Owls see as humans do

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This montage illustrates a barn owl (*Tyto alba*) watching a monitor displaying a paradigm which tests behavioral and neural responses to figure-ground segregation. The paradigm consists of a target dot appearing inside the borders of the site's receptive field (figure, represented by the dashed red circle), and moving to the right (denoted by the gray arrow), surrounded by dots-array (ground). The colors of the arrows represent 3 types of movement tested: (1) magenta relates to condition where 100% of the circles moved 1350 upwards; (2) green relates to condition where 70% of the circles moved 1350 upwards; (3) blue relates to condition where 50% of the circles moved 1350 upwards. In behaving barn owls the coherency of the background motion modulates the perceived saliency of the target object, and in complementary multi-unit recordings in the Optic Tectum, the neural responses were more sensitive to the homogeneity of the background motion than to motion-direction contrasts between the receptive field and the surround. Credit: Yoram Gutfreund

A study of barn owls published in *JNeurosci* suggests the visual systems of humans and birds may be more similar than previously thought.

The ability to perceive an object as distinct from a background is crucial for species that rely on vision to act on their environment. One way humans achieve this is by grouping different elements of a scene into "perceptual wholes" based on the similarity of their motion. This phenomenon has been mostly studied in primates, leaving open the question of whether such perceptual grouping represents a fundamental property of visual systems in general.

Yoram Gutfreund and colleagues addressed this question by studying the brain and behavior of barn owls as the animals tracked dark dots on a gray background presented on a computer screen. A wireless "Owl-Cam" tracked the owls' visual search behavior in one set of experiments while neural activity in the optic tectum—the main visual processor in non-mammalian vertebrates—was recorded in another. The researchers indeed report evidence of perceptual grouping in the owl, suggesting that this ability evolved and was conserved across species prior to the development of the human neocortex.

More information: Zahar Yael et al, Behavioral evidence and neural correlates of perceptual grouping by motion in the barn owl, *The Journal of Neuroscience* (2018). DOI: 10.1523/JNEUROSCI.0174-18.2018

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