

Introduction

When a vertically moving disk is placed on the top of the background, consisting of lines subtending forty-five degrees, it is perceived to move in the direction of lines. Previous evidence suggests that this illusion, called the Furrow illusion, is independent of background contrast (1, 2).

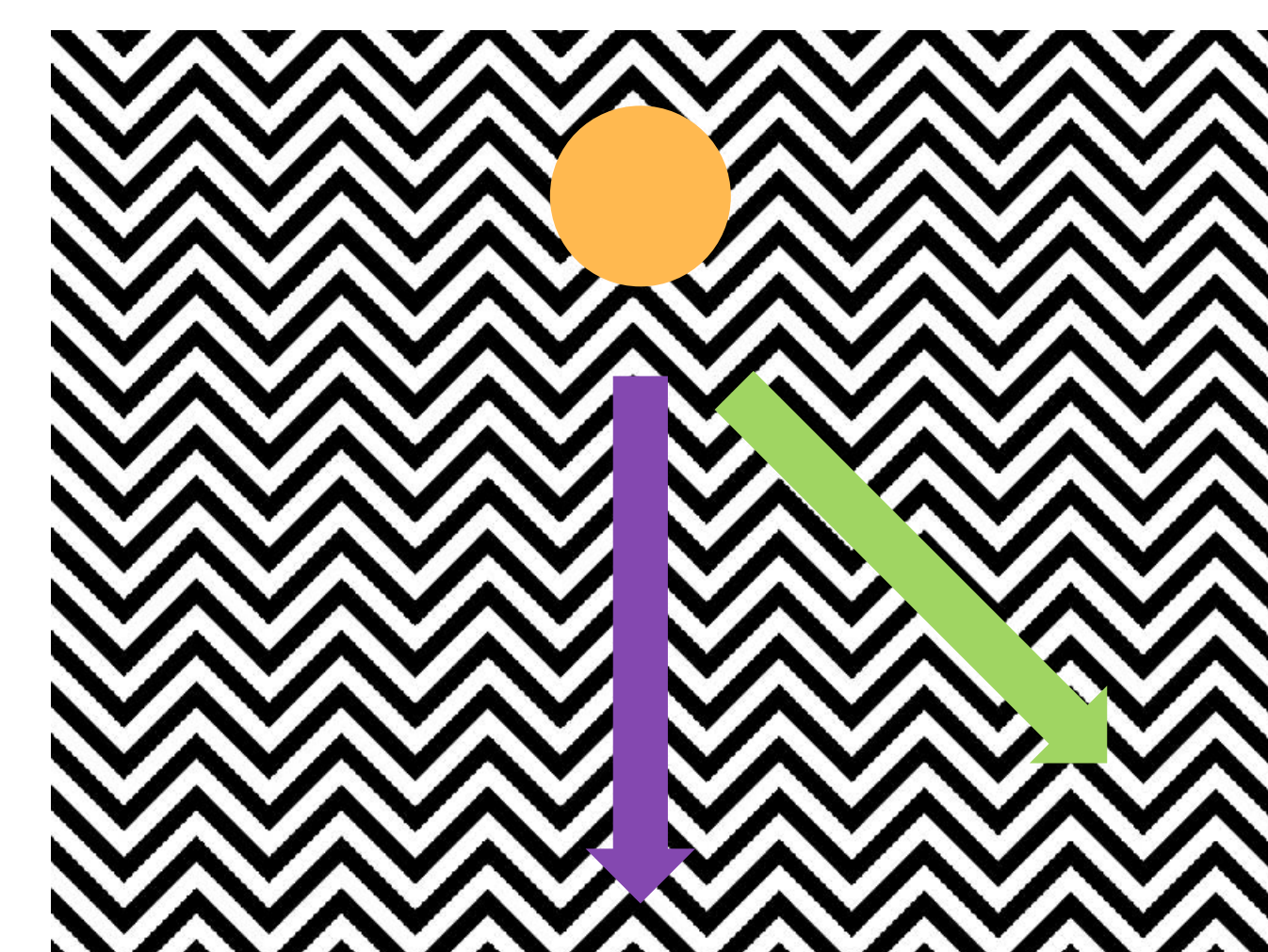
Pilot experiment in our laboratory, however, showed that at higher speed illusion disappears at lower contrasts.

In the proposed study we will examine the relationship between the background contrast, background awareness and illusion strength.

Method

Backgrounds of various contrasts will be presented randomly to participants. A small disk will then move vertically across the lines. Participants will report the direction of movement and whether they perceived the orientation of lines.

From these measurements we will calculate illusion strength and awareness as a function of background contrast.



10%



50%



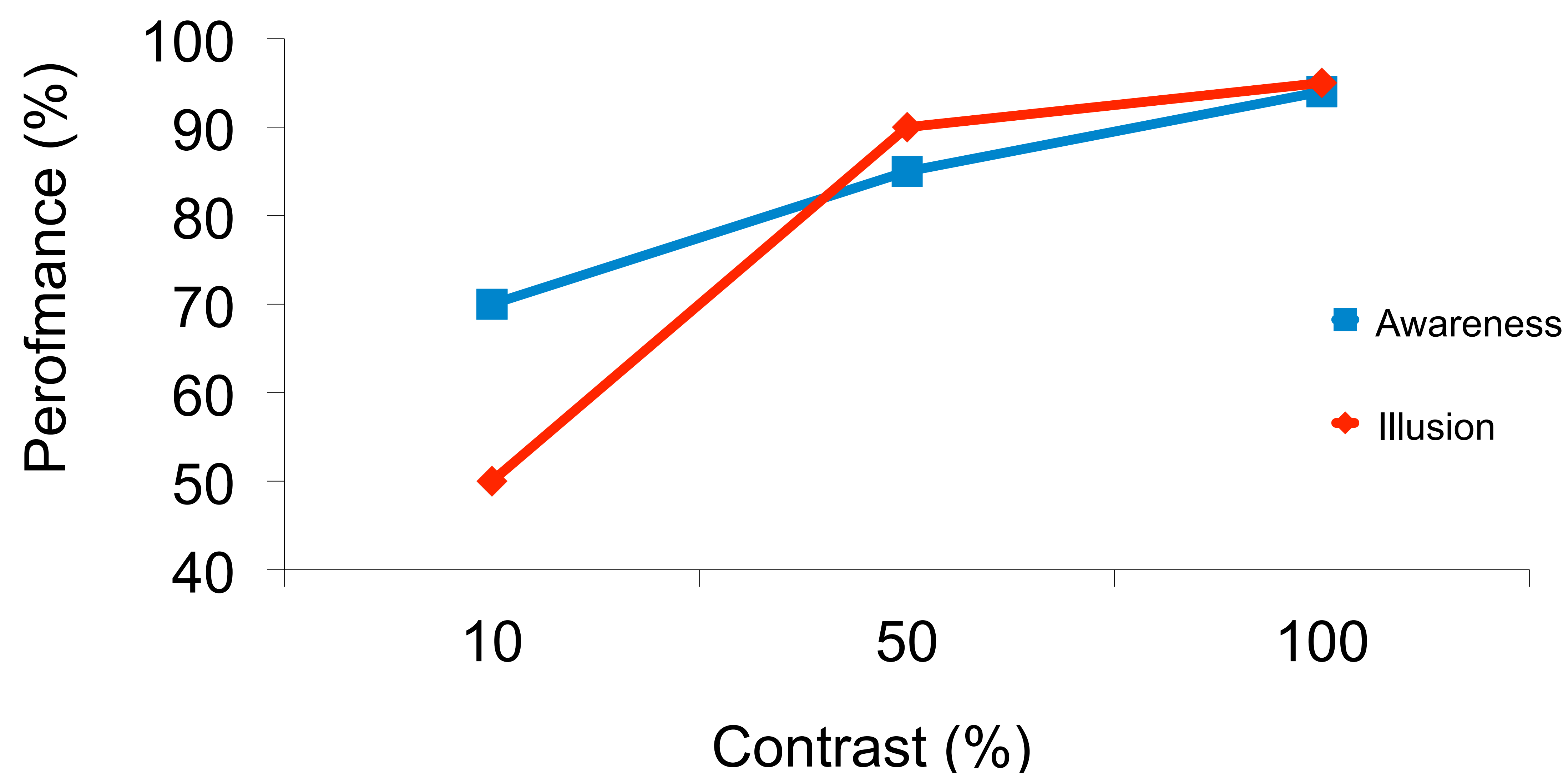
100%

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

Contrast level

Results

Performance on Awareness and Illusion tasks



We predict that participants will be able to perceive the orientation of background lines (awareness) even at 10% contrast level. We however predict a dissociation, in which illusion disappears at lower, but still visible contrasts.

Conclusions

If our predicted results are confirmed in an actual experiment, it would suggest that Furrow illusion is independent of background awareness and depends only on background contrast.

Such a dissociation would be interesting, because it would demonstrate that the strength of visual signal that our brains need for calculation of direction of motion is independent from our conscious perception of visual signal.

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.