

# Covert Transient Attention Affects Motor Response Trajectories

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## Background

### Transient covert attention:

- accelerates the rate of visual information processing  
*Carrasco & McElree (2001)*

### Visually guided motor response:

- is modified by spatial attention  
*Sheliga, Craighero, Riggio & Rizzolatti (1996); Lee (1999)*
- can be used to quantify covert attention  
*Peterson, Kramer & Irwin (2004)*
- replicates attentional effects found in keyboard response tasks  
*Faludi, Maloney & Carrasco (VSS, 2004)*

## Aim

### How does transient covert attention affect motor response?

- **endpoint (accuracy)**
- **trajectory (accelerated processing)**

## References

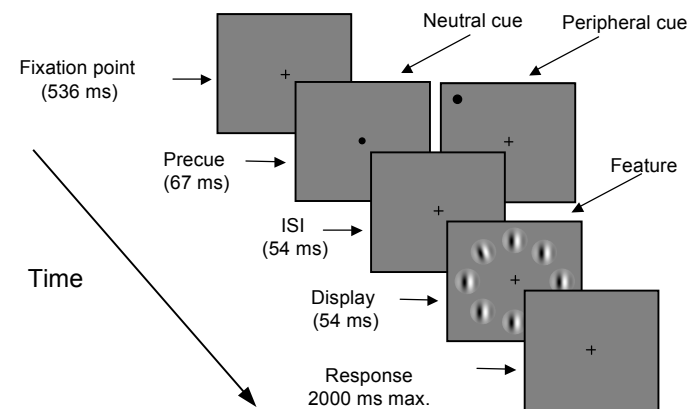
Carrasco, M and McElree, B (2001). *Proceedings of the National Academy of Sciences* **98**, 5363-5367.  
Faludi, R, Maloney, LT and Carrasco, M (2004). *Vision Sciences Society*.  
Lee, D (1999). *Cognitive Brain Research* **8**, 143-156.  
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## Acknowledgements

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## Methods

### TRIAL SEQUENCE

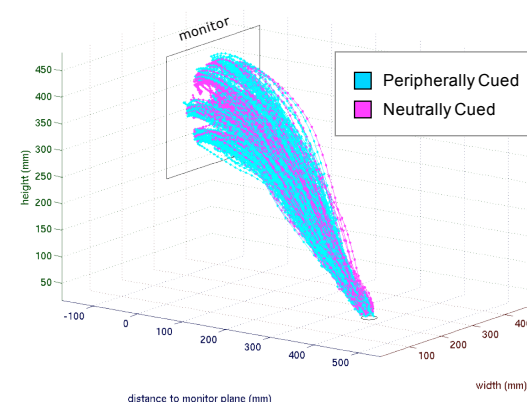


Stimulus contrast set for each observer to attain accuracy of ~82%

- Detection task
- 5 observers
- Target: 2°, 4 cpd,  $\pm 30^\circ$  tilted Gabor, present or absent
- Target at 1 of 8 locations, 9° iso-eccentric, with distracters
- Peripheral cue adjacent to potential target location
- Neutral cue at fixation
- Elo Entuitive 1525C 15" CRT Touchmonitor
- Optotrak 3020 Motion Capture Device
- Dependent variables:  
coordinates of screen contact (touch screen)  
motion trajectories  
response times

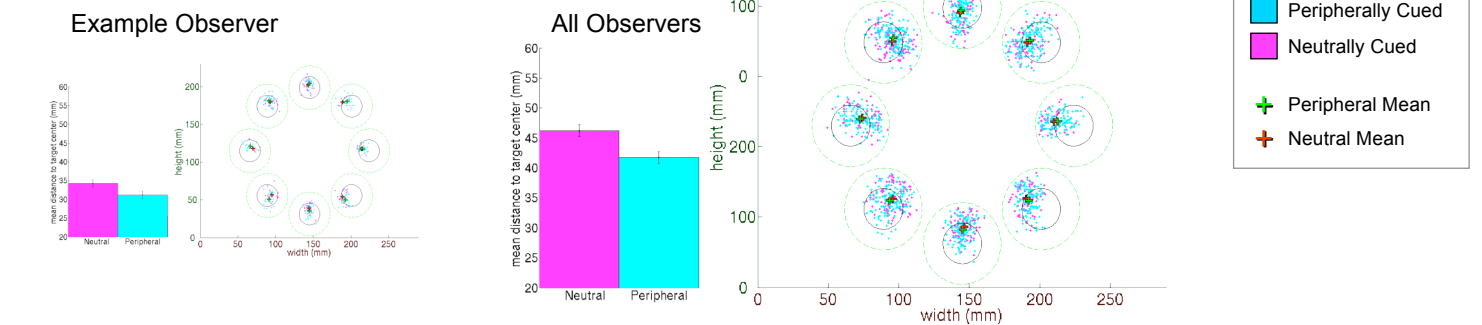


### RAW DATA

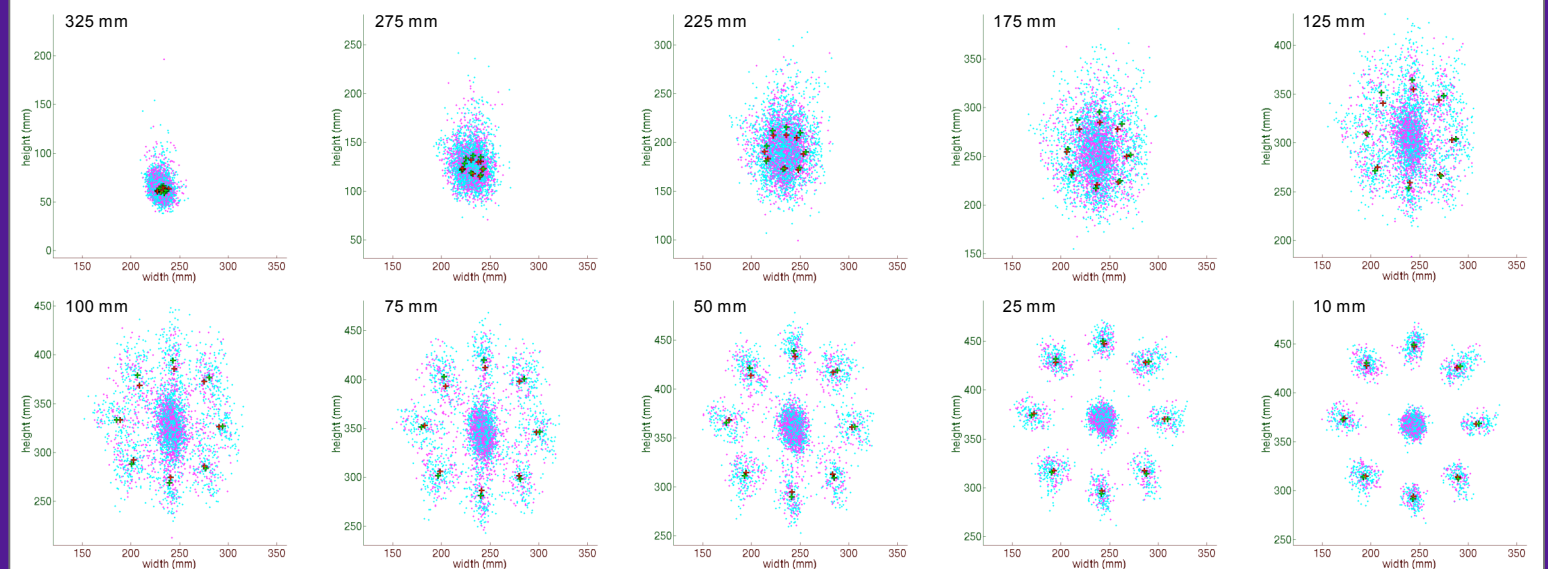


## Results

### ACCURACY

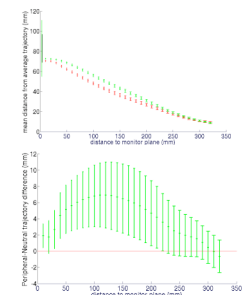


### PLANE INTERSECTIONS (distance from monitor)

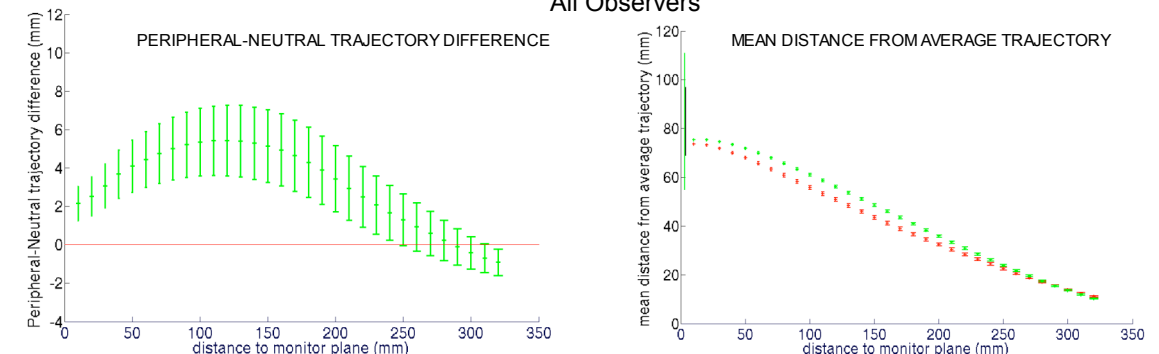


### TRAJECTORIES

#### Example Observer



#### All Observers



### Transient covert attention:

- responses are closer to target center—attention increased accuracy
- trajectories trended toward target sooner—attention accelerated processing