1. Background

- Abrupt changes in trajectory can attract attention (Howard & Holcombe, 2010).
- Increasing the number of abrupt changes in a multiple-object tracking (MOT) task negatively impairs tracking ability (Ericson & Beck, In Press).

2. Current Research

- Attention may be preferentially allocated to items that have recently changed trajectory.
  - Pulling attention away from the remaining target items.
- A probe detection task was used to measure when or where attention may be allocated after a change in trajectory occurs for a target item.

Expected Findings

- More changes in trajectory will lead to lower tracking accuracy.
- If changes in trajectory capture attention.
  - Probe detection will be better for probes on items that have just changed trajectory.
    - Indicating attentional attraction/capture.
  - Probe detection will be better when more changes in trajectory occur.
    - Suggesting frequent reallocations of attention.
  - Reaction times will be faster to probes on items that have recently changed trajectory.
    - Suggesting frequent reallocations of attention.

3. Current Experiment

- Tracking Task
  - Distance traveled held constant (6 Revs).
  - Manipulated number of trajectory changes for each target (1 or 6 changes).
  - Recorded tracking accuracy
- Probe Detection Task
  - Responded to a dim gray probe that appeared on a target item after a change in trajectory (200 ms), either on the target (same item) that just changed trajectory or on another target (different item).
  - Time penalty for early, late, or no response.
  - Recorded detection accuracy and RT.

4. Results

- Tracking Accuracy
  - Main Effects
    - Tracking Accuracy
      - Num. Changes \( p < .01 \)
      - Probe Detection
        - Num. Changes \( p < .05 \)
      - Probe RT
        - Num. Changes \( p < .05 \)
        - Interaction \( p < .05 \)

- Probe Detection Accuracy
  - Main Effects
    - 1 Change
    - 6 Changes

5. Discussion

- Increasing the number of changes in trajectory negatively impacted tracking ability.
  - Consistent for probes appearing on both same or different items that changed trajectory.
- Probe detection performance showed no differences between the same or different target item that changed trajectory.
  - Probe detection may not be dependent on attentional allocation.
  - Higher performance with 6 changes suggests a faster reallocation of attention across targets.
- Probe RTs slower in the 6 change trials, but only when probes were on the same item.
  - Attention may have been allocated at other locations/changes, making probe RT slower.

References


Contact
jerics1@lsu.edu, rgolds5@tigers.lsu.edu, mbeck@lsu.edu