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# Education for older drivers in the future

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ABSTRACT

IATSS Research Vol. 38, no. 1 2014: "Designing Mobility for the Coming Age"
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**Education for older drivers in the future**
Five presumptions have to be considered when addressing future education for older drivers: 1. Driving a car will continue to be one element of mobility in the future; 2. Older people want to be able to keep driving; 3. Safety will be an even more important factor in mobility in the future; 4. Ecological values will be more important in the future; and 5. Innovative technological applications will be more important in the future. Hierarchical models of driving are suitable in increasing understanding of older drivers' needs and abilities. The highest levels of the driving hierarchy in the Goals for Driver Education (GDE) model are especially important for the safety of both young and elderly drivers. In these highest levels goals for life, skills for living, and social environment affect everyday decision making in general but also driving, which has an impact on driver safety. Giving up driving is very much a social decision and should be taken as such. However, the highest levels of the driving hierarchy are by nature inaccessible to teacher-centered instruction These levels require more coaching-like education methods where the learner takes the central role and the teacher helps the drivers understand their own abilities and limitations in traffic. Testing and selecting older drivers to enhance safety is not, according to research findings, working in a proper way. Older drivers do not so much need more information concerning traffic rules, etc., but rather better understanding of themselves, their health restrictions, their skills, and their abilities to ensure daily mobility. Their closest companions also need tools to help them in discussions of traffic safety issues affecting older drivers.


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## 1. Five presumptions concerning older drivers and the future

In this paper, the concept of driver education encompasses any kind of teaching or learning effort aimed at increasing drivers' skills in traffic and motivation to use those skills in safety-enhancing ways [1]. The

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paper considers "formal" (professional) learning in driving schools, "informal" learning with non-professional supervisors, and the combinations thereof to be part of driver education. Because getting a driver license often requires passing a driving test, the scope of the paper also includes driving tests as evaluations of older drivers.

### 1.1. Presumption 1: driving a car will continue to be one element of mobility in the future

Mobility in industrialized countries has mainly been based on private car traffic, and the same trend can be seen in developing countries [2]. Driving a car is part of Western culture, especially in rural areas, but also in urban areas where other possibilities in the form of public transportation will continue to develop into the future. The ability to drive a private car gives the driver a feeling of independence and offers a more flexible way of moving than public transportation does.

The safe, efficient, and ecological use of a car in traffic presupposes abilities, skills, and knowledge. It hinges on the permission to take part in common traffic. To be a fully "authorized" citizen, a person may indeed have to have a driving license.

The idea of private car traffic also provides the foundation for planning and constructing infrastructures in the West. However, a dense city structure creates broader possibilities for effective public transportation systems. In addition, long distances between cities offer competitive possibilities for public transportation like high-speed trains in Europe and Japan. However, long distances alone are not enough; there has to be enough large population to use the train system regularly. One advantage of driving a private car is the independence in deciding the time of departure and arrival. In large, low-population countries, there is no way to create a public long-distance transportation system where departures would happen every 10 to 15 min, as in Japan. In such countries, private car traffic will continue, and driving licenses will be necessary.

Increased free time among all citizens, especially healthy pensioners, has changed the lifestyles. Citizens often have second houses or cottages not in the city centers but rather, as is the case in Nordic countries, far away from cities in the countryside. Trips to these sorts of cottages involve taking along all kinds of supplies, which are easier to carry from door to door in a private car.

One important fact is that when a person learns and grows accustomed to using a car, it is difficult to stop using it even if alternatives exist [3]. There are extensive measures for educating citizens to use cars, but the education for using public transportation is limited. Some European countries have been experimenting on how to train older people to use public transportation when they have given up driving.

### 1.2. Presumption 2: older people want to be able to keep driving

In industrialized countries, there is a rapidly growing group of older drivers who are used to using private cars and also want to continue using them later in life [3]. Older drivers and their road safety-related problems have drawn considerable attention since the 1960s, when studies came out arguing that the elderly represent a risk in traffic [3]. Older drivers were regarded as some kind of "other group" not belonging to "normal drivers" but rather a special segment of their own. The demands on older drivers were strict. People discussed the ideas of upper age limits for older drivers, periodical medical checks, obligatory driving tests, and education.

However, empirical investigations later revealed that older drivers are mainly dangers to themselves and not to others; compared with middle-aged drivers with the same driving exposure, older drivers do not, in fact, have more accidents. Studies have also shown that neither periodical medical checks nor re-licensing increases older drivers' safety [3–7].

It is also possible to see that the whole concept of the "older driver" is a construct firmly rooted in the corresponding time period. People are living longer and more healthily than before, and their expected active lifespans are increasing. In the future, older drivers will be even older (+75 years) than today (+65 years). There will also be more female drivers and more active drivers than there are now [3].

Individual differences in life are big, but person-to-person variations are even larger among the elderly population [3,8,9]. The reasons that people choose to keep driving differ, too. Elements affecting these decisions include driving skill and ability (declining confidence), life and society (increased dependence), self-worth (importance of dependence), and automobile (lack of public transport) [10].

### 1.3. Presumption 3: safety will be an even more important factor in mobility in the future

Aiming for reliable and higher-level safety seems to be becoming more and more important for the human species. The Swedish concept of "vision-zero" (1997) (nobody should be killed or seriously injured in traffic) is one reflection of this safety trend on the road [11]. In industrialized countries, this ideology has been part of working life for a long time. Given that traffic is one of the leading causes of death, especially in developed countries, it commands a great deal of attention in society. Although the fatality numbers in traffic have decreased in many countries over the last 50 years, the number of people injured in traffic is still rising.

However, it is interesting to note that older drivers are actually among the statistically safest groups in terms of crash rates [7] and that "what are perceived as being problems or errors made by older drivers are actually 'normal driver behaviors' or 'bad habits' developed over years of driving" [12]. Of course, there are still some age-related impairments that may lead to loss of sensory, cognitive, and motor skills, thereby making older people more prone to accidents [13–15].

There are many measures aimed at increasing safety on the road, and driver education will always be one of them. In the development of initial driver education, it is possible to see how the important topics have changed over the years from technical details to safety and environment-related responsibilities.

A broader view of driver education called Goals for Driver Education (GDE) [16] combined earlier ideas and findings and became a leading theoretical model concerning driver education in Europe at the beginning of 2000. The GDE model consisted of four levels (hierarchy of driving behavior) and three columns (level-specific educational content: knowledge and skills, risk factors, and self-evaluation skills). Safety was the main target of the GDEmodel. As early as 2009, the GDE model had already been applied to the behavior of older drivers [17].

### 1.4. Presumption 4: ecological values will be more important in the future

In addition to safety, ecological values will be even more important in the future than they are nowadays. Traffic safety, in fact, can also be regarded as part of ecological values. Saving the nature and organic environment of the world are the goals of ecological values. The idea of ecological mobility has often been understood in too narrow a way as "ecological driving" or "anticipatory driving," both of which usually focus on technical maneuvers and fuel-saving handling techniques.

Ecological mobility is a wider issue that concerns things like the selection of transportation means in different situations and for different trips. The driver education industry, however, has regarded the idea of teaching the selection of transportation means to be outside the agenda of initial driver education.

However, driver education must work to enhance drivers' responsibilities for ecological values outside the actual act of driving. Driver education should inspire drivers to be safe and ecological. These ecological values may be more unfamiliar to older drivers, who have grown up in a world where ecological problems were not yet as prominent as they are now.

### 1.5. Presumption 5: innovative technological applications will be more important in the future

New technology will be affecting driving and traffic safety more strongly in future. Passive safety measures like safety belts, airbags, and many kinds of other means designed to lower the possibility of serious injuries in a collision are already effective now. Active safety devices, which help drivers in difficult driving situations, are growing in number, and automatic control systems for handling the car are on the horizon. As new technology becomes more and more complex, it is important that drivers understand the capabilities and restrictions of the new systems. There is no way back to the "ancient times" when learning the technical details of driving a car comprised the central thrust of driver education.

The cooperation between technical systems and human behavior will be even more important in the future. There are several possible innovations that could help older drivers, such as collision warning systems aimed at intersections, automated lane changing and merging, blind spot and obstacle detection, in-vehicle signs and warnings, intelligent cruise control, and driver information systems for demanding urban traffic situations. Older drivers are apparently also interested in making use of these new tools [3]. However, the problem may lie in the learning processes for these new technologies. New drivers may possess all the necessary information and skills required to use these new systems and understand their operation and functions in their cars, but older drivers may have only a very limited amount of the necessary information and skills. It may be necessary to develop educational programs that teach older drivers about the technical systems in their cars.

## 2. A five-level model of driver education: GDE5SOC

Questions about what driving is and what makes driving safe are important when considering driver education [18]. Plans for driver education should be based on a theoretical concept of driving, but unfortunately, that has not always been the case. Driving theory and driver education curricula have not had very strong connections with each other. One might think that in an applied area like traffic psychology, there would be plenty of theories or models on how beginning drivers learn to drive and how they should be taught to decrease their risk of accident [19]. However, driver education and training has not been driven by theory [20]. At the beginning of the 21st century, though, a new description of driving and a new model of the goals and contents of safe driving—GDE—was presented [16,21] and applied in many European development and research projects on driver education and safety [22–25,26,27–29]. In all of these projects, the ideas of the GDE model have been some of the starting points for describing what driving is and what the content of driver education should be.

### 2.1. Hierarchical models of driving

When analyzing the need for theories in driver education and the current theories of driving [18,19], scholars have found that the most influential theories of driving concentrated on a few factors of driving, mainly connected to motivation and accidents: the risk compensation model [30] (later termed target risk[31]), risk avoidance model [32] (later termed the task-difficulty homeostasis model [33]), risk allostasis theory [34], and risk threshold model [35,36] (also called the zero-risk model). These theories have been evaluated and criticized in review articles [37,38]. All risk theories operate on the idea that the key element in driving safety is taking risks or learning how not to take risks. Wilde [31] and Fuller [33] made recommendations concerning driver education, but their suggestions have not had any general effect, at least not explicitly in curricula. This is understandable because trying to develop a driving school curriculum around one main idea is very difficult, especially considering the variety of risk factors involved in driving [19]. Many theories describe and explain only failures in driving (accidents); perhaps the most famous of these is the theory of accident proneness. However, theories of accidents do not seem to be enough. We must go beyond accidents if we are to understand driving behavior [30]. "A theory of traffic behavior," one scholar wrote, "should cover both the normal course of events in traffic and the deviations which anticipate risk situations and accidents" [39].

Conceptualizing behavior using the hierarchical system description makes it possible to gain a more comprehensive understanding of behavior and its complexity [40]. The first hierarchical approaches focused on the performance aspects of driving behavior [39,41,42]. These approaches can also be used to combine the motivational and attitudinal aspects of driving behavior with performance in certain traffic situations; a four-level combination of this type was developed in 1996 [19,43].

Mikkonen and Keskinen (1980) [39] originally had three levels in their model of the knowledge and skill bases needed in driving: 1) Vehicle Maneuvering (lowest level); 2) Mastery of Traffic Situations; and 3) Goals and Context of Driving. The authors handled the issue of motives behind driver behavior by suggesting a large network of cognitions to be responsible for the motives in driver behavior. Keskinen's [43] idea was to describe individual, personal motives and skill bases in all areas of life, not only driving. The name of the fourth level was "Goals for Life and Skills for Living." Later, this four-level model became the starting point of the GDE model [16]. Detailed descriptions of the model and its uses can be found elsewhere [19,21,44]. The model has also been used for older drivers' education [3]. The description here concentrates on the fourth level and the newest fifth level [45].

As the three lowest levels are more technical in their nature and specifically concern driving, the fourth level (Goals for Life and Skills for Living) connects driving to the individual's personality and general life skills. Initially, this fourth level centered on the personal motives, behavioral styles, and abilities and the social relations of a driver in a broader sense were the main ingredients in the highest level of the hierarchy. These include not only personality factors such as self-control but also lifestyle, social background, attitudes, gender, age, group affiliation, importance of cars and driving as part of one's self-image, and other preconditions that research has shown to affect drivers' choices and behavior [16]. There is ample proof that such factors also have a direct influence on accident involvement [46–50].

### 2.2. The fifth level of the hierarchy: social level

The planners of the new driver education curriculum in Finland quickly recognized the need to incorporate the "fifth level" of driver behavior [51], a level that first entered the context of driver education in 2003 [45]. The idea was to describe and demonstrate what the social environment meant to developing young people and their choices in society. Called "Culture and Subculture," the fifth level concentrated on values, social and other norms, legislation, and social environment. In the new model, GDE5SOC [51], the level was renamed "Social Environment" (Fig. 1). The fifth level concerns culture, legislation, enforcement, subculture, social groups, group values, and norms. As has been pointed out, the GDE model was originally conceived with novice drivers in mind, but it is also suitable for older drivers and their abilities and problems in traffic [52].

Social environment, which is important for personal development, serves older drivers in many ways. First, it offers goals and norms for older drivers who want to identify with a certain social group. It also provides a model of living in general. Retirement age, for example, is one turning point in human life that allows for a new way of living; the norms for that process are naturally important. Social environment is also a source of feedback from valued peer groups. While the group offers values and norms, it also gives feedback of how well the person is fulfilling the needs set by the social environment. An older driver chooses to belong to an attractive group, which thus shapes his or her

identity, norms, values, and behavior (Fig. 2). Reward seeking relative to impulse control is highest in youth [52–57] but remains important for people throughout their whole lives.

In the proposal for the Finnish driving school curriculum, the fifth level—"Social Preconditions for Driving"—is the new content in the Finnish curriculum [51]. The objective is to help the student understand the connection between his or her actions in traffic, from personal driving capabilities and motives to traffic situation control, and the social environment in which he or she lives. The driver's social environment constitutes the framework through which he or she seeks to comply with all areas of life. Consequently, when driving, the driver seeks to comply with the norms of his or her social reference group. The group and the individual's identification with the group play a major role in the formation of personal objectives and values.

The social environment and the pressures originating from it are major forces in the lives of individuals when they are young and also as they grow older. The demands of the peer group and other subgroups are particularly important. Studies show that the social environment, particularly the social pressures emanating from different groups, has a considerable effect on the actions of young drivers and accident risk [51]. However, such studies have not treated older drivers.

The driver education curriculum describes the content and advantages of using the fifth level from the viewpoint of young drivers, of course. However, it is possible and important to look at this level from the viewpoint of older drivers, as well [17]. Older drivers also have their own social environments where family and friends of similar ages, as well as the accepted values in society, affect older drivers' views of driving and, by extension, giving up driving. Male drivers usually want to keep up driving longer than females do for several reasons [3]. Males often drive the "family car," for example; if a man's wife does not drive, his family often wants the man to maintain the family's mobility. Driving is also usually more important for men as part of their personal identities, an attachment that makes giving up difficult. There are also different kinds of pressure from the social network of the driver, which can affect the decision to give up driving or not [10]. When older drivers were asked about why they were able to give up driving, their answers revealed that the reasons for giving up driving are much more complex than originally thought: reasons fell into all the different levels of the driving hierarchy. Health reasons were not the only factors [17].

The problem here is that even when an older driver's health situation and driving capability decline, the driver may want to continue driving. Females give up more easily, regardless of whether they have any health problems [3]. This means that older drivers, too, should learn to know their skills and abilities better than they currently do; thus, the fifth level is as important for older drivers as it is for younger ones.

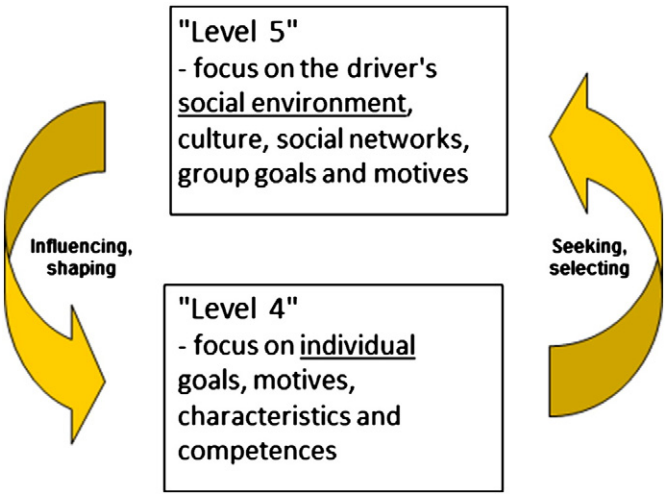


**Fig. 2.** The interaction between the two highest levels in driving hierarchy: goals for life and skills for living and social preconditions for driving [51].

Donorfio et al. [10] point out in their insightful article "To drive or not to drive, that isn't the question—the meaning of self-regulation among older drivers" that social environment is in many ways important when older drivers make their decisions about giving up driving. The important issues are maintaining independence and self-worth and being connected to life and society. Older drivers also define self-regulation as much more than the behavioral changes caused by declining health and ability; older adults emphasize the psychological processes surrounding independence, self-worth, remaining connected to life and society, and the roles of the automobile. Household composition also influences decisions related to self-regulation. For instance, those from two-person households were more willing to let their partners drive or share in the driving, while those who lived alone were less likely to self-regulate their driving.

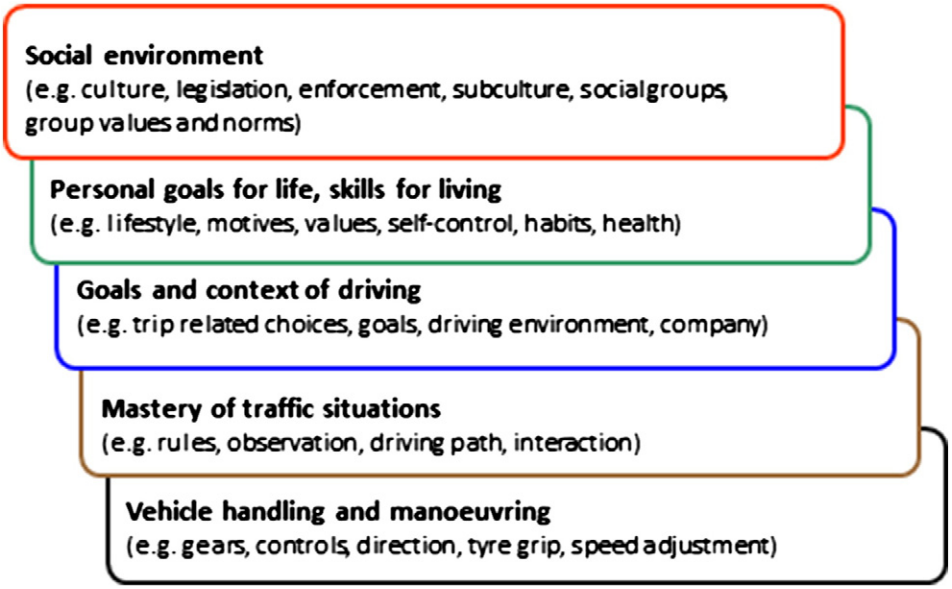


**Fig. 1.** The five-level driving hierarchy that has been the basis for the Goals for Driver Education in the Social Perspective (GDE5SOC) [51],.

*2.2.1. Social skills in driving*

Besides looking generally at social environment, it is possible to locate social skills as an element of safe driving [58]. Social skills are often defined in a simple and practical way as skills needed in interaction with others or by using a list of different skills needed for interpersonal relations. By examining social skills in traffic more closely, one can see that social skills can be defined as a multistructural system in the areas of human motivation, emotion, and cognition [58].

Hernetkoski et al. (2007) [58] defined social skills in traffic using three main factors, each of which is composed of two elements. The main skills are *prosocial skills, anticipating skills,* and *emotion skills*. Prosocial skills break down into knowing the norms and having the willingness to follow them. Anticipating skills, meanwhile, have two components: skills in anticipating others' behavior and skills in making one's own behavior anticipatable for others. Stereotypes and social attributes are important in anticipating skills. Emotion skills consist of skills for noticing and understanding others' emotions and skills for expressing one's own emotions in a constructive way. Social skills are important in traffic because different participants and participant cohorts may have different skills in anticipating others' behavior and other areas [59].

It is often argued that experience in traffic is a powerful teacher of social skills [60], but there are few studies on what those social skills in traffic are and how they develop [61,62]. Age is a determinant of involvement in traffic accidents, but how age connects to social skills in traffic is unclear [63].

While many accident-related studies have shown that young drivers are easily affected by others [64,65], the effect of driving experience on this susceptibility and the general effect of age are both unknown. Gender is always an important variable in explaining human behavior, but often the comparison concerns only the differences between males and females, leaving a shortage of work on factors that affect male and female behavior separately. Keskinen et al. [66] found that younger drivers (both males and females) were less safety oriented and more influenced by others, and more easily irritated in traffic than older people and driving teachers, which are a special group in traffic. Total mileage had almost no effect at all on social skills in traffic, defying frequent arguments that experience strongly affects drivers' social behavior in traffic.

## 3. How learning is connected to GDE5SOC

It is amazing how little attention theories of teaching and learning have gained recognition in the context of learning to drive. Many researchers have published curve modeling exposure and experience and number of accidents, emphasizing how accidents decrease as experience increases [67]. However, learning is taken as self-evident: practice and exposure produce learning. The idea of learning to drive is expressed in the beliefs that “driving/practice makes perfect,” and “solo driving is safer when novice drivers are older” [68].

The idea is simple: the more you practice, the more you can collect feedback that helps you improve your performance. Nyberg et al. [69] called this approach “quantity training” compared to quality training.

Each level of the driving hierarchy has different tasks to be learned; thus, the best or even the only possible ways to learn vary [16,70]. When learning on the lowest level (maneuvering level), acquiring knowledge and skills, and also partly understanding risks in traffic, learning takes place mostly via practice: planning, acting, getting feedback, changing plans, and trying again.

The processes of mastering the skills needed in traffic situations and learning the risks in traffic situations can follow the same repetitive practices as described above. However, the focus of learning on this hierarchy level—still relatively basic—is not only on repetition but also on the considerable amount of background knowledge required. This background knowledge is crucial in helping a driver make plans of action and better understanding feedback.

Gathering and processing feedback are key factors in learning to drive in a safe way.

An analysis of the nature of feedback and its significance in learning [71] indicated that society has not taken the need for and nature of feedback seriously enough. Proper feedback is especially important when a driver is trying to learn skills for self-evaluation. On all levels, the realistic view of a driver's assessment of his or her own skills and habits is imperative [71]. The teaching and learning process is often explained within a framework that compares the roles of teacher and student. An instructor's role in teaching at the lowest levels of driving hierarchy, covering the content and skills, and educating drivers about risky factors is that of an information distributor: the instructor offers information to the student [70].

On the highest levels of driving, especially on the levels of goals for life and skills for living (level 4) and social environment (level 5), the situation is different. On these levels, the instructor cannot give the student any more knowledge because the student is the only one who could possibly know it; knowledge on these levels is the student's personal insight. Knowledge, skills, risk factors, and self-assessment are all pieces that the student already has in his or her learning situation. The teacher's role is to show the importance of this information and guide the student's interest.

There is no way to get students to achieve changes in the fourth and fifth levels through the kind of purely information provision-driven method that characterizes the lower levels of the driving hierarchy. The two highest levels are important because of their motivational position in the driving hierarchy [16]. Motivational aspects are responsible of the main part of young drivers' serious accidents [72]. Taking risks voluntarily, acting against traffic regulations, speeding, drinking and driving, driving while tired, and driving without wearing a seat belt are all common among young and especially male drivers [73,74].

However, older drivers get into serious accidents for different causes. They are seldom the consequences of risk taking. Older drivers tend to have accidents because they fail to act properly in traffic situations despite wanting to behave in a safe way [3]. The slowness of older drivers, for example, creates problems in intersections where they encounter younger drivers who drive faster and have higher capacities for action than older people do [44]. Older drivers may also have problems in assessing their own driving skills, understanding their risks in traffic, and assessing and understanding the influence of their social environment. This means that older drivers and younger ones may need to learn about themselves as drivers, but this topic cannot be taught on information alone. Driving decision workbooks have proved fruitful in improving older driver knowledge and self-awareness through self-assessment [75].

Feedback also varies according to hierarchy level. On the lowest levels, the learner is always possible to get feedback on his or her own behavior because feedback on these levels is concrete by nature and thus easy to understand; misinterpretations are rare [71]. On the highest levels, where paying attention to interaction with other traffic and one's own behavioral habits is vital, the situation is different. Feedback on these levels comes partly from outside—from the instructor, for instance—and partly from inside the learning individuals as they reflect on their own ideas and emotions and try to understand them. The instructor's role is here not to offer information and explanations but rather to offer questions that help the learner find his or her own answers in understanding feedback [71]. Even though the instructor's tasks are even more important on the higher levels of driving hierarchy, instructors have traditionally concentrated their teaching attention on the two lowest levels of hierarchy: maneuvering and traffic situations.

## 4. Testing older drivers: is it possible to increase safety?

Waller [76] argues that extended practice makes for safer drivers but that safe driving skill is impossible to measure. This means that safe

driving goes beyond mere skills; in addition to skills, motives are also important for safe driving. This is the main argument of the GDE and GDE5SOC models, as well [16,51].

As motives in the fourth level of the hierarchy are important in terms of safety, they should be measured in driver testing. However, driver testing can only evaluate "maximal behavior," rendering it impossible to measure "typical behavior" in a reliable way [77]. Maximal behavior corresponds to skills that can be defined as being used in the "right or wrong way," such as changing gears, selecting and staying in the lane, and obeying rules. In these contexts, the candidate can behave either appropriately or inappropriately in response to prompts. Testing typical behavior means testing normal behavior [77]. This distinction has formed a dichotomy in traffic psychology since at least 1991, when Evans [78] said that safe driving is not only a matter of how well one drives but also a matter of how one drives in the real world.

The problems that older drivers experience in driving are problems on the maneuvering level (slowness) and the traffic situations level (attention-related problems) [3]. On the higher levels, older drivers rarely have issues arising from the type of voluntary risk taking common in younger people; rather, the elderly's driving problems are connected to health conditions [13] and improper self-assessment—not understanding their own limitations. Getting feedback concerning these problems may be helpful.

## 5. Future driver education models for older drivers

A multitude of driver education programs will be available in the future for different customer groups. The above discussion demonstrated the variety of needs that driver education for older drivers will have to fulfill in the future. There has to be additional or advanced education to help drivers learn skills that are more advanced. As some people stop driving temporarily, there need to be courses that people can take to brush up or refresh their skills after a period of non-driving. There are also many different kinds of health, age-related, and personal problems, which means that there should be educational programs that address these special needs, also.

However, the idea here is not that all these courses should be available and only available at driving schools or other formal education settings. Formal courses are certainly not the only modes of education that need to be offered. The main question concerning future driver education is how to arrange a broader system that meets future demands in traffic safety and environmental friendliness.

Even if this different kind of educational system for drivers successfully develops, one major problem remains: how to separate the people who really need driver education, especially additional education, from the ones who do not need such courses. Molina et al. [79] showed that novice drivers were mainly interested in improving their abilities to recognize their strengths and weaknesses as drivers and that overconfident drivers were not so interested in safe driving courses. Basic knowledge and skills in driving were the least popular topics.

Another question is if drivers themselves should be even more responsible for their actions concerning driving knowledge and skills. Are the authorities responsible for "helping" drivers who refuse to take their own responsibility? This point often comes up in efforts to plan mandatory driver education.

Driving a car will continue to be one element in mobility, thus creating a future need for driver education. Driver education should be available to all drivers, but one central problem is how mandatory it should be and how to make it attractive to the drivers who need it because of problems with insufficient skills, declining health, and decreased levels of self-assessment and self-regulation. Driver education methods should serve different age groups—younger and older and males and females—separately but also together as age variation is large and problems with males and females are somewhat different. Younger and older drivers and males and females should fit into the same traffic environments safely, an ideal that depends on the mutual understanding of other people's intentions and habits. Having younger and older drivers in the same education may be challenging because what interests young people may not interest older people. When the aim is to make people of different ages in traffic understand each other, however, this may be the optimal method. Of course, computer-based programs can provide helpful resources for arrangement.

Safety education and the promotion of ecological values should be part of larger driving education programs in the way that education always takes care of these goals. This kind of connection would help improve everyday decisions in the understanding of how safety and ecological values are always present in the decision-making process of driving. This means that the main part of learning should venture outside normal driving procedures. Tools for seeking out and understanding feedback, like different kinds of diaries, computer-based programs, and other organizers, would help in learning on the basis of one's own experience. The traditional pattern of transferring information from instructor to learner is no longer sufficient; new ways of helping learners to assess, motivate, and regulate themselves are essential in driver education. Applications of new technology can also be used to collect data and help drivers make decisions based on empirical information.

New technological applications will help drivers in their tasks, but new technology is also a challenge for driver education because the variety and skills of learners differ and new technology places new demands on driving curricula by possibly increasing the content to be learned. It has to be decided what kinds of content really are essential and how it should be learned. Different kinds of active learning methods and the interaction between learner and his or her social environment will be crucial, as well. While social media may offer possibilities for learning, the fact that it is so open makes understanding content critically difficult.

In the future, there will be a multitude of driver education possibilities available for different customer groups. As the demands in future driver education as a lifelong process will require different approaches, it seems clear that basic training, driving school, and private instruction will not be enough; different kinds of combinations are needed. The content should be based on accepted descriptions of driving behavior. In Europe, interests have been in theoretically based driver education models such as Goals for Driver Education [16] and GDE5SOC [51], while the curricula and the driving tests have been developed according to these models. Education for older drivers should also be driven by theory. If the GDE5SOC model is used, the highest levels of the hierarchy might not accessible through teacher-centered methods such as lecturing or simply by increasing the amount of training offered. Active learning methods that make use of the learner's own experiences are important. Coaching is one of those active learning methods that could help in this learning process [29].

Although there has not been so much research concerning effective safety interventions concerning older drivers, there are many studies concerning children's traffic safety interventions [80]. Studies suggest that for children, as well, the social environment—parents [81] and friends [82], particularly—is the most important factor concerning their safety in traffic. It has also been shown that community-level and macro-level factors and interventions are effective in increasing traffic safety. Re-licensing (non-voluntary), however, is not that effective, as shown above [3–7]. What is needed are different forms of tools for increasing older drivers' self-understanding and family members' understanding of older license holders.

Older drivers' social environment should have the support of the society in assessing and affecting whether older drivers should continue or give up driving. Tools (checklists, etc.) that spouses or children could use would be important and relatively easy to develop. These would help family members discuss with older drivers and make safety-increasing decisions concerning driving. Self-evaluation tools [17] could also play into this discussion.

The aim in education for older drivers could perhaps be simplified by saying that it should not be teaching knowledge or skills and teachers should not simply give information to older people. It could be more of a process in mutual understanding where the teacher helps the older driver learn more about his or her own abilities and challenges in driving. It could also help older drivers solve their mobility problems in a safe and ecological way.

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