Do distractors disrupt prediction in multiple object tracking?

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Abstract

Additional distractors are known to disrupt multiple object tracking (MOT) performance. Our previous work with motion-defined stimuli argues that increased errors cannot be entirely 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 hypothesis 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 target was not tracked. In accord with the motion extrapolation hypothesis, we found that adding distractors reduced directional precision.