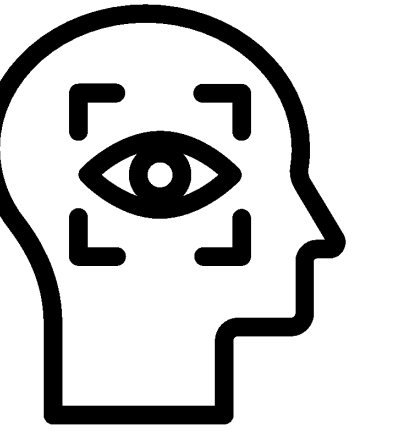


# Portable Pupillometry Captures Robust Responses to Imaginary Light

Morgan McCarty<sup>1,2</sup>, Michael McPhee<sup>2</sup> & Jorge Morales<sup>2,3</sup>

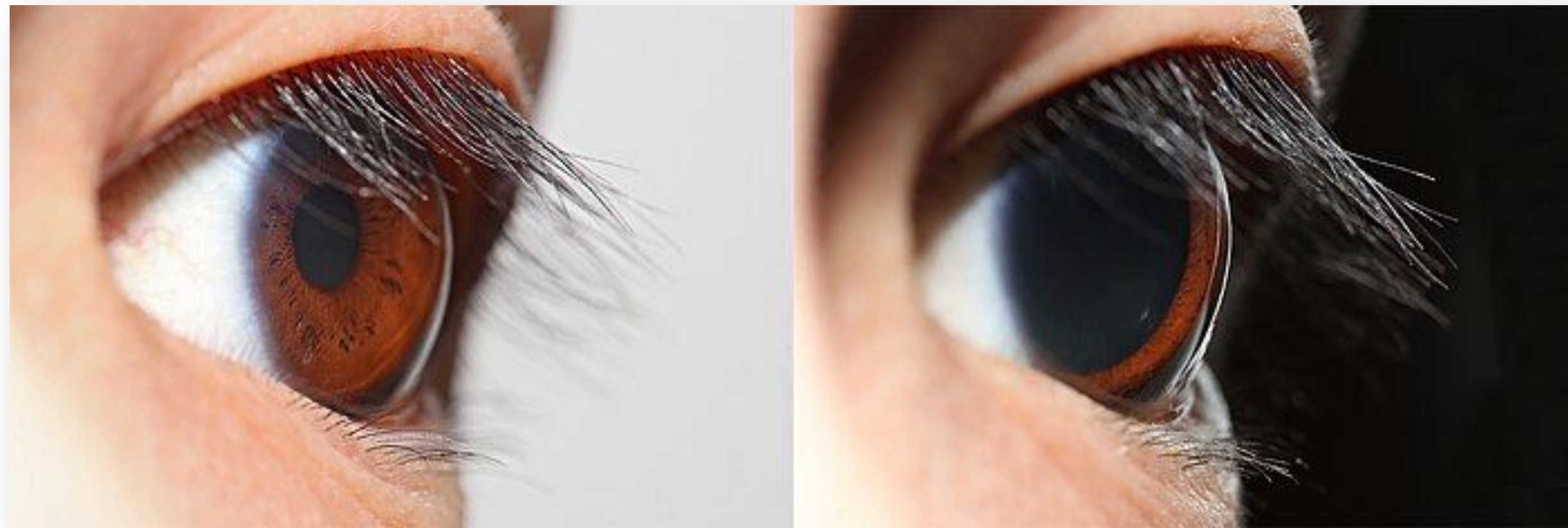
<sup>1</sup> Khoury College of Computer Sciences, <sup>2</sup> Department of Psychology, <sup>3</sup> Department of Philosophy



SUBJECTIVITY LAB at  
Northeastern University

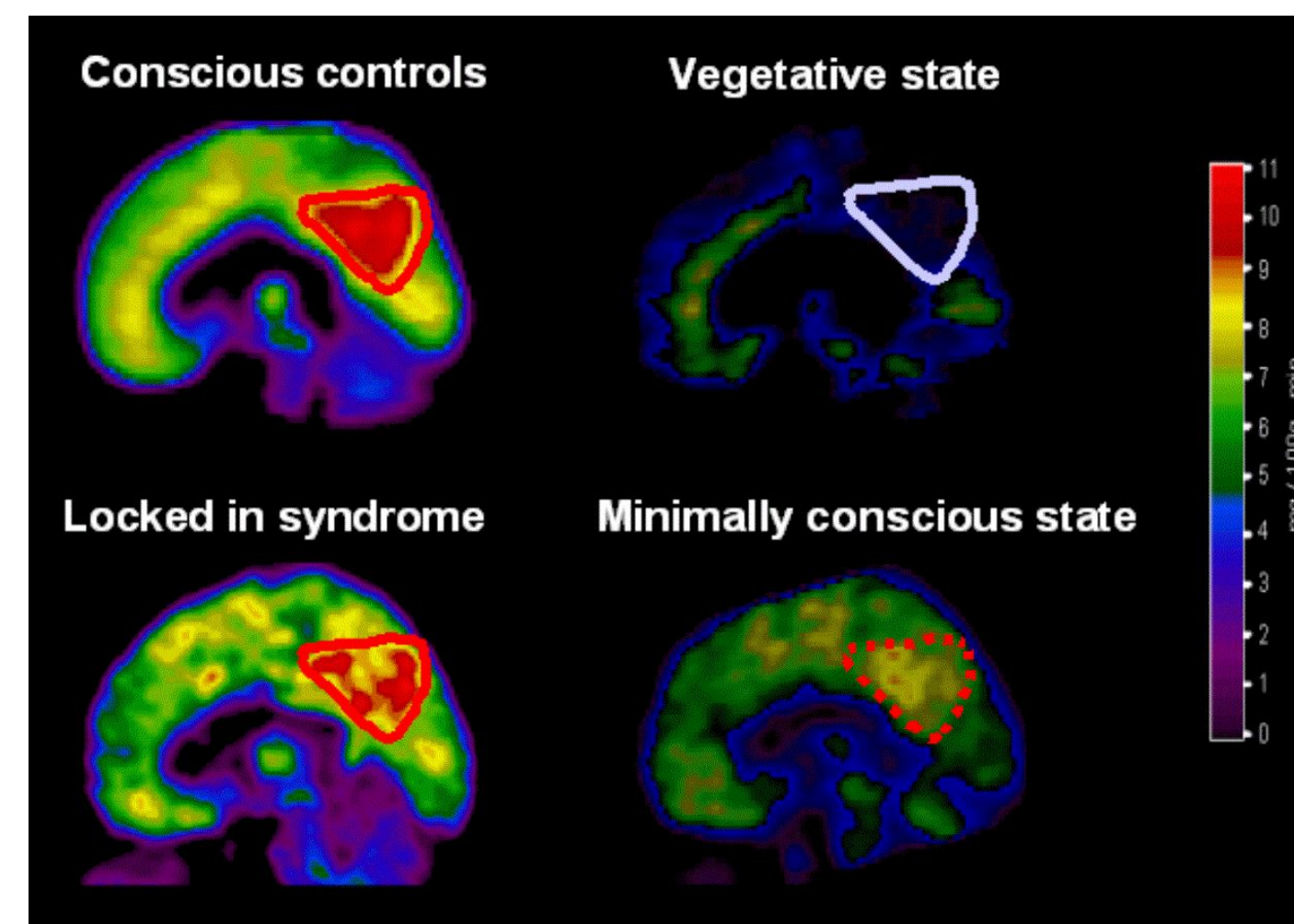
## Background

Pupillary response reveals external and internal states:  
e.g., physical light, arousal & *imagined light*



## Motivation

Pupillometry requires **controlled laboratory conditions**. But some subjects cannot be tested in the lab: e.g., patients with **disorders of consciousness**

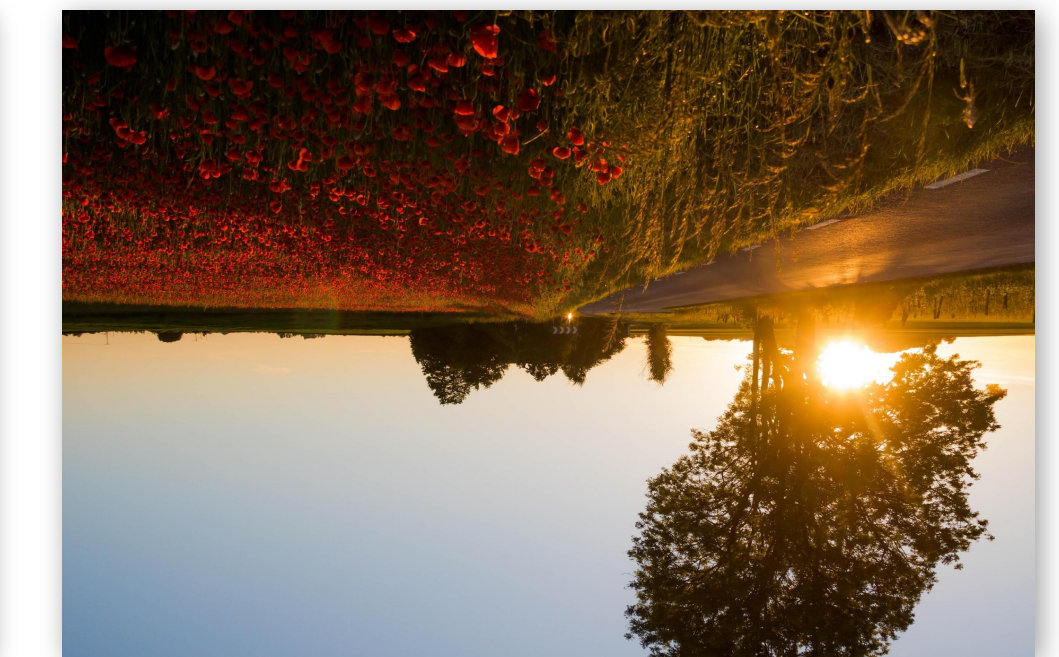


## Portability

VR headset with internal eye-tracker

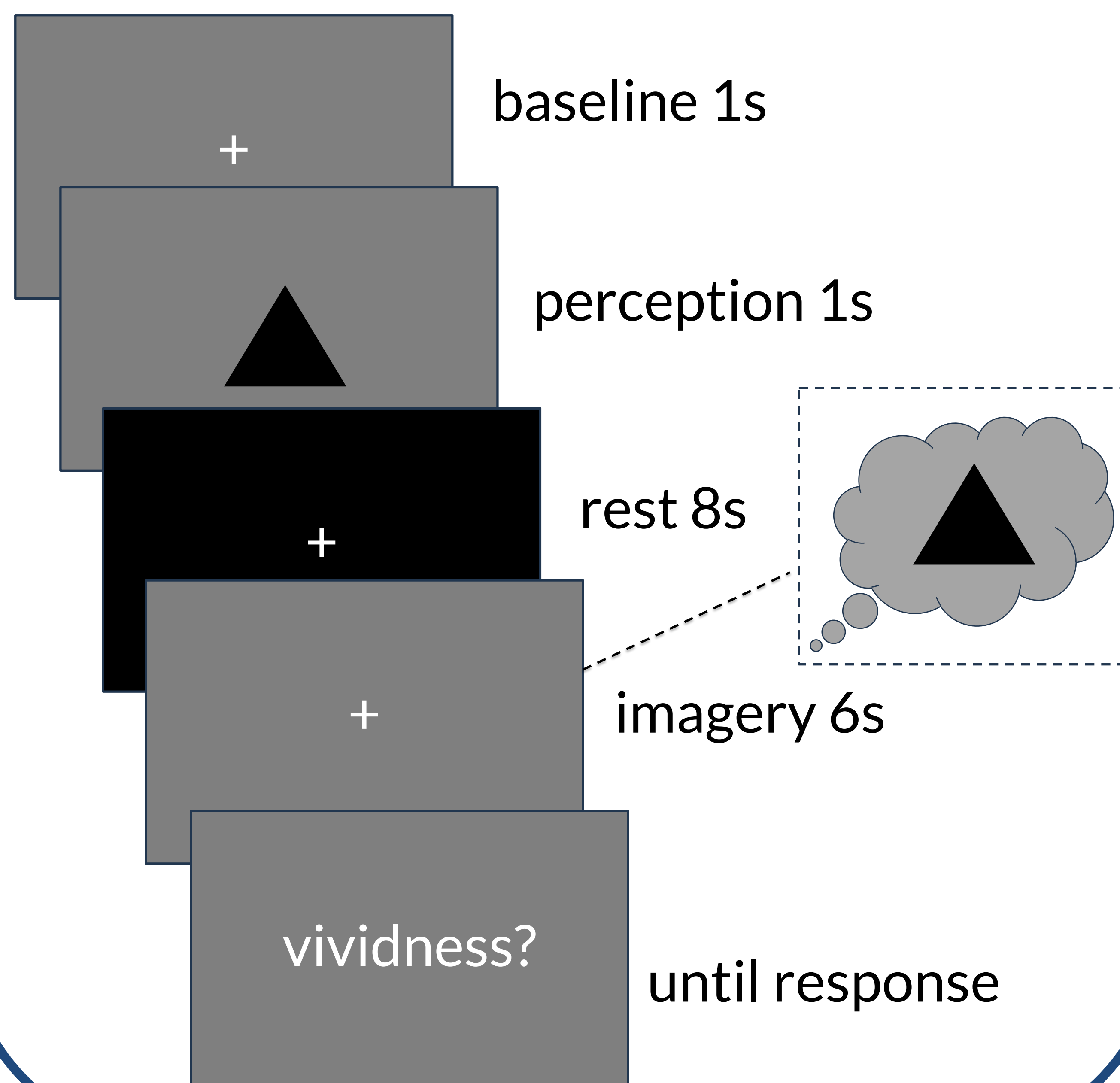


## Future Directions



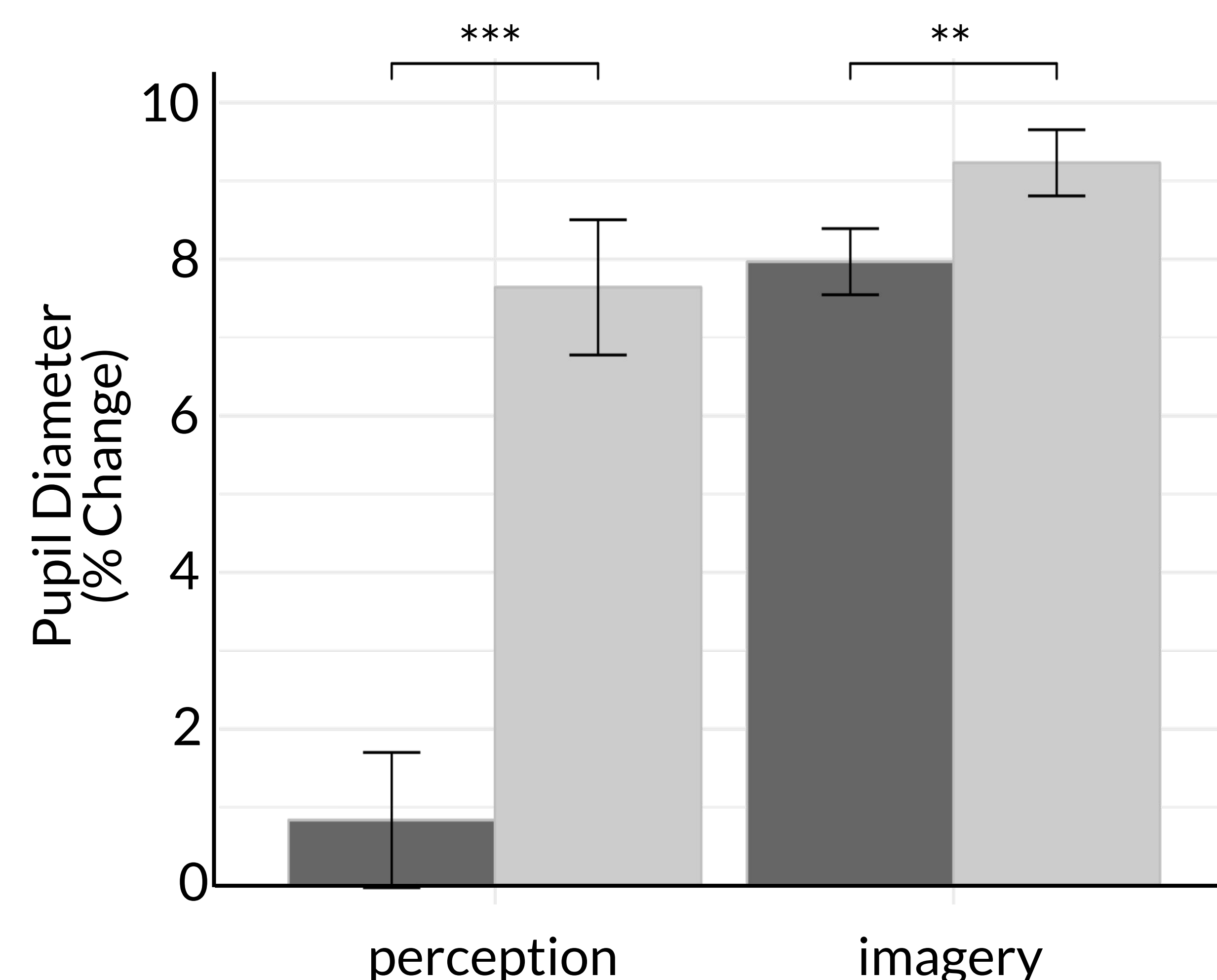
tunnel  
cave  
beam  
flash

## Task Design



## Results

Pupil constriction: Dark vs Light



## Conclusions

Pupillary responses are proportional to both the luminance of perceived shapes and the brightness of imagined counterparts.

Portable eye-tracking demonstrates the feasibility of pupillometry outside of the laboratory.

## Acknowledgements

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