$$E_{\text{Sid,t}} = \delta + \gamma_{\text{Sid}}$$
$$+ \beta_{\text{AE}}A_{\text{Sid}} + \beta_{\text{TE}[G_{\text{Sid}},T_{\text{Sid}}]}t$$
$$\delta \sim \text{Normal}(0, 1.5)$$
$$\beta_{\text{AE}}, \beta_{\text{TE}} \sim \text{Normal}(0, 1)$$
$$\gamma_{\text{Sid}} \sim \text{Normal}(0, \tau)$$
$$\tau \sim \text{Normal}^+(0, 1)$$

$$D^*_{\text{Sid,t}} \sim \text{Binomial}(14, P_{\text{Sid,t}})$$
$$\text{logit}(P_{\text{Sid,t}}) = -D_{\text{Sid,t}}$$
$$D_{\text{Sid,t}} = \alpha + \beta_{\text{TD}[\text{T}_{\text{Sid}}]}\text{t} + \beta_{\text{AD}}\text{A}_{\text{Sid}} + \beta_{\text{ED}}E_{\text{Sid,t}}$$
$$\alpha \sim \text{Normal}(0, 1.5)$$
$$\beta_{\text{AD}}, \beta_{\text{ED}} \sim \text{Normal}(0, 1)$$
$$\beta_{\text{TD}} \sim \text{Normal}(\mu_{\beta_{\text{TD}}}, \sigma_{\beta_{\text{TD}}})$$
$$\mu_{\beta_{\text{TD}}} \sim \text{Normal}(0, 1)$$
$$\sigma_{\beta_{\text{TD}}} \sim \text{Normal}^+(0, 1)$$

$$R_{\text{Sid,Iid,t}} \sim \text{OrderedLogit}(\phi_{\text{Sid,Iid,t}}, \kappa)$$

$$\phi_{\text{Sid,Iid,t}} = E_{\text{Sid,t}} + I_{\text{Iid}}$$

$$\kappa \sim \text{Normal}(0, 1)$$

$$I_1 = -\sum_{i=2}^{N_I} I_i \quad \text{(sum-to-zero)}$$

$$I_2, I_3, ..., I_{N_I} \sim \text{Normal}(0, \sigma_I)$$

$$\sigma_I \sim \text{Exponential}(1)$$