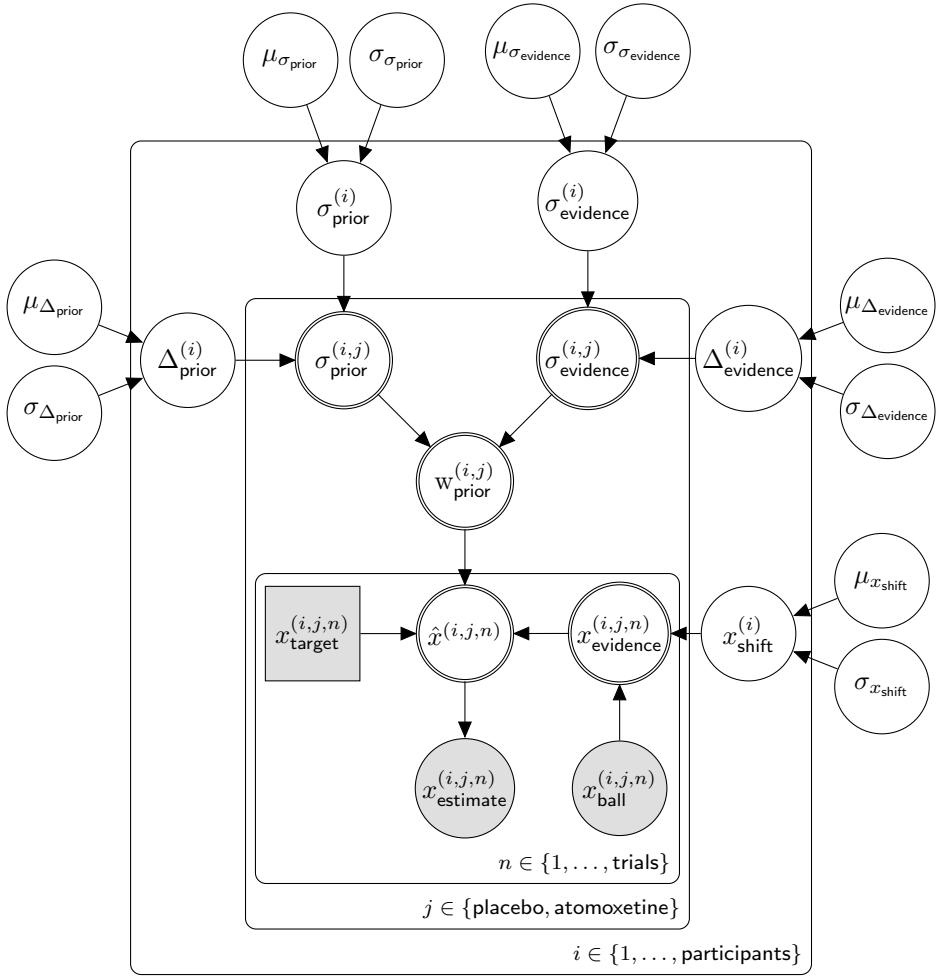


group-level prior SD:

$\mu_{\sigma_{\text{prior}}} \sim \mathcal{N}(100, 10)$ $\quad \mu_{\sigma_{\text{prior}}} > 0$

$\sigma_{\sigma_{\text{prior}}} \sim \text{Cauchy}(0, 5)$ $\quad \sigma_{\sigma_{\text{prior}}} > 0$

group-level drug effect on prior SD:

$\mu_{\Delta_{\text{prior}}} \sim \mathcal{N}(0, 10)$

$\sigma_{\Delta_{\text{prior}}} \sim \text{Cauchy}(0, 5)$ $\quad \sigma_{\Delta_{\text{prior}}} > 0$

group-level sensory evidence SD:

$\mu_{\sigma_{\text{evidence}}} \sim \mathcal{N}(100, 10)$ $\quad \mu_{\sigma_{\text{evidence}}} > 0$

$\sigma_{\sigma_{\text{evidence}}} \sim \text{Cauchy}(0, 5)$ $\quad \sigma_{\sigma_{\text{evidence}}} > 0$

group-level drug effect on sensory evidence SD:

$\mu_{\Delta_{\text{evidence}}} \sim \mathcal{N}(0, 10)$

$\sigma_{\Delta_{\text{evidence}}} \sim \text{Cauchy}(0, 5)$ $\quad \sigma_{\Delta_{\text{evidence}}} > 0$

group-level sensory evidence shift:

$\mu_{x_{\text{shift}}} \sim \mathcal{N}(0, 10)$

$\sigma_{x_{\text{shift}}} \sim \text{Cauchy}(0, 5)$ $\quad \sigma_{x_{\text{shift}}} > 0$

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participant-level prior SD:

$\sigma^{(i)}_{\text{prior}} \sim \mathcal{N}\left(\mu_{\sigma_{\text{prior}}}, \sigma_{\sigma_{\text{prior}}}\right)$ $\quad \sigma^{(i)}_{\text{prior}} > 0$

participant-level drug effect on prior SD:

$\Delta^{(i)}_{\text{prior}} \sim \mathcal{N}\left(\mu_{\Delta_{\text{prior}}}, \sigma_{\Delta_{\text{prior}}}\right)$

participant-level sensory evidence SD:

$\sigma^{(i)}_{\text{evidence}} \sim \mathcal{N}\left(\mu_{\sigma_{\text{evidence}}}, \sigma_{\sigma_{\text{evidence}}}\right)$ $\quad \sigma^{(i)}_{\text{evidence}} > 0$

participant-level drug effect on sensory evidence SD:

$\Delta^{(i)}_{\text{evidence}} \sim \mathcal{N}\left(\mu_{\Delta_{\text{evidence}}}, \sigma_{\Delta_{\text{evidence}}}\right)$

participant-level sensory evidence shift:

$x^{(i)}_{\text{shift}} \sim \mathcal{N}\left(\mu_{x_{\text{shift}}}, \sigma_{x_{\text{shift}}}\right)$

---

session-level prior SD:

$$\sigma^{(i,j)}_{\text{prior}} \leftarrow \begin{cases} \sigma^{(i)}_{\text{prior}}, & \text{if } j = \text{placebo} \\ \sigma^{(i)}_{\text{prior}} + \Delta^{(i)}_{\text{prior}}, & \text{if } j = \text{atomoxetine} \end{cases}$$

session-level sensory evidence SD:

$$\sigma^{(i,j)}_{\text{evidence}} \leftarrow \begin{cases} \sigma^{(i)}_{\text{evidence}}, & \text{if } j = \text{placebo} \\ \sigma^{(i)}_{\text{evidence}} + \Delta^{(i)}_{\text{evidence}}, & \text{if } j = \text{atomoxetine} \end{cases}$$

session-level prior weighting:

$$\text{w}^{(i,j)}_{\text{prior}} \leftarrow \frac{\left[\sigma^{(i,j)}_{\text{evidence}}\right]^2}{\left[\sigma^{(i,j)}_{\text{evidence}}\right]^2 + \left[\sigma^{(i,j)}_{\text{prior}}\right]^2}$$

session-level posterior SD:

$$\sigma^{(i,j)}_{\hat{x}} \leftarrow \sqrt{\frac{\left[\sigma^{(i,j)}_{\text{evidence}}\right]^2 \cdot \left[\sigma^{(i,j)}_{\text{prior}}\right]^2}{\left[\sigma^{(i,j)}_{\text{evidence}}\right]^2 + \left[\sigma^{(i,j)}_{\text{prior}}\right]^2}}$$

---

trial-level sensory evidence mean:

$$x^{(i,j,n)}_{\text{evidence}} \leftarrow x^{(i,j,n)}_{\text{ball}} + x^{(i)}_{\text{shift}}$$

trial-level posterior mean:

$$\hat{x}^{(i,j,n)} \leftarrow \text{w}^{(i,j)}_{\text{prior}} \cdot x^{(i,j,n)}_{\text{target}} + \left[1 - \text{w}^{(i,j)}_{\text{prior}}\right] \cdot x^{(i,j,n)}_{\text{evidence}}$$

trial-level estimate of performance:

$$x^{(i,j,n)}_{\text{estimate}} \sim \mathcal{N}\left(\hat{x}^{(i,j,n)}, \sigma^{(i,j)}_{\hat{x}}\right)$$