Hierarchical Multinomial Bayesian Regression

Analysis of 1451 behavioral choices from 6 rhesus macaques

A

Experimental Design

B

Outcome Frequencies

Count

200
100

solo duo trio

Social Context

Outcome ■ Exploit ■ Explore ■ None

Fixed-Effect Coefficients

Odds Ratio

0.51.0050   2750000

Explore   **None**

Predictor

Dominance Rank
Subjective Explore
Social Context
ChosenValue

-3 -2 -1 0   -15 -10 -5 0

Coefficient (log-odds)

Outcome ■ Explore ■ None

Random-Effect Spread

Explore   **None**

Individual

-1 0 1   -12 -8 -4 0

Random Effect

Sex ■ Female ■ Male

Posterior-Predictive Check

Frequency

50%
40%
20%
10%
0%

solo   duo   trio

Social Context

Observed ■ Exploit ■ Explore ■ None **Predicted** ● Exploit ● Explore ● No

Model Comparison

2000
1000

13.1 0.0   0.0 29.1

Fixed   Hierarchical   Null

Model

Metric ■ ΔAIC ■ ΔBIC