Do distractors disrupt prediction in multiple object tracking?

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Abstract

Additional distractors are known to dis- rupt multiple object tracking (MOT) performance. Our previous work with motion-defined stimuli argues that increased errors cannot be en- tirely due to confusions between targets and distractors. Since distractors are known to disrupt motion extrapolation in a variety of tasks, from smooth pursuit to time-to-contact judgments, we suggest that distractors degrade the ability to predict target motion in MOT. We tested this hy- pothesis by measuring information about target trajectories. Observers tracked four targets either alone or among four distractors. When probed, observers had to report a randomly selected target's direction of motion by adjusting an arrow. We analyzed the angular errors with a mixture model in order to remove the influence of trials on which the probed tar- get was not tracked. In accord with the motion extrapolation hypothesis, we found that adding distractors reduced directional precision.