

Impact of Alcohol on Lane Placement and Glance Patterns when Passing a Parked Active Law Enforcement Vehicle

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Summary

The *moth effect* refers to the tendency of drivers to inadvertently steer their vehicles toward a light source on the side of road. It is so named because of actual moths' tendency to fly toward lights or even into flames. The aim of this study, and studies like it, is to reduce the incidence of nighttime collisions with parked emergency vehicles—in this case, law enforcement vehicles—that display active flashing lights.

This study was an effort to validate the moth effect, measure the extent to which a driver's blood-alcohol concentration influences this phenomenon, and to measure how much drivers under the influence will deviate from their path of travel (lane placement), how frequently they glance at the light source, how the size of their pupils varies depending on where they aim their gaze, and how the speed of their vehicles is affected.

These measurements were determined by analyzing a dataset that the authors had amassed in a previous study. In one segment of that study, drivers passed by a law enforcement vehicle parked on the side of the road with its flashing lights on. The data from that portion of the study informs the conclusions of the current study.

This report describes the methodology for the original research: how subjects were recruited and screened and the procedure for driving the test course both before and after consuming alcohol.

The research team concluded that all participants did, in fact, drift toward the law enforcement vehicle with active flashing lights, but none actually drifted out of the lane. The amount that they deviated from the course of travel varied by participant. Pupils of the participants were smaller when looking at the law-enforcement vehicle. However, pupils tended to be larger at a higher blood-alcohol level. Drivers who had consumed no alcohol tended to drive more slowly. However, there was very little overall difference noted in vehicle speed at the two blood-alcohol concentration levels.

The original research effort was intended to gauge drivers' perception of signs, but the current study's analysis of the smaller dataset related to driver behavior in the presence of a law enforcement vehicle with active flashing lights revealed that the moth effect is indeed a factor that can cause drivers to deviate from their position (placement) within the lane. Also, the research team confirmed that bright-light sources will affect the pupils of drivers who are impaired by alcohol differently than those of drivers who are not impaired.