

Abstract

Understanding how patterns are selected for both recognition and action, in the form of an eye movement, is essential to understanding the mechanisms of visual search. It is argued that selecting a pattern for fixation is time consuming—requiring the pruning of a population of possible saccade vectors to isolate the specific movement to the potential target. To support this position, two experiments are reported showing evidence for off-object fixations, where fixations land between objects rather than directly on objects, and central fixations, where initial saccades land near the center of scenes. Both behaviors were modeled successfully using TAM (Target Acquisition Model; Zelinsky, 2008). TAM interprets these behaviors as expressions of population averaging occurring at different times during saccade target selection. A large population early during search results in the averaging of the entire scene and a central fixation; a smaller population later during search results in averaging between groups of objects and off-object fixations.