

**AN INVESTIGATION OF THE EFFECTIVENESS OF A STROBE LIGHT AS AN  
IMMINENT REAR WARNING SIGNAL**

by  
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# **AN INVESTIGATION OF THE EFFECTIVENESS OF A STROBE LIGHT AS AN IMMINENT REAR WARNING SIGNAL**

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## **ABSTRACT**

Strobe lights have been used successfully in many transportation applications to increase conspicuity. It was hoped that a strobe signal could also be applied to more effectively warn distracted drivers of an unexpected rear end conflict.

This “proof of concept study” used a 2 x 2 between-subjects design using thirty-three subjects (16 subjects in the strobe condition, 17 subjects in the no strobe condition) who were divided into two age groups: younger (25-35) and older (60-70). The driver unexpectedly encountered a stopped “surrogate” vehicle in the roadway (with or without a rear-facing strobe light) in a controlled on-road study at the Smart Road located at the Virginia Tech Transportation Institute (VTTI).

Results suggested that younger subjects’ perception times improved as a result of being exposed to the strobe signal. Faster perception of the situation allowed more time to initiate a brake response. Older subjects perception and response times remained unchanged by the strobe signal. More severe initial steering rate and subjective responses indicated that the strobe conveyed a sense of urgency irrespective of age.

Visual distraction of subjects proved difficult. Hence, the impact of the strobe on attracting the attention of a visually distracted driver to the stimulus could not be as fully investigated as originally hoped. The formulation of a more difficult distraction task was suggested for future research to truly assess the ability of the strobe light at alerting visually distracted drivers.

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Finally, my thoughts go to Sarah Hardy, a close friend of mine who committed suicide in February of 2000. Despite my attempts to help my friend, events had led her past a point of no return. Her death was the hardest obstacle I faced during my time at Virginia Tech. I miss her. Together we had overcome limitations placed on us by circumstance. We had an unspoken promise to continue to grow beyond expectations and to encourage one another on our way. She was a special person who showed incredible thought and generosity to all who knew her. I would like to dedicate this work to my friend Sarah. In honor of her memory, I promise to continue to go beyond everyone's expectations.

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