

Introduction

A prominent theory suggests that response priming depends only on physical characteristics of stimuli and not on their perceived attributes.

In response priming, a prime stimulus moderates responses to trailing target stimulus, by either affecting reaction time or accuracy.

We tested this theory with a priming paradigm using a Furrow illusion (1, 2).

In this illusion a vertically moving disk, placed on background consisting of tilted lines, appears to move along the direction of tilted lines.

Method

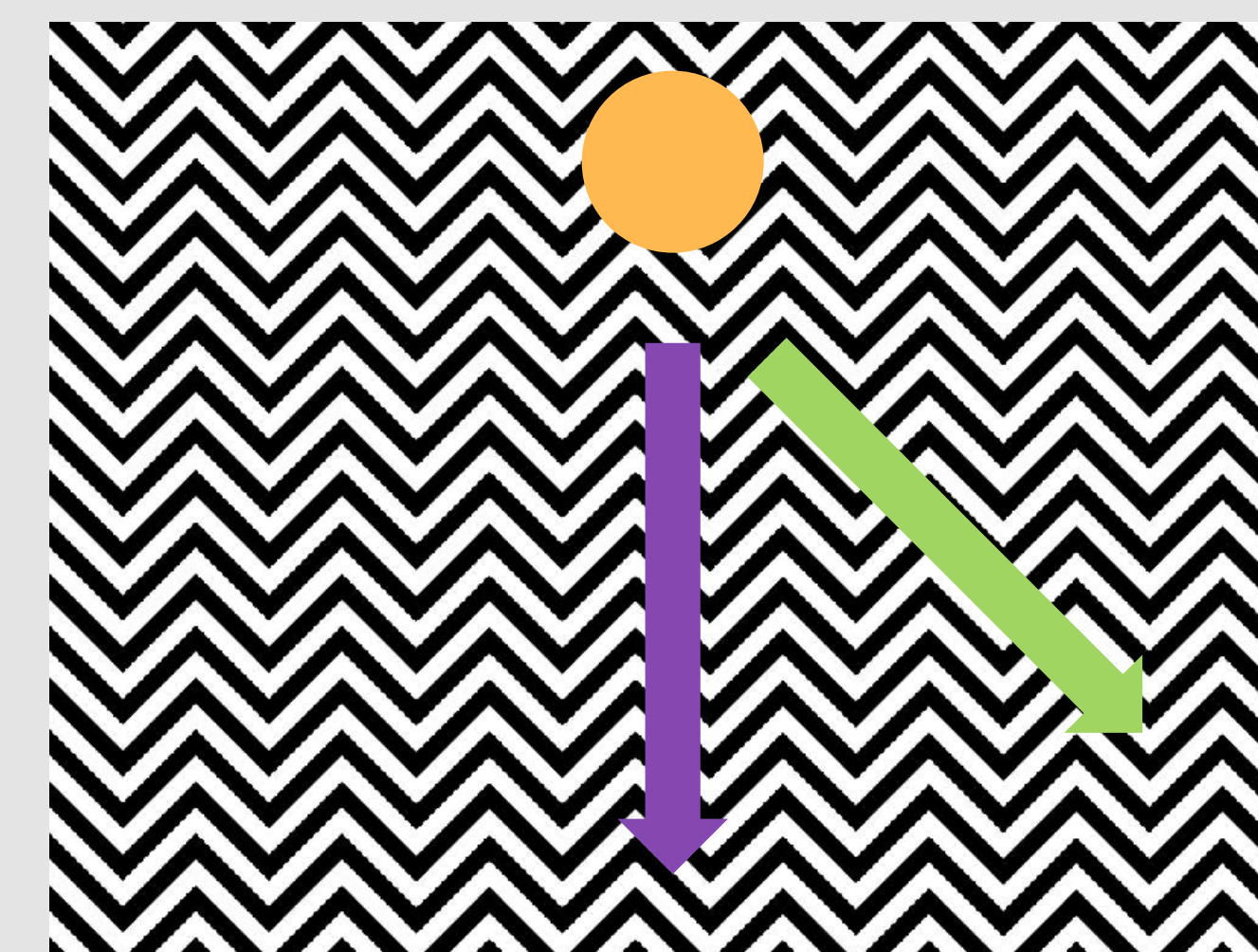
Furrow illusion stimulus served as a prime and was followed by a target stimulus. Participants were instructed to respond to the direction of the motion of the target as fast as possible. The target moved either left or right. The prime disk always moved vertically; however, the perceived motion of the prime depended on the orientation of the background lines (45° or -45°).

If the effect of the prime on the target responses is based on the **veridical motion**, then no priming should be observed, because the prime moved vertically. However, if priming depends on the **perceived motion** of the prime the following should be true:

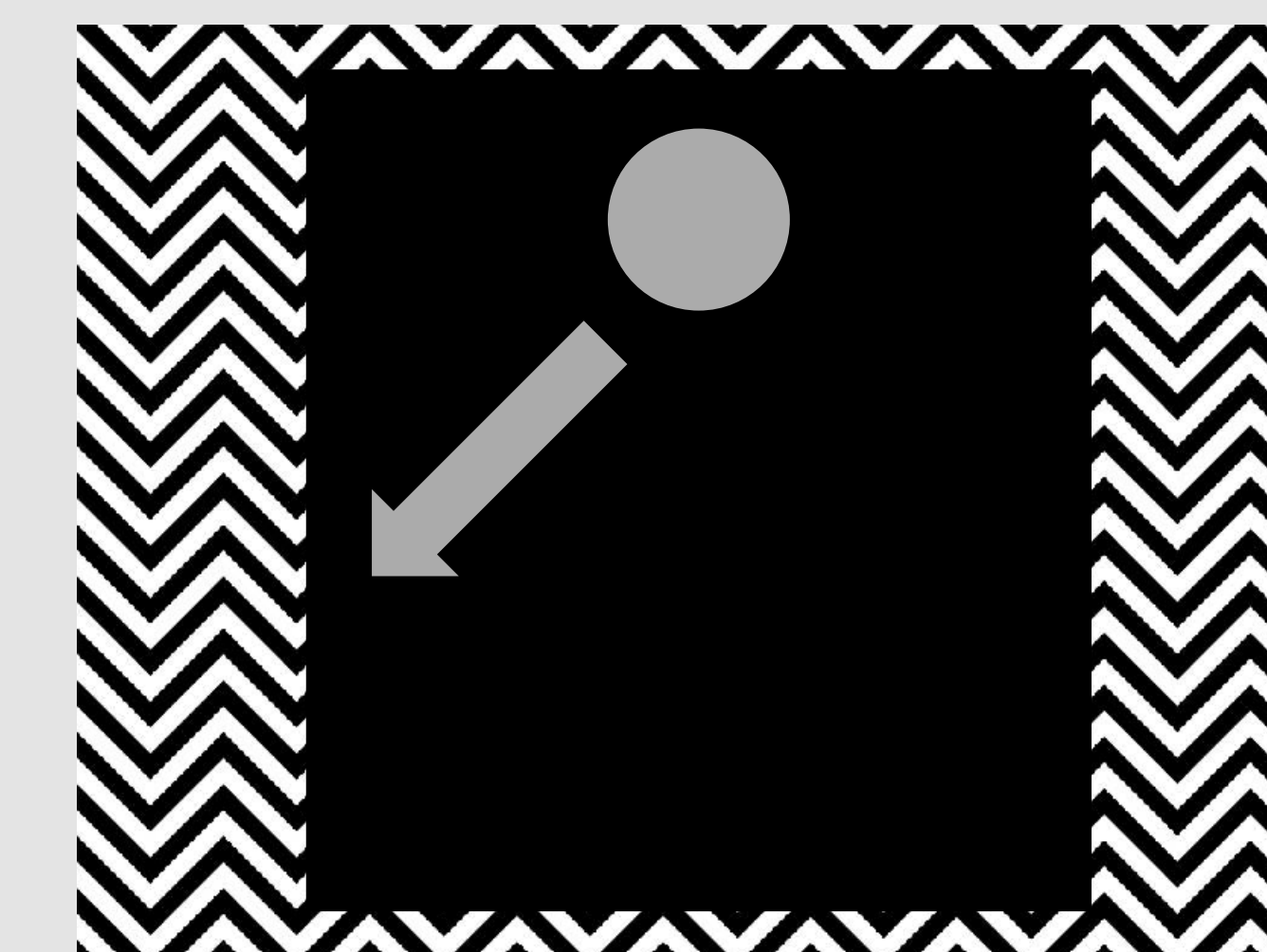
When the perceived movement of the disk is in the same direction as the target, responses are faster and more accurate (congruent trials). When the perceived movement of the prime is in the opposite direction from the target, responses are slower and less accurate (incongruent trials). A difference in reaction times between incongruent and congruent trials is one measurable aspect of priming.

Furrow Illusion

A disk moves vertically (purple arrow), however the perceived direction of motion is in the direction of background lines (green arrow).



Prime

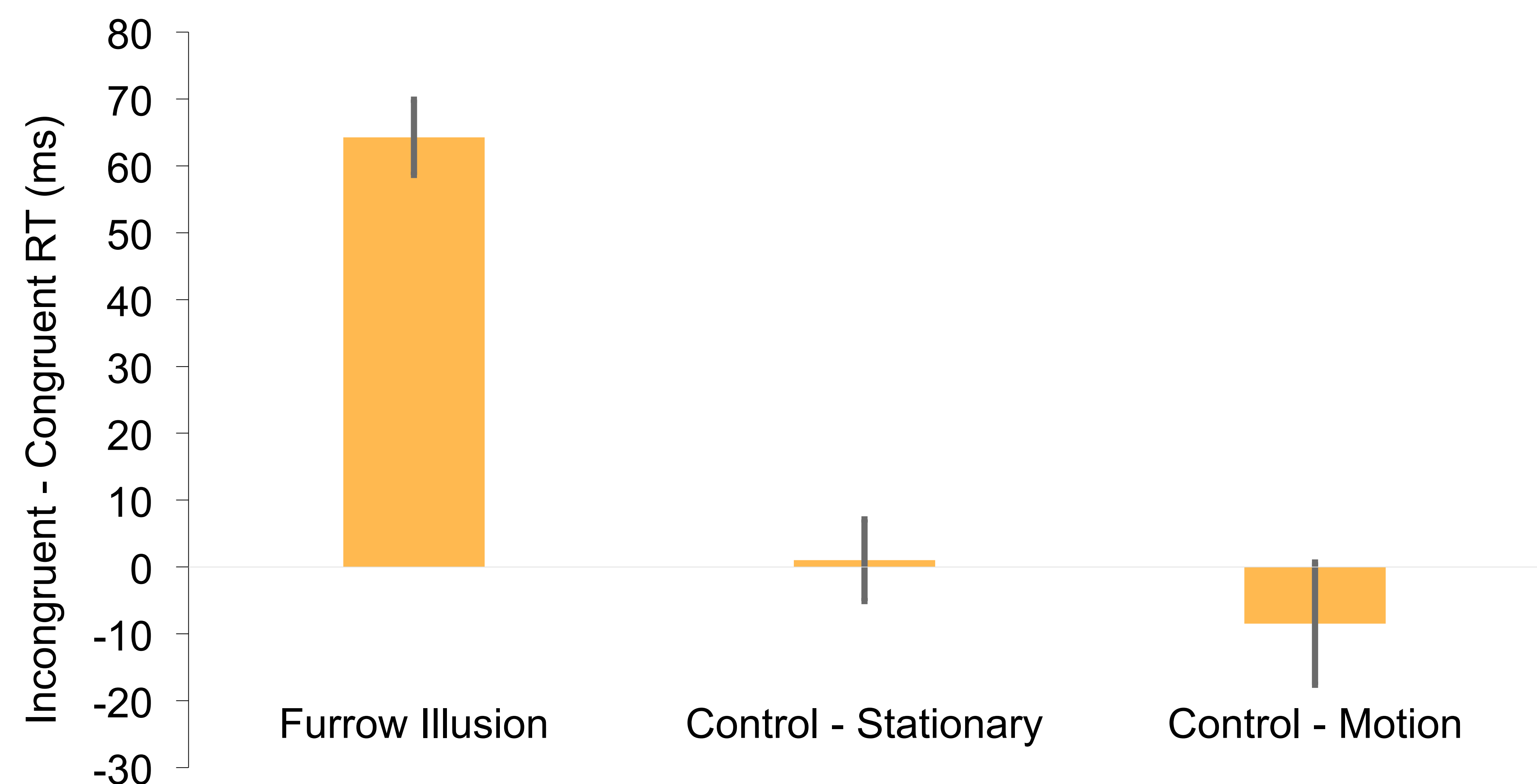


Target

An example of the incongruent trial. The prime and the target disks appear to move in the opposite directions.

Results

Motion priming with Furrow Illusion



Responses to targets were systematically affected by the prime in the direction of the perceived movement and not in the direction of the veridical, vertical motion of the prime disk. We included two control conditions, in which the disk was either stationary or moved vertically inside a bar, placed on the background of tilted lines. There was no priming in either of the control conditions.

Conclusions

These results suggest that response priming can be based on the perceived properties of a stimulus. We are planning to conduct a second experiment, in which we will estimate the size of the illusion and test whether the veridical motion of the prime, across tilted lines, affects responses to targets even when perceptually disk is moving vertically.

References

1. Anstis S. (2012) The furrow illusion: Peripheral motion becomes aligned with stationary contours. *Journal of Vision* 12: 1–11.
2. Cormack R., Blake R., Hiris E. (1992) Misdirected visual motion in the peripheral visual field. *Vision Research* 32, 1: 73–80.