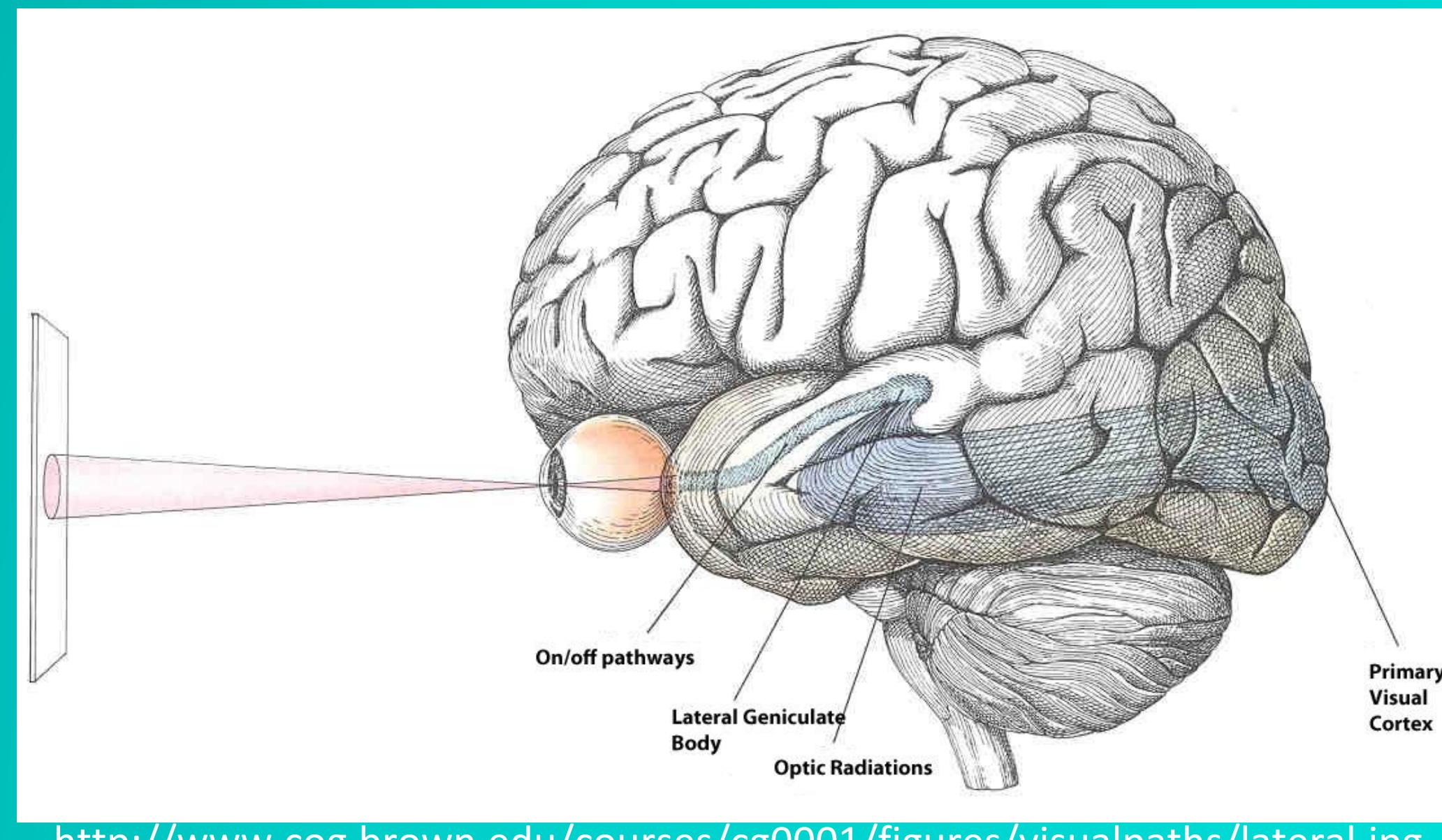


The role of putative on- and off-cell channels in motion induced blindness

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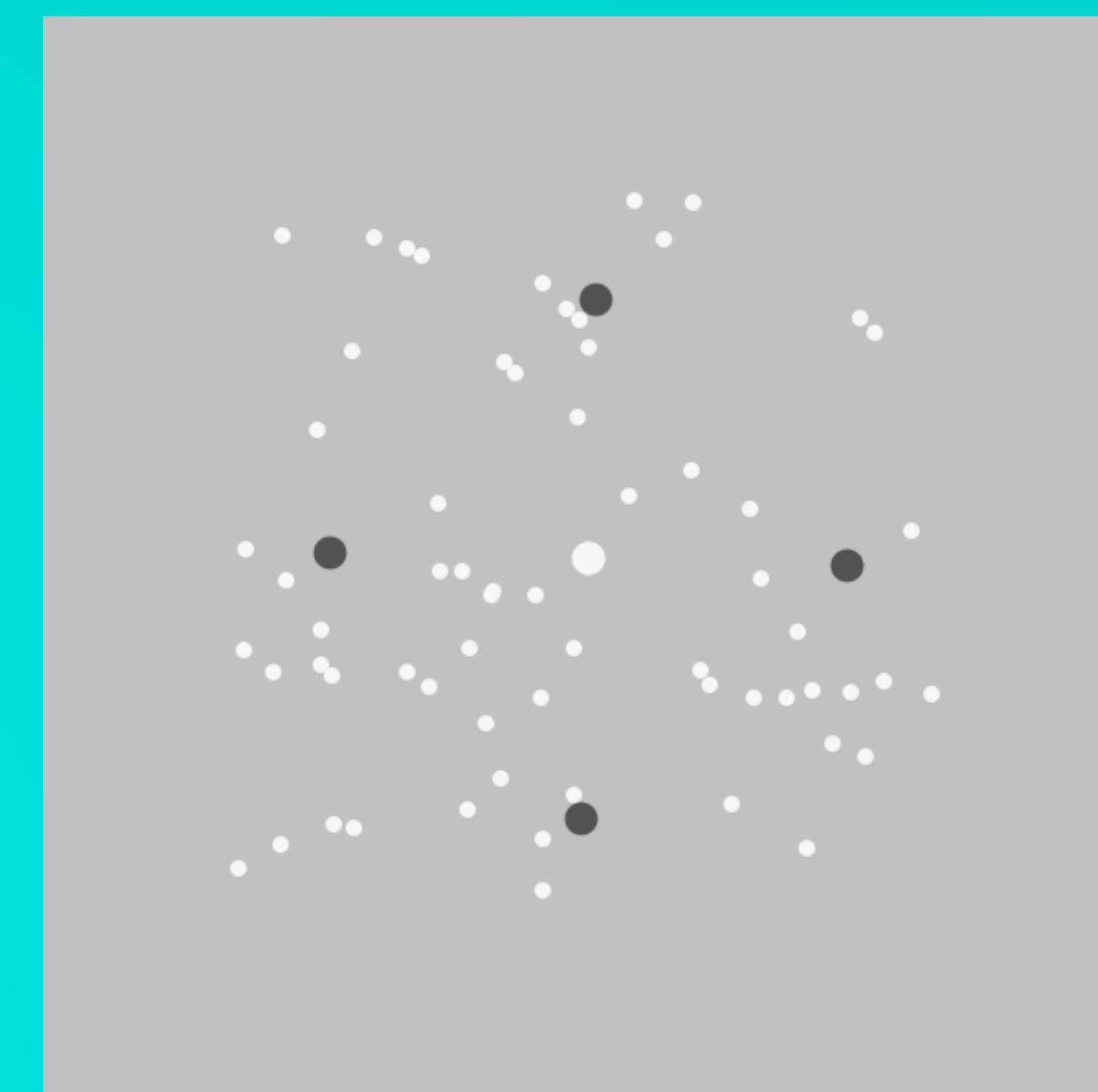
Introduction

Motion Induced Blindness (MIB) is a visual anomaly in which highly salient images disappear in the presence of a moving global mask. Studies have shown that MIB seems to be located in the extrastriate area V5 (Schölvinck & Rees, 2010). The on and off retinal ganglion cells form two distinct pathways that code for increments and decrements of light respectively. These pathways remain separate until they converge at the lateral geniculate nucleus (Westheimer, 2007). We sought to investigate the effect of the on and off cell pathways on the perception of MIB.



Methods

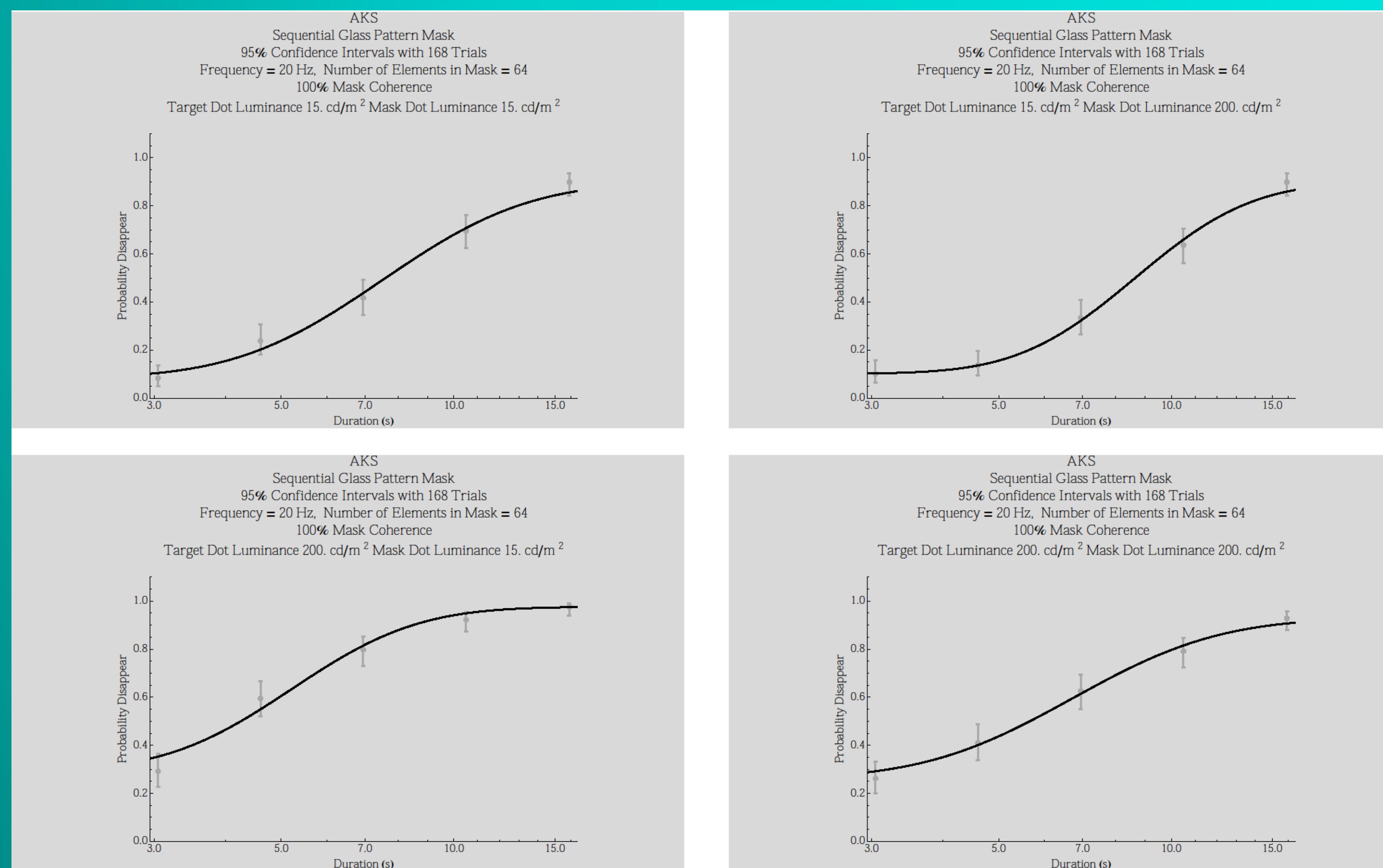
Subjects ran six sessions. Each session contained 7 trials of each of the 20 conditions, for a total of 140 trials per session. The stimuli were viewed on a 15inch MacBook Pro running OSX version 10.9.2. Subjects were placed on a chin rest three feet away from the computer screen. The computer screen was secured at a 90 degree angle from the subjects' eyes to insure equal luminance across all trials.



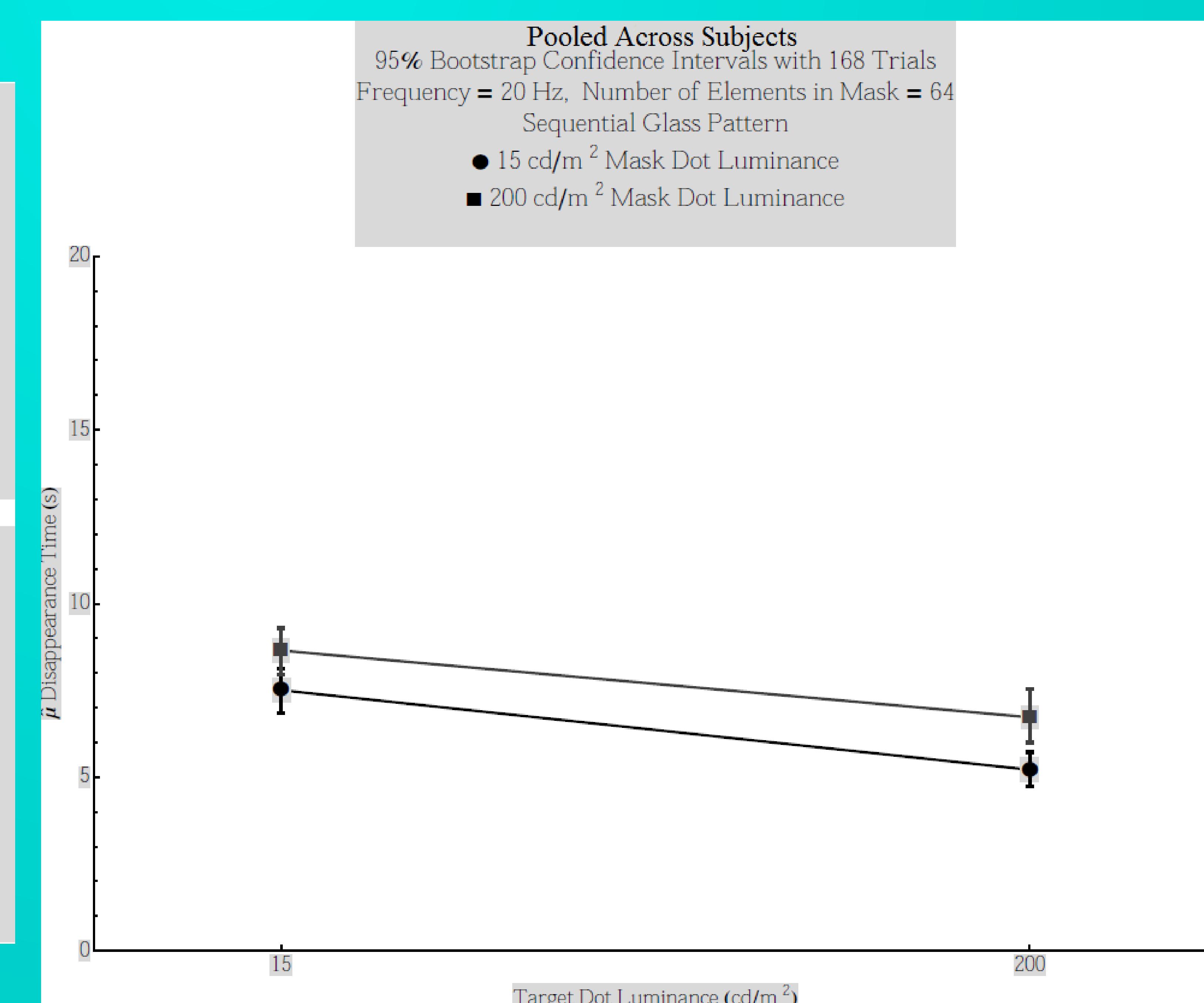
Subjects fixated on the center dot and reported if peripheral dots disappeared in the presence of a mask.

Results

Data was pooled across samples and the probability of perceived disappearance was determined.



All data recorded was from six trials from one individual subject. These graphs show that threshold is dependent upon duration of stimulus.



95% Bootstrap Confidence intervals were calculated for the combinations of mask and target luminance.

Discussion

Major findings:

- Black targets were always more difficult to mask (less MIB perceived) than white targets
- This effect was seen in all subjects
- This suggests that the on/off-cell pathways retain differences past the point where they converge in the lateral geniculate nucleus (LGN)
- Future studies should be done to investigate the extent of the asymmetries between the two pathways past the LGN

References

- Schölvinck, M., & Rees, G. (2010). Neural Correlates of Motion-induced Blindness in the Human Brain. *Journal of Cognitive Neuroscience*, 6, 1235-1243.
- Westheimer, G. (2007). The ON-OFF dichotomy in visual processing: From receptors to perception. *Progress In Retinal And Eye Research*, 26, 636-648.