

Microsaccadic rate is shaped by working memory load

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Microsaccades are tiny fixational eye movements that we perform unconsciously. On the one hand, microsaccades are crucial for many processes concerning both vision and perception. For instance, they correct eye displacements and prevent image fading [1]. On the other hand, evidence is accumulating showing that these microscopic eye movements can be shaped by some higher-order cognitive mechanisms, such as orienting of attention or preparatory processes [2].

In the present study, we conducted two experiments to assess whether microsaccadic rate can be shaped by working memory load. In Experiment 1, participants were asked to maintain fixation on a centrally-placed spot, and to memorize either two digits (low-load condition) or five digits (high-load condition) digits that appeared close to fixation. In Experiment 2, a new sample of participants were presented with a numerical sequence that were always composed by five digits. The colour of the numerical sequence could be red or green. Again, participants were asked to fixation on a centrally-placed spot, and to memorize the colour of the numerical sequence (low-load condition) or the five digits (high-load condition). In this manner, the same perceptual stimulation was employed in both conditions.

In both experiments, fewer microsaccades were observed in the high-load condition with respect to the low-load condition. Overall, these results suggest the presence of a link between working memory load and microsaccades, and provide a further evidence that microsaccades can be used as an intriguingly and non-invasive tool to study cognitive functioning through eye movements.

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