

# Modelspecification

**Analyze: Class Scannertyp-Main with 6 Covariates**

$$\begin{bmatrix} y_{11} \\ y_{12} \\ y_{13} \\ y_{14} \\ y_{15} \\ y_{16} \end{bmatrix} = \begin{bmatrix} 0 & 1 & z_{11} & z_{21} & z_{31} & z_{41} & z_{51} & z_{61} \\ 0 & 1 & z_{12} & z_{22} & z_{32} & z_{42} & z_{52} & z_{62} \\ 1 & 0 & z_{13} & z_{23} & z_{33} & z_{43} & z_{53} & z_{63} \\ 1 & 0 & z_{14} & z_{24} & z_{34} & z_{44} & z_{54} & z_{64} \\ 1 & 0 & z_{15} & z_{25} & z_{35} & z_{45} & z_{55} & z_{65} \\ 0 & 1 & z_{16} & z_{26} & z_{36} & z_{46} & z_{56} & z_{66} \end{bmatrix} \cdot \begin{bmatrix} b_1 \\ b_2 \\ b_3 \\ b_4 \\ b_5 \\ b_6 \\ b_7 \\ b_8 \end{bmatrix} \quad (1)$$

Contrast: Main-Effect in consideration of variable *scanner*

$$C = [1 \quad 1 \quad 0 \quad 0 \quad 0 \quad 0 \quad 0 \quad 0] \quad (2)$$

**Analyze: Class Scannertyp-Main with 2 Covariates**

$$\begin{bmatrix} y_{11} \\ y_{12} \\ y_{13} \\ y_{14} \\ y_{15} \\ y_{16} \end{bmatrix} = \begin{bmatrix} 0 & 1 & z_{11} & z_{21} \\ 0 & 1 & z_{12} & z_{22} \\ 1 & 0 & z_{13} & z_{23} \\ 1 & 0 & z_{14} & z_{24} \\ 1 & 0 & z_{15} & z_{25} \\ 0 & 1 & z_{16} & z_{26} \end{bmatrix} \cdot \begin{bmatrix} b_1 \\ b_2 \\ b_3 \\ b_4 \end{bmatrix} \quad (3)$$

Contrast: Main-Effect in consideration of variable *scanner*

$$C = [1 \quad 1 \quad 0 \quad 0] \quad (4)$$

**Analyze: Class Scannertyp-Main**

$$\begin{bmatrix} y_{11} \\ y_{12} \\ y_{13} \\ y_{14} \\ y_{15} \\ y_{16} \end{bmatrix} = \begin{bmatrix} 0 & 1 \\ 0 & 1 \\ 1 & 0 \\ 1 & 0 \\ 1 & 0 \\ 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} b_1 \\ b_2 \end{bmatrix} \quad (5)$$

Contrast: Main-Effect in consideration of variable *scanner*

$$C = [1 \quad 1] \quad (6)$$

**Analyze: Class Main**

$$\begin{bmatrix} y_{11} \\ y_{12} \\ y_{13} \\ y_{14} \\ y_{15} \\ y_{16} \end{bmatrix} = \begin{bmatrix} 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \end{bmatrix} \cdot [b_1] \quad (7)$$

Contrast: Main-Effect without consideration of variable *scanner*

$$C = [1] \quad (8)$$