Using Science to Help Teach Teens Safe Driving Skills

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Young drivers have a reputation for being among the most dangerous on the road for good reason; according to the Center for Disease Control and Prevention (CDC), teen drivers, per mile driven, are nearly three times more likely than drivers older than 20 to be in a fatal crash, particularly in the first few months after receiving their license.

This week at the Transportation Research Board 94th Annual Meeting in Washington, D.C., psychological scientists presented innovative research on how we learn to transition from accident-prone novices to safer drivers as we gain experience behind the wheel.

“The over representation of novice drivers in road accidents across the world is consistent. This trend eclipses cultural trends and licensing differences,” says Neale Kinnear, a psychologist at the Transport Research Laboratory in the United Kingdom.

According to Kinnear, a key difference between novice drivers and more experienced drivers is how accurately they anticipate potential road hazards. As drivers gain experience, they get better at visually scanning ahead for danger and their emotional appraisals of hazards become quicker and more accurate.

One hypothesis for how drivers learn to recognize road hazards is through physiological markers. When we encounter a dangerous or threatening situation, our bodies react with unpleasant sensations. These unpleasant sensations lead to unconscious bias which acts as a marker or signal that allows us to respond earlier the next time we encounter the threat.

Kinnear has found key differences in how drivers learn to recognize and respond to hazards as they gain experience. In one study, groups of experienced, inexperienced, and just-learning drivers watched video clips of hazardous driving scenarios while their sweat-induced skin conductance response was measured. Skin conductance provides researchers an objective, physiological measure of the body’s “fight or flight” response.

Kinnear and colleagues were interested in investigating exactly when drivers began to anticipate and react to the oncoming hazard. They found that more experienced drivers began to show a skin conductance response (i.e., their body is registering something potentially hazardous) just before the dangerous road event in the video occurred. On the other hand, novice drivers didn't show a response until after the hazard had already taken place.

One strategy that many countries are adopting to help keep inexperienced motorists safe as they're learning to drive is graduated licensing programs, which often include logging hours with a parent or other adult supervisor in the car. But does this supervision actually lead to safer teen drivers?

Research from Robert D. Foss of the University of North Carolina, Chapel Hill finds that although supervised driving programs are assumed to help people learn, evaluations show little evidence that they actually improved driving safety.

In one study, Foss looked at crash data collected from teen drivers within 36 months of receiving licensure. Surprisingly, he found that even after a year of supervised driving, teens were getting into accidents at unexpectedly high rates.

"That doesn't mean graduated driver licensing doesn't work, that just means it doesn't appear to make more savvy drivers the way I thought they would," says Foss.

One possibility, Foss suggests, is that novice drivers aren't really learning while they're driving under supervision. Instead, teens may just be doing what they're told and following directions instead of truly focusing on learning basic skills.

Although the vast majority of licensed US drivers say that their parents helped them learn to drive, Foss found evidence suggesting that parents don't provide the kind of challenging variety in driving environments (rural, urban, highways, rain, or nighttime) that inexperienced drivers really need to improve their skills.

In an effort to help parents become better driving teachers, Jessica H. Mirman of The Children's Hospital of Philadelphia has worked to develop a program to help parents become better driving instructors.

Through a comprehensive series of focus groups and interviews, Mirman and colleagues found that parents were rarely addressing two key areas for improving teen driving: exposure to diverse driving environments and mastering key skills behind the wheel.

As part of a large team of investigators and scientists, Mirman helped put together an interactive web-based program called TeenDrivingPlan (TDP) which helps provide a framework for parents and teens to track and master new skills in a variety of road environments. The program uses a series of short tutorials and other resources to help parents identify and track their child's progress on specific driving skills.

Teen drivers that used TDP were 65% less likely to fail a rigorous on-road driving assessment compared to peers who hadn't used the TDP training system.

“Helping parents become better supervisors, helps make teens into better drivers,” says Mirman.

Reference

Foss, R. D., Kinnear, N., & Mirman, J. H., (2015, January). Learning to Drive: Theory and Practice. Symposium conducted at the Transportation Research Board 94th Annual Meeting, Washington, D.C.