NON-CENTERED POOLED EFFECT

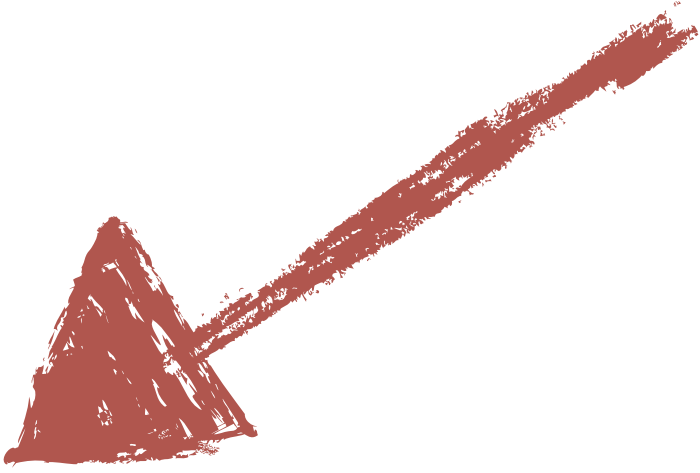
$$logit(p_i) = \alpha_0 + \tilde{\alpha}_{actor[i]} * \sigma_\alpha$$

$$\tilde{\alpha}_j \sim Normal(0,\ 1), \text{for } j = 1..7$$

$$\alpha_0 \sim Normal(0,\ 1.5)$$

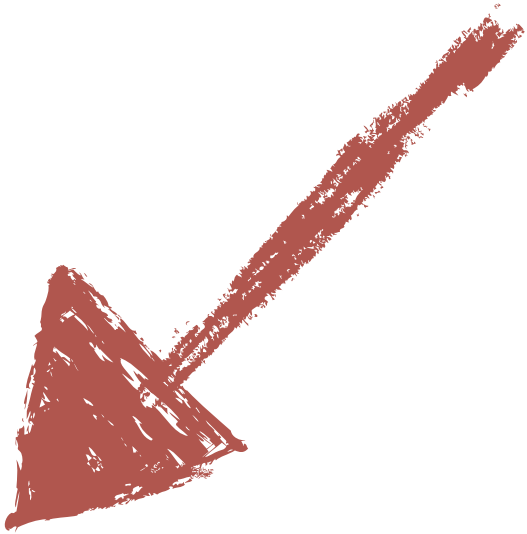
$$\sigma_\alpha \sim Exponential(1)$$

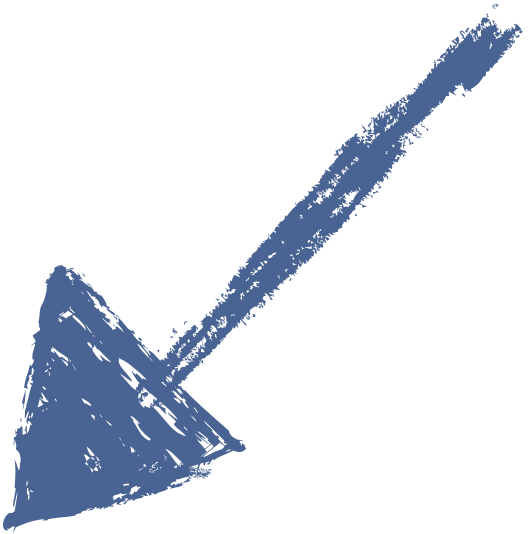
Non-Centered coefficient

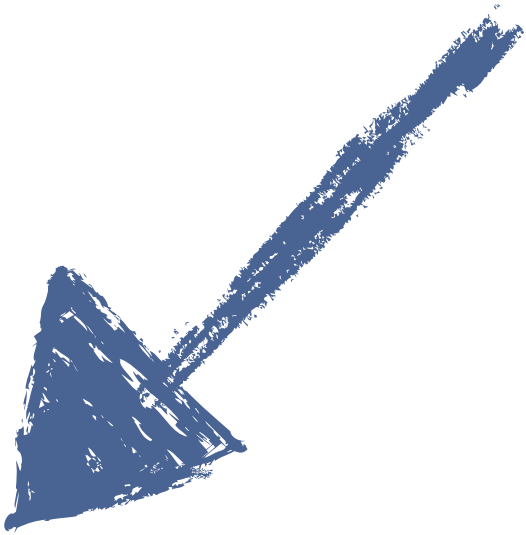


$$
\begin{aligned}
logit(p_i) &= \alpha_{actor[i]} \\
\alpha_j &\sim Normal(\alpha_0,\ \sigma_\alpha), \text{for } j = 1..7 \\
\alpha_0 &\sim Normal(0,\ 1.5) \\
\sigma_\alpha &\sim Exponential(1)
\end{aligned}
$$

Centered coefficient







$$x_j \sim N(\mu, \sigma)$$

$$\tilde{x}_j \sim N(0, 1)$$

$$x_j = \mu + \tilde{x}_j \sigma$$

NON-CENTERED POOLED EFFECT

Centered coefficient

$$logit(p_i) = \alpha_{actor[i]}$$

$$\alpha_j \sim Normal(\alpha_0,\ \sigma_\alpha), \text{for } j = 1..7$$

$$\alpha_0 \sim Normal(0,\ 1.5)$$

$$\sigma_\alpha \sim Exponential(1)$$

$$x_j \sim N(\mu,\ \sigma)$$

Non-Centered coefficient

$$logit(p_i) = \alpha_0 + \tilde{\alpha}_{actor[i]} * \sigma_\alpha$$

$$\tilde{\alpha}_j \sim Normal(0,\ 1), \text{for } j = 1..7$$

$$\alpha_0 \sim Normal(0,\ 1.5)$$

$$\sigma_\alpha \sim Exponential(1)$$

$$\tilde{x}_j \sim N(0,\ 1)$$

$$x_j = \mu + \tilde{x}_j\ \sigma$$

NON-CENTERED CHIMP MODEL

```
m1nc <- ulam(
  alist(
    pulled_left ~ binomial( 1 , p ) ,
    logit(p) <- a_0 + z[actor]*sigma_a +
                x[block_id]*sigma_g +
                b[treatment] ,
    b[treatment] ~ normal( 0 , 0.5 ),
    z[actor] ~ normal( 0 , 1 ),
    x[block_id] ~ normal( 0 , 1 ),
    a_0 ~ normal( 0 , 1.5 ),
    sigma_a ~ exponential(1),
    sigma_g ~ exponential(1),
    gq> vector[actor]:a <<- a_0 + z*sigma_a, # actor intercepts
    gq> vector[block_id]:g <<- x*sigma_g     # block intercepts
  ) , data=dat_list , chains=4 , cores=4 )
```