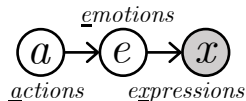


**a**

# Human emotion reasoning as Bayesian belief updating

Lay causal theory



Dataset 1

Hyperprior over players' actions  
 $p(a)$

Dataset 3

Emotions inferred from expression

$$\hat{e}_i \sim p(e|x)$$

Dataset 2

Emotions predicted from event context

$$p(e|a)$$

$p(\hat{e}_i|a)$  is the likelihood of observing emotions  $\hat{e}_i$  under hypothesis  $p(e|a)$

Simulated Expt. 1  
outcome judgments

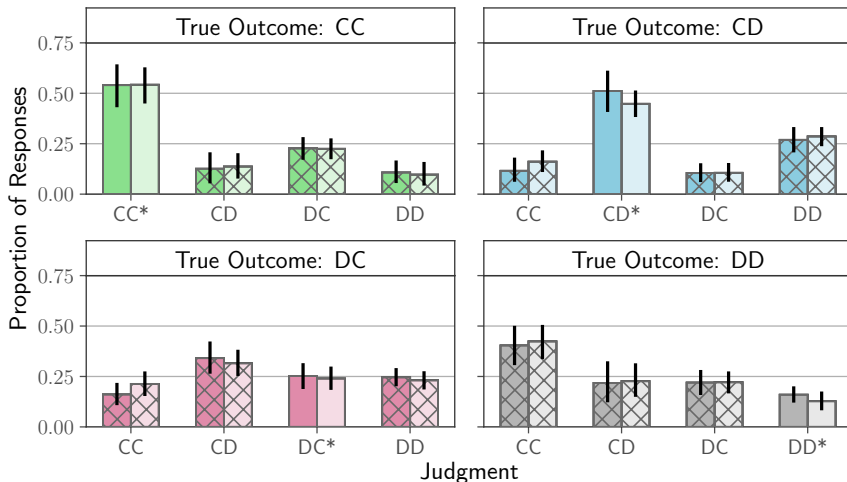
$$p(a|x) = \frac{\mathbf{E}_{p(e|x)} \frac{p(a) p(e|a)}{\sum_a p(a) p(e|a)}}{p(e|x)}$$

Probability that event  $a$   
caused expression  $x$

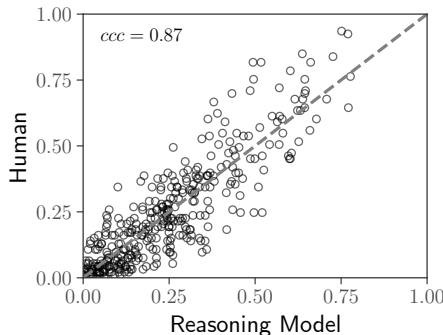
**b**

Reasoning Model: CC CD DC DD

Judgment: Correct Incorrect

**c**

$p(a|x)$  Emotion Reasoning

**d**

$p(a|x)$  Emotion Recognition

