1. Introduction

Multiple-object tracking (MOT) is the ability to keep track of the positions of multiple targets, as they move among identical non-target items (distractors)\(^1\). We use a dual-task paradigm to study the relationship between MOT and visually guided touch, and observe the pattern of interference when the two tasks are performed concurrently.

Pylyshyn (2001) suggested that the cognitive mechanisms used to track targets in MOT may be necessary to later perform coordinated actions toward the targets such as pointing or touching\(^2\). How do these mechanisms influence the performance of each task?

We can use a dual-task paradigm to study the relationship between MOT and visually guided touch, and observe the pattern of interference when the two tasks are performed concurrently.

Task #1: track the targets (MOT)
Task #2: touch any item in MOT that changes colour

Distractors: appear like targets but are to be ignored.

Research Question: Why does touching distractors in MOT interfere with performance appreciably more than touching targets?

2. Method

A static item was added to the display to serve as a neutral distractor. Why does touching distractors in MOT interfere appreciably more than touching targets? Touch interferes differentially with targets than with distractors.

Time to touch results differ based on task load

Without tracking, modest effect of item touched

With track results provide evidence of target enhancement

3. Results

Both time-to-touch and MOT accuracy results provide evidence of target enhancement.

- Tracking accuracy was significantly higher when participants touched targets as compared to static items or distractors.
- Time-to-touch was significantly faster when participants tracked and touched targets as compared to static items or distractors.

Future Directions

- Investigate errors in tracking - does touching an item make it more likely to be reported as a target?
- Use probe-one method to selectively probe touched vs. not touched items

4. Discussion

In the present study, we found preliminary evidence that touched items were more likely to be identified as targets, especially distractors.

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References


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\(^1\)\(^2\)\(^3\)\(^4\)\(^5\)\(^6\)\(^7\)\(^8\)\(^9\)\(^10\)