

Decisions About Objects in Real-World Scenes Are Influenced by Visual Saliency Before and During Their Inspection

Abstract

Authors: Geoffrey Underwood , Katherine Humphrey, Editha van Loon

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Evidence from eye-tracking experiments has provided mixed support for saliency map models of inspection, with the task set for the viewer accounting for some of the discrepancies between predictions and observations. In the present experiment viewers inspected pictures of road scenes with the task being to decide whether or not they would enter a highway from a junction. Road safety observations have concluded that highly visible road users are less likely to be involved in crashes, suggesting that saliency is important in real-world tasks. The saliency of a critical vehicle was varied in the present task, as was the type of vehicle and the preferred vehicle of the viewer. Decisions were influenced by saliency, with more risky decisions when low saliency motorcycles were present. Given that the vehicles were invariably inspected, this may relate to the high incidence of "looked-but-failed-to-see" crashes involving motorcycles and to prevalence effects in visual search. Eye-tracking measures indicated effects of saliency on the fixation preceding inspection of the critical vehicle (as well as effects on inspection of the vehicle itself), suggesting that high saliency can attract an early fixation. These results have implications for recommendations about the conspicuity of vulnerable road users.