

Observation model

$$y_i^{p,m} \sim \text{Gamma}(\mu_i^{p,m} \cdot \beta_i^{p,m}, \beta_i^{p,m})$$

$$\mu_i^{p,m} \leftarrow \mathcal{F}(x_i^{p,m} \mid a^{p,m}, \Omega^{p,m})$$

$$\beta_i^{p,m} \leftarrow c_1^{p,m} + \frac{\mu_i^{p,m}}{c_2^{p,m}}$$

Participant specific parameters

$$a^{p,m} \sim \text{TruncatedNormal}(\mu_a^m, \sigma_a^m)$$

$$\theta^{p,m} \sim \text{HalfNormal}(\sigma_\theta^m) \text{ for all } \theta^{p,m} \in \Omega^{p,m}$$

Priors

$$\mu_a^m \sim \text{TruncatedNormal}(50, 20)$$

$$\sigma_a^m \sim \text{HalfNormal}(30)$$

$$\sigma_L^m \sim \text{HalfNormal}(0.05)$$

$$\sigma_\theta^m \sim \text{HalfNormal}(5) \text{ for all } \sigma_\theta^m, \sigma_b^{p,m}, \sigma_v^{p,m} \in \Omega^m$$

$$\Omega^{p,m} \leftarrow \{b^{p,m}, v^{p,m}, L^{p,m}, \ell^{p,m}, H^{p,m}, c_1^{p,m}, c_2^{p,m}\}$$

$$\Omega^m \leftarrow \{\sigma_b^m, \sigma_v^m, \sigma_\ell^m, \sigma_H^m, \sigma_{c_1}^m, \sigma_{c_2}^m\}$$

