Similarities in the Perception of Color and Velocity. An Empirical Investigation of the Cognitive Representation of Velocity.

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Object properties that can be perceived simultaneously and without focused attention are called features (Treisman, 1980). Examples include color and the movement of objects. To date, the question whether velocity is a Feature or not has received little attention. In order to build exact cognitive models of visual object recognition this research gap has to be filled. Therefore, the current study compared the visual perceptibility of color and velocity changes.

A varying number of moving and non-moving squares was presented to 22 participants. In conditions with moving objects squares moved on linear trajectories with different velocities. Further, the color of the squares was varied between conditions, with the squares being either unicolored or multicolored. Based on paradigms from working memory research, the first presentation of the stimuli was followed by a brief pause and a second presentation (Luck & Vogel, 1997). In the second presentation color, velocity or both attributes of one square were changed. The participants had to decide whether both presentations were identical or differed. From the number of correct and incorrect answers the sensitivity index d' was computed.

The computed sensitivity did not differ significantly (p = .212) between conditions with unicolored squares and an increase in velocity and conditions where only the color of a square changed. However, when conditions with a reduction of velocity were compared to conditions with only a color change, significant differences in sensitivity were observed (p < .001). In conditions with multicolored squares sensitivity differences between color and velocity changes decreased with an increasing number of squares. The results indicate that velocity might in fact be a feature.