group level

$$\mu^c \sim \text{Normal}(0, 10000)$$
$$\sigma^c \sim \text{Uniform}(0, 10000)$$
$$\mu^m \sim \text{Normal}(-2.43, 0.27)$$
$$\sigma^m \sim \text{Normal}_{(0,+\infty)}(0.072, 0.25)$$
$$\omega \sim \text{Beta}(1.1, 10.9)$$
$$\kappa \sim \text{Gamma}(0.01, 0.01)$$
$$\mu^\alpha \sim \text{Uniform}(0, 1000)$$
$$\sigma^\alpha \sim \text{Uniform}(0, 1000)$$

participant level

$$c_p \sim \text{Normal}(\mu^c, \sigma^c)$$
$$m_p \sim \text{Normal}(\mu^m, \sigma^m)$$
$$\epsilon_p \sim \text{Beta}_{(0,0.5)}(\omega(\kappa - 2) + 1, (1 - \omega)(\kappa - 2) + 1)$$
$$\alpha_p \sim \text{Normal}_{(0,+\infty)}(\mu^\alpha, \sigma^\alpha)$$

trial level

$$\log(k^A_{pt}) = m_p . \log(A_{pt}) + c_p$$
$$\log(k^B_{pt}) = m_p . \log(B_{pt}) + c_p$$
$$V^A_{pt} = \frac{A_{pt}}{1 + k^A_{pt} D^A_{pt}}$$
$$V^B_{pt} = \frac{B_{pt}}{1 + k^B_{pt} D^B_{pt}}$$
$$P_{pt} = \epsilon_p + (1 - 2.\epsilon_p).\Phi\left(\frac{V^B_{pt} - V^A_{pt}}{\alpha_p}\right)$$
$$R_{pt} \sim \text{Binomial}(P_{pt}, 1)$$