

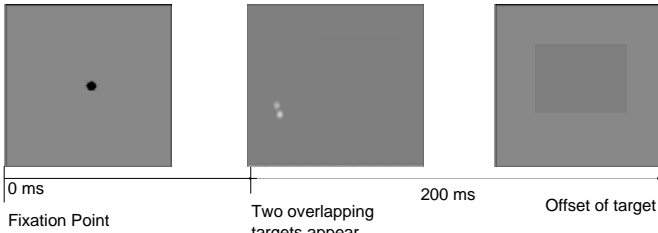
Introduction

In the past several paradigms were used to investigate the influence of an additional target on saccade latencies and end points:

If a second target is presented far away of the actual saccade target, latencies are increased, which is called the remote distractor effect [1,2]. If the second target is presented closer to the actual target, saccade amplitudes are directed to the center-of-gravity of both targets, the global effect [3]. In all of these paradigms two distinct targets are clearly visible.

Here we investigated how saccades are influenced if two overlapping targets are presented.

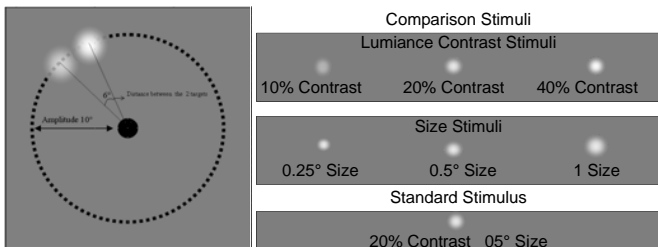
Methods



We used two Gaussian blobs as saccade targets. The blobs were presented for 200 ms at an eccentricity of 10 degrees of visual angle. The blobs were separated by 6 angular degrees. Subjects were instructed to saccade to the targets as soon as they appeared.

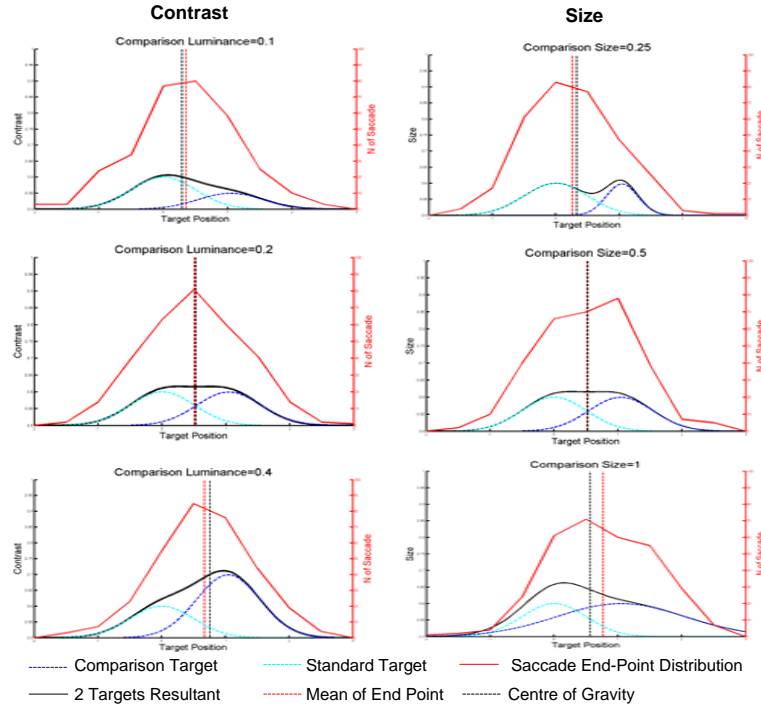
One of the blobs (standard target) had always a contrast of 20% and a standard deviation of 0.5 degrees of visual angle. The other blob (comparison target) varied either in contrast (Experiment 1), size (Experiment 2) or both (Experiment 3).

We tested three different contrast levels (10, 20 & 40%) and three different size conditions (0.25, 0.5 & 1 deg).

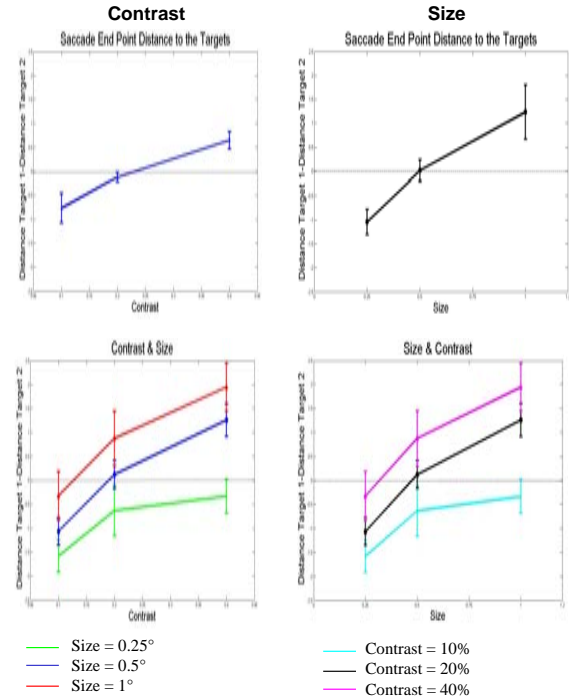


Results

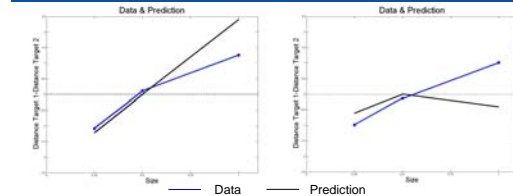
Saccade End-Point distribution around the Target



Distance Difference between the Two Targets



Model



We predicted saccade end points to double targets based on the the end point variability to single targets, using the inverse of the variability as the weight. There was no consistent pattern across subjects.

Conclusions

We presented two overlapping gaussian blobs that differed in contrast or size. We observed that saccade end points were consistently biased in the direction of the target with the higher contrast or the larger size. Moreover we tried to predict the saccade end points based on the end point variability to single targets. However there were no consistent results for the model prediction.

Our results show that the global effect emerges also if two stimuli are presented overlapping.

References:

- [1] Ross LE & Ross SM. (1980). Saccade latency and warning signals: stimulus onset, offset, and change as warning events. *Percept Psychophys* 27, 251-257.
- [2] Walker R, Deubel H, Schneider WX & Findlay JM. (1997). Effect of remote distractors on saccade programming: evidence for an extended fixation zone. *J Neurophysiol* 78, 1108-1119.
- [3] Findlay JM. (1982). Global visual processing for saccadic eye movements. *Vision Res* 22, 1033-1045.

Acknowledgments:

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