

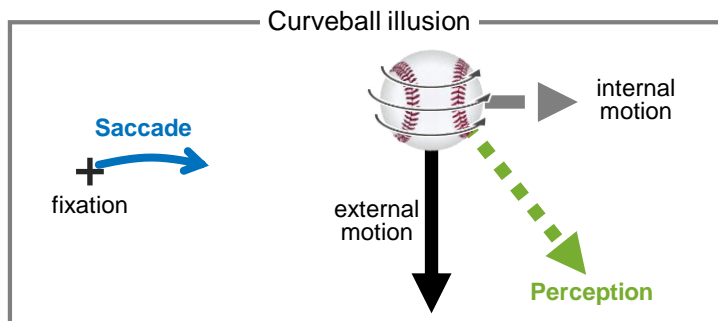


Abstract

When an object moves while rotating, the position of the object appears to shift in the direction of rotational motion (curveball illusion). Although this illusion occurs perceptually, no effect on saccadic eye movements has been observed. Here, we studied **why only perception (but not eye movement) is susceptible to the illusion**.

We found that, **regardless of perception or eye movement, the size of illusion was small when the elapsed time from visual input to response was short and was large when the elapsed time was long**. This indicates that the timing of judgment is important when localizing moving objects and it does not necessarily improve even if a long time is spent.

The present study shows the importance of the time from the input of visual motion to decision making. These findings would be useful to make applications for athletes' training and UI design **encouraging appropriate perceptual judgment and motor response to visual signals**.

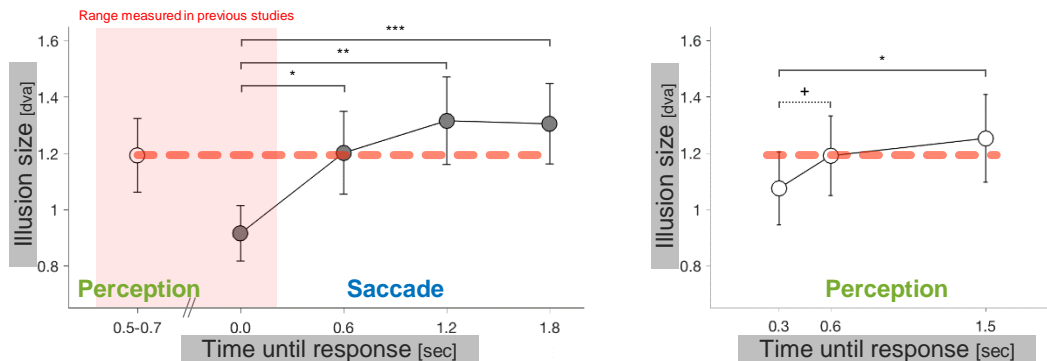


Why is only perception susceptible to the illusion?

Experiment

We measured the size of perceptual illusion (**perceived position**) and saccadic illusion (**saccadic landing position**) at various elapsed times from target offset to the response.

Results Regardless of perception or action, the size of illusion was small when the elapsed time to response was short and was large when the elapsed time was long.



Conventionally, the neuronal representation of moving objects for perception and action has been considered to be different and time-invariant. The present study revealed that these position representations similarly change over the visual information processing.

References

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- [2] H. Ueda, N. Abekawa, H. Gomi, "Temporal change of position representation of a moving object filled with Gabor motion for saccadic eye movements" in Proc. The 46th Annual Meeting of the Society for Neuroscience, 2016.

Contact

Hiroshi Ueda Sports Brain Science Project