Practice improves peri-saccadic shape judgment but does not diminish target mislocalization

Learning to see through the saccadic veil

Visual sensitivity is markedly reduced during saccades. This seems sensible since the image motion (and blur) is caused by the eye movement, while the "outside" visual scene is static. But is the visual information available if the task requires one to recognize such stimuli. We show here that shape discrimination of peri-saccadic stimuli (shown only during eye flight) improves significantly with practice. Learning is generalized across saccade directions and stimulus locations specific to the stimulus type and task. The limited visual information available during a saccade may be better used with practice, possibly by focusing attention on the specific target features or a better readout of the available information.

Another aspect of peri-saccadic stimuli has to do with the perception of their position: they are typically misperceived as being closer to the saccade target. Surprisingly, practice does not change this: stimulus mislocalization remains as pronounced. Thus, the representation of stimulus position probably involves an obligatory process triggered by the upcoming saccade. The results point to a dissociation between shape and location representations of peri-saccadic stimuli.

Full text (PDF).
Visual blur due to saccadic eye movement

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