



Two-faced: A value-based computational model of emotional expression and suppression.

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BACKGROUND

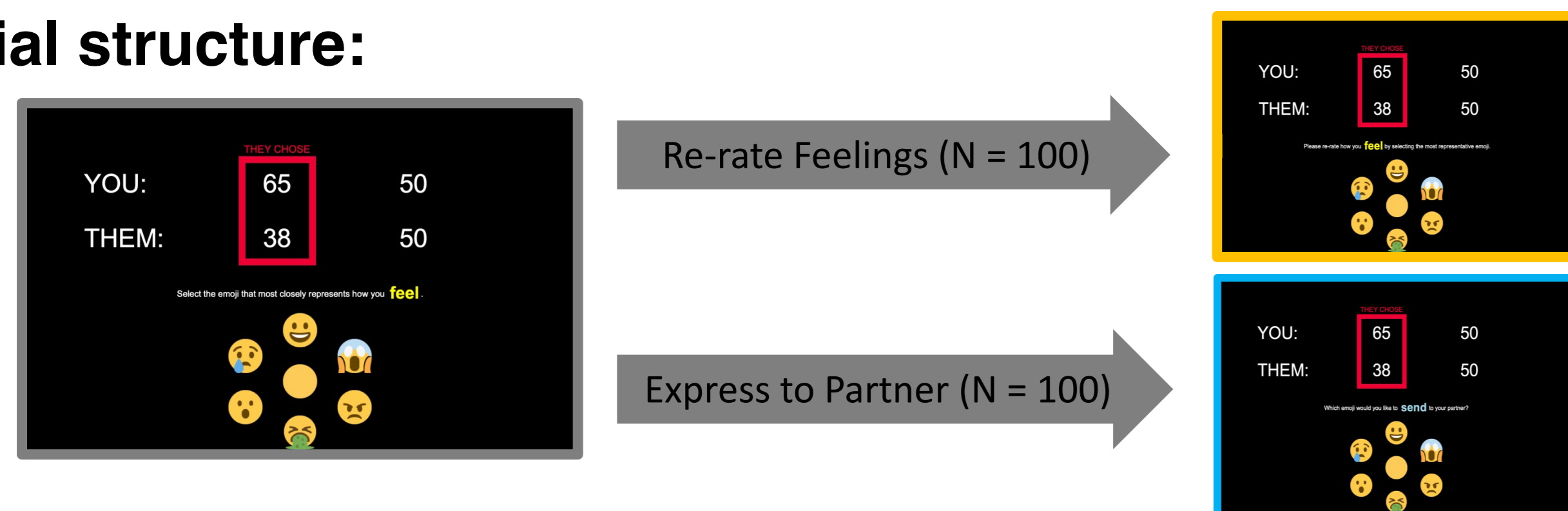
- ❖ Unfair behavior elicits strong negative emotions such as **anger**¹ & **sadness**² in targets. Expressions of such emotions may have **strategic value**^{3,4} by encouraging prosocial behavior in others.
- ❖ However, expressions may also incur social costs, which could lead to a tendency for **emotional suppression**⁵.

HYPOTHESIS

- ❖ Hypothesis: Emotional expression, particularly for negative emotion, is a value-based decision influenced by considerations of both **potential social benefits** and **potential social costs**.

METHODS

Trial structure:



Pps saw 84 dictator game offers from different anonymous partners. All subjects rated how they felt about the offer (T1). One group (N = 100) were then asked what they wanted to **express**, and the other group (N = 100) was asked to **re-rate** what they felt (T2).

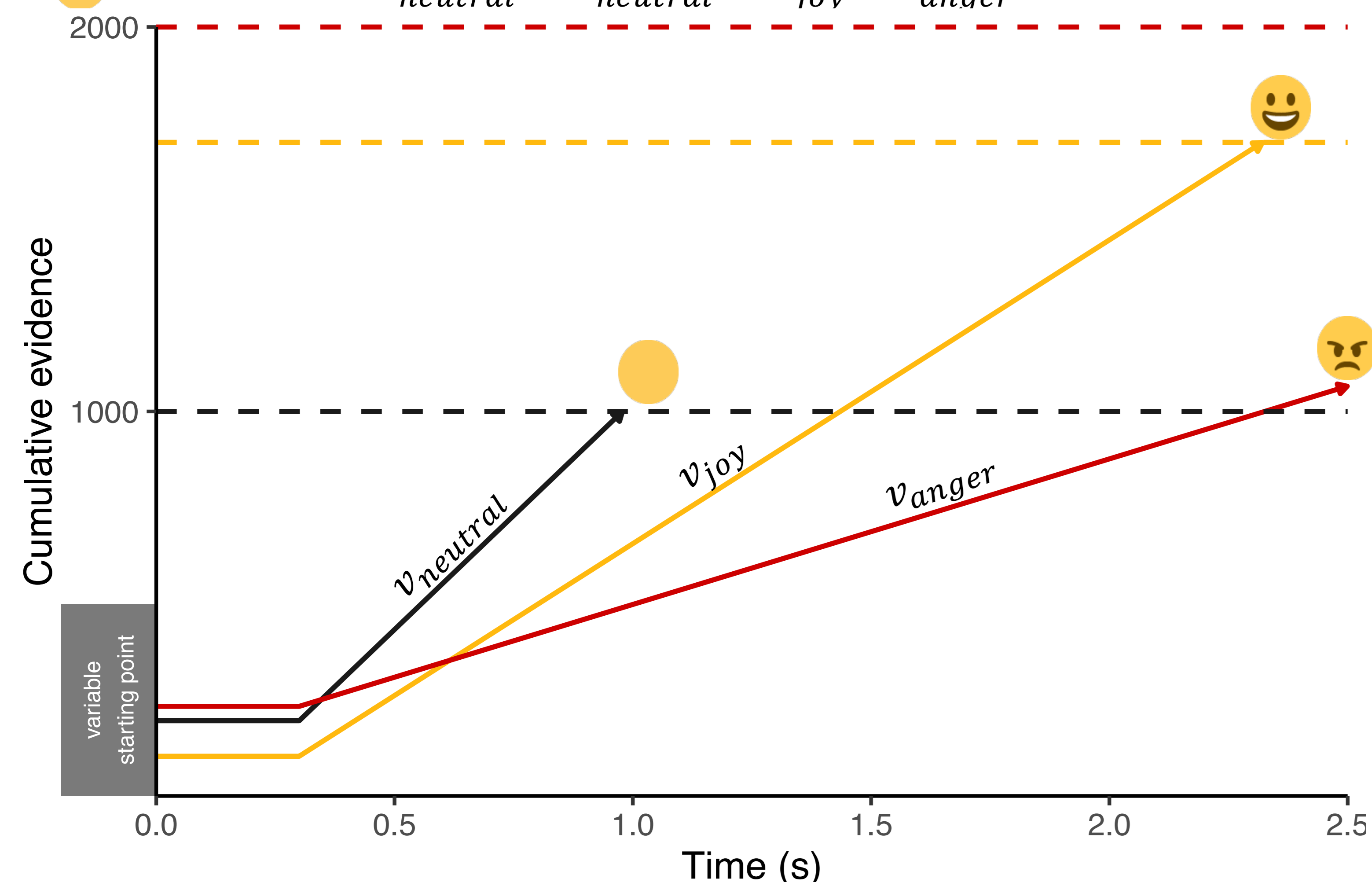
ANALYSIS: LINEAR BALLISTIC ACCUMULATORS

To model Pp's emotional responses as a value-based decision, we fit linear ballistic accumulator models to response times and selected feelings/expressions on the emoji scale. Each possible option (i.e., anger, neutral, etc.) was modelled as a separate accumulator with choice and response determined by the first accumulator to cross its evidence bound relative to the competing responses.

$$v_{\text{anger}} = C_{\text{anger}} + w_{\$Self:\text{anger}} \times \$Self + w_{\$Other:\text{anger}} \times \$Other + \dots$$

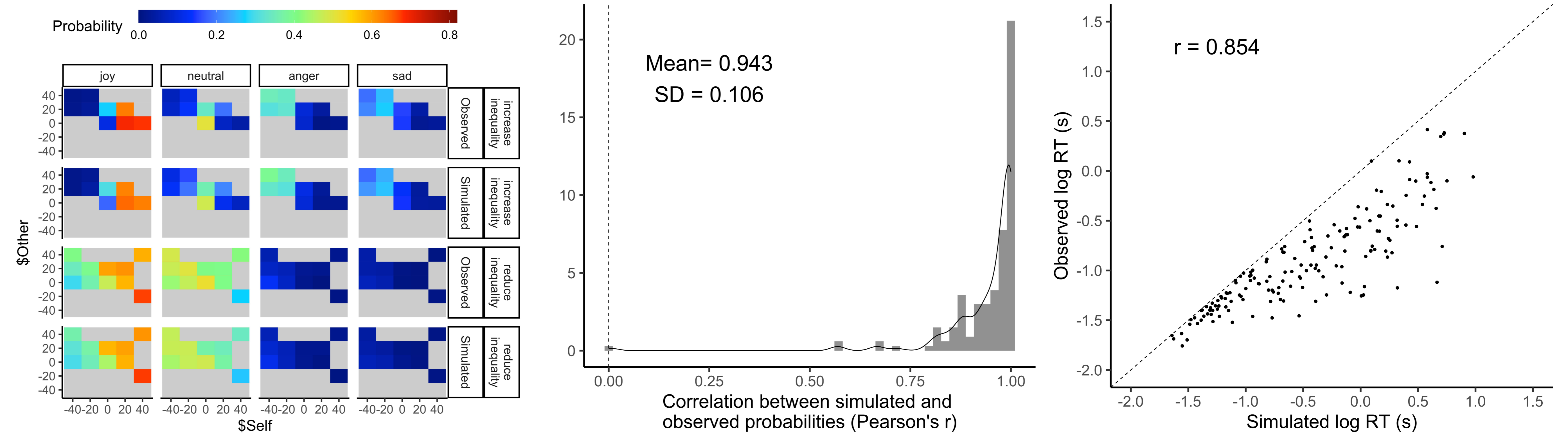
$$v_{\text{joy}} = C_{\text{joy}} + w_{\$Self:\text{joy}} \times \$Self + w_{\$Other:\text{joy}} \times \$Other + \dots$$

$$v_{\text{neutral}} = C_{\text{neutral}} - v_{\text{joy}} - v_{\text{anger}} - \dots$$



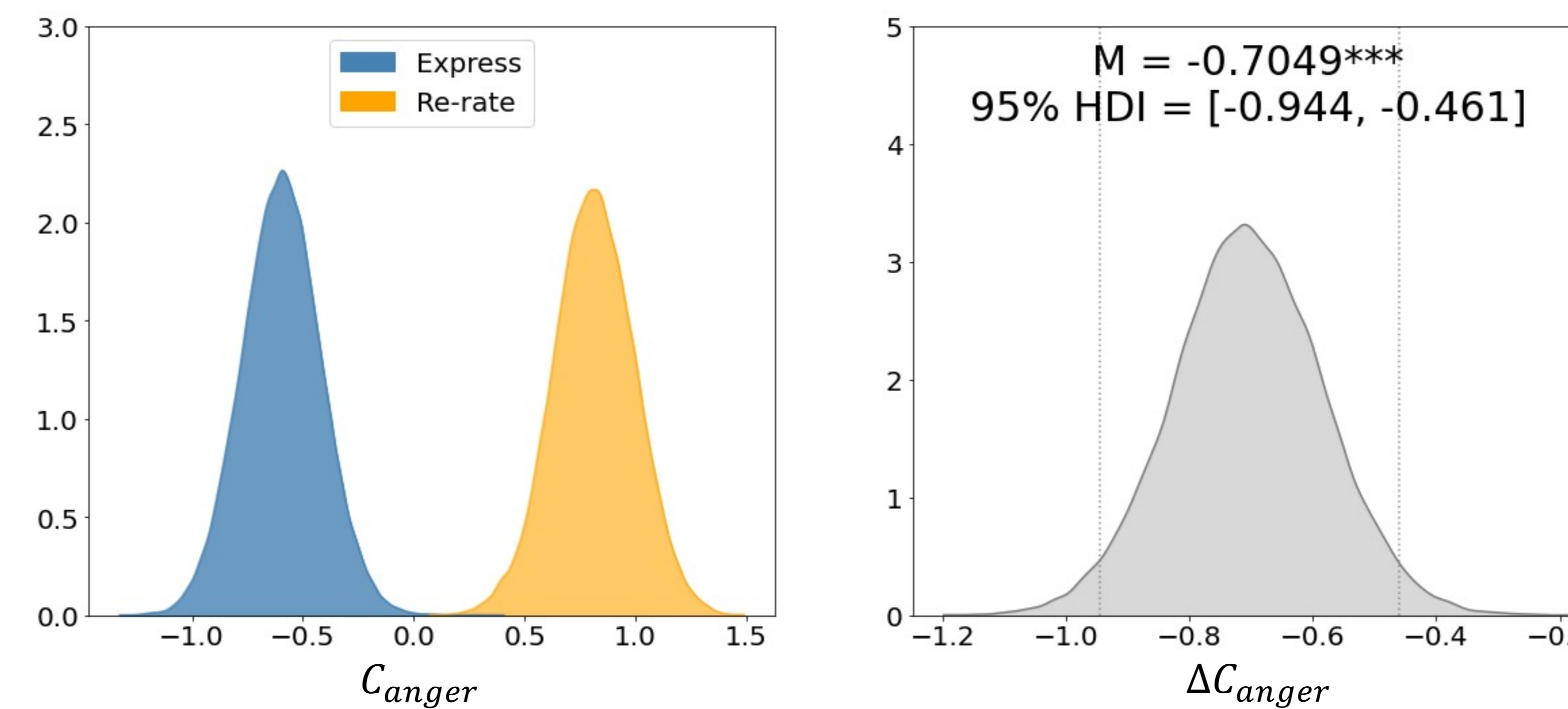
RESULTS

Preliminary model fitting suggests that a linear ballistic accumulator model of choice accurately captured emotional responses!



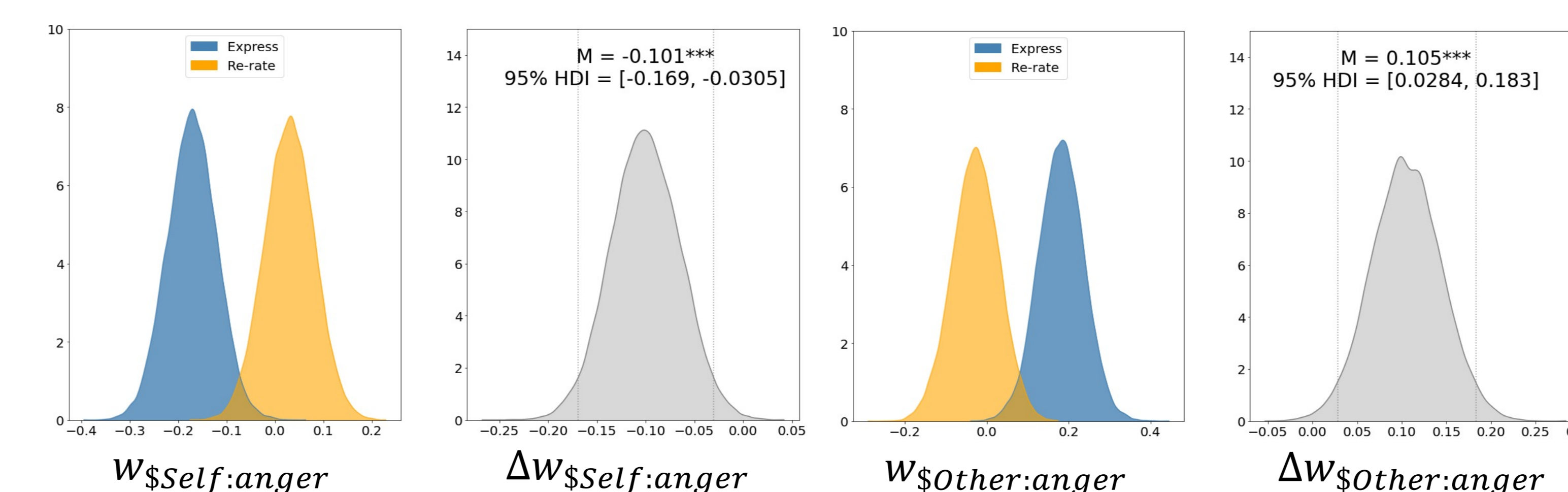
DOES EXPRESSING ANGER INCUR A COST?

Our model also suggests that people may not express their anger because expressing negative emotions incur a substantial cost. We found a decrease in the constant/intercept of the value associated with expressing anger compared to feeling anger.



EXPRESSIONS ARE MORE CONTEXT-SENSITIVE

Our model further suggests that people become more sensitized to the contextual attributes of the choice when choosing whether/what to express to their partners, with expressions both more strongly dependent on the magnitude of their own losses and their partner's gains than re-ratings of subjective feelings.



CONCLUSIONS

- ❖ As expected, relative gains in social interactions elicit joy while losses elicit anger.
- ❖ However, people may deliberately suppress their feelings and/or express unfeared emotions.
- ❖ These strategic suppressive/expressive behaviors are sensitive to the severity of the partner's actions, suggesting a deliberate weighing of costs and benefits.
- ❖ Our custom computational models of expressive choices suggest that expressions of negative emotions like anger incur a quantifiable constant cost.
- ❖ Furthermore, these models suggest that when choosing to express emotions, people may not only consider this constant cost, but may also further uniquely re-appraise the situational factors.

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