Journal of Adolescent Health 57 (2015) S1–S5

ELSEVIER

JOURNAL OF ADOLESCENT HEALTH

www.jahonline.org

Editorial

Adolescent Drivers: Fine-Tuning Our Understanding

Over the past two decades, graduated driver licensing (GDL) has been the primary focus of research on motor vehicle crashes among adolescents. GDL ensures that beginners acquire a substantial amount of driving experience under conditions that minimize their risk of crashing as they learn by doing [1]. Its widespread adoption in North America, beginning in the mid-1990s, has been a remarkable success story. Dozens of studies have documented the crash-reduction effects of this sensible approach [2,3]. However, beyond studies to investigate the effects of GDL, there has continued to be relatively little research devoted to understanding—rather than simply documenting—the nature and extent of young driver crash risks. Such inquiry is essential in the search for the next great leap forward in adolescent driver safety.

To begin addressing this need, the Transportation Research Board Subcommittee on Young Drivers was formed in 2007, specifically to promote and guide high-quality research to understand adolescent driving. Recognizing the lack of theoretical guidance for research in the field, the Subcommittee drafted a document to identify the key questions most in need of scientific inquiry. This was meant to stimulate efficient use of limited resources by guiding researchers and funding agencies toward inquiry into critical issues [4]. Because a substantial number of studies had already been conducted to examine GDL, and more were under way, it was clearly "on the radar" of the scientific community and recommendations to study it seemed unnecessary. Consequently, the Subcommittee considered inquiry into the following issues to be most urgent:

How driving competence develops

The novice driver crash rate declines sharply during the initial months and years of driving [5,6]. But, why or how this occurs is not understood. Evidence about what brings about this dramatic decrease is essential to guide efforts to increase the speed with which it does so.

Role of parents in adolescent driving

As with other adolescent behaviors, parents are in a position to influence driving, and they have been drafted as key players in the GDL process. Yet, little research has examined the extent or nature of parental involvement and influence. Parents are thought to need guidance, but there was no evidence in 2008 that this was the case, what parents might do to reduce the crash risk of their children, or how they could be influenced to engage in such actions.

Passenger influences on adolescent drivers

By 2008, several studies had documented an association between adolescent driver fatal crash involvement and the presence of passengers in the vehicle, but little was known about why this was the case.

Measuring adolescent driving exposure

As in infectious disease etiology, exposure plays a huge role in motor vehicle crashes. Yet, virtually no measures of adolescent driving exposure exist. We know little of how much young novices drive and virtually nothing about how much takes place under conditions involving varying degrees of risk (e.g., at highway speed on rural roads, at low speed in urbanized areas, late at night or while transporting multiple passengers). Lacking adequate measures of exposure, simple crash counts have often erroneously been taken to indicate situation-based or behavior-based risk, although they often represent nothing more than simple variations in exposure. Although high-quality measures of young driver exposure are not easily obtained, they are essential to a fundamental understanding of adolescent driver crashes. Unlike the previous three topics, this issue has received little research attention from 2008 to the present. One encouraging effort to begin addressing this issue is the American Driving Survey, a continually ongoing survey of drivers [7].

Improving the scientific foundation of adolescent safe driving programs

Finally, subcommittee members felt strongly that efforts to address young driver risks need to rest on a stronger scientific foundation. This led to the two-part recommendation that researchers (1) conduct methodologically rigorous evaluations of existing popular programs whose efficacy has not been properly examined and (2) develop new interventions based on solid scientific understanding of the epidemiology and etiology of adolescent driver crashes along with established behavior change principles [8], to supplement or replace those based on little more

Conflicts of Interest: The authors have no conflicts of interest to report.
Disclaimer: Publication of this article was supported by the National Institutes of Health's Office of Disease Prevention and the intramural program of the Eunice Kennedy Shriver National Institute of Child Health and Human Development. The opinions or views expressed in this article are those of the authors and do not necessarily represent the official position of the funders.

1054-139X/© 2015 Society for Adolescent Health and Medicine. All rights reserved.
http://dx.doi.org/10.1016/j.jadohealth.2015.04.024

than common sense beliefs. Little has been done since 2008 to evaluate popular teen driver safety programs. On the other hand, there have been some serious efforts by researchers to develop, then evaluate, scientifically grounded programs to assist parents of teenage drivers, as the Curry et al. [9] paper illustrates.

The articles in this volume capture the current state of knowledge within the first three previously listed topic areas. One additional topic—adolescent distracted driving—was added because of the substantial policy and research attention to this issue since 2009.

Here, we offer a few comments on the priority research areas, the critical review articles that follow, and issues that have emerged since 2008. Each of the reviews followed predetermined criteria to systematically search the English language literature and identify all relevant studies. The ultimate goal of systematic literature reviews is to conduct formal meta-analyses. However, as was the case here, this is often not attainable as the existing literature is insufficient to support quantitative summaries of findings.

Despite the impossibility of conducting formal meta-analyses, each of the articles in this volume provides a valuable summary and critical assessment of the limited research on important aspects of adolescent driving. They also identify broad problems of inadequate reporting; imprecise, inconsistent, and idiosyncratic measurement; and a frequent lack of conceptual rigor in the current adolescent driver research literature. The recommendations provided to address these, if followed by future researchers, will improve our understanding of important issues.

Two measurement and analysis issues are particularly problematic, because they seriously impede the opportunity to synthesize findings. First, researchers routinely commit the fundamental error of grouping quite different entities into a single category. Although crash rates, and the many factors that contribute to adolescent crashes, vary substantially between 16- and 19-year-olds, teenage drivers are routinely treated as a homogeneous group for analytic purposes. Because of the dramatic changes in crash risk during the first 2 years of driving, such grouping completely obscures critically important information. This relates to the second widespread problem: age and experience are too often conflated, with researchers assuming—quite incorrectly—the two are largely synonymous. Although most 16-year-olds will exhibit roughly similar levels of neurocognitive and psychosocial development, they can have dramatically different amounts of driving experience, ranging from none to as much as 2 years in many jurisdictions. Although age-related developmental phenomena play a role in adolescent driver risk, driving experience is far more important, accounting for about four times as much variance in crash rates [10,11]. Accordingly, it is essential for researchers to begin focusing analyses thoughtfully on experience, measured precisely (e.g., months of active driving, calculated days since a driver license was issued), rather than using age as a poor proxy. Analyses in adolescent driver studies should be conducted on units no larger than a single year of age. Analyzing experience in units larger than 3 months risks missing important variation during the first 18 months of driving, regardless of driver age.

How novice drivers improve

The limited literature on driving competence led McDonald et al. [12] to deal exclusively with hazard anticipation. Developing and refining the ability to quickly recognize hazards, and especially to know when and in what situations unseen hazards may potentially appear, appears to be a key step in becoming a competent driver. Despite a lack of evidence about the role of hazard recognition or anticipation in experienced drivers' ability to avoid crashing, the logical argument that they are critical is sufficiently compelling that GDL programs in Australia, Canada, and New Zealand require novices to pass hazard perception tests as part of the licensing process. These tests vary, ranging from computerized versions requiring participants to identify hazards (e.g., Victoria, Queensland, New South Wales) to on-road testing in which drivers are asked to identify and verbalize the presence of hazards in the immediate driving environment (e.g., Alberta, British Columbia, New Zealand).

Hazard perception tests have not been incorporated in driver licensing systems, nor has hazard perception training been a training focus in the United States. The findings reported by McDonald et al. suggest that this would be premature. Although they report some encouraging findings about the potential for hazard perception training to influence various behaviors that might indicate increased driver safety, most of these were measured almost immediately after training, with almost no follow-up beyond a week. Moreover, few of these measures have been validated, most were obtained in simulated rather than actual driving, and there was little consistency across studies in what was measured or reported as affected by training. Several studies employed multiple measures but found evidence of effects on only a few.

Summarizing research on hazard perception training is particularly difficult given the apparent lack of any standard notion of what effects training should produce or how to measure them. The suggestion by McDonald et al. that efforts to identify and standardize some measures be undertaken by researchers in the field is both timely and important. Such an undertaking would undoubtedly help to refine the still somewhat nebulous concept of hazard anticipation, thereby improving the focus of efforts to develop training approaches. This should also help resolve another problem with the current literature—the lack of clarity about who hazard training should help, what exactly should be learned, and how this should happen. One would assume such training, if effective, would be most useful to novice drivers. However, most studies reviewed by McDonald et al. appear to have paid little or no attention to the driving experience of experimental participants, focusing instead on "young" drivers and making the aforementioned mistake of equating relative youthfulness with lack of driving experience. Having included many relatively experienced drivers in their studies, researchers may have inadvertently set the bar unrealistically high, attempting to improve the hazard anticipation abilities of individuals who were already fairly accomplished. Although as McDonald et al. note, the rate at which these abilities develop as drivers gain practical experience is presently unknown, it is difficult to believe that individuals with as little as 2 years of experience are not quite accomplished at hazard anticipation.

Finally, the suggestion by McDonald et al. that longer term measures of the effect of hazard anticipation training are needed presents an important, but particularly daunting challenge for researchers. Hazard anticipation abilities probably begin to develop the moment, individuals begin to drive. The challenging question for researchers is how to distinguish the effect of training from the natural development of hazard anticipation skills resulting merely from driving. It will require a thoughtful

Download English Version:

https://daneshyari.com/en/article/1077952

Download Persian Version:

https://daneshyari.com/article/1077952

Daneshyari.com