

Exploratory Eye Movements and the Müller-Lyer Illusion

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Eye movements are often considered in explanations of visual illusions. In the case of the Müller-Lyer illusion, though, explanations based on eye movement were largely abandoned when it became apparent that the illusion also occurs under retinal stabilization (Evans & Marsden, 1966). Even so, recently there has been a renewal of interest in the analysis of the patterns of exploration that occur while observing Müller-Lyer configurations (e.g., van Doorn et al., 2009). This interest derives from Goodale and Milner's dual model (Goodale & Milner, 1992), which holds that information is processed separately depending on whether it is related to conscious perception or needed for the control of action. One of the lines of evidence for this dual model is that illusions, it is argued, affect perception but not action. However, van Doorn et al. observed differences in the exploratory eye movements that underlie perception and action. This seems to imply that the differential effects of illusions on perception and action are at least partly due to the use of different informational variables, rather than only to the differential processing of information as proposed by Goodale and Milner. With the present study we aim to provide more detail about the relation between exploratory eye movements and illusory effects. Participants observed Müller-Lyer configurations during 2 seconds, without any constraints on eye movements, before they performed a length estimation task. In agreement with previous results, we found that the amplitude of saccades is significantly influenced by the configuration of the figure (wings-in versus wings-out). Furthermore, our results show different patterns of exploratory movements for different individuals. Some of these exploratory patterns seem to be more effective than others, because the errors in the estimation task are much smaller for some participants than for others.