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Are stripes beneficial? Dazzle camouflage influences perceived speed and hit rates

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In the animal kingdom, camouflage refers to patterns that help potential prey avoid detection. Mostly camouflage is thought of as helping prey blend in with their background. In contrast, disruptive or dazzle patterns protect moving targets and have been suggested as an evolutionary force in shaping the dorsal patterns of animals. Dazzle patterns, such as stripes and zigzags, are thought to reduce the probability with which moving prey will be captured by impairing predators' perception of speed. We investigated how different patterns of stripes (longitudinal—i.e., parallel to movement direction— and vertical—i.e., perpendicular to movement direction) affect the probability with which humans can hit moving objects and if differences in hitting probability are caused by a misperception of speed. A first experiment showed that longitudinally striped objects were hit more often than unicolored objects. However, vertically striped objects did not differ from unicolored objects. A second study examining the link between perceived speed and hitting probability showed that longitudinally and vertically striped objects were both perceived as moving faster and were hit more often than unicolored objects. In sum, our results provide evidence that striped patterns disrupt the perception of speed, which in turn influences how often objects are hit. However, the magnitude and the direction of the effects depend on additional factors such as speed and the task setup.

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