How do we Criterion Shift Free Recall?: The Difficulty of Systematically Manipulating Criterion for Freely Recalled Episodic Events

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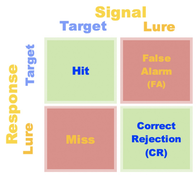
Background

- 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.[4]
  - 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(Hit rate) – Z(FA rate).[2]
  - Decision criterion:
    c = -0.5 x [Z(Hit rate) + Z(FA rate)]
  - Criterion shift = c(conservative) – c(liberal)

Question: *Does Criterion Shifting Affect the Free Recall of an Episodic event?*

Main Aims:

1. To test whether established signal detection theory principles hold true in experiments about the free recall of an episodic event.
2. To explore any effects negative arousal may have on free recall conducted with criterion threshold manipulation.

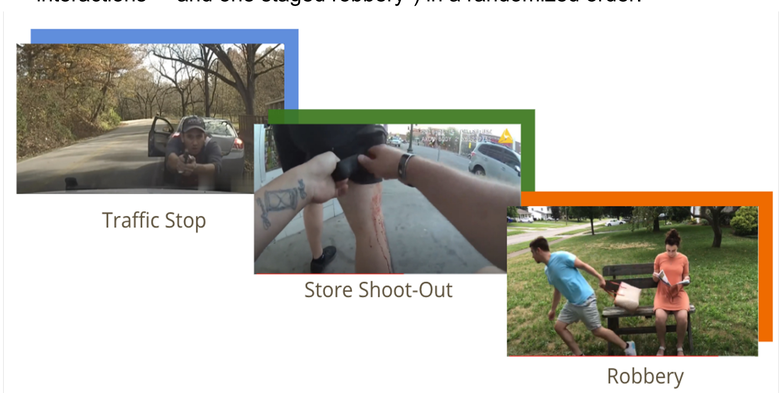
Hypothesis:

It is predicted that, regardless of the video and induced level of emotional arousal, the liberal condition will influence participants to report more correct and incorrect information (higher Hit and FA rates) compared to the other criterion manipulation conditions, while the conservative condition will lead to participants reporting less information overall, thus resulting in lower correct and incorrect information reported (lower Hit and FA rates).

Methods

Episodic Events - Crime Videos

- Study condition: Participants (n = 170; 115 females, M = 22.6 years, range = 18 – 65 years, SD = 7.8) were shown three crime videos (two real-life police interactions[1,5,] and one staged robbery[3]) in a randomized order.



Methods cont.

- Testing condition: Free Recall with Criterion Shifting Manipulations.
  - ***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 coders created categories for each video based on participant narratives (categories were created based on whether 2 or more participants reported the information).

	Total Correct Categories	Total Incorrect Categories
Traffic Stop (N = 170)	25	24
Store Shoot-Out (N = 170)	45	16
Robbery (N = 170)	32	18

Inter-Rater Reliability (Kappa Score)***
0.76
0.77
0.87

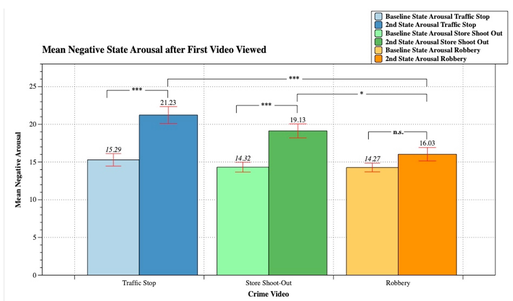
Hit	**Correct detail provided**
Miss	**Correct detail NOT provided**
False Alarm	**Incorrect detail provided**
Correct Rejection	**Incorrect detail NOT provided**

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

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

***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



Emotional Arousal

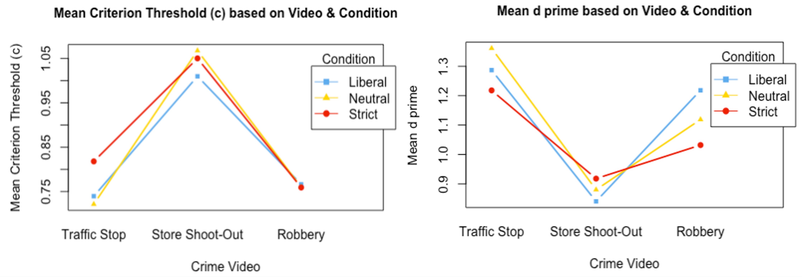
- The first and second real-life crime videos (traffic stop & the store shoot-out) successfully induced higher levels of reported negative state arousal compared to the staged crime (robbery) control condition within and between subjects.

Hit Rates & False Alarm Rates

Results cont.

Criterion Placement & Stimuli Discriminability

- Participants on average established higher criterion thresholds for the Store Shoot-Out video compared to the other two. This higher criterion threshold may also have influenced the lower level discriminability (or accuracy) for this video. Alternatively, the Store Shoot-Out video may be too salient/overstimulating compared to the other videos due to it being from the perspective of a body camera (high levels of movement) rather than a stationary perspective like the Traffic Stop (dash cam) and the Robbery (tripod) videos.



Conclusion

- There was no significant effect on criterion placement for the three criterion manipulation conditions [F(2, 507) = 1.427, p > .05].
- Criterion shifting for participants during this task was negligible (M = 0.043, SD = 0.332), which suggests that future research involving freely recalled episodic events may need more explicit criterion shifting manipulations in order to optimize decision strategies.
- 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.

Future directions

- A second iteration of the task is currently in the data collection phase
  - The criterion shifting manipulations have more explicit rewards and punishments (monetary motivation; +10 cents for correct information & -25 cents for critical errors)

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