

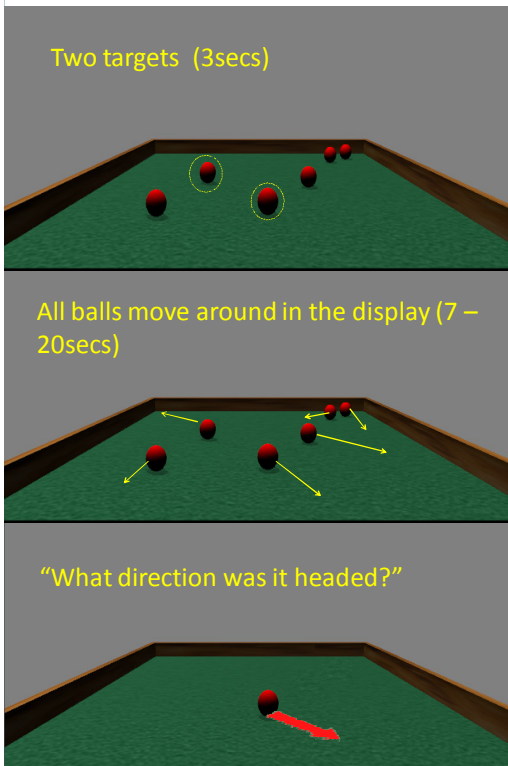
Strategies to overcome the neural and attentional demands of multiple object tracking

Background

- The dynamic environment presents our visual system with scenes that are demanding on attentional and cognitive resources.
- It would be plausible to think that strategies are employed in order to cope with these demanding processes, two of which are investigated here.

Experiment 1 – Do humans anticipate the future positions of moving objects by extrapolating its speed and direction?

Experiment 2 – Can humans strategically split attention unequally between multiple objects?



Method

Tracking ability was measured by the difference between the actual direction the ball was headed, and the direction participants responded: the degree of error.

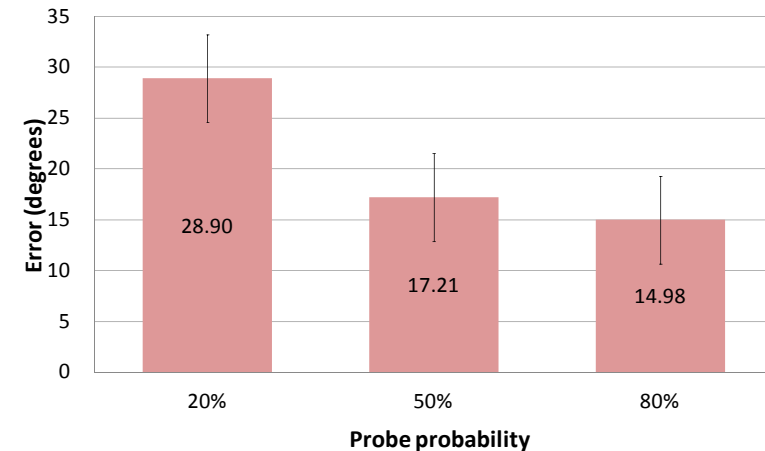
Experiment 1 manipulated the predictability of motion; unpredictable motion should make extrapolation impossible.

Experiment 2 provided participants with information about the probability a target ball will be probed. Probabilities were either 20%, 50% or 80%.

Results

Experiment 1 - There was no significant difference in the degree of error between the ‘unpredictable’ and ‘normal’ conditions.

Experiment 2



Discussion

Experiment 1

- It is unlikely motion extrapolation is used as a way of lightening the cognitive load of tracking multiple objects.
- It remains plausible that it is used to compensate for neural lags associated with the correspondence problem.

Experiment 2

- Results indicate that attention can be strategically distributed in an unequal manner.
- This suggests that stimulus-driven and goal-driven factors can split spatial attention.