Color

The primate visual cortex contains various regions that exhibit specialization for different stimulus properties, such as motion, shape, and color. Within each region, there is often further specialization, such that particular stimulus features, such as horizontal and vertical orientations, are over-represented. These asymmetries are associated with well-known perceptual biases, but little is known about how they influence visual learning. Most theories would predict that learning is optimal, in the sense that it is unaffected by these asymmetries. However, other approaches to learning would result in specific patterns of perceptual biases. To distinguish between these possibilities, Laamerad et al. trained human observers to discriminate between expanding and contracting motion patterns, which have a highly asymmetrical representation in the visual cortex. Observers exhibited biased perceptions of these stimuli, and these biases were affected by training in ways that were often suboptimal. They simulated different neural network models and found that a learning rule that involved only adjustments to decision criteria, rather than connection weights, could account for the data. These results suggest that cortical asymmetries influence visual perception and that human observers often rely on suboptimal strategies for learning [1].

1)
Laamerad P, Awada A, Pack CC, Bakhtiari S. Asymmetric stimulus representations bias visual perceptual learning. J Vis. 2024 Jan 2;24(1):10. doi: 10.1167/jov.24.1.10. PMID: 38285454.