

Frustrative non-reward causes generalised inhibition that affects performance on attentional blink task

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Background

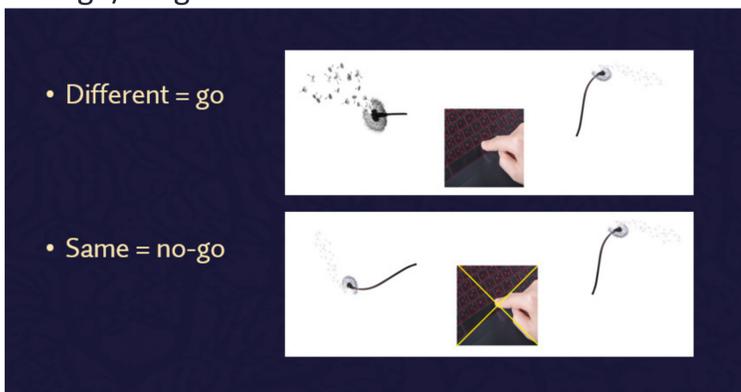
- Frustrative non-reward: A drop from large to small reward results in poor performance.
- In rats, inhibitory signaling and stress hormone release are key to frustrative non-reward phenomenon.
- Attentional blink: When subjects are asked to identify targets within a rapid serial visual presentation display, performance is poor for targets that follow each other closely.

Key Questions

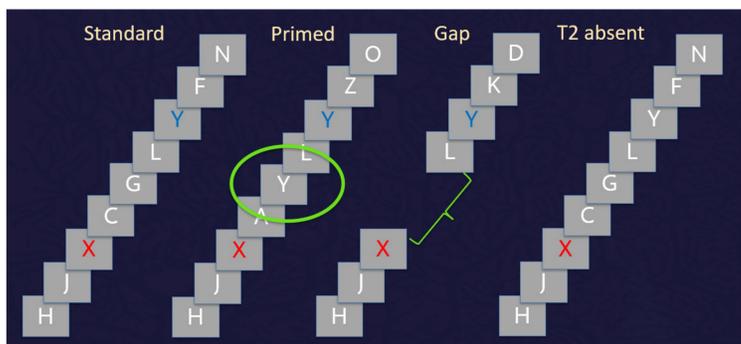
- Can our task cause frustration?
- Does frustration affect attentional blink performance?
- Are there specific effects of frustration on inhibition?

Methods

- Two tasks:
 1. go/no-go:



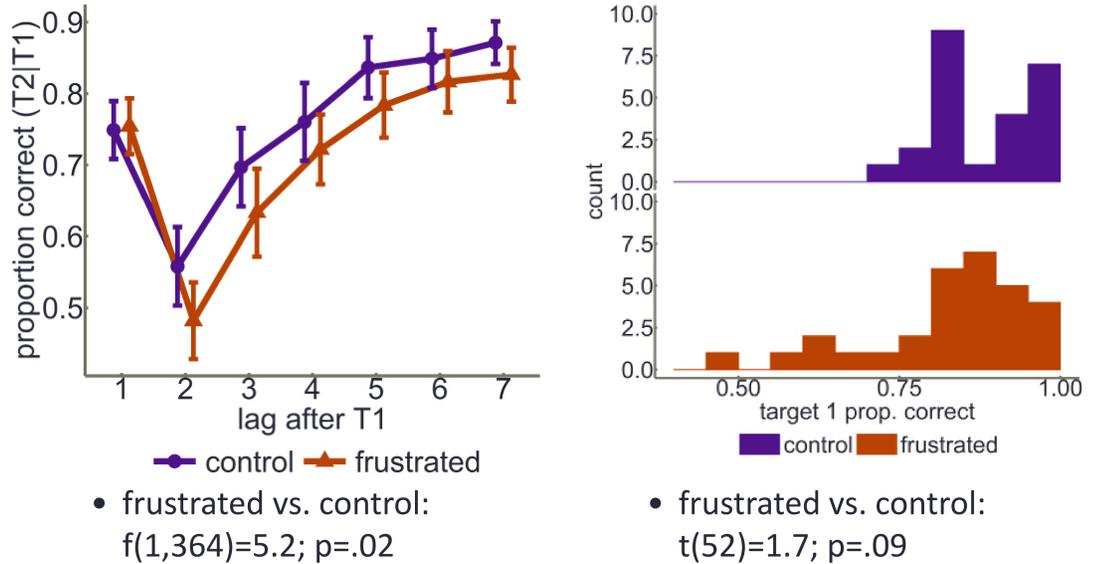
2. AB task:



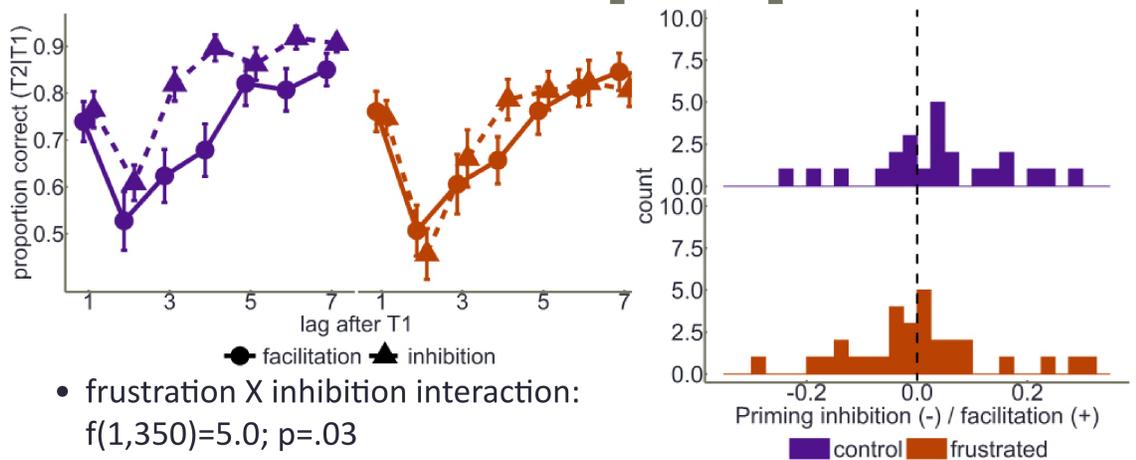
- Go/no-Go Instruction/difficulty manipulation:

1. Frustration group: "This task will be easy and you can win extra reward by maintaining 75% correct" and the task starts easy
2. Control group: "This task will be quite difficult. Don't worry if you can't get above 65% correct" and task is hard from start

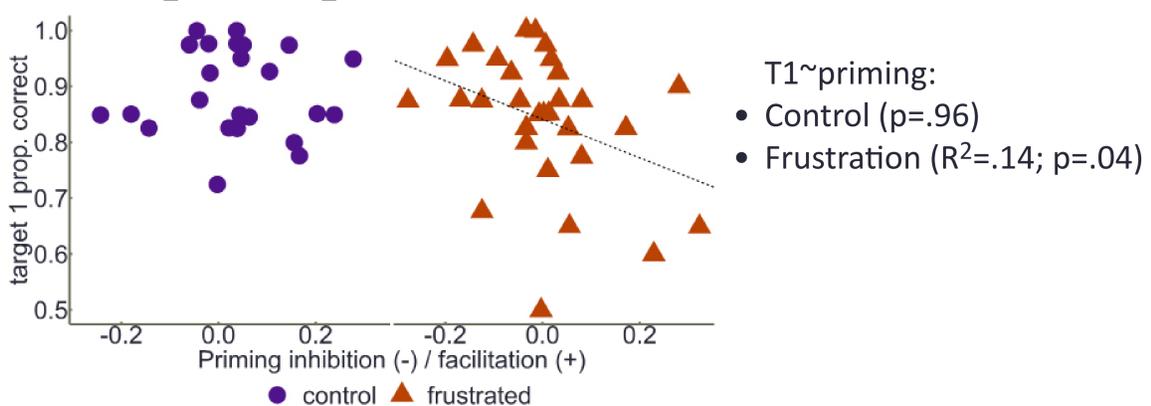
Frustrated participants perform less well on attentional blink



Inhibition of distractors is associated with better overall performance for controls but not for frustrated participants



Inhibition of distractors is associated with better target 1 performance for frustrated participants but not for controls



Frustrative non-reward causes frustration

| | Control (n=22) | | | Frustration (n=30) | | |
|-------------|----------------|-------------|-------------|--------------------|-------------|-------------|
| | RT limit | Accuracy | Frustration | RT limit | Accuracy | Frustration |
| pre shift | 0.63 (0.02) | 0.67 (0.01) | 3.58 (0.42) | 0.80 (0.03) | 0.78 (0.01) | 3.41 (0.48) |
| post shift | 0.49 (0.02) | 0.64 (0.01) | 5.55 (0.61) | 0.48 (0.03) | 0.63 (0.01) | 8.00 (0.44) |
| session end | | | 5.52 (0.71) | | | 5.73 (0.61) |

Note: values represent mean and (standard error). RT expressed in seconds. Accuracy expressed in proportion correct. Frustration is unitless between 1 and 10

Conclusions

- This paradigm successfully induced frustration
- Frustration reduced performance on the attentional blink task.
- Inhibition served different purposes for the two groups:
 - » Control: no problem staying alert, inhibition of distractors helped to boost target v. distractor contrast, resulting in better overall performance
 - » Frustration: needed to inhibit self-generated negative ideation associated with frustration, so inhibition measured with priming represented general effort to stay alert