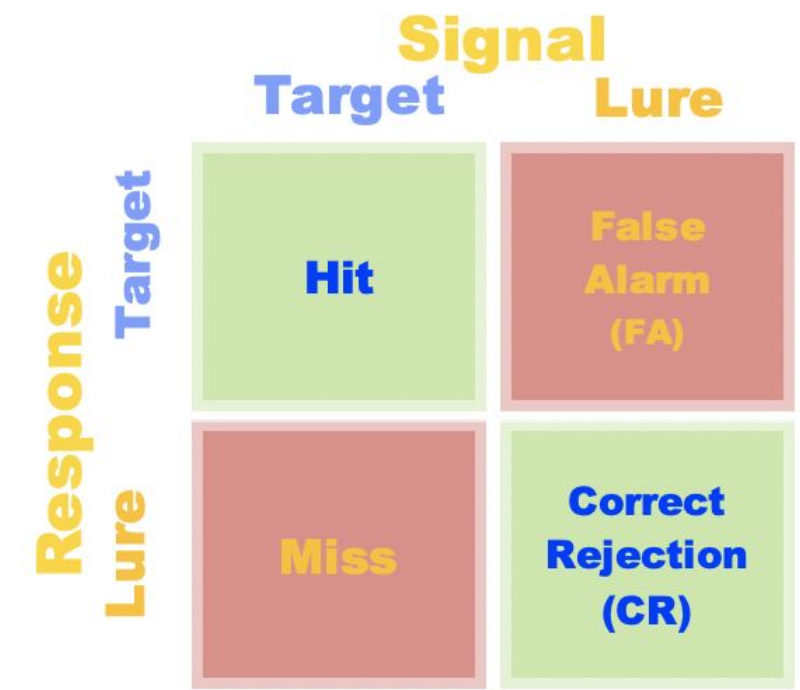


## Background

- The ultimate decision to report information from a witnessed event depends on the level of familiarity and the scenario, which can dictate whether a person only relies on strong, clear memory evidence or is willing to rely on relatively weaker memory evidence.<sup>4</sup>
  - The ability to shift criterion thresholds has the potential to improve decision outcomes, especially where there is some uncertainty.



- Signal Detection Theory:**
  - Discriminability:  $d' = Z(\text{Hit rate}) - Z(\text{FA rate})$ <sup>2</sup>
  - Decision criterion:  $c = -0.5 \times [Z(\text{Hit rate}) + Z(\text{FA rate})]$
  - Criterion shift = c(conservative) – c(liberal)



- The tendency to criterion shift appears to be a stable cognitive trait<sup>6</sup>, yet the nature or origin of this stability remains to be clarified.

**Question:** Do Monetary Incentives Affect Criterion Shifting Behavior When Freely Recalling an Episodic event?

### Main Aims:

- To test whether criterion shifting behavior presents as a stable cognitive trait in experiments utilizing the free recall of an episodic event.
- To explore if monetary incentives with written criterion threshold manipulations have any effects on free recall.

### Hypotheses:

- It is predicted that the liberal condition would influence participants to report more correct and incorrect information (higher Hit and FA rates) compared to the other criterion conditions.
- Because the second version of this study involved monetary incentives, it is predicted that the tendency for participants to criterion shift will be higher compared to the first version.

## Methods

### Episodic Events - Crime Videos

- Encoding Phase:** Participants (Study 1:  $n = 170$ ; 115 females,  $M = 22.6$  years, range = 18 – 65 years,  $SD = 7.8$ ; Study 2:  $n = 171$ ; 127 females,  $M = 20.2$  years, range = 18 – 33 years,  $SD = 2.4$ ) were shown three crime videos (two real-life police interactions<sup>1,5</sup>, and one staged robbery<sup>3</sup>) in a randomized order.



## Methods cont.

- Testing condition:** Free Recall with Criterion Shifting Manipulations; Study 2 monetary incentives: +10 cents for correct information & -25 cents for critical errors.
  - Liberal:** Please describe what you remember from the video you just watched. As you write down what you remember, be sure to include any and all details (even little details you may not think are important). Also include things that you may not be sure about or are guessing. If you are making a guess, then please state this in your description (i.e. "I am not sure", "I am guessing", etc.).
  - Neutral:** Please describe everything you remember from the video you just watched.
  - Strict:** Please describe what you remember from the video you just watched. As you write down what you remember, be sure to only include details that you are absolutely sure about.

## Qualitative Coding Free Recall Narratives

- Two research assistant created categories for each video based on participant narratives (categories were created based on whether 2 or more participants reported the information). Study 1 had two independent coders while Study 2 had three.

	Total Correct Categories	Total Incorrect Categories	Study 1: Inter-Rater Reliability (Kappa Score)***	Study 2: Inter-Rater Reliability (Kappa Score)***	Hit	Correct detail provided
Traffic Stop	25	24	0.76	0.93	Miss	Correct detail NOT provided
Store Shoot-Out	45	16	0.77	0.89	False Alarm	Incorrect detail provided
Robbery	32	18	0.87	0.95	Correct Rejection	Incorrect detail NOT provided

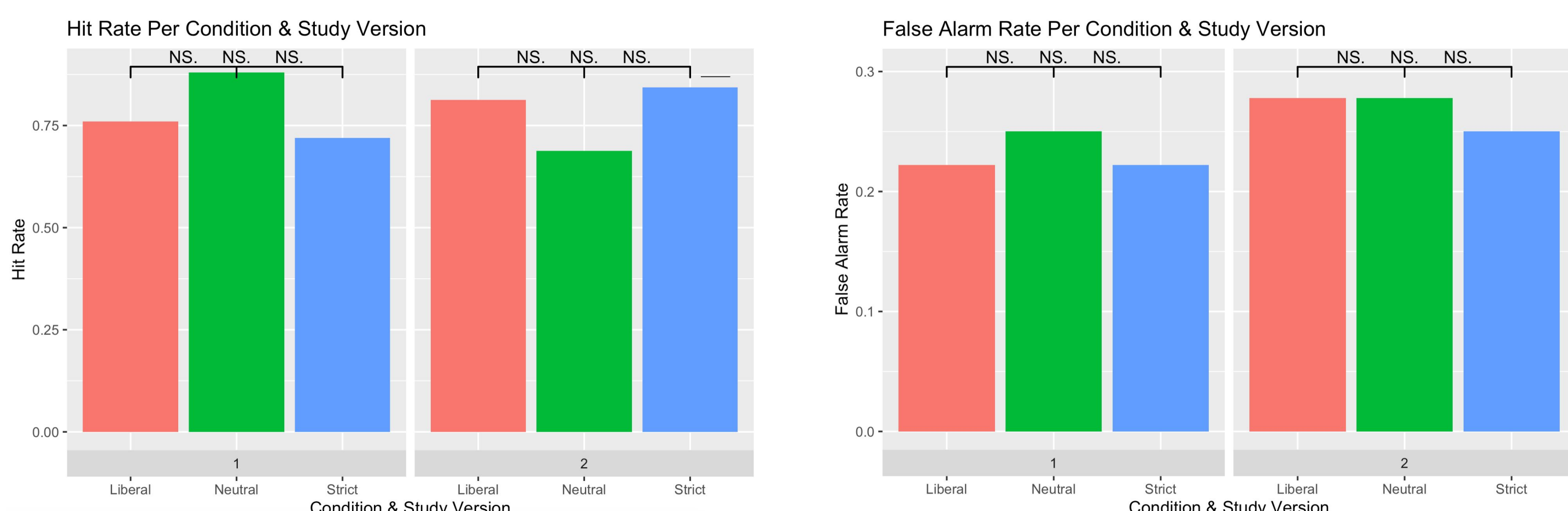
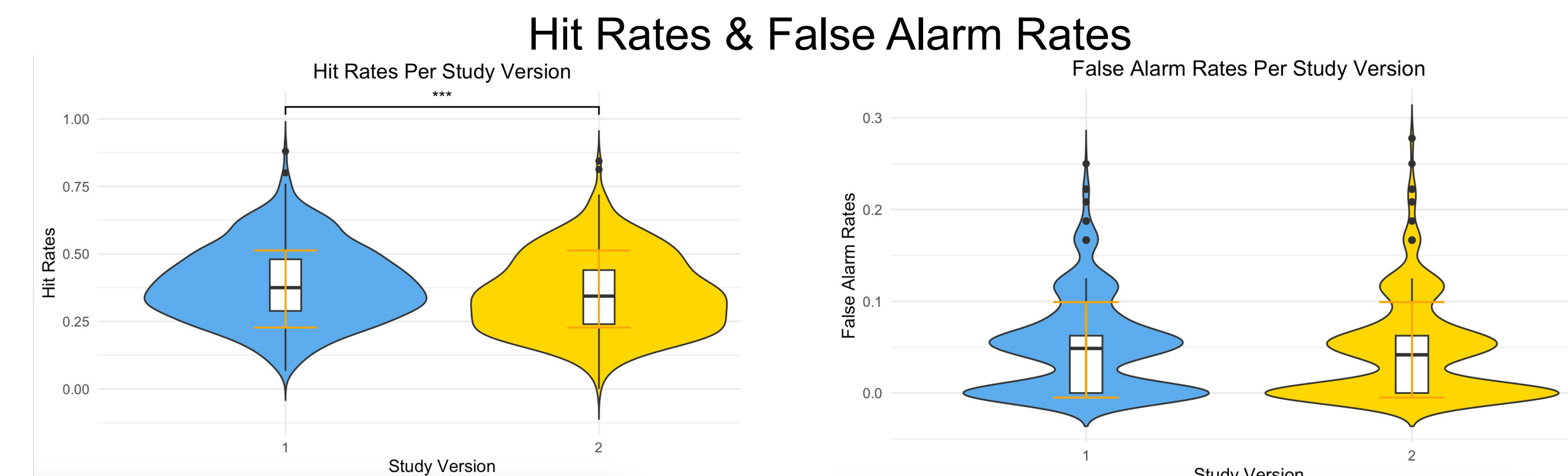
$$\frac{\text{Number of Hits}}{\text{Number of Hits} + \text{Number of Misses}} = \text{Hit Rate}$$

$$\frac{\text{Number of False Alarms}}{\text{Total Possible Alarms}} = \text{False Alarm Rate}$$

\*\*\*The Kappa statistic measures inter-rater reliability on a scale of 0 to 1 as follows: 0 = agreement equivalent to chance, 0.1 – 0.20 = slight agreement, 0.21 – 0.40 = fair agreement, 0.41 – 0.60 = moderate agreement, 0.61 – 0.80 = substantial agreement, 0.81 – 0.99 = near perfect agreement, 1 = perfect agreement.

## Results

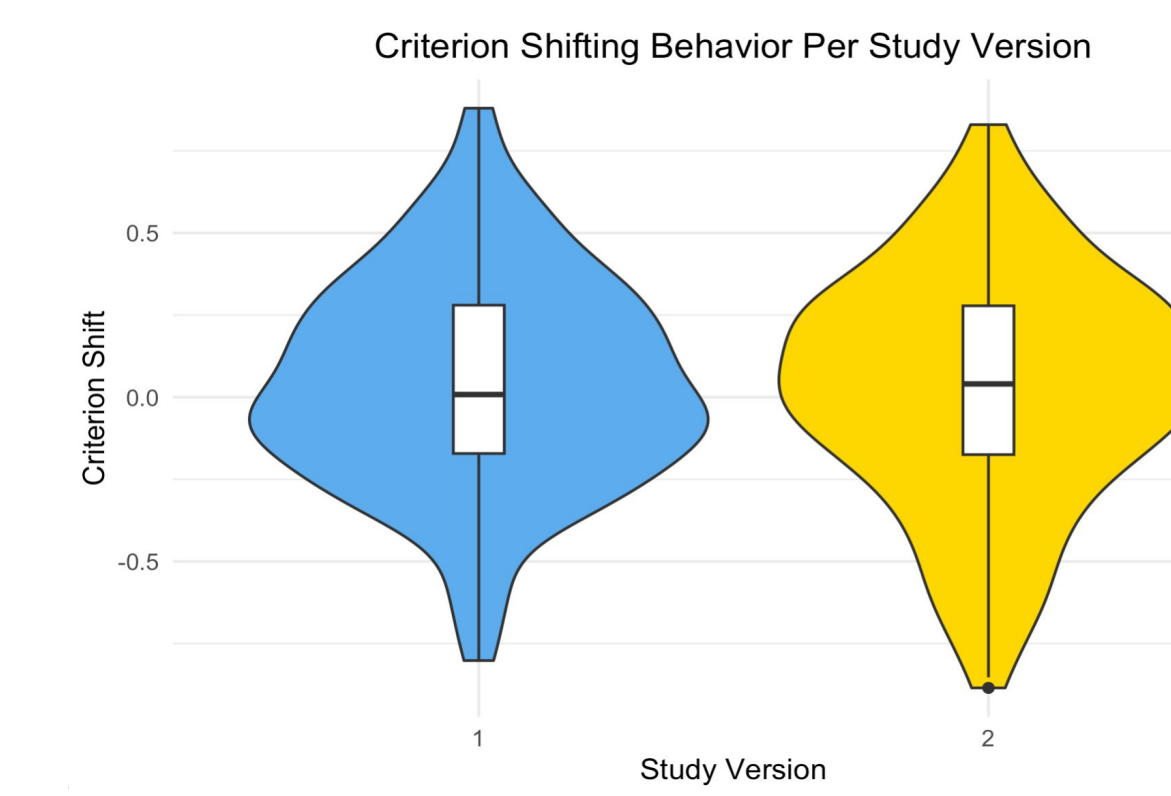
### Study 1: No Monetary Incentives vs. Study 2: Monetary Incentives



- There was a significant difference in the Hit Rates between participants in Study 1 ( $M = 0.39$ ,  $SD = 0.14$ ) compared to those in Study 2 ( $M = 0.35$ ,  $SD = 0.14$ ;  $t(1015) = 4.34$ ,  $p < 0.001$ ).
- However, no significant differences were found between the two studies for False Alarm Rates (S1:  $M = 0.05(0.05)$ ; S2:  $M = 0.04(0.05)$ ) nor between any of the Criterion Shifting Manipulations within each Study Version, and no interaction effects were found ( $F(2,1011) = 0.35$ ,  $p = 0.71$ ), Tukey's HSD post hoc tests were carried out.

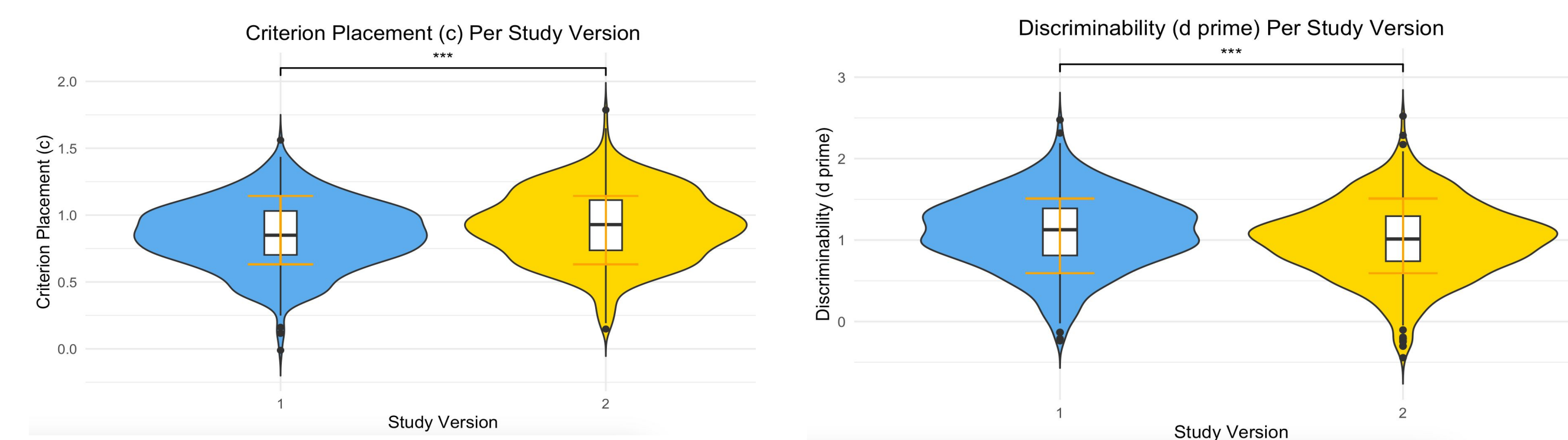
## Results cont.

### Criterion Shifting Behavior



- The mean Criterion Shift from Study 1 was 0.04 ( $SD = 0.32$ ), whereas the mean in the Study 2 was 0.03 ( $SD = 0.36$ ). There was no significant effect from the monetary incentive as shown in the Two Samples t-test,  $t(337) = 0.48$ ,  $p = 0.32$

### Criterion Placement & Stimuli Discriminability



- There was a significant difference in the Criterion Placement (c) participants set in Study 1 ( $M = 0.85$ ,  $SD = 0.25$ ) compared to those in Study 2 ( $M = 0.92$ ,  $SD = 0.26$ ;  $t(1015) = -4.11$ ,  $p < 0.001$ ).
- There was a significant difference in the Discriminability (d prime) for participants in Study 1 ( $M = 1.10$ ,  $SD = 0.45$ ) compared to those in Study 2 ( $M = 1.00$ ,  $SD = 0.46$ ;  $t(1015) = 3.37$ ,  $p < 0.001$ ).

## Conclusion

- No significant differences were found in criterion shifting behavior between Study 1 and 2; however, those in the non-monetary incentivized condition tended to place their criterion thresholds more conservatively as well as have higher discriminability when reporting information in the free recall.
- Future analyses can examine individual differences in relation to shifting behavior and confidence ratings (per trial and generally their self-perception of their memory capabilities) as well as looking more closely at stimuli presentation order, criterion manipulation in relation to each video, etc.
- Subsequent iterations of this study may attempt to control for the number of free recall categories in order to account for an event's "richness of detail" on decision-making.
- So much of how we operate in society is reliant on people's ability to freely recall episodic events, so understanding these fundamental decision-making strategies is necessary to potentially improve upon them under varying real-world circumstances.

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For any additional questions, please contact Courtney Durdle at [cadurdle@ucsb.edu](mailto:cadurdle@ucsb.edu).

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