# Interplay between Emotionality, Fairness, and Decision Making: From Behaviors to Cognitive Processes

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## 1. Introduction

➤ **When deciding whether to accept a monetary offer, people's decisions are linked to how fair the offer is.** (e.g., Güth et al., 1982)

➤ **Decision making also associates with emotion-related traits.** (for a review, see Thielman & Balliet, 2020)

➤ *Unknown* – What are the **cognitive mechanisms** underlying the **interplay** between **fairness**, **emotional trait**, and **decision making**?

➤ Utilizing the **Drift Diffusion Model (DDM)** and a modified **Ultimatum Game**, we investigated how fairness and individual emotional trait affect the **cognitive processes** of decision making.
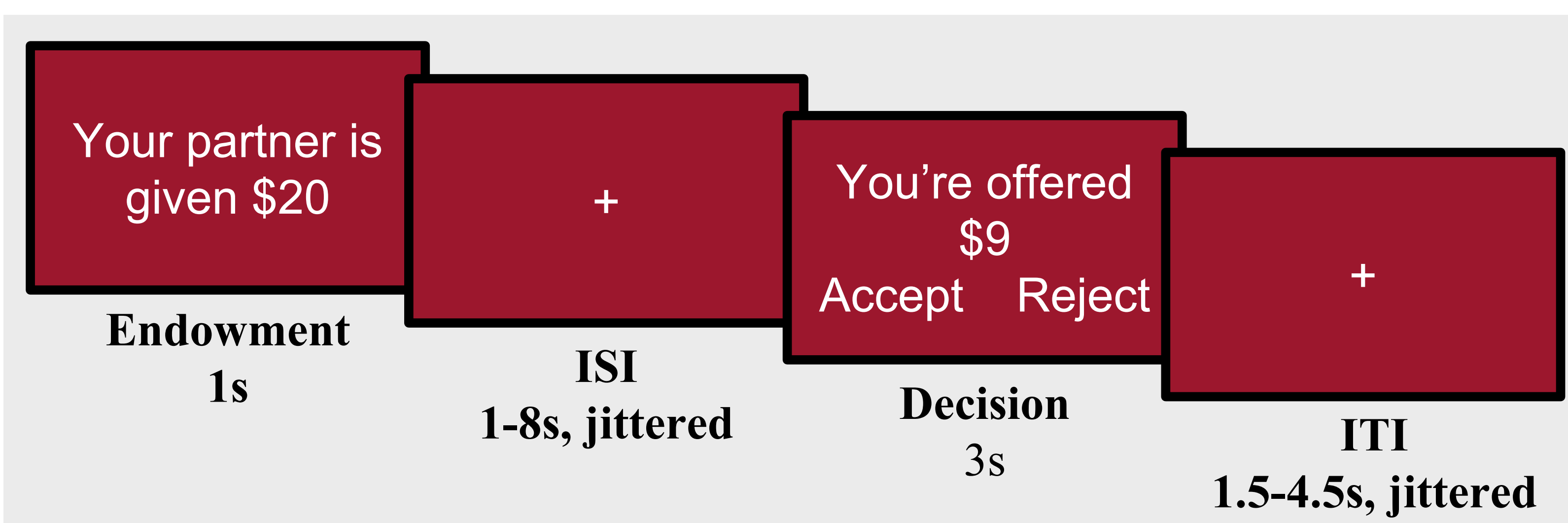
## 2. Methods

### Participants

- 52 adults ($M_{age}$ = 20.8, SD = 1.6) from Philadelphia, US
- 75% female, 25% male; 46% non-white, 54% white

### Modified Recipient Ultimatum Game

- Partner/Proposer - **a different stranger** in each trial
- **Offer Fairness** = 6, 19, 32, or 45%
- Endowment = $15-20 (control variable, proxy for offer size)
- N trials = 24



Your partner is given $20 — Endowment 1s
+ — ISI 1-8s, jittered
You're offered $9 Accept Reject — Decision 3s
+ — ITI 1.5-4.5s, jittered

### Emotion-Related Individual Difference

- **Emotionality**: 8-item self report of **emotional capability** from the Trait Emotional Intelligence Scale (TEI, Petrides, 2009).

  Example item: Expressing my emotions with words is not a problem for me.
  (7-point scale, 1 = Completely Disagree, 7 = Completely Agree)

### Analyses

- Mixed-Effects Linear and Logistic Regression (lme4, R)
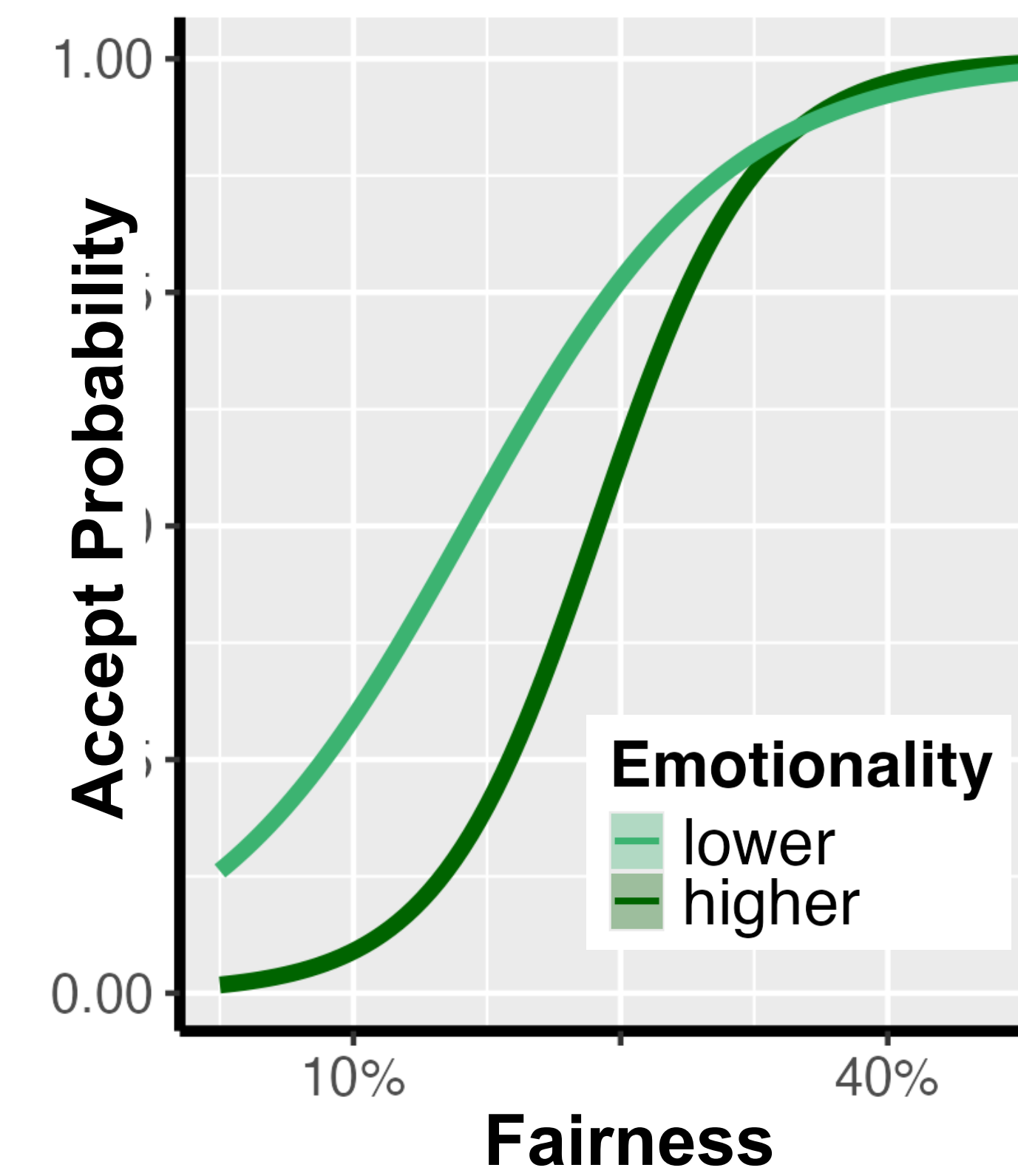- Hierarchical Bayesian Drift Diffusion Model (brms, R)

## 3. Emotionality Links to Fairness-Related Decisions?

### Logistic Model

$$accept \sim \underline{fairness * emotionality} + endowment + (1 + fairness \mid participant)$$

### Result

**Individuals with higher emotionality are more likely to reject unfair offers.** ($\beta$ = 0.65, $p$ = 0.003)



## 4. Emotionality Links to Fairness-Related Response Time?

### Linear Model

$$response\ time \sim \underline{decision * fairness * emotionality} + decision * endowment + decision * emotionality + (1 + fairness + decision \mid participant)$$

### Result

**For individuals with higher emotionality, response time increases with an offer's fairness for decisions to reject but remains stable for decisions to accept. Compared to those with higher emotionality, this fairness-decision interaction is weaker among individuals with lower emotionality.** ($\beta$ = -0.08, $p$ < 0.001)
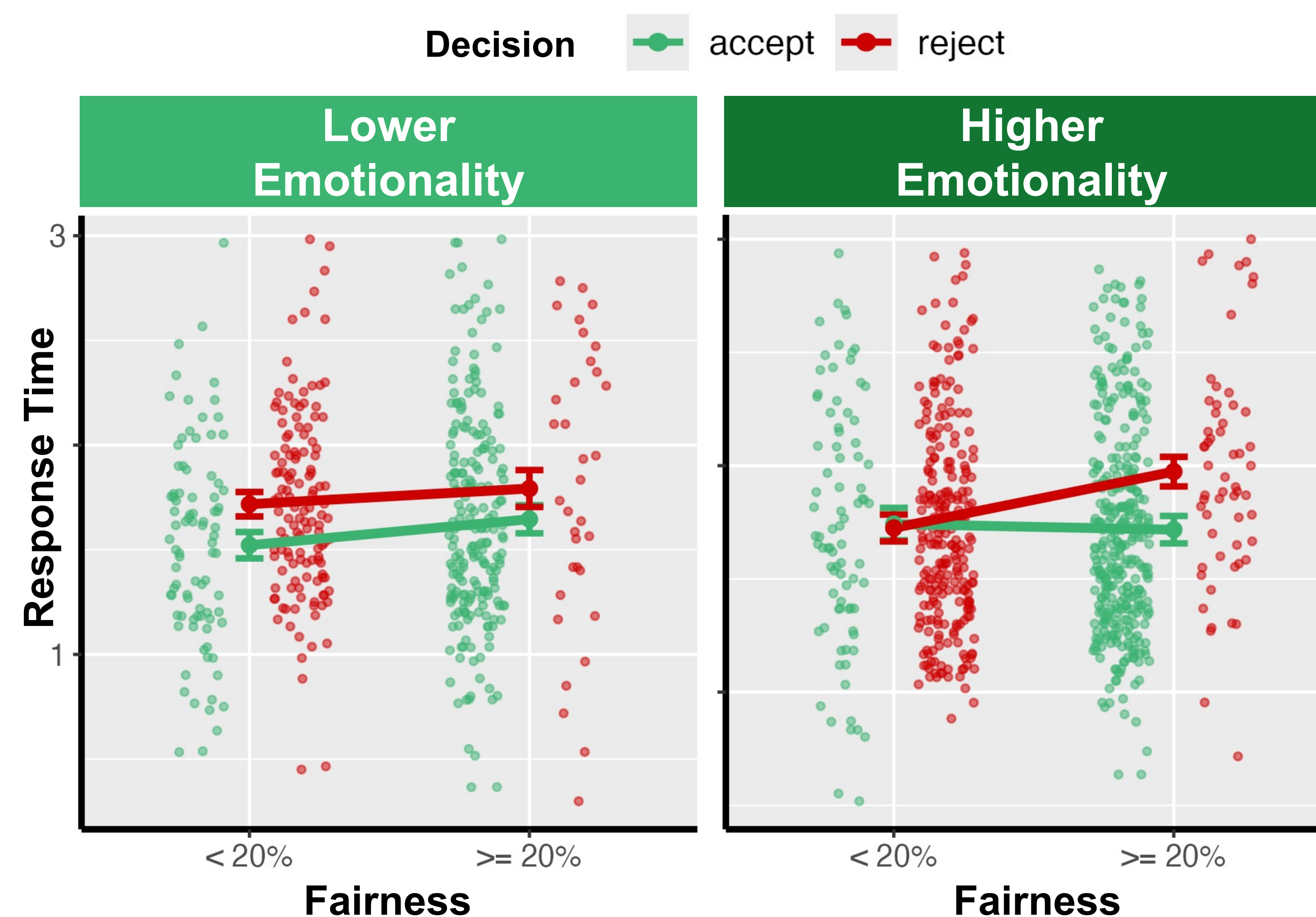


## 5. Emotionality Links to Cognitive Processes during Decision Making

### Drift Diffusion Model

$$drift\ rate \sim \underline{fairness * emotionality} + endowment + (1 + fairness + endowment \mid participant)$$
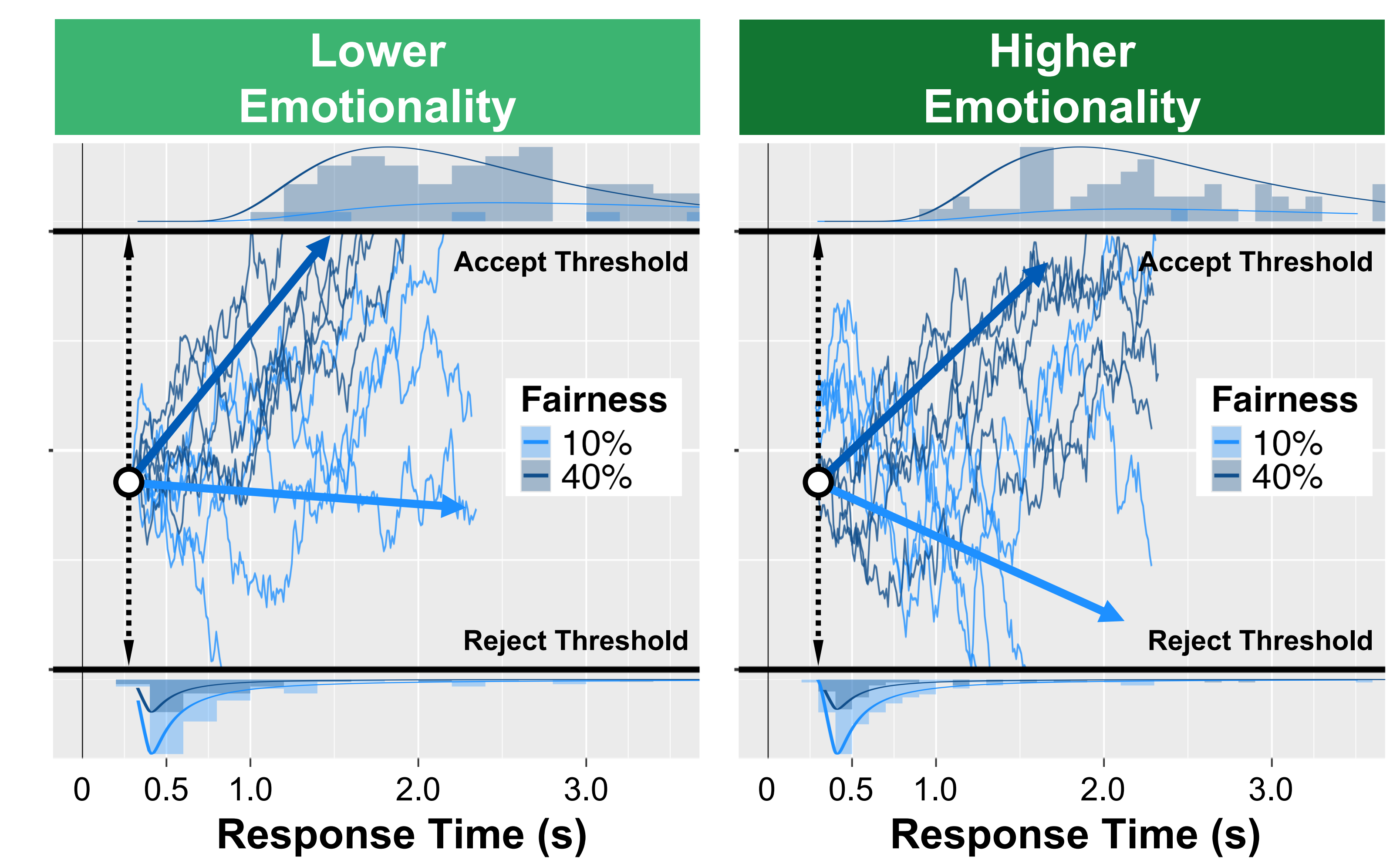$$boundary\ separation \sim 1 + (1 \mid participant)$$

### Result

**The increase in drift rate associated with higher levels of offer fairness is larger among individuals with higher emotional capability.**

($\beta$ = -0.08, $95\%CI$ = [0.03, 0.23])
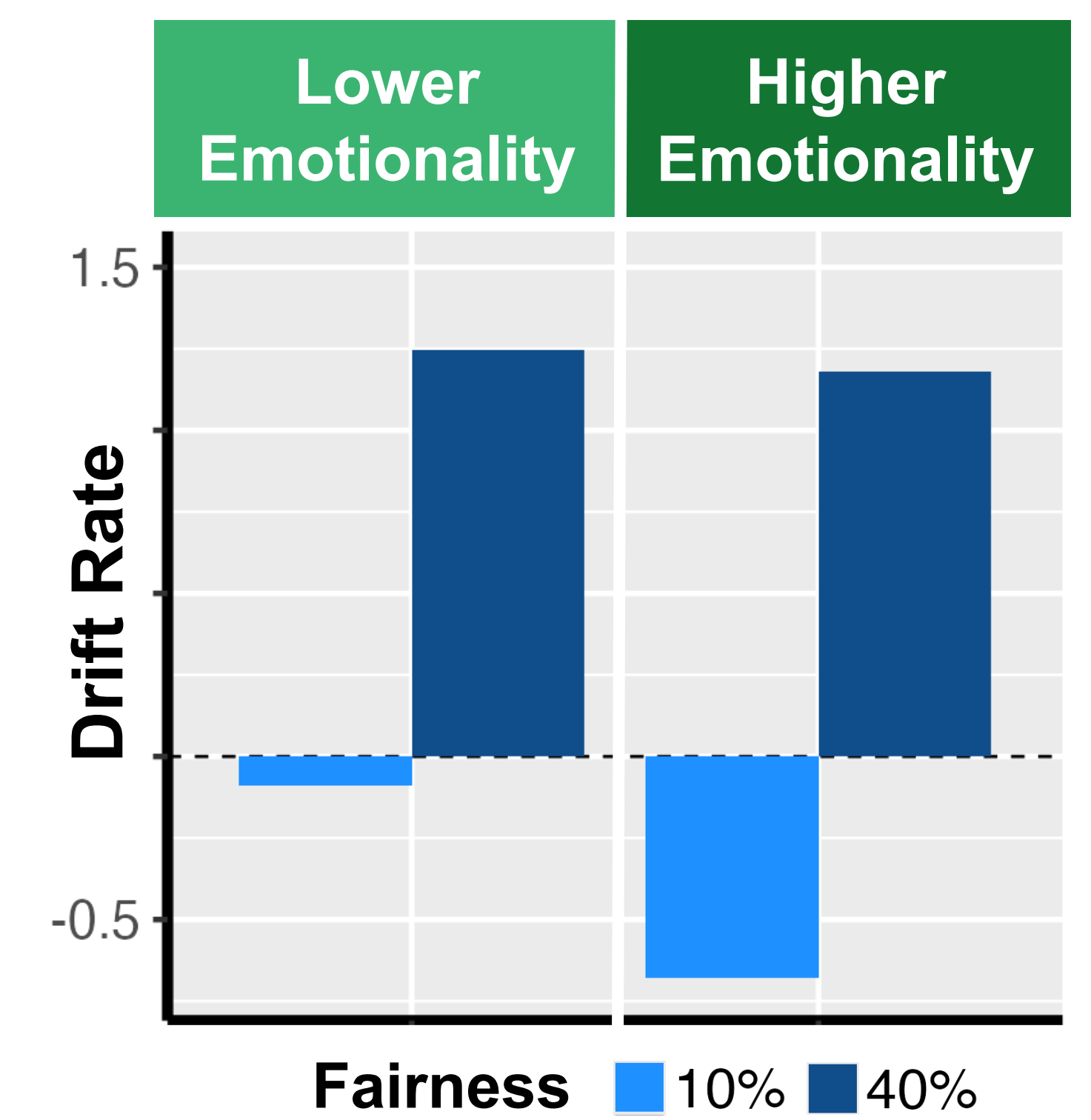


### DDM Illustration (predicted data)



## 6. Discussion & Future Directions

➤ We found that **higher emotionality links to greater sensitivity to fairness in evidence accumulation** (drift rate), providing a **mechanistic explanation** for how emotional intelligence influences complex social decisions.

➤ *Future Directions* – (1) **Replicate** current findings. (2) **Investigate** how **experience and contextual factors** influence decision-making processes and outcomes across **different social scenarios.**