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Peterson Lab

Temporal Attention Capture by Portions of Unconsciously Processed Familiar Objects

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Background

Figural priors bias the black, closed regions as figures and the white regions as shapeless grounds.

A **B** **C**

Novel Figures Familiar Figure

Portions of familiar objects are suggested on the groundside of Type B Novel objects.

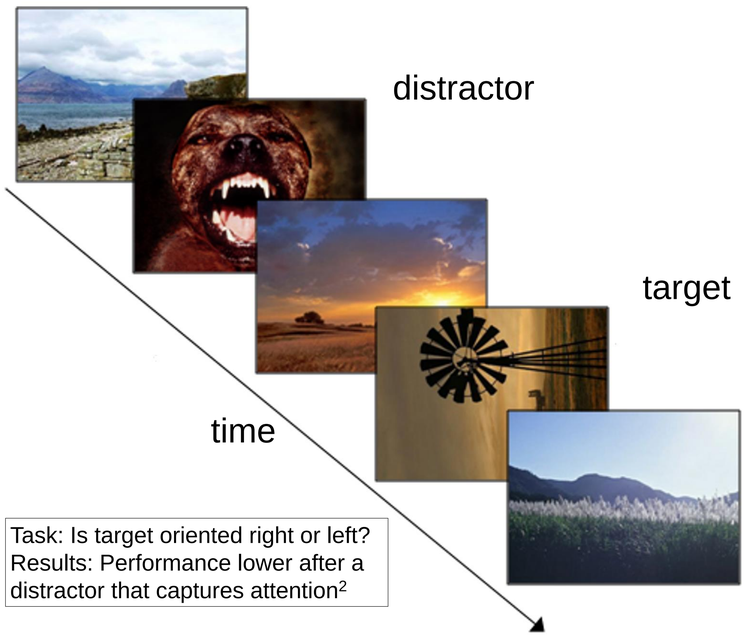
pineapples above

Their shape & semantics activated but they're ultimately rejected for conscious perception[1]

Question

Can activated objects that are not consciously perceived capture attention?

- **Plan**: Adapt an attentional blink paradigm

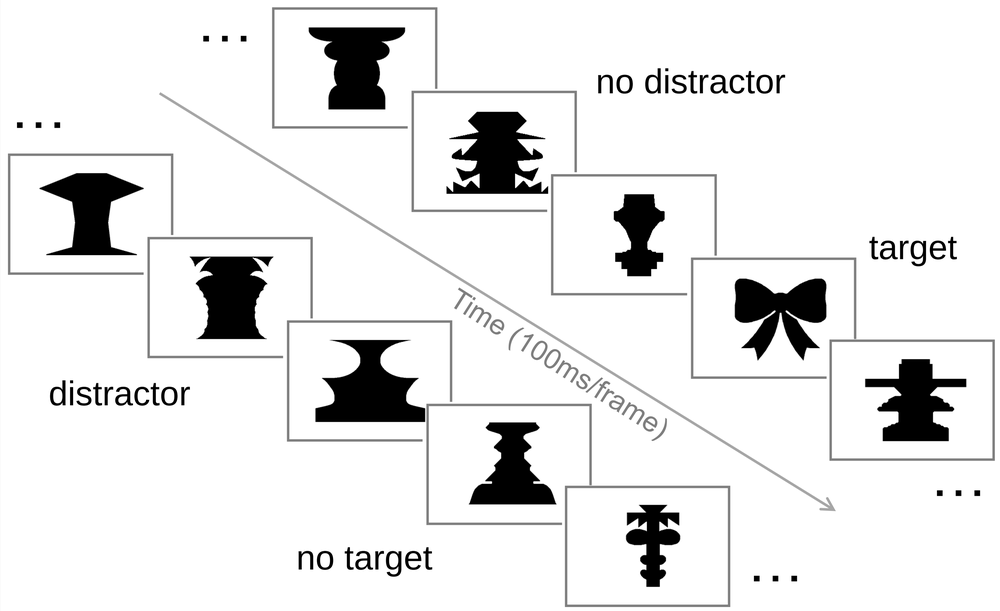


Task: Is target oriented right or left?
Results: Performance lower after a distractor that captures attention[2]

Methods

Task: Familiar object present? (Yes/No button press)

Distractors are Type B novel figures
they suggest familiar objects on their groundsides



Stream of 12 black figures
2 Repeated Blocks (128 trials each)
96 Familiar Targets/block (1X / block; position 6-9)
64 Distractors/block
32 distractors (2X / block; position 4-7)

48 Target-Present, Distractor-Present trials / block
48 Target-Present, Distractor-Absent trials / block
16 Target-Absent, Distractor-Present trials / block
16 Target-Absent, Distractor-Absent trials / block

688 'Filler' novel silhouettes (1X / block)
Trials randomized within block

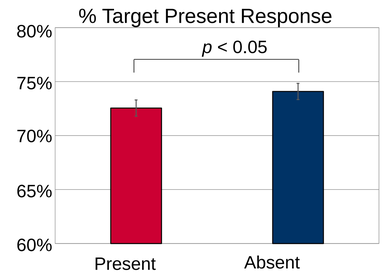
References

[1] Peterson, M.A., et al (2012). Meaning can be accessed for the groundside of a figure. *Journal of Gestalt Theory*, 3, 297-314.
[2] Cieselski, B.G., et al (2010). Emotion modulation of visual attention: Categorical and temporal characteristics. *PLoS One*, 5, e13860.
[3] Treisman, A., Kahneman, D., & Burkell, J. (1983). Perceptual objects and the cost of filtering. *Perception & Psychophysics*, *33*, 527-532.

Results

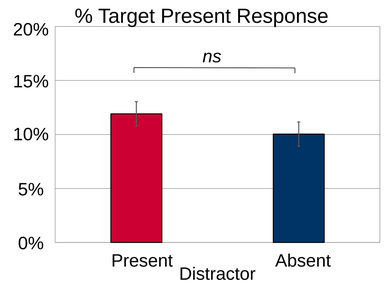
Target-Present Trials

Target detection lower after distractor



Target-Absent Trials

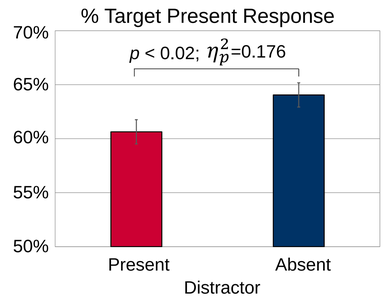
No effect of distractor



Difference ($T_{PRESENT} - T_{ABSENT}$)

Attentional Blink

Distractor reduces target detection per se and not just response



Conclusions

Unconsciously processed familiar objects can capture attention in time

- Even though they are rejected as objects present in the scene

Not in accordance with late theories of attentional selection[3]

A follow up experiment with longer frame duration didn't produce significant results – performance may have reached ceiling