

NEWLY LICENSED DRIVER CRASHES: CAUSES AND REMEDIATION

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During their first six months of solo driving, teens between the ages of 16 and 17 are up to 11 times more likely to die in a crash than drivers 40 – 50 years old. Automobile crashes are the number one killer of 16 and 17 year olds. Graduated driver licensing programs have decreased this risk some during the first six months, but the risk is still unacceptably high. The increased fatalities are not due to drugs, alcohol or speed; rather, they appear largely to be a function of failures of hazard anticipation, attention maintenance, and speed management. Various programs of research will be described which have both identified the particular behaviors which differentiate newly-licensed from experienced drivers and evaluated alternative training programs designed to modify the behaviors of newly-licensed drivers.

Cause of Crashes. If we know that failures of hazard anticipation, attention maintenance and speed control are the major causes of newly-licensed driver crashes, and if the risks for newly licensed drivers have remained the same over the past fifty years or so, it seems clear that we are not teaching novice drivers the particular set of skills that they need in order to reduce their crashes. We have engaged in a systematic program of research to determine exactly which hazard anticipation, attention maintenance and speed control skills are compromised. In this regard, we find that newly-licensed drivers can be up to six times less likely to look for potential hazards than more experienced drivers¹. This is true even when the driving demands are minimal and the drivers are not distracted. Standard driver education programs would not appear to be teaching novice drivers to look for potential threats. We also find that newly-licensed drivers are more than twice as likely as more experienced drivers to glance away from the forward roadway for longer than two seconds¹. This is particularly problematic given the increased use of cell phones for text messaging and iPods for playing music. Again, standard driver education programs may be failing to give drivers the practice they need monitoring the duration of their glances away from the forward roadway.

Driver Training Programs. In an attempt to address these problems, a number of investigators have developed and evaluated alternative programs designed to increase the likelihood that a newly-licensed driver will not crash. In our laboratory, we wanted to design a program that was inexpensive, easily available, and effective both when evaluated in a driving simulator and on the open road. To begin, we focused on the development of a hazard anticipation training program using simple PowerPoint slides to display top down views of the potential threats. Evaluations of this simple hazard anticipation training program indicate that it more than doubles the likelihood that newly-licensed drivers will anticipate potential hazards and that they do so both in a driving simulator¹ and on the open road¹. Other investigators have evaluated speed management programs (e.g., skid control training). By contrast, such programs either increase crash risk or do not change that risk.

What Can the Federal Government Do. The federal government has funded and continues to fund analyses of the differences between the skills of newly-licensed and experienced drivers. And through their SBIR program they fund small scale evaluations of the effectiveness of these programs. But, to date there have not been the funds required to determine whether the training programs that are being evaluated not only decrease unsafe behaviors among newly-licensed drivers, but also reduce crashes, injuries and fatalities. The federal government has a role to play that no other obvious entity can assume.

¹ Pradhan, A. K., Hammel, K. R., DeRamus, R., Pollatsek, A., Noyce, D. A. and Fisher, D. L. (2005). The Use of Eye Movements to Evaluate the Effects of Driver Age on Risk Perception in an Advanced Driving Simulator. *Human Factors*, 47, 840-852.

² Chan, E., Pradhan, A. K., Knodler, M. A., Pollatsek, A. and Fisher, D. L. (January 2008). *Empirical Evaluation on a Driving Simulator of the Effect of Distractions Inside and Outside the Vehicle on Drivers' Eye Behaviors*. Presentation at the 87th Transportation Research Board Annual Meeting, TRB, National Research Council, Washington, D.C.

³ Pollatsek, A., Narayanaan, V., Pradhan, A., and Fisher, D. L. (2006). The Use of Eye Movements to Evaluate the Effect of PC-Based Risk Awareness Training on an Advanced Driving Simulator. *Human Factors*, 48, 447-464

⁴ Fisher, D. L., Pradhan, A. K., Pollatsek, A. and Knodler, M. A. Jr. (submitted). Empirical evaluation of hazard anticipation behaviors in the field and on a driving simulator using an eye tracker. *Transportation Research Record*.