The coordinate frame of pop-out learning

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Abstract:
Saccades are ubiquitous in natural vision. One way to generate a coherent representation of a scene across saccades is to produce an extra-retinal coordinate frame (such as a head-based representation). We investigate this issue by behavioral means: Participants learned to detect a 3D-pop-out target in a fixed position. Next, target was relocated in one coordinate frame while maintaining it fixed in the others. Performance was severely affected only when the change in target position occurred in a retinotopic coordinate frame. This further suggests that perceptual learning occurs in retinotopic regions having receptive fields restricted within a hemifield.

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