of the same schools and pupils as the main data set at <http://www.stats.ox.ac.uk/~snijders/mlbook.htm> , but it has a few more variables. Use the R scripts at this website to help you do the multilevel analysis.

Use as a dependent variable `langPRET`, which is a similar language test as the one studied in Snijders & Bosker, but measured at an earlier moment.

Analyse how this variable depends, in this two-level structure, on verbal IQ (`IQ_verb`), social-economic status (`ses`), sex (`sex`) and minority status (`Minority`). The corresponding classroom means are already in the data set (`sch_iqv`, `sch_ses`, `sch_min`).

Pay attention to the following issues.

- Description of the main features of the data.
- Selection of an appropriate model.
- Difference between within-group and between-group regression coefficients.

- Random slopes.
- Interactions.
- Tests of the parameters in the model.
- Checks of model assumptions.
- Reporting the results in an understandable way.

Since this is the non-assessed part, your report will probably be limited. It is mentioned here, however, because this always is an important part of a statistical analysis.