

Do you know what you're tracking?

Todd S. Horowitz, Sarah B. Klieger, Jeremy M. Wolfe, George A. Alvarez, & David E. Fencsik

In laboratory studies of multiple object tracking (MOT), observers see a set of identical objects, track a subset of target items for several seconds, then report which items were targets. Capacity is 3-5 objects. However, real world observers might monitor several quite different objects and wish to determine the location of one specific object (e.g. "Where is my child?").

In two experiments, observers tracked four of eight unique cartoon animals moving over a backdrop of cactuses. After a random tracking duration, all animals "hid" behind cactuses. Accurate responses required observers to track continuously.

In a series of experiments, observers were either asked to click on all cactuses occluding target animals ("full report") or to click on the cactus occluding a specific target (e.g. the zebra - "target location").

Capacity was derived from accuracy corrected for guessing. In all experiments, "target location" capacity (1.44 to 2.15 objects) was significantly lower than "full report" capacity (2.84 to 3.54 objects). However, observers could individuate more than one item, suggesting featural or identity information is tracked. Tracking ability in MOT may reflect two systems, one tracking individual object representations, and one discriminating targets from nontargets.