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# Value-driven attentional capture under time constraints appace



Jérémy MATIAS <sup>1</sup>, Jean-Charles QUINTON <sup>2</sup>, Michèle COLOMB <sup>3</sup>, Marie IZAUTE <sup>1</sup> & Laetitia SILVERT <sup>1</sup>





<sup>1</sup> Université Clermont Auvergne, CNRS, LAPSCO, F-63000, Clermont-Ferrand, France

<sup>2</sup> Université Grenoble Alpes, CNRS, LJK, F-38000, Grenoble, France





#### INTRODUCTION

- \* We need to avoid distraction by irrelevant stimuli to maintain a good performance (e.g., while reading, driving, etc.).
- ❖ Our ability to avoid distraction by irrelevant salient stimuli could be influenced by the time constraints of the task (e.g. vehicle speed):
  - > Less distraction under high temporal demands (Kiss et al., 2012)
- Even when counterproductive for the task at hand, distractors associated with rewards receive high attentional priority because of their motivational significance (Le Pelley et al., 2016).
  - "Value-driven attentional capture"
  - > More distraction by high- rather than low-reward distractors

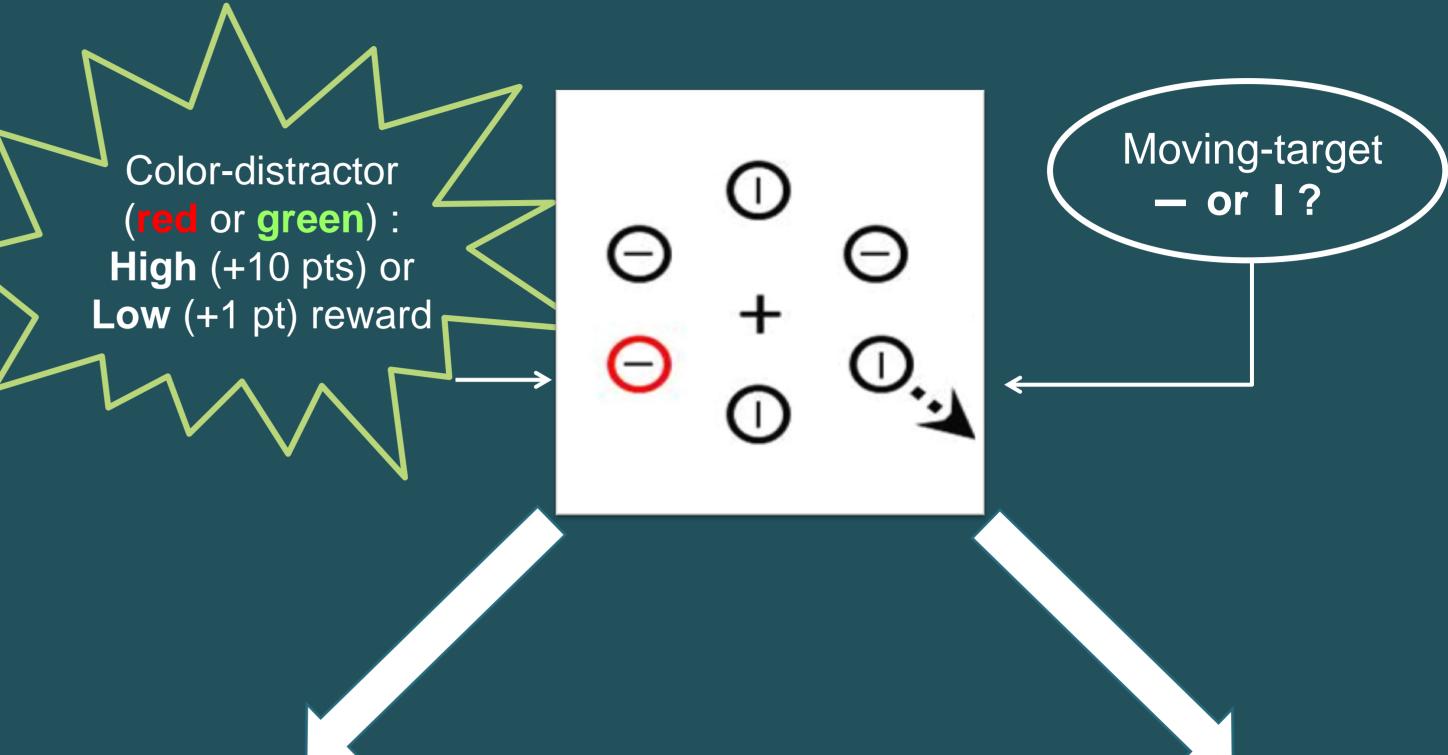
To replicate the temporal demands effect on distraction (i.e., AIM 1 less distraction under high temporal demands)

To investigate whether a reward-distractor would survive to AIM 2 this effect in virtue of its attentional priority.

To investigate whether distraction is modulated by the relative **AIM 3** magnitude of reward-distractors under high temporal demands.

#### **METHOD**

❖ Additional singleton paradigm (Theeuwes, 1992): give the orientation of ` the small bar contained in the moving target



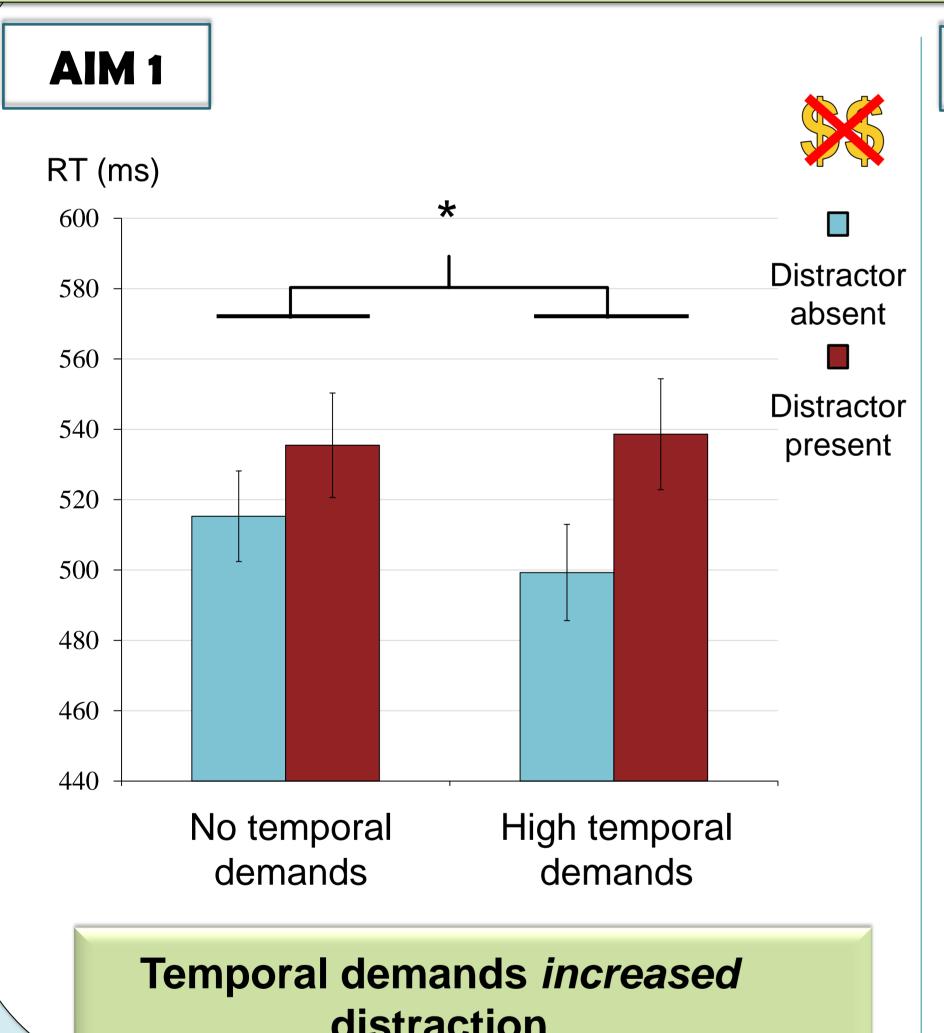
Group 1 (n=30) No temporal demands: Display visible until response

Group 2 (n=30) **High temporal demands:** Display visible only for 200 ms

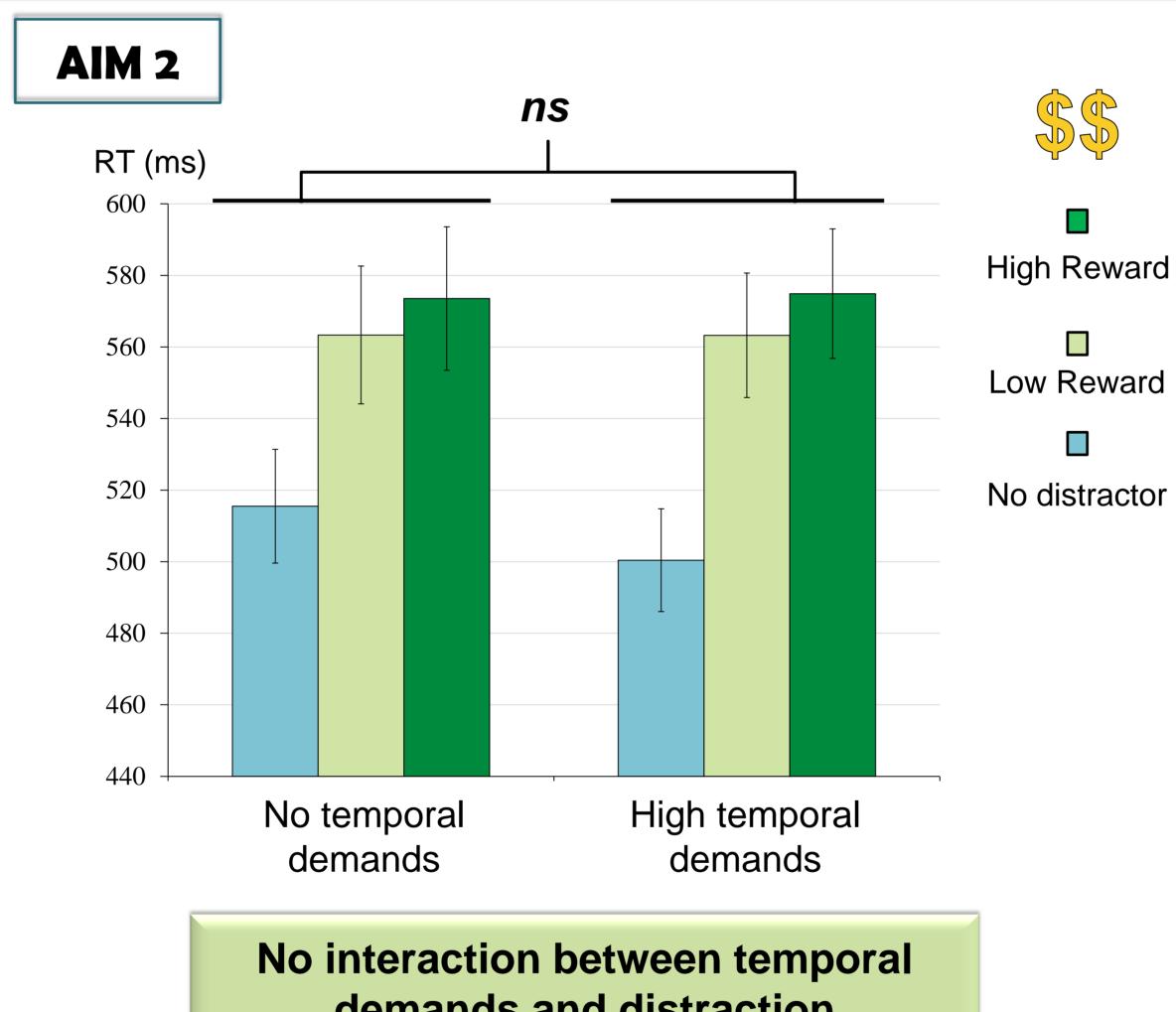
- VD: Distraction (RTs distractor absent vs RTs distractor present)
- + Control study: same experiment without reward-outcomes



### **RESULTS**



distraction



demands and distraction

## **AIM 3**

High vs Low reward	p-values
No temporal demands	< .01
High temporal demands	< .01

Distraction was also modulated by reward magnitude under high temporal demands

## DISCUSSION

AIM 1

- Contrary to our first hypothesis, distraction was increased under high temporal demands.
- \* High temporal demands, as sensory degradation (i.e., reduced time presentation), would increase task difficulty which in turn would increase probability of distractor intrusion (Lavie & de Fockert, 2003).
  - $\triangleright$  Error rates: No temporal demands (8.3%) vs High temporal demands (10.5%), t(49) = 1.8, p = .066

AIM 2

- \* Temporal demands did not increased distraction by reward-distractors (as it was observed with threatening faces Yao et al., 2013)
  - > "Ceiling effect" due to large distraction by reward distractor?
  - > Error rates: (9.4%) vs (9.4%) vs (11.1%), t(98) = 1.9, p = .0.56

AIM 3

& Psychophysics, 65(2), 202-212.

- \* Even when task was performed under high temporal demands, high-reward distractors produced stronger distraction than low-reward
- The learning of distractor-values was not impaired under time constraints.
- Value-driven attentional capture: automatic capture impervious to top-down control? (Anderson, 2013; Hickey & van Zoest, 2013; Pearson et al., 2015)
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distractors.

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