YOUNG DRIVERS

Young driver risk factors: successful and unsuccessful approaches for dealing with them and an agenda for the future

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The extent to which various interventions to deal with the young driver crash problem have worked are discussed, and promising interventions that should be tried are identified. Traditional forms of driver licensing and driver education have not worked. Graduated licensing reduces the problem and existing laws need to be strengthened. Programs involving parents and police have shown some potential to increase compliance with graduated licensing restrictions. Insurer discount programs also have potential. In other public health areas, comprehensive programs have worked better than those based on single components. There are continuing efforts to develop new driver education and training programs and methods of delivery that can combine with graduated licensing and contribute to reductions in the young driver problem. The most promising intervention strategy is likely to be a coordinated community based program in states with strong graduated licensing laws as a foundation, involving modern education and training techniques, insurance discount programs, and well publicized enforcement and education programs featuring parents and police in combination, with as much input and participation as possible from the target group of young drivers.

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In this paper, the following topics are covered: risk factors for young drivers and behaviors that should be addressed; how we have addressed these behaviors in the United States and with what results; why various interventions have worked or not worked; and promising interventions that should be tried. The primary age group of concern is 16–17 year olds.

RISK FACTORS

It is well understood that the extra risk young people have for crash involvement is due to inexperience, characteristics associated with youthful age, and the interaction between these two factors. All beginners are by definition inexperienced, and we know inexperience to be a crash risk factor whatever the starting age. Characteristics of adolescence include an appetite for strong sensations and excitement, emotionality, sometimes poor judgment and decision making, and strong peer influences.[1 2] Most beginners in the United States are at a stage of adolescent development where risk taking is a normative feature, and there is emerging evidence that brain development is at a stage at which controls on risk taking are not fully in place.[3] There is a continuum of age associated risk. Not all adolescents are equally vulnerable, and there is a high risk subgroup of special interest. However, there are many examples of "model" teens being killed in car crashes, and all young beginners are legitimate targets for interventions.

We know that young beginners are more likely than older drivers to perform risky driving behaviors such as speeding, close following, and smaller gap acceptance.[4–6] This driving style combines with their inexperience, manifested in lesser abilities to recognize and respond to hazards, to produce their higher crash risk. The crashes of young beginners are more likely than those of older drivers to involve single vehicle events, speeding, and driver error, reflecting their risk taking tendencies and inexperience.[7] It is difficult to sort out the relative contribution of inexperience and age factors to their individual crashes. For example, following too closely and crashing can reflect risk taking or merely inexperience with car placement. Many crashes involve both factors—for example, driving too fast and running off the road, and failure to recover because of driving inexperience. Studies that have tried to determine overall the relative contribution of age and experience to crashes are difficult to do well, but indicate that both contribute, with age being more of a factor the younger the licensing age.[8] The United States is an early licensing country. Many countries do not license until 17 or 18, which lessens the contribution of age related factors. Sixteen year olds are at a markedly different stage of adolescent development compared with 18 year olds.[9]

We know also the times and situations of higher and lower risk for young drivers. Driving under adult supervision is low risk.[10 11] The first few months of licensure are high risk, highest in the first month and then dropping steadily.[10 12] Driving late at night is high risk, as is driving with young passengers in the car.[13 14] This needs some elaboration. Driving late at night is high risk but low exposure. Numbers of crashes are higher at other times of the day, and the periods just before and just after school hours show peaks.[15] Driving with young passengers is both high risk and high exposure, and accounts for nearly half of the deaths that occur in crashes involving young drivers. Yet not all travel with young passengers is high risk. Male passengers are an especially problem scenario; a male driver and a female passenger is lower risk.[16]

Other risk factors include alcohol and non-use of seat belts. Alcohol obviously increases crash risk but its contribution to young driver crashes has decreased greatly since the early 1980s. Lack of seat belt use is a continuing problem for young drivers, and especially young passengers.[17]

With that as background, how have we tried to deal with these risk factors and associated behaviors? Primarily we have done so through driver education/training programs and licensing policies.

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TRADITIONAL DRIVER EDUCATION

Driver education programs for young beginners have not succeeded in producing drivers less likely to be in crashes than drivers without formal training.[18–23] There is little reason they should be expected to do so, although this is the way they have been promoted. The standard courses have generally been of short duration, much of the time has to be spent on skill building, attempts to invoke safe driving practices (primarily scare techniques and admonitions by adults to drive safely) have been unsophisticated, and safety messages conveyed can readily be overwhelmed by ongoing parental, peer, personal, and other social influences that largely shape driving styles and crash involvement. A more realistic goal is that driver education/training be a superior way to learn basic driving skills, and there is some evidence that this goal can be achieved. For example, in the landmark DeKalb study, those who received the maximum training scored higher than the minimum training and control groups on an on-road performance test.[24]

LICENSING POLICIES PRIOR TO GRADUATED SYSTEMS

Historically, licensing policies in the United States also failed to deal adequately with the young driver problem. For most of the 20th century, states allowed quick and easy licensing at a young age.[25] Licensing ages were 16 in most states, 15 in a few, and only New Jersey had a licensing age of 17. Few states had mandatory learner permit holding periods or they were of short duration, license exams were easy, and in most states full driving privileges were bestowed immediately upon licensure. That is, little was done to deal with either the age or inexperience factors that produce the crash problem. The control of risk taking was attempted largely through penalty systems. In many states beginning drivers were subject to penalties applied on the basis of fewer violations than would be the case for adults, and the penalties could be more severe. Evaluations of so-called probationary systems found them to have modest positive effects, but for various reasons they are insufficient for dealing with the young driver crash problem.[26]

GRADUATED LICENSING

Graduated licensing began to take hold in the United States in the mid-1990s. This sensible way of licensing is geared to protecting beginners while they are learning, allowing and encouraging them to obtain on-road driving experience under conditions of low risk, and keeping them out of high risk situations. Accordingly, the basic model includes an extended learner period, intended to increase the amount of low risk supervised driving experience prior to licensure, and curbs on unsupervised late night driving and driving with young passengers when initially licensed. In this way, the highest risk types of driving in the very high risk period right after licensure are addressed.

Studies in various states have shown that graduated licensing reduces crashes, generally by 20–30%,[27 28] and effects are beginning to show up on a national level.[29 30] The effects come from two sources.[31] Longer permit periods can delay licensure, and night-time and passenger restrictions in graduated systems are known to reduce crashes.[32 33] There is also limited evidence that the extra experience gained by extending the learner period results in safer drivers once licensed.[34] Concern has been expressed that upon graduation, the crash rate would be higher than in predecessor licensing systems because of less experience driving at night or with passengers and possibly less exposure overall. The one study that has addressed this issue found no evidence for a negative aftermath of graduated licensing,[34] but this issue merits further study.

Graduated licensing is a risk management system that is applied to all young beginners in the United States. Its primary purpose is to control exposure to risky situations, not to change driver attitudes. Graduated licensing is also a system for dealing with the inexperience component, not age, and in jurisdictions outside the United States, it typically applies to novices of all ages. However, when applied to young beginners, it does affect the age factor by delaying initial licensure in some cases, raising the age of full privilege licensure, and keeping young people out of driving situations where risk can be exacerbated by the immaturity factor.

EXTENDING THE EFFECTS OF GRADUATED LICENSING

With the spread of graduated licensing across the country, we have a building block, something we know works. How do we build on it, enhancing features of graduated licensing known to be effective? One way is to upgrade the laws. Many of the systems have significant gaps, so establishing stronger systems is one priority. Some states do not have night and passenger restrictions and in many states that have them they are weak—for example, night restrictions that do not begin until midnight or 1:00am; passenger restrictions that allow as many as three companions. License delay can be enhanced through graduated licensing laws by raising the minimum learner permit age and/or lengthening the minimum holding period. Several states currently do not allow permits until age 16. Two of these states, Connecticut and Kentucky, instituted minimum holding periods of six months, in effect raising the licensing age and resulting in large reductions in 16 year old crash involvement.[35 36] Other states could make similar gains by raising the permit age to 16 and/or further extending the minimum learner stage.

Of course, the most straightforward way to delay licensure is to increase the licensing age to 17. We know from studies of New Jersey's 17 year old licensing age that this would be an effective policy for reducing crashes,[37] and survey results indicate that lifestyle effects are minimal. That is, 16 year olds in New Jersey spend about the same amount of time at paying jobs, homework, dating, parties, being with friends, and participating in sports or school activities as 16 year olds in neighboring states.[38 39] Surveys of parents have indicated that a licensing age higher than 16 is favored by about half,[40–42] but raising the age has had no political viability. Interestingly, recognition that graduated licensing is effective but by no means a panacea has led to renewed interest in higher licensing ages, and more serious consideration may be given to this policy in the future. Delaying licensure obviously sacrifices some mobility, and societies have to decide where they want to strike the balance between mobility and safety concerns for teenagers.

Seat belt use also can be addressed through graduated licensing. A few states have specific provisions in their legislation requiring seat belt use. For example, North Carolina requires all occupants in a vehicle driven by a driver in the graduated system to be properly restrained, else the driver can be cited. Other states can use this as a model.

Better compliance with the rules of graduated licensing also is key, recognizing that strengthening systems accomplishes little if compliance is low. We know that parents are the chief enforcers and getting them more involved in enforcing and supplementing the graduated system in their state, and monitoring their teens, is important. Studies to persuade parents to better manage teen driving have produced mixed results, some studies finding no effects on behavior or crashes.[43 44] The research literature on this topic has been summarized by Simons-Morton.[45] The most promising technique thus far is the Checkpoints Program, which attempts to convince parents to adopt and maintain

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restrictions on teen driving during the first year of licensure. The program has been successful in influencing parents' reported behavior although there has been no direct effect on the crash involvement of their sons and daughters.[45]

One issue in developing parent programs is that parents differ in the amount of time and motivation they have to participate in the licensing process, and it is likely that teens whose parents are less inclined to participate are a higher crash risk group than those whose parents are more willing and able. It will be a special challenge to influence parents with lesser inclination to be involved.

Police have not been involved much in enforcement of graduated licensing laws, but a recent study in North Carolina featuring a well publicized enforcement campaign showed that this approach has potential.[46] The effects on reported teen and parent behavior were actually quite modest, but this initial study will serve as a learning experience to guide future program efforts. Interestingly, the most success was achieved at a school in which students got involved, running their own checkpoints and giving out mock tickets to violators of graduated licensing provisions, and restaurant coupons to reward compliant drivers.

We are still in the beginning stages of determining the best ways to increase compliance in graduated systems. Parent and police programs tried thus far have been insufficiently effective. One possibility is to combine the efforts of parents and police in a coordinated program aimed at maximizing compliance. The combined efforts of parents and police should be mutually reinforcing. It is known that while parents understand that they are first in line in enforcing graduated licensing provisions, they want police involved in enforcement to support and validate their own efforts.[47] Police are more likely to be motivated to enforce if they know they have the backing and assistance of parents.

DRIVER EDUCATION AND GRADUATED LICENSING

An important question is whether driver education can be combined with graduated licensing in ways that enhance the effectiveness of both. Michigan has adopted a two-phase driver education program designed to coordinate with the phases of graduated licensing. Several contemporary driver education programs attempt to involve parents, encouraging them to support and supplement graduated licensing provisions. There is ongoing research in this area, including a program in Michigan that combines driver education and the Checkpoints Program. Evaluations have not yet been done or completed.

We can learn from other countries in combining driver education and graduated licensing. One model is a course called Parents Plus offered by the Royal Automobile Club of Victoria, Australia.[48] It combines parents and professional instructors in the management of pre-license driving, starting with an initial driving lesson where a parent is invited to join the learner and instructor. The intention is to encourage parents to ask questions and request advice on how to manage supervised driving instruction, motivate the provision of supervised driving experience, and introduce parents to support and guidance materials on providing supervised on-road experience. The goal is to have the learner acquire at least 120 hours of practice, and of necessity most of the supervision will be done by parents. This coordinated approach provides an opportunity to combine professional instruction in driving skills with maximum supervised practice, facilitated by parents guided by professional instructors. This approach seems promising, though it has not been formally evaluated.

NEW TYPES OF DRIVER EDUCATION

Driver education is constantly being reinvented and has become a substantial though highly fragmented industry. We tend to think of driver education courses as being school based or commercial courses, but there are now many other sources of driver education materials and/or training, including manufacturers, insurers, government agencies, police agencies, and highway safety organizations. Some insurance companies have programs for sons and daughters of their insured population, involving teen and parental education, and incentives for crash-free driving in the form of insurance discounts. The incentives aspect makes these programs of particular interest, but formal evaluations of their effectiveness have not been conducted.

Many new types of programs have been developed in recent years, both for beginners and for teen drivers who have acquired some experience. There are programs that involve improved classroom curricula and techniques for on-road driver training. There are new ways for teaching driving skills, and for attempting to develop cognitive and perceptual skills, and there are new methods of delivery, involving computer based instruction and simulation. In addition there has been a proliferation of courses teaching teens skid control and other advanced driving techniques. One important and realistic goal for driver education is to be a superior way of mastering basic driving skills. There may be potential for some of the new training methods to produce more skillful drivers or to speed up the learning process, assuming that students are motivated to learn and apply the lessons taught. These programs are typically unevaluated in terms of on-road driving or crashes so what they can accomplish is not established. However, controlled evaluations of skid control programs have been done and they indicate that these programs can backfire, a consequence of ignoring the contribution of age related factors to young driver behavior. Young drivers who receive skid training, especially males, have more crashes than those without training, probably through inspiring overconfidence and show-off behavior.[49 50]

Many modern driver education programs emphasize the teaching of driving skills, but there is always the question of whether they can do more than that, and actually produce safer drivers. Changing behavior through changing attitudes is difficult with any audience, especially where a repetitive behavior like driving is involved, with many outside influences on this behavior that continue long after the course is over. There are programs developed in Scandinavia and elsewhere that focus on attitudinal-motivational skills, often referred to as ''insight'' training programs, that may have some promise in this regard but need further evaluation.[51]

HARKING BACK TO THE 1960s

It is interesting from a historical perspective to note a program conducted in the late 1960s that tried to change driver attitudes and behavior through a version of ''insight'' training. This program was run by Stanley Schuman and Donald Pelz of the University of Michigan. The treatment group, mostly male high school seniors, participated in seven two-hour sessions, dealing with: the effects of anger, frustration, and competition on driving; situational factors in driving and how to deal with them; traffic incidents (collisions, close calls, etc) experienced by the participants; and examination of personal driving styles—their strengths and weaknesses and what changes might be needed. Discussions were facilitated by ''trigger films'' that depicted potentially dangerous driving situations aggravated by emotional factors, and by films of real traffic situations. Personalized letters were sent to each participant six and 12 months after the workshops, congratulating the drivers if they had recorded no crashes, or expressing concern if they had been in a crash. A pilot program showed some promise,[52] though differences in crashes between treatment and

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comparison groups did not approach statistical significance. A follow up, larger scale program, somewhat less intense than the pilot (for example, six hours' discussion rather than 14), produced no effect on crashes.[53] This program has been described in some detail because it was extensive and thoughtfully designed, and it illustrates how difficult it is to address the young driver problem successfully this way.

AN AGENDA FOR THE FUTURE

Despite the successes of graduated licensing, the young driver problem remains large. Are there models from the public health field that can guide efforts to further reduce young driver crashes and associated injuries? Developments in the broader health education field provide some direction. Most school based programs dealing with tobacco, alcohol, or drug use have not had any more success than driver education programs, for many of the same reasons.[54–56] However, there are modern health education programs that are successful in influencing teens, and they tend to be longer term comprehensive programs.[57–62] They contrast with traditional programs that focus on the individual and put the burden of change on the individual, overlooking influences from family, peers, and the community. It may be that ''insight'' training or professional on-road training or hazard perception training, for example, do not work as stand alones, but can combine successfully with a more comprehensive program. Community based programs have been found to be effective in changing behavior in regard to alcohol and other drug use, and alcohol impaired driving. Here is a suggestion for a community based program to reduce young driver crashes and injuries. In communities in a state that has a strong graduated licensing law as a foundation, combine and coordinate various interventions that have shown promise or seem promising. These would include inputs to young beginners through skills training and insight training (or attitude/behavior change programs based on social learning theory or other modern techniques), along with insurer education programs with discounts for crash-free driving. Added to this mix would be well publicized programs involving parents and police to encourage appropriate driving behavior and to enforce graduated licensing regulations, with as much involvement as possible of teens themselves in these programs. A comprehensive program including these elements is likely to work better than any one component alone, and formal evaluations involving matched communities can be carried out to investigate effects on driving behaviors and crashes and violations. Community programs have the added benefit of drawing attention to the young driver problem, identifying it as a high priority issue demanding effective actions to reduce it.

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