

Introduction

The role of attention with regard to its effect on visual perception has long been debated. One previous study, conducted on non-human primates showed that attention gates visual processing (1).

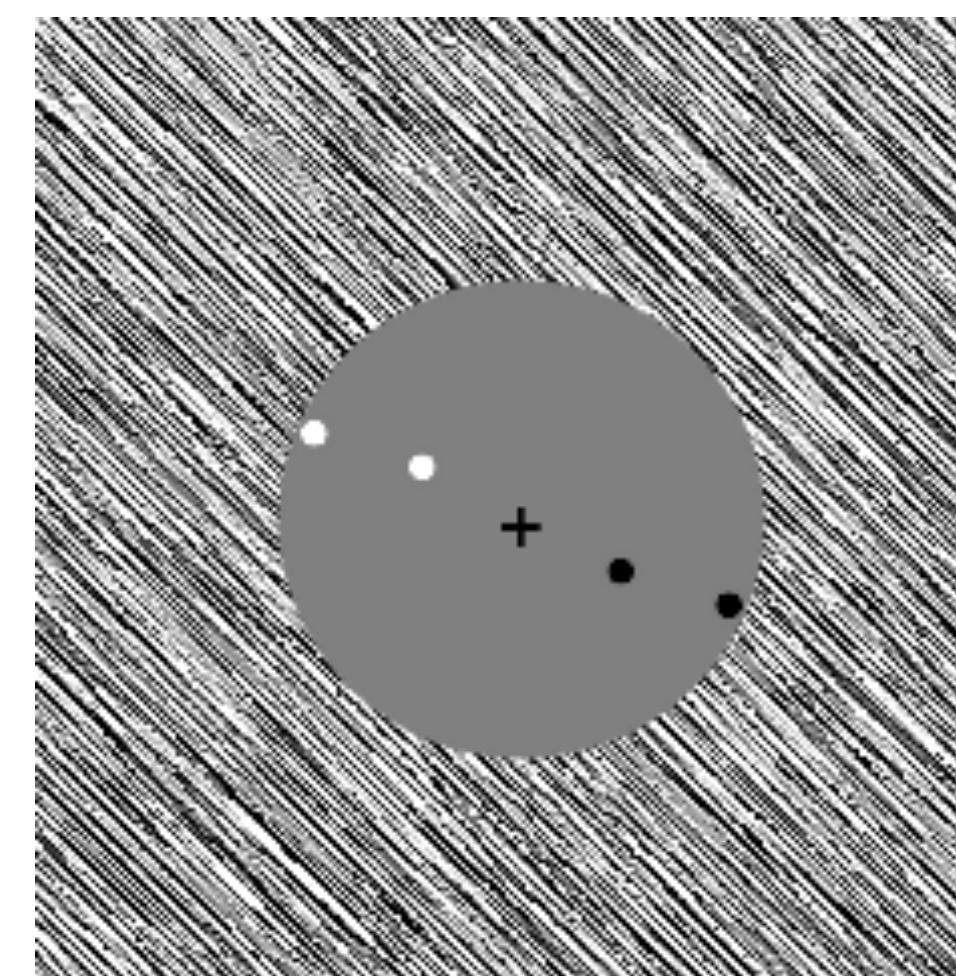
Our earlier studies demonstrated that attention is necessary for iconic memory, a proxy for conscious visual perception (2).

In the current study we developed a method that allows us to manipulate the availability of attentional resources in a graded manner.

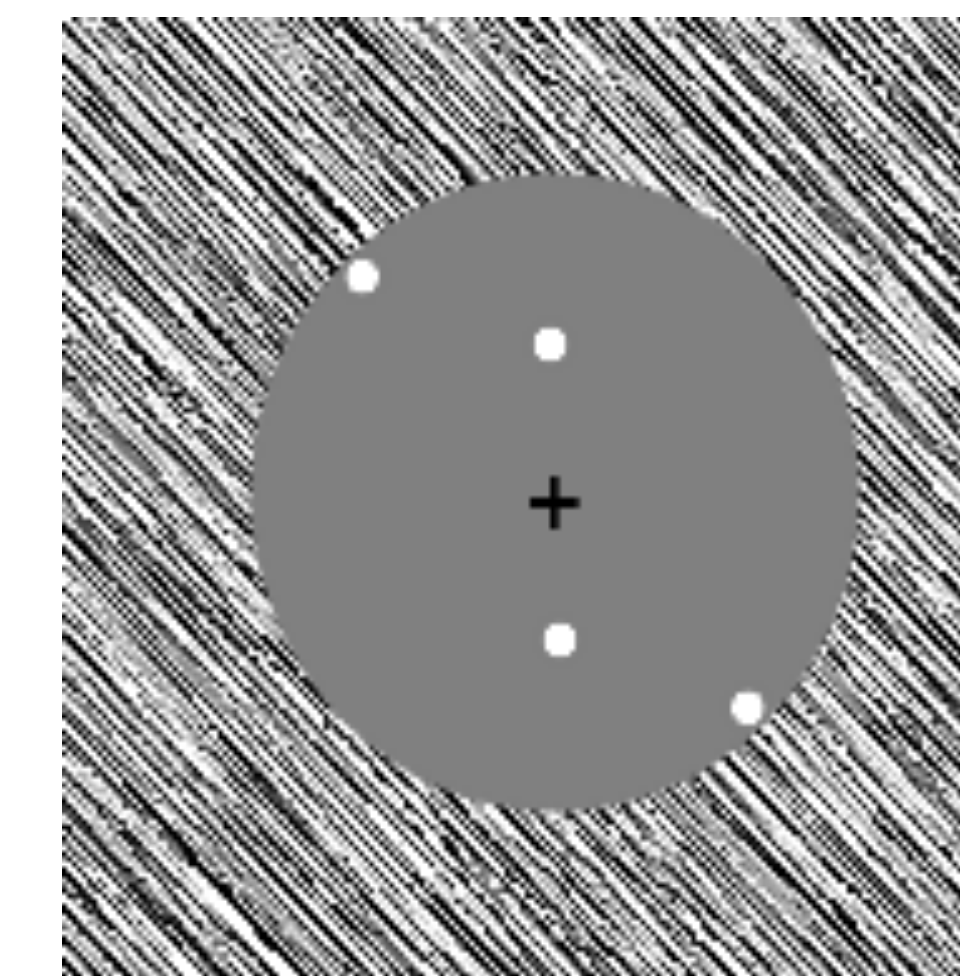
Method

We developed a method for measuring attention and perception simultaneously. We modified multiple object tracking paradigm, in which observers are asked to remember and track continuously moving objects.

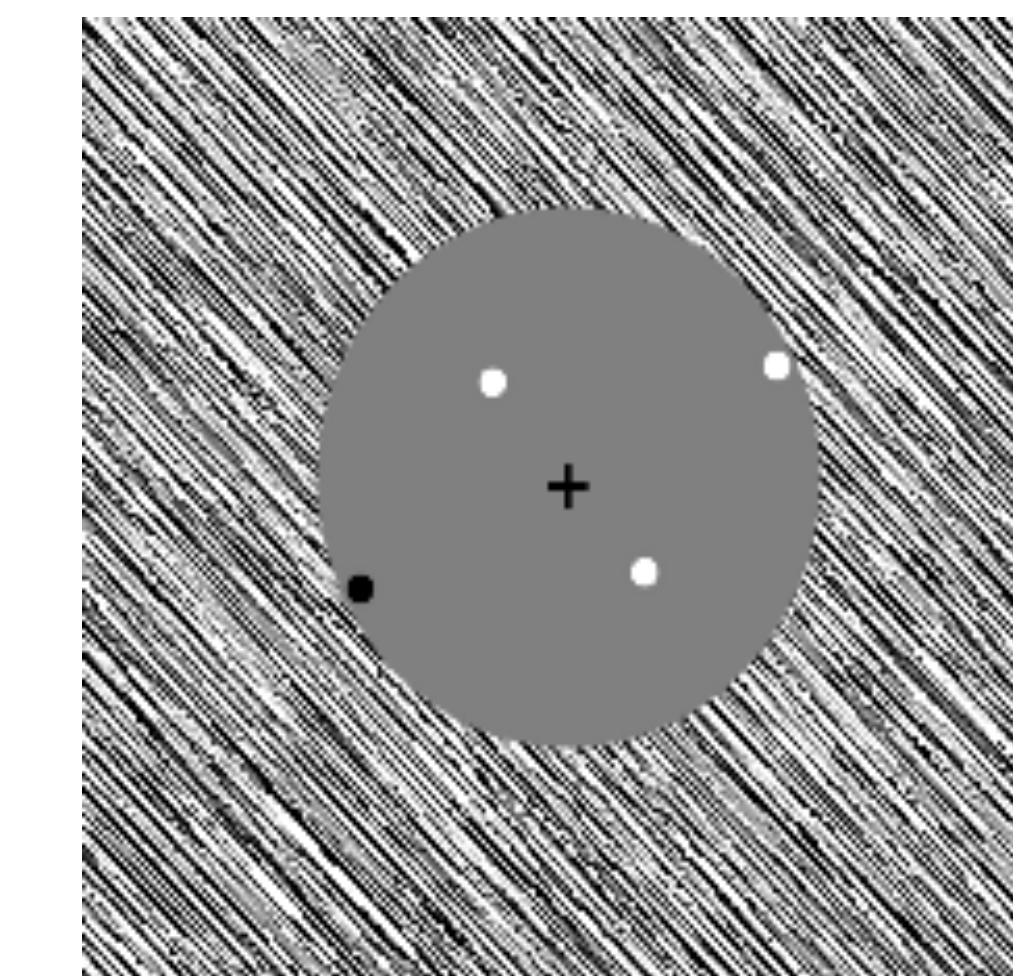
We used open source tool PsychoPy, to program pilot experiment, in which observers tracked target items in the presence of moving distractors.



Two black disks are marked as targets.



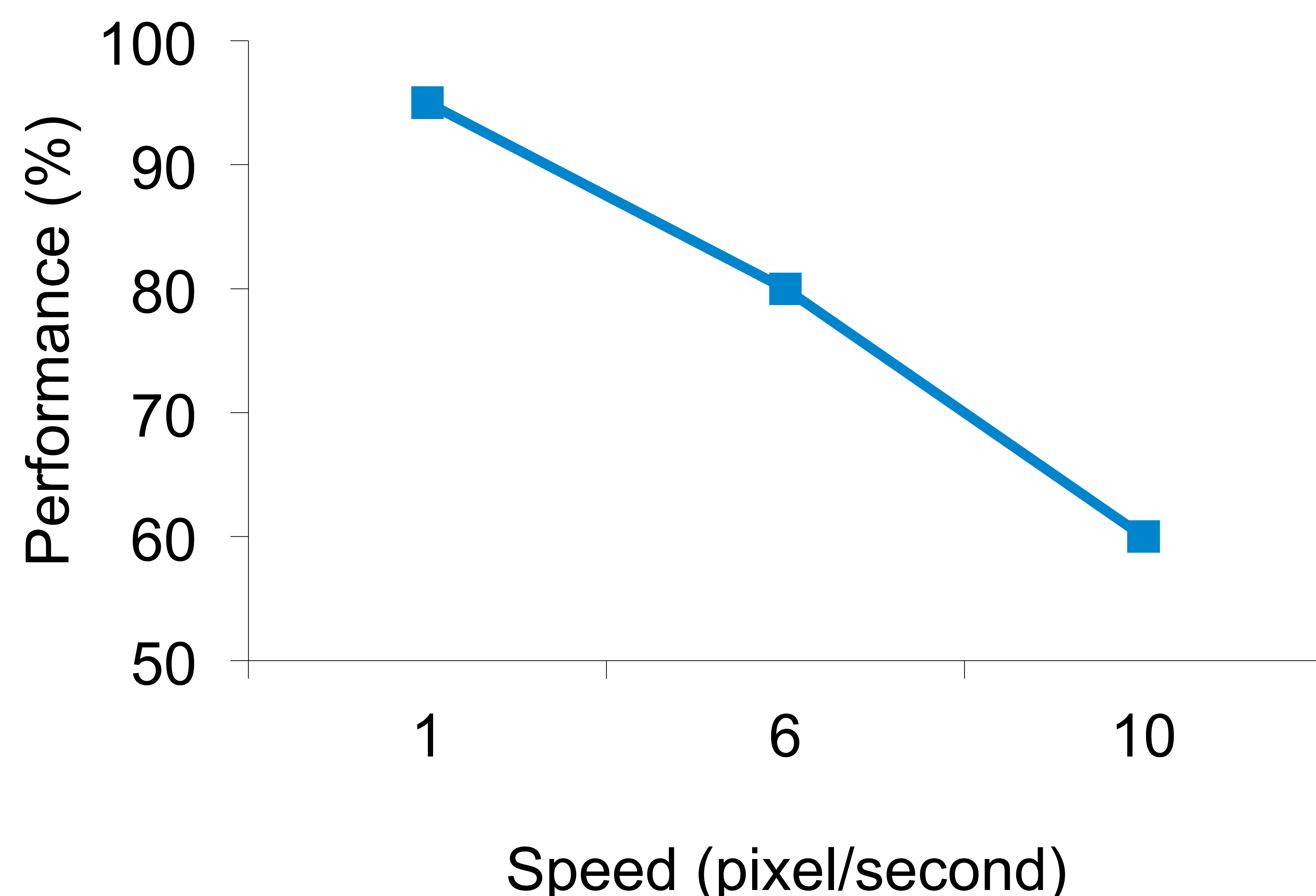
Black disks turn to white. All disks are rotating and switching direction.



One dot turns black and participants determine if it is the target.

Results

Performance on MOT task



We started testing participants in a pilot experiment. We predict that at lower speed, the accuracy will be nearly at ceiling for almost all participants. At a medium speed, the accuracy will drop to approximately eighty percent. At the fastest rotation rate, accuracy should be near guessing, averaging around fifty-five percent for most participants.

Conclusions

We predict that the results of our pilot experiment will indicate that the higher the rate of rotation, the more difficult the task becomes, which will demonstrate that task requires more attentional resources.

We are currently developing a visual perception task, which will directly measure visual experience of participants. Once the visual perception task is completed, it will be combined with multiple object tracking task. This design will allow us to determine whether increasing demand on attentional resources affects visual perception.

References

1. Moran J, Desimone R. Selective attention gates visual processing in the extrastriate cortex. *Science*. 1985;229(4715):782–784.
2. Persuh, M., Genzer, B., and Melara, R. (2012). Iconic memory requires attention. *Front Hum Neurosci* 6:126.