The Roles of Garment Design and Scene Complexity in the Daytime Conspicuity of High-Visibility Safety Apparel

A naturalistic field study was conducted to assess the effects of garment color, the amount of background material, pedestrian arm motion, scene complexity, and driver age on the daytime conspicuity of personal safety garments. Sixteen drivers drove instrumented vehicles in real traffic, along a fixed 31-km route, in search of pedestrians wearing one of four fluorescent safety garments with retroreflective trim. Distances at which the drivers first reported detecting the pedestrians were recorded. Drivers had no prior knowledge of where along the route pedestrians would be located, nor the number of pedestrians positioned along the route. All of the challenges normally encountered when driving on public roadways were present during the study (other motor vehicles, traffic signals, signs, pedestrians, and bicyclists), thus imposing an ecologically valid level of workload on the drivers.

The results show that scene complexity was the only main effects variable to significantly affect the distance at which a pedestrian wearing a fluorescent safety garment was detected. Garment color (fluorescent yellow-green or fluorescent red-orange), garment type (Class 2 vest or Class 2 jacket), arm motion (arms in motion or stationary), and driver age (younger or older) did not significantly affect the distance at which pedestrians were detected. The results contribute to a growing body of research aimed at a more general understanding of what garment characteristics enhance pedestrian conspicuity in both day and night conditions.

Key Words: Daytime, conspicuity, fluorescent, pedestrian, personal protective equipment, road worker