

The shape of attention over a common motion group

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Common motion is a rich segmentation cue

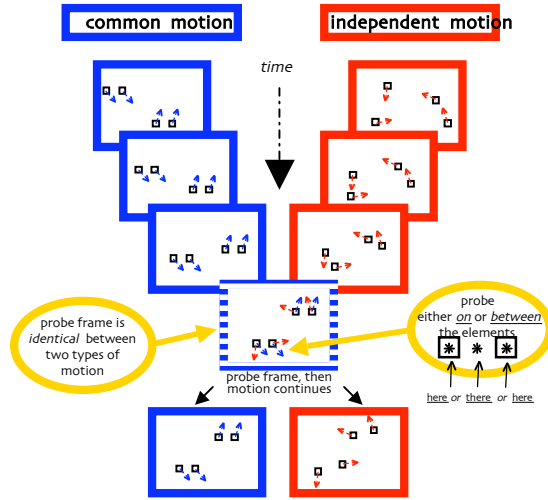
Question 1:

How does attention spread over a common motion group?

Question 2:

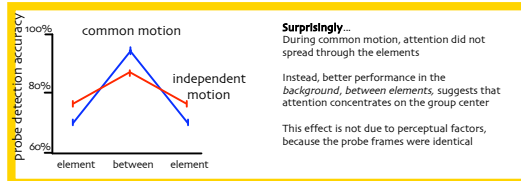
Is common motion grouping *mandatory*, or subject to top-down control?

Question 1: How does attention spread over common motion?



Task: was there a probe?

[note: there were actually 8 total elements in both conditions]



Question 2: Is common motion grouping mandatory?

If attention is attracted to the center of a common motion group, then it should be difficult to attend to just one element of the group.

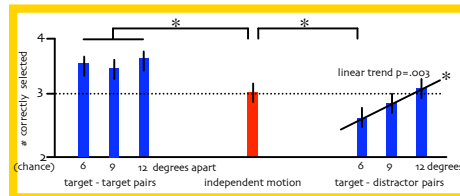
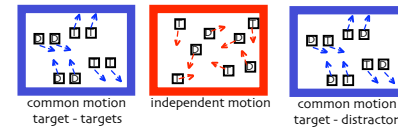
For example, during Multiple Object Tracking, tracking is impaired when lines connect targets to distractors (Scholl, Pylyshyn, & Feldman, 2001)

Is grouping by common motion *mandatory*?

Can observers track a target when its motion is linked to a distractor?

We tested whether common motion created mandatory groups while varying the distance between the group elements.

Task: track 4 elements among 8



Target-target pairs were tracked better than independent elements, consistent with common motion enabling observers to track two groups of 2.

However, target-distractor pairs were tracked worse than independent elements, suggesting that attention is involuntarily pulled to the center of the group.

This effect diminished as target-distractor pairs were moved farther apart, suggesting that common fate grouping has a limited range.

Conclusions

Common motion seems to cause attention to concentrate in the center of the group, between the elements

During Multiple Object Tracking, this grouping was *mandatory* - observers could not restrict attention to a single element

Common fate grouping can be distance-limited; common motion distractors only interfered when nearby.

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