



Over- or under-dispersion

In some situations, the actual level-1 variance may be larger than that assumed (over-dispersion) or smaller than that assumed (under-dispersion). For example, if undetected clustering exists within level-1 units or if the level-1 model is under-specified, extra-binomial or extra-Poisson dispersion may arise. HGLM allows estimation of a scalar variance so that the level-1 variance will be $\sigma^2 w_{ij}$.

For binomial models with $m_{ij} > 1$ and for all Poisson models, there is an option to estimate a level-1 dispersion parameter σ^2 . If the assumption of no dispersion holds, $\sigma^2 = 1$. If the data are over-dispersed, $\sigma^2 > 1$; if the data are under-dispersed, $\sigma^2 < 1$.

If the data follow the assumed level-1 sampling model, the level-1 variance of the Y_{ij} will be w_{ij} where $w_{ij} = m_{ij} \phi_{ij} (1 - \phi_{ij})$ in the binomial case, and $w_{ij} = m_{ij} \lambda_{ij}$ for the Poisson.

To check for over-dispersion, check the radio button next to the **Over dispersion** option on the **Basic Model Specifications** dialog box, which is accessed by clicking the **Basic Settings** option from the main WHLM window. The **Over dispersion** option is not available for multinomial or ordinal models.

Basic Model Specifications - HLM2

Distribution of Outcome Variable

Normal (Continuous)

Bernoulli (0 or 1)

Poisson (constant exposure)

Binomial (number of trials)

Poisson (variable exposure)

Multinomial

Ordinal

Over dispersion

Title

Output file name
(See File->Preferences to set default output type)

Make graph file

Graph file name