Linear transformation

Linear transformations do not affect the fit of the model, as they get cancelled out when building the prediction matrix. On the other hand, they influence the multilevel model, as it will be shown later. However, they make the model easier to understand.

Scaling

Categorical scaling can be achieved by placing the values between $\{-1, 1\}$ with 0 being the moderate or central value. This has got an application for options varying between disagree and strongly agree. It is very important to note that scaling will not have any effect on $R^{"}$ values. It has been shown that centring the data with any of the following methods :

1. mean subtraction - i.e. $x = x - \mu_x$

2. conventional centring point - i.e. $x = x - a$ where a is a fixed value

3. standardization, mean subtraction and division by standard deviation - i.e. $x = \frac{x - \mu_x}{\sigma_x}$

   Note

When all predictors and outcome variables are standardized then the slope of the regression line will always have value less than 1. Therefore, if x is roughly σ_x above μ_x, then its predicted value should correspond to $y \in \{\mu_y, \mu_y + \sigma_y\}$. This is referred to as regression to the mean