

$$\begin{array}{c}
y_{ij} \sim \text{Multinomial}(\boldsymbol{\omega}_{ij}) \\
\downarrow \\
\boldsymbol{\omega}_{ij} = \underbrace{(\omega_{ij0}, \omega_{ij1}, \cdots, \omega_{ijc}, \cdots, \omega_{ij(C-1)})}_{\downarrow} \\
\omega_{ijc} = \sum_{b=0}^{C-1} \gamma_{cb} \pi_b \quad \downarrow \quad \pi_b = \Phi \left[(\tau_b - \nu_{ij}^*) \sigma_j^{-1} \right] - \Phi \left[(\tau_{(b+1)} - \nu_{ij}^*) \sigma_j^{-1} \right] \\
\downarrow \quad \boldsymbol{\lambda}_c \sim \text{Dirchlet}(\alpha_{c0}, \alpha_{c1}, \cdots, \alpha_{c(C-1)}) \quad \uparrow \quad \tau_b \sim \text{N}(0, 10^2) \quad \tau_{(b+1)} \sim \text{N}(0, 10^2) I(\tau_{(b+1)} > \tau_b) \\
\downarrow \quad \nu_{ij}^* \sim \text{N}(\lambda_j \eta_i, \sigma_j^2) \\
\downarrow \quad \begin{array}{l} \downarrow \quad \lambda_j \sim \text{N}^+(0, 5^2) \\ \downarrow \quad \eta_i \sim \text{N}(0, 1) \end{array} \quad \begin{array}{l} \downarrow \quad \sigma_j^2 = 1 \end{array}
\end{array}$$