ROCK, PAPER, *SCISSORS*

A Multinomial Processing Tree application

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OVERVIEW

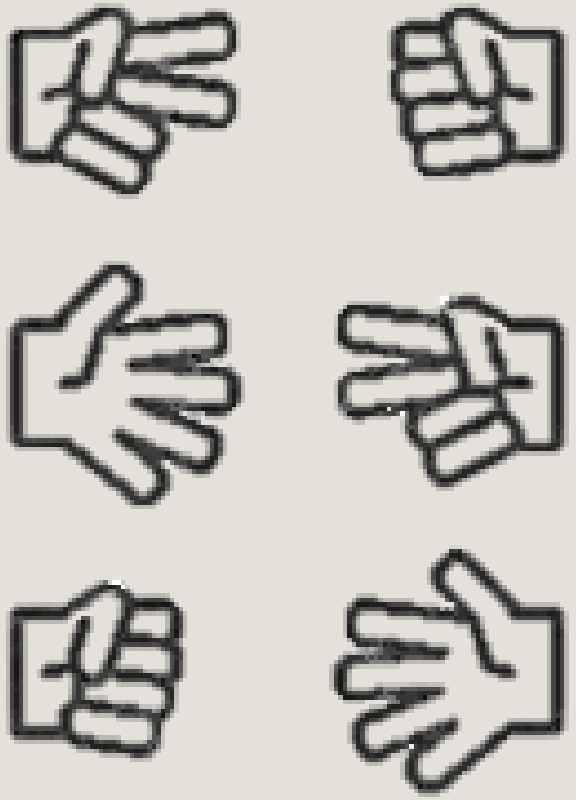
I. Introduction
II. MPT Adaptation
III. The Model
IV. Equations
V. Identifiability
VI. Results
VII. Comparisons
VIII. Questions

INTRO

What is the paradigm?

INTRO

- Paradigm
  - Simple rock, paper, scissors game
- Data
  - 2 players
  - 250 trials



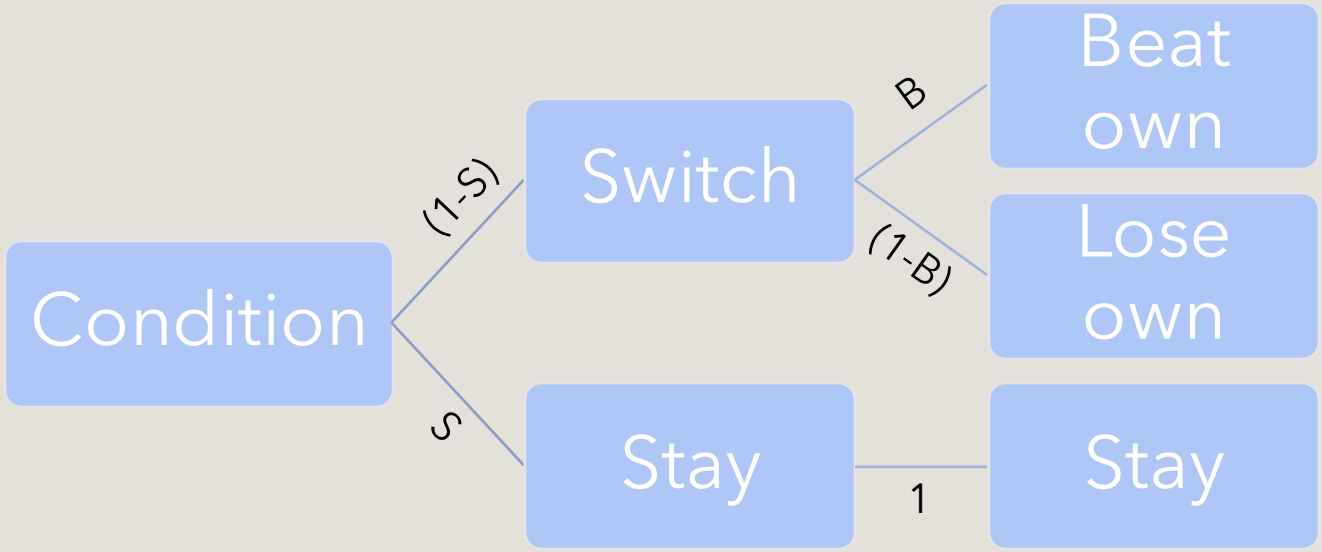
MDT ADAPTATION

Conditions, Categories, Relevant Parameters

MDT ADAPTATION

MPT ADAPTATION

- Conditions
  - Win
  - Lose
  - Draw
- Parameters
  - S
    - Stay = S
    - Switch = (1-S)
  - B
    - Bias = B
    - Complement = (1-B)



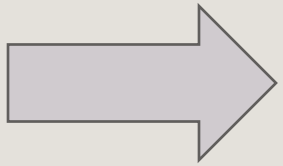
THE MODEL

What does the MPT look like?

THE MODEL

DATASET TRANSFORMATION

Round	Chiara	Mona
1	2	3
2	3	1
3	2	3
4	3	2
5	1	2
6	3	1
7	2	2
8	3	3
9	2	3



	cond	cat	freq
1	0	1	40
2	0	2	15
3	0	3	22
4	1	1	35
5	1	2	29
6	1	3	15
7	99	1	39
8	99	2	42
9	99	3	12

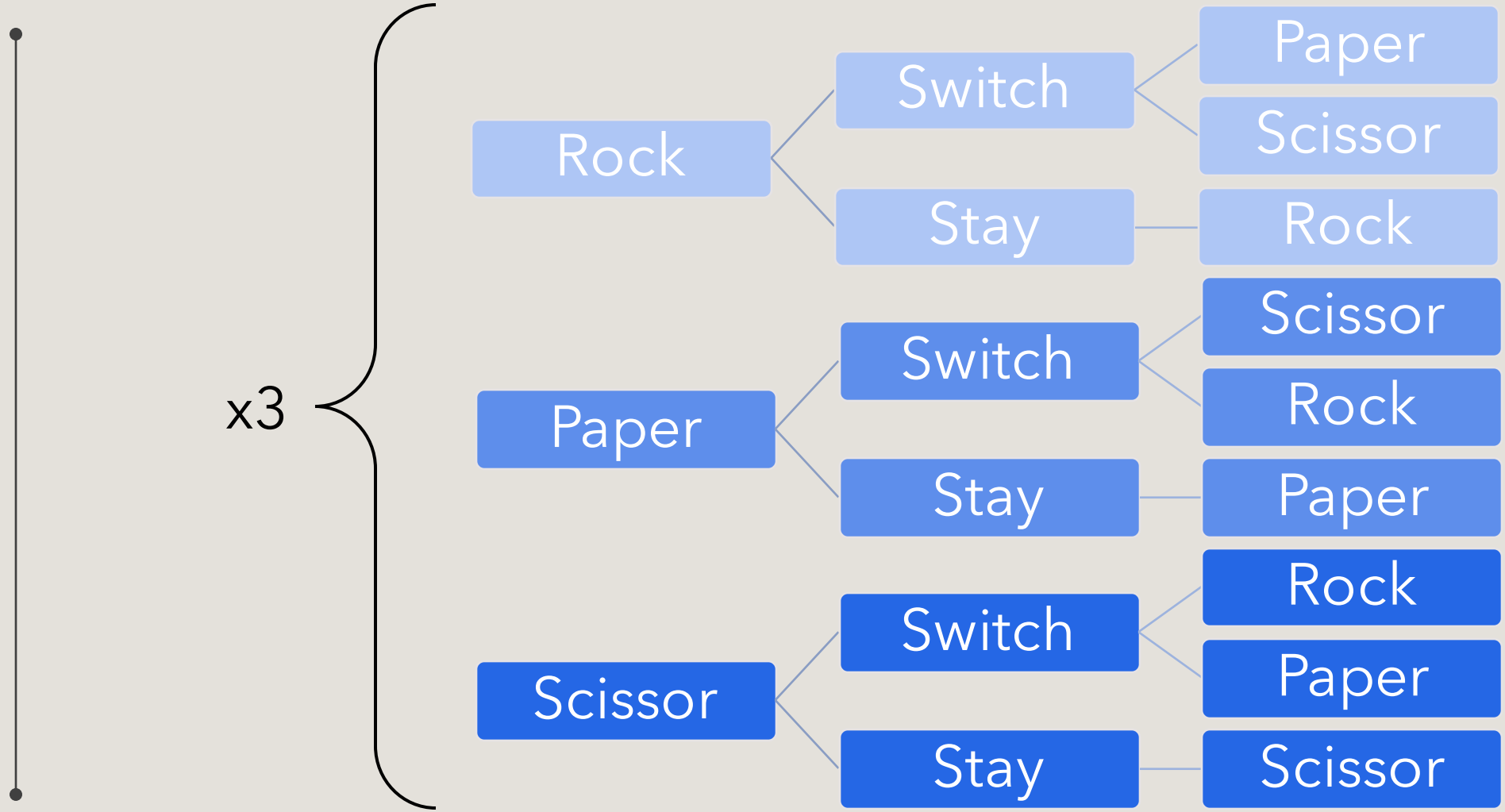
	cond	cat	freq
1	0	1	34
2	0	2	32
3	0	3	13
4	1	1	26
5	1	2	35
6	1	3	16
7	99	1	32
8	99	2	35
9	99	3	26

MODEL H1

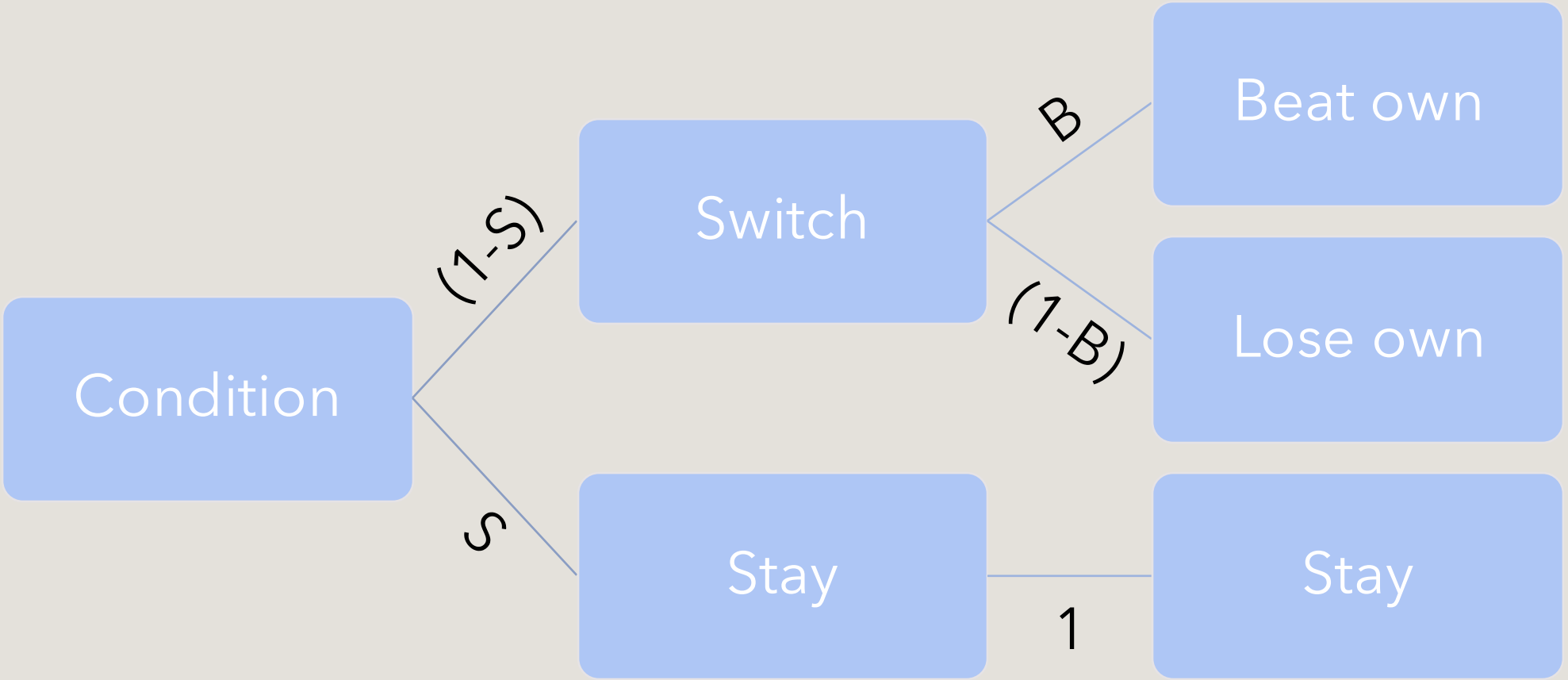
Model H1: Self-Reference Model

MODEL H1

THE MPT MODEL



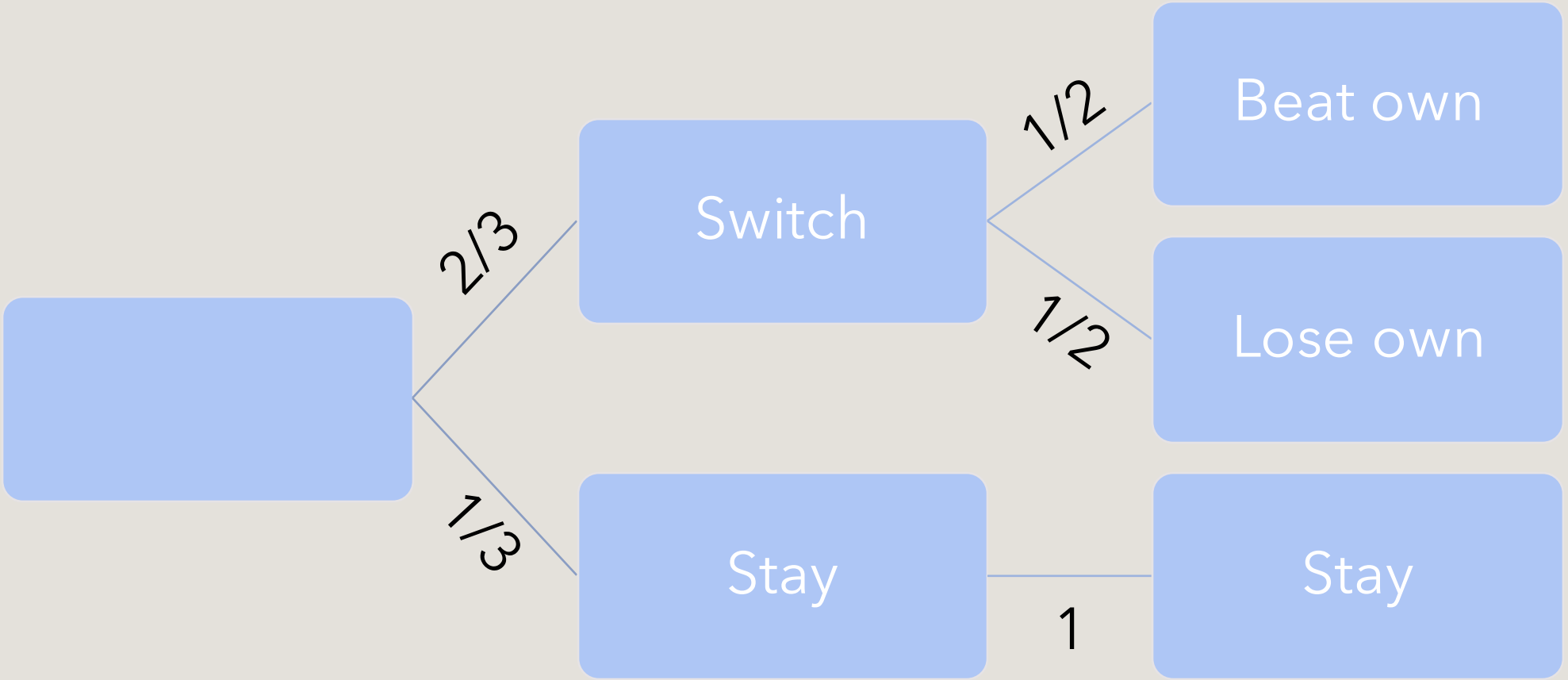
MODEL H1



MODEL 2

Model 2: Random Model

RANDOM MODEL



EQUATIONS

What are the equations?

EQUATIONS

EQUATIONS

- Path equations for the self-reference and prediction models

  - $E_{stay} = S * 1$
  - $E_{switch\&beat} = (1-s)* b$
  - $E_{switch\&lose} = (1-s)* (1-b)$

➔ In this case, path equations = redundant with categories equations

IDENTIFIABILITY

Testing the local identifiability

IDENTIFIABILITY

IDENTIFIABILITY

Run	b1	b2	b3	s1	s2	s3	Fit	AIC	BIC	Delta AIC	Delta BIC
1	0.27660	0.68627	0.47761	0.40506	0.33766	0.27957	0.00000	538.97330	560.07802	0.00000	0.00000
2	0.27660	0.68627	0.47761	0.40506	0.33766	0.27957	0.00000	538.97330	560.07802	0.00000	0.00000
3	0.27660	0.68628	0.47761	0.40506	0.33766	0.27957	0.00000	538.97330	560.07802	0.00000	0.00000
4	0.27660	0.68628	0.47761	0.40506	0.33766	0.27957	0.00000	538.97330	560.07802	0.00000	0.00000
5	0.27660	0.68628	0.47761	0.40506	0.33766	0.27957	0.00000	538.97330	560.07802	0.00000	0.00000
6	0.27660	0.68628	0.47761	0.40506	0.33766	0.27957	0.00000	538.97330	560.07802	0.00000	0.00000
7	0.27660	0.68628	0.47761	0.40506	0.33766	0.27957	0.00000	538.97330	560.07802	0.00000	0.00000
8	0.27660	0.68627	0.47761	0.40506	0.33766	0.27957	0.00000	538.97330	560.07802	0.00000	0.00000
9	0.27660	0.68628	0.47761	0.40506	0.33766	0.27957	0.00000	538.97330	560.07802	0.00000	0.00000
10	0.27660	0.68627	0.47761	0.40506	0.33766	0.27957	0.00000	538.97330	560.07802	0.00000	0.00000
Dev.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000					

Run	b1	b2	b3	s1	s2	s3	Fit	AIC	BIC	Delta AIC	Delta BIC
1	0.27660	0.68627	0.47761	0.40506	0.33766	0.27957	0.00000	538.97330	560.07802	0.00000	0.00000
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Dev.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000					

(MultiTree)

RESULTS

Estimated parameters and *goodness of fit*

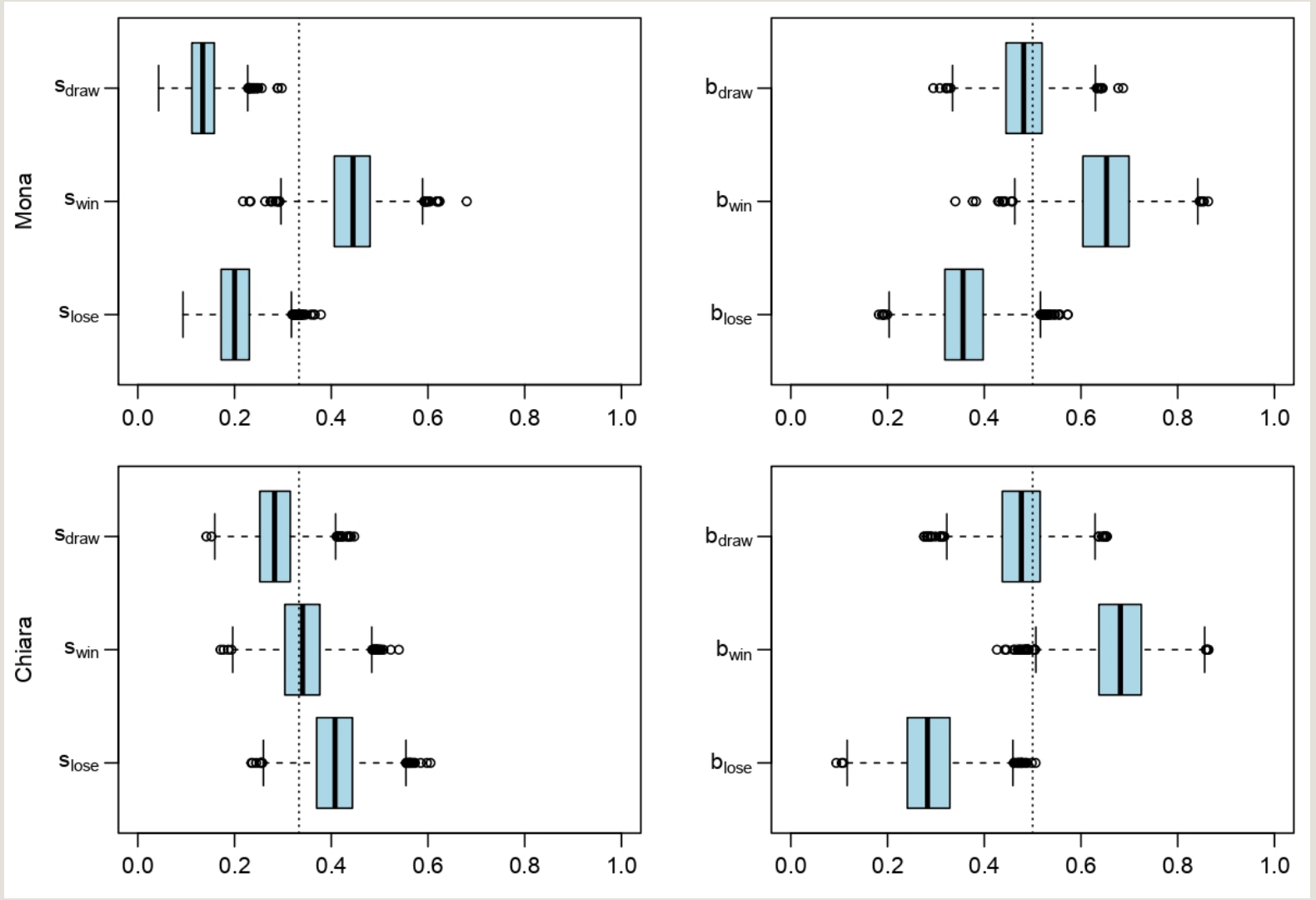
RESULTS

MODEL H1

Model H1: Self-Reference Model

MODEL H1

RESULTS MODEL H1

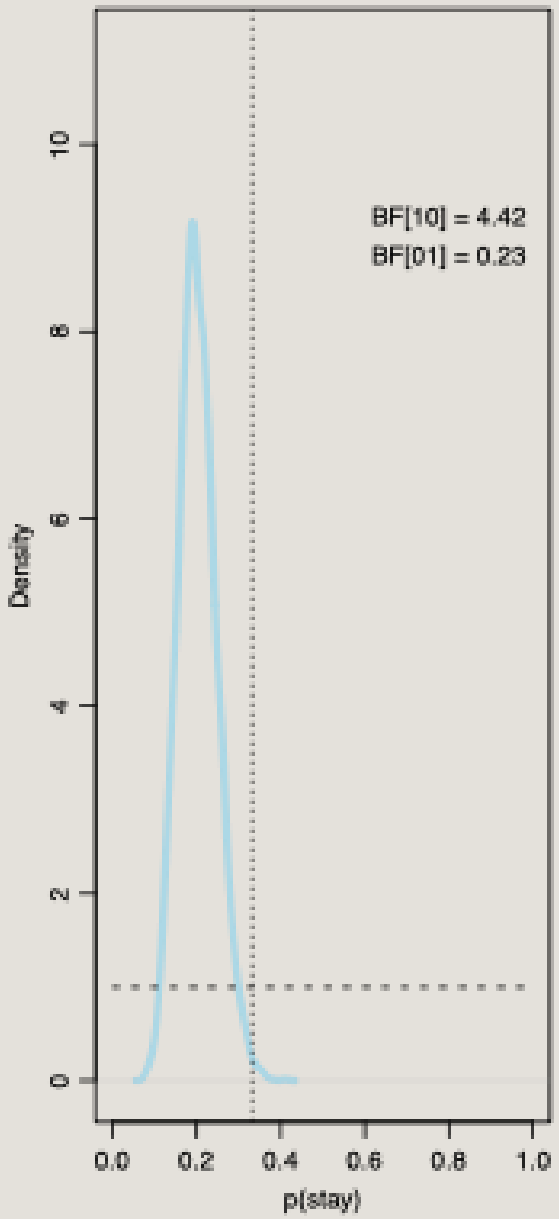


COMPARISONS

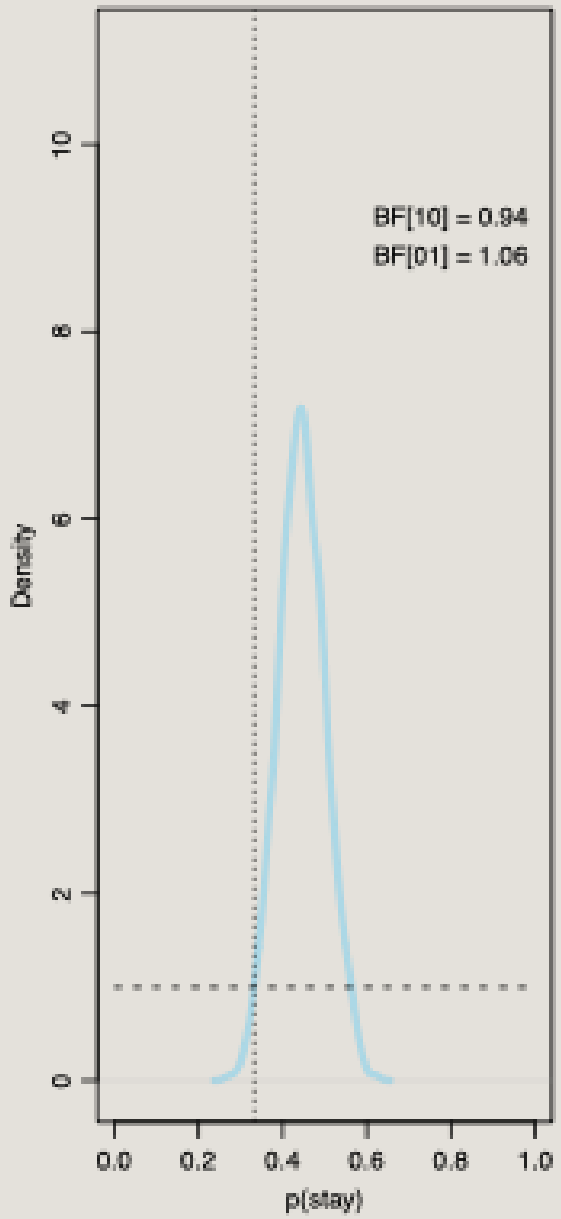
Comparing the model to the base model

COMPARISONS

LOSE



WIN



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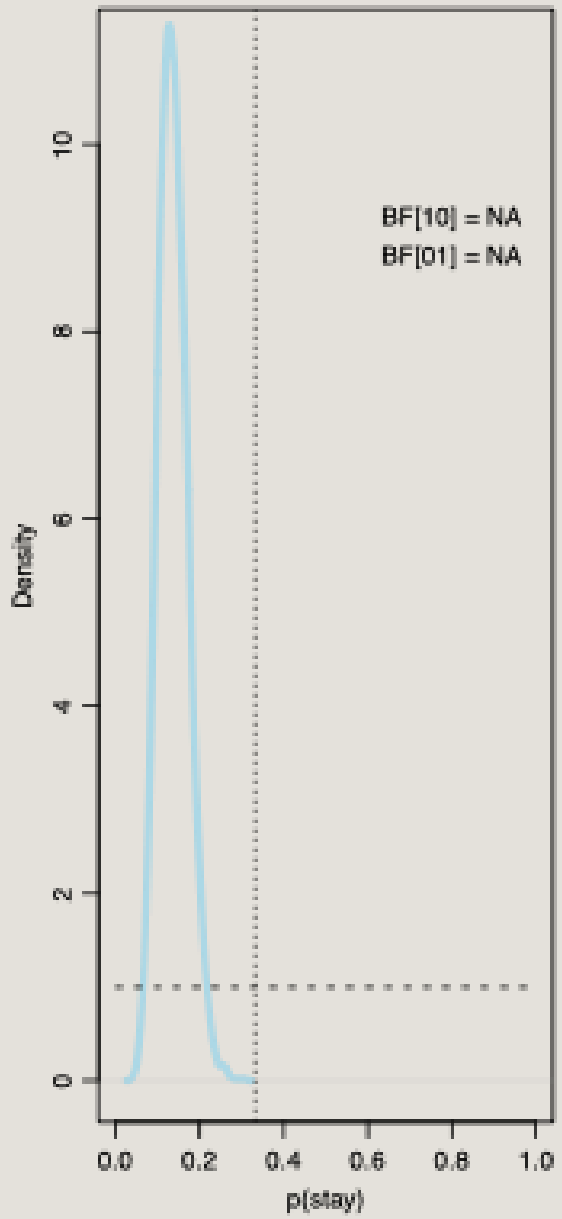

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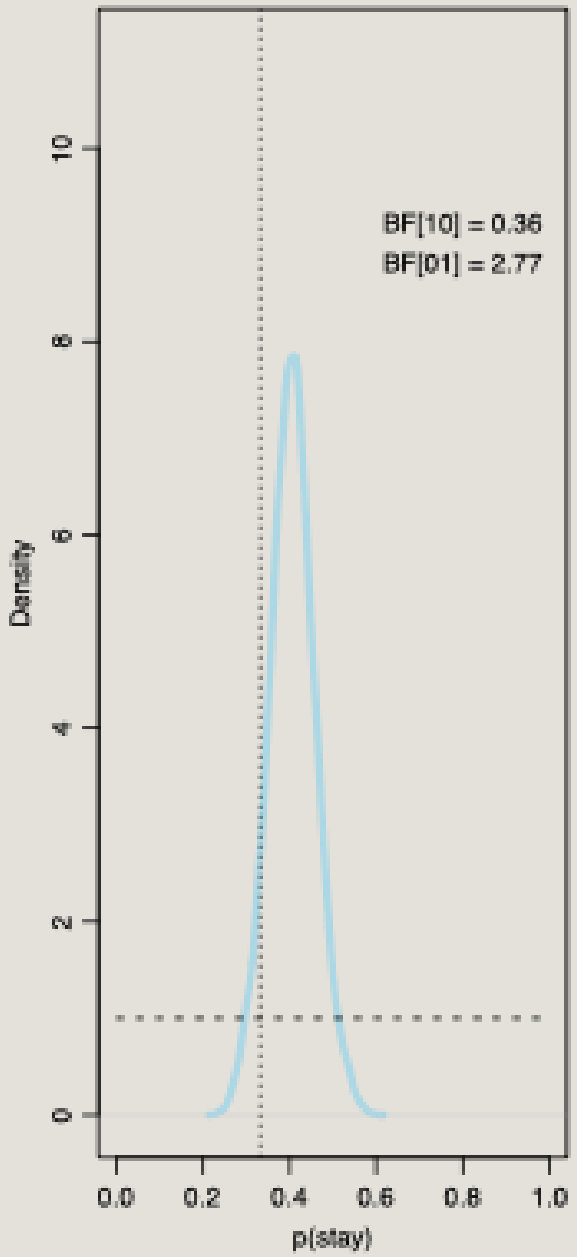
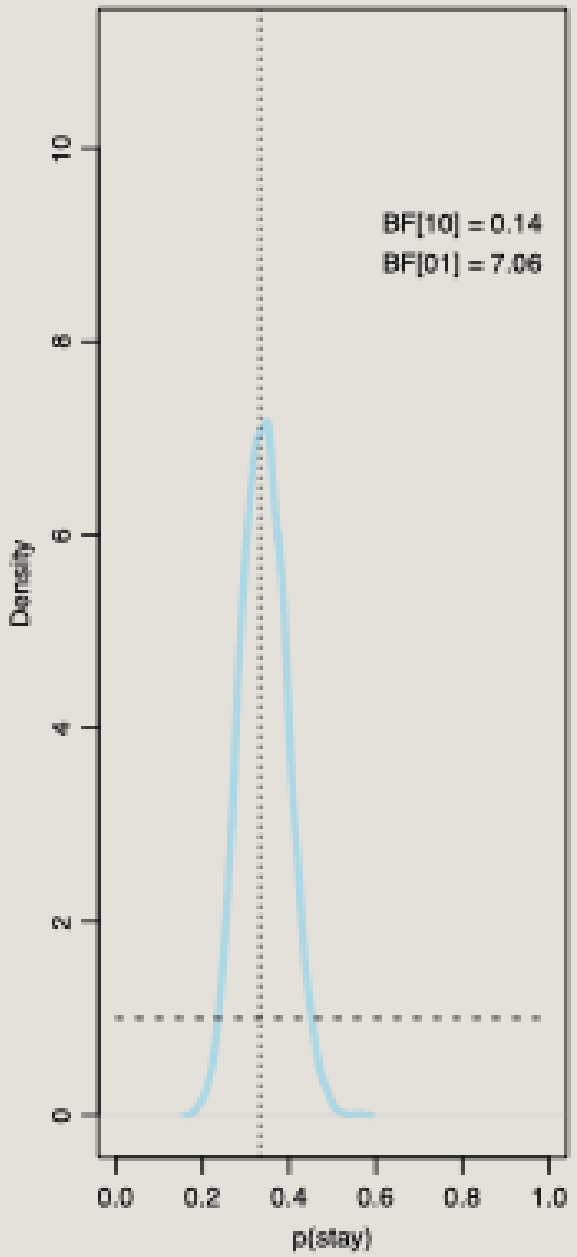


WIN



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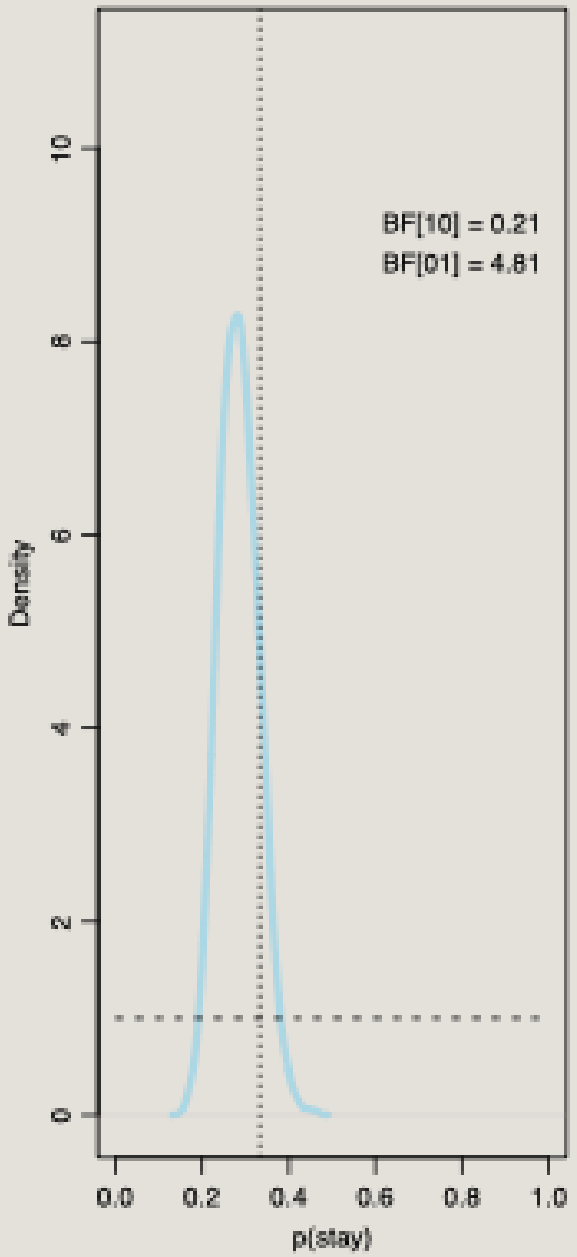

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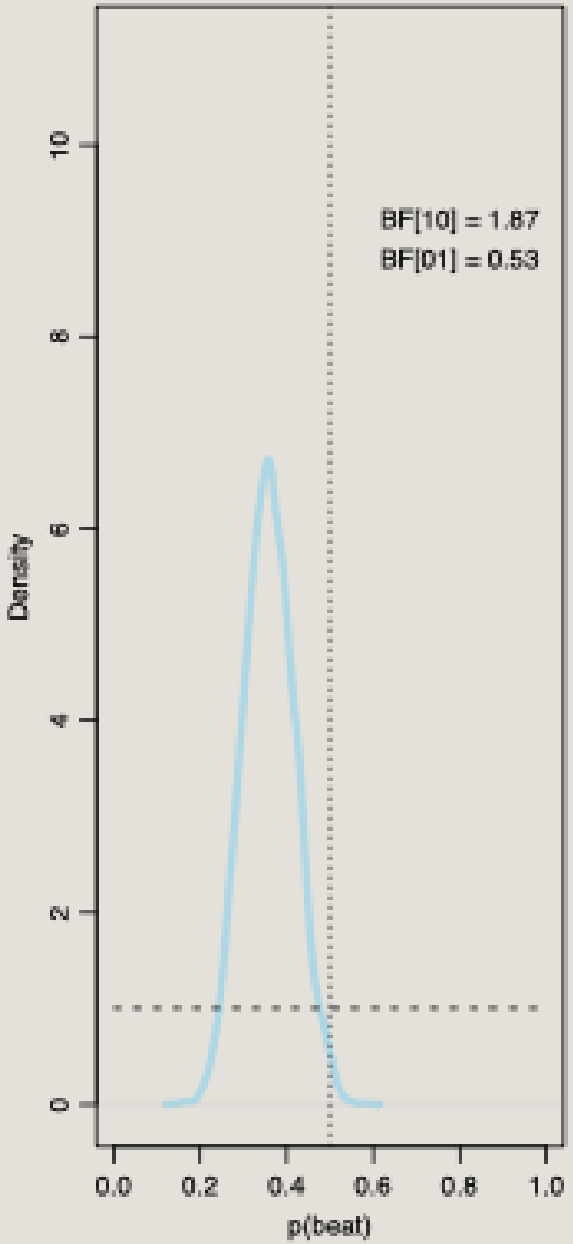

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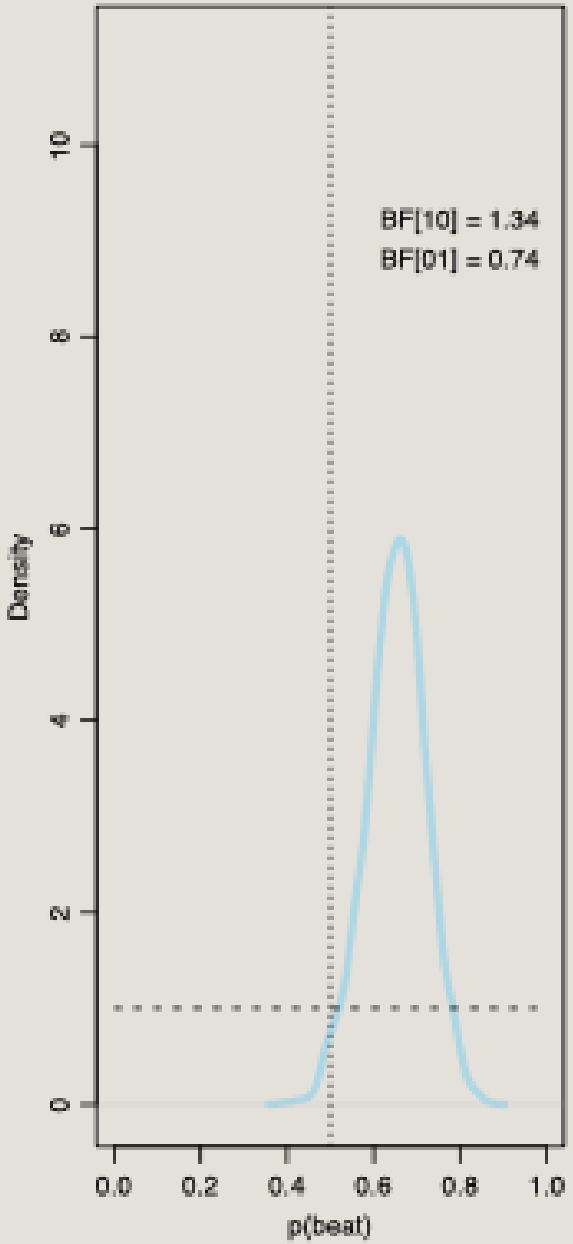

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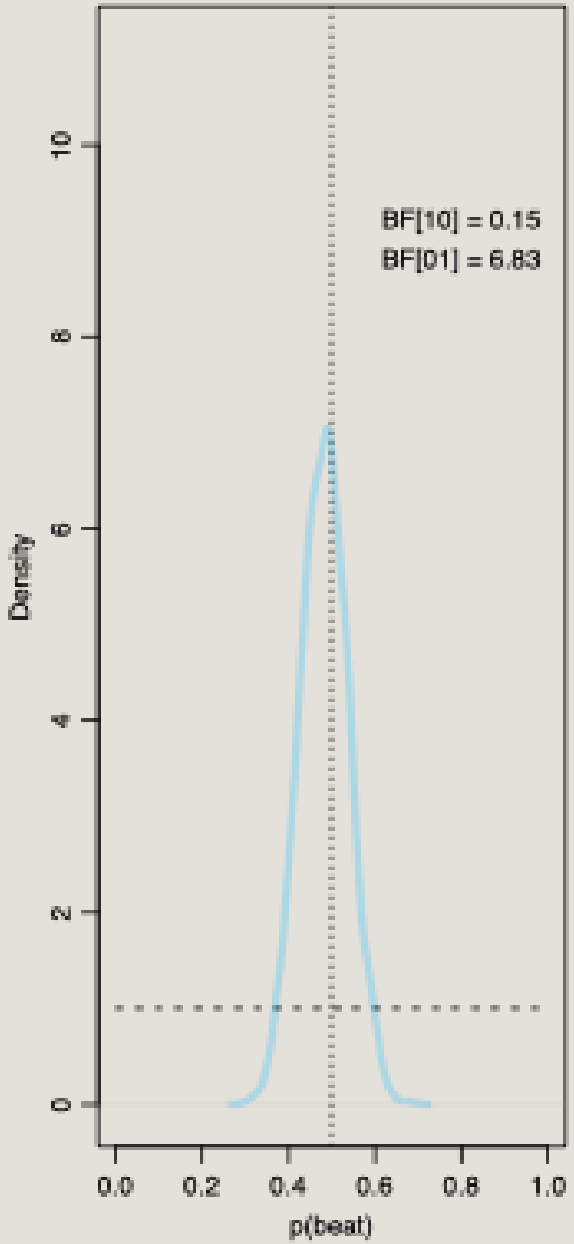
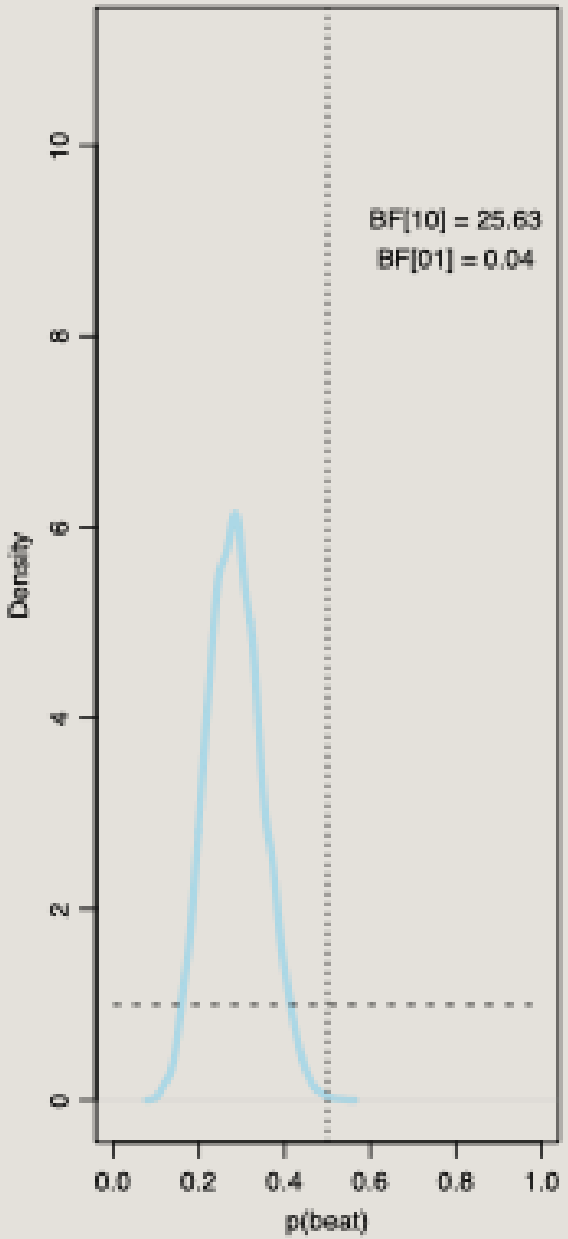
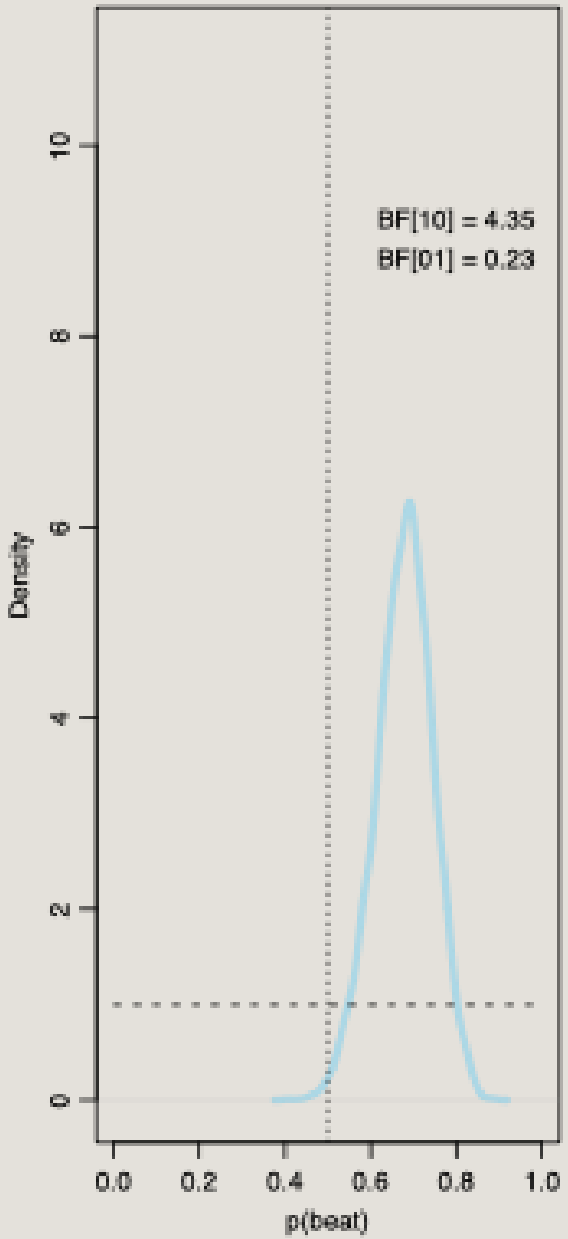


LOSE



WIN



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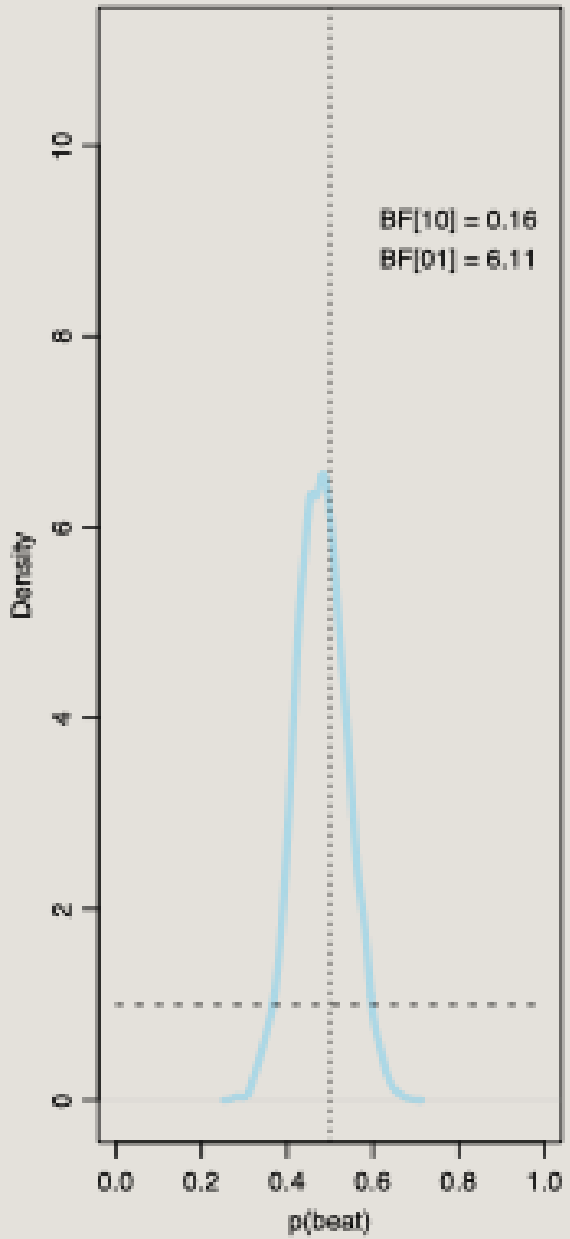


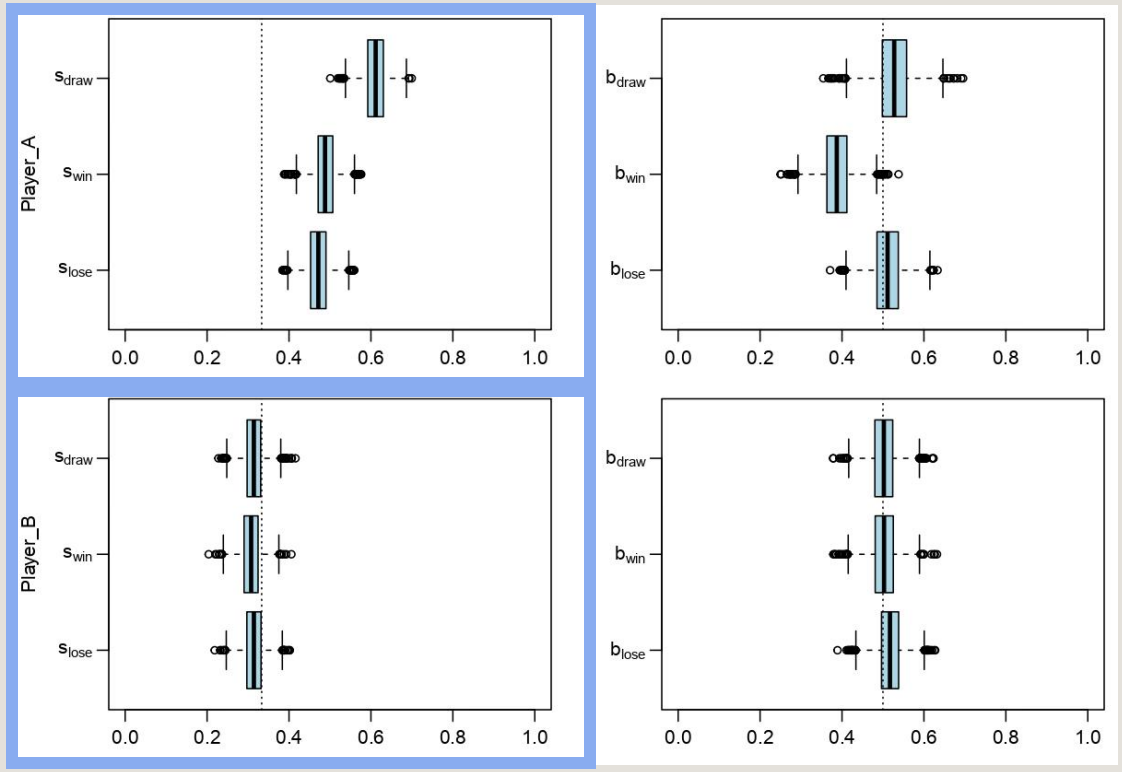
SIMULATED DATA

Can This Model Detect Patterns in the Simulated Data?

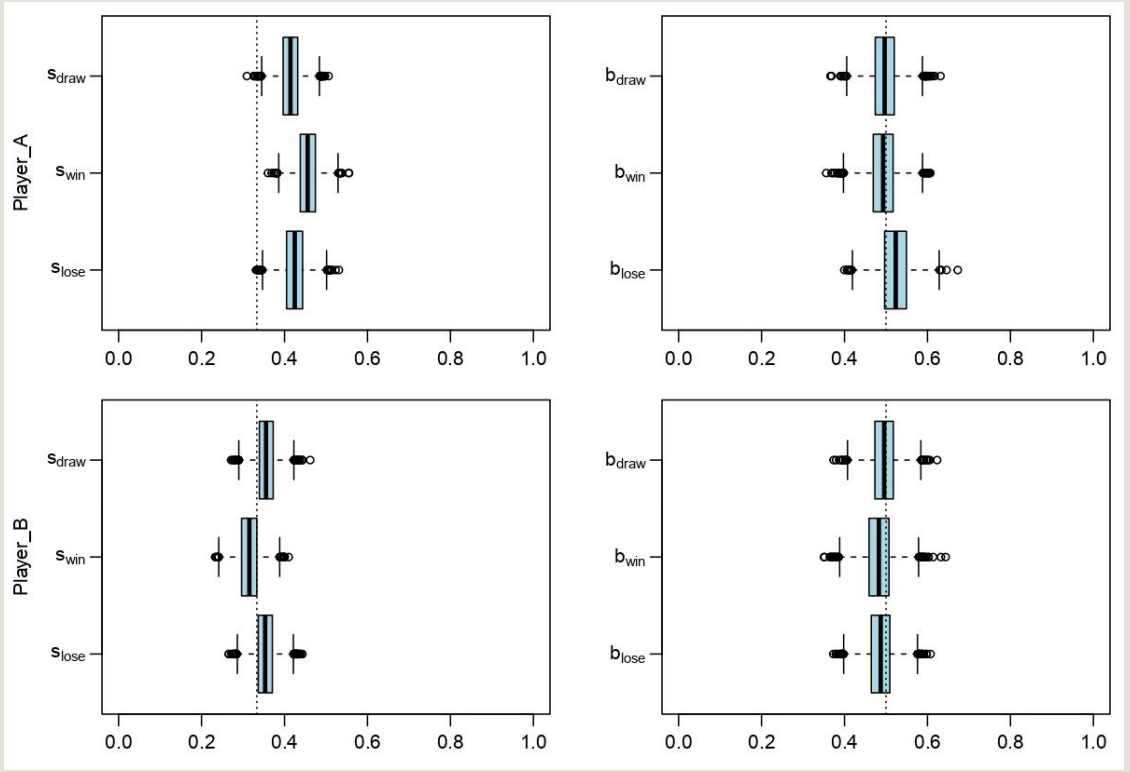
SIMULATED DATA

RESULTS SIMULATED DATA

G-Data



P-Data



QUESTIONS

Any Questions or Comments?

QUESTIONS