

Start with complete model:
all fixed effects + all random effects

Random effects selection

Optimize random effects one by one
starting with the effect with the highest impact
(standard deviation)

Vary **one random effect r** within the complete model:
1. Model w/o r
2. w/ r as random intercept
3. w/ r as random slope, testing possible interaction with each fixed effect

Select best model:
lowest AIC, the model has to be significantly better with the effect or an interaction than without

Continue with best model

Test next random effect

All random effects tested

(a)

Intermediate model:
all fixed effects + **optimized random effects**

Fixed effects selection

Select significant fixed effects one by one
starting with the effect with the lowest impact (estimate)

Test for **one fixed effect f** :
1. Model w/o f
2. Model w/ f

Select best model:
lowest AIC, the model has to be significantly better with the effect than without

Continue with best model

Test next fixed effect

All fixed effects tested

(b)

Final model:
selected fixed + optimized random effects