Holding On and Letting Go: The Perspectives of Pre-seniors and Seniors on Driving Self-Regulation in Later Life*

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RÉSUMÉ

Bien que les décisions relatives à la conduite d'un véhicule soient fondamentales du point de vue du bien-être des personnes âgées, nous en savons assez peu sur la manière dont les conducteurs âgés, qui ne souffrent pas de problèmes médicaux pour lesquels ils devraient cesser de conduire, gèrent la conduite d'un véhicule. Cette étude qualitative exploratoire s'est appuyée sur des groupes de discussion composés de 79 de ces personnes vivant dans la collectivité, dans le but d'étudier l'autoréglementation en matière de conduite, selon le point de vue des conducteurs âgés de 55 à 64 ans et selon celui des conducteurs et des ex-conducteurs âgés de 65 ans et plus. Les thèmes découlant de l'analyse inductive portent sur l'importance de conduire, sur les mécanismes d'autosurveillance et d'autoréglementation, sur les gens qui ont une influence sur la prise de décisions et sur les opinions relatives à la réglementation en matière de permis de conduire. L'article comprend un modèle préliminaire du processus d'autoréglementation qui souligne les facteurs personnels, interpersonnels et environnementaux qui influencent la raison, la manière et le moment dont les conducteurs âgés s'adaptent et cessent de conduire. Le modèle permet de désigner les domaines dans lesquels des recherches pourraient être entreprises dans le but d'accroître notre compréhension de ce processus, y compris l'efficacité de l'autoréglementation. Les résultats révèlent qu'en améliorant la sensibilisation du public à l'égard des questions liées à la conduite et au vieillissement on pourrait aider les conducteurs âgés, leur famille et leur médecin de famille à optimiser la sécurité de cette population en matière de conduite. Puisqu'un accident ou un quasi-accident était considéré comme le seul facteur qui inciterait de nombreux sujets à arrêter de conduire et que peu de sujets prévoyaient arrêter de conduire, il est nécessaire que l'on puisse intervenir afin d'aider les conducteurs âgés à faire la transition vers un statut d'ex-conducteur au moment opportun d'une manière qui leur soit acceptable.

ABSTRACT

Although decisions related to driving are vital to well-being in later life, little is known about how aging drivers who do not experience a medical condition that requires driving cessation regulate their driving. This exploratory, qualitative study used focus groups with 79 such community-dwelling individuals to examine driving self-regulation from the perspective of *pre-senior* (aged 55–64) drivers, *senior* (aged 65 years or over) *drivers*, and *senior ex-drivers*. Themes resulting from inductive analysis addressed the importance of driving, mechanisms of self-monitoring and self-regulation, people who influenced decision making, and opinions regarding licensing regulations. A preliminary model of the process of self-regulation that highlights intrapersonal, interpersonal, and environmental influences on why, how, and when aging drivers adapt or cease driving is presented. The model identifies areas for future research to enhance understanding of this process, including the effectiveness of self-regulation. Findings suggest that increased public awareness of issues related to driving and aging could assist aging drivers, their families, and their family physicians in optimizing driving safety for this population. Since a near accident or accident was seen as the only factor that would lead many informants to stop driving and few informants planned for driving cessation, there is a need for interventions that help aging drivers make the transition to ex-driver in a timely and personally acceptable way.

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A range of negative consequences can follow when seniors stop driving. These include increased loneliness and social isolation, increased demands on others to meet transportation needs, strained relationships with those who suggested the driving change, depressive symptoms, and decreased participation in out-of-home activities (Fonda, Wallace, & Herzog, 2001; Johnson, 1995; Marottoli et al., 1997). Considering these negative consequences and the importance to health and quality of life of maintaining mobility in the later years, it is not surprising that aging drivers want to continue driving for as long as possible (Yassuda, Wilson, & von Mering, 1997).

Yet there is growing evidence that driving becomes increasingly risky with age. When the incidence of crashes is adjusted to reflect distance driven, drivers aged 65 and over have the highest crash rates of any age group (Gillespie & McMurdo, 1999). While drivers aged 65 to 75 years are less likely than teenaged or middle-aged drivers to injure fatally drivers of other cars, drivers aged 65 and over are more likely to kill or injure themselves when involved in a crash (Florida At-Risk Driver Council, 2004; Insurance Institute for Highway Safety, 2003). The risk of death associated with crash involvement increases significantly with advancing age and associated increases in fragility. Death rates per mile driven are approximately 13 times higher for those aged 80 and over compared to drivers aged 30 to 59 years of age (Li, Braver, & Chen, 2003).

Thus far, research on older drivers has focused primarily on the impact of specific impairments and diagnoses (e.g., visual impairments, dementia, and stroke) on driving ability (Hakamies-Blomqvist & Wahlstrom, 1998; Marottoli & Richardson, 1998). Such research has informed the development of assessments and clinical guidelines to assist physicians and other health care professionals in determining what medical contra-indications should be reported to a licensing authority and in evaluating whether aging persons can resume driving after experiencing such conditions (Canadian Council of Motor Transport Administrators, 2004; Canadian Medical Association, 2000).

Although the physical and cognitive changes associated with aging may affect driving ability (Kostyniuk & Shope, 2003; Messinger-Rapport & Rader, 2000), comparatively little research focuses on driving among the well elderly. The term *well elderly* refers here to community-dwelling adults aged 65 and over who may exhibit age-related changes, such as slowed reaction time, decreased visual acuity, or decreased joint range of motion (Stutts & Wilkins, 2003; Withaar, Brouwer, & van Zomeren, 2000), but who have not experienced a medical condition that requires reporting to a transportation authority.

Research that has examined the driving behaviours of the well elderly has demonstrated that individuals adopt strategies to decrease risk as they age—for example, by decreasing speed and miles driven (De Raedt & Ponjaert-Kristoffersen, 2000; Lyman, McGwin, & Sims, 2001; Messinger-Rapport & Rader, 2000). Although it has been proposed that stopping driving should be conceptualized as part of an overall process of self-regulation of driving that occurs with aging (Dellinger, Sehgal, Sleet, & Barrett-Connor, 2001; Lyman et al., 2001), most research has focused primarily on the final driving-cessation decision. Surveys of older people asking why they chose to stop driving have found that health problems, vision problems, and a decreased level of confidence were the reasons most often selected (Brayne et al., 2000; Dellinger et al., 2001; Hakamies-Blomqvist & Wahlstrom, 1998; Lyman et al., 2001; Parker, Macdonald, Sutcliffe, & Rabbitt, 2001). However, as was highlighted in a study by Siren, Hakamies-Blomqvist, and Lindeman (2004), such surveys may not ascertain what is most important to respondents; they found that most of the reasons listed in the survey for ceasing driving were rated as *unimportant*

by ex-drivers. Similarly, the results of a telephone survey conducted by Lyman et al. (2001) examining the association between chronic medical conditions and impairments, on the one hand, and the driving habits of community-dwelling older drivers, on the other, led the authors to conclude that there was a ''need to further understand the factors negatively affecting driving independence and mobility in older drivers'' (p. 413).

Many regulatory systems rely on drivers without specified medical conditions to monitor and adapt their driving behaviour as they age (Florida At-Risk Driver Council, 2004); however, there has been little in-depth examination of this process. Research on driving self-regulation in theory and practice should inform regulatory procedures. It should also lead to educational interventions to enable aging drivers to maintain safe driving for as long as possible and help them decide when it is appropriate to stop.

The purpose of this study was to examine the experiences and perspectives on driving of well elderly individuals who did not have a medical condition that required reporting by a physician to a regulatory body. In particular, we explored (a) the meaning of driving and its cessation, (b) how drivers self-monitor and self-regulate driving, and (c) how they plan for the future when driving becomes difficult or impossible. We draw on the conceptualization of personal and environmental factors affecting participation published by the *International Classification of Functioning, Disability, and Health* (World Health Organization, 2002) to explore if and how intrapersonal, interpersonal, and environmental factors influence the driving behaviours and decisions of aging drivers.

Methods

Recruitment

In order to examine self-regulation as a *process*, three groups of aging drivers, divided according to age and driving status, were included in the study: (a) *pre-senior drivers*, who were between the ages of 55 and 64, (b) *senior drivers*, who were 65 years and over, and (c) *ex-drivers*, who were 65 years and over and who reported stopping driving of their own volition.

Ethics approval for the study was granted by the University of Toronto Health Sciences Research Ethics Board in 2001. Maximum variation sampling (Creswell, 2003) was employed by recruiting volunteers—via posted notices—from a variety of sampling sources, including subsidized seniors' housing complexes, a later-life learning group, retirement homes, community service organizations, and hospital out-patient departments. Recruitment occurred from July 2001 through May 2002. Eligibility criteria included age (55 and over) and driving status (i.e., currently driving or having been a driver). Those who volunteered to participate were then asked, ''[H]ave you been told to stop driving either by a doctor or a driving regulator (i.e., the Ministry of Transportation of Ontario)?'' If volunteers gave a negative response, they were invited to join the study.

Context

This study was conducted in Toronto, Ontario, where motor vehicle licensing regulations require a vision test, a written test of driving knowledge, and attendance at a 90-minute group education session when a driver turns 80 and every 2 years thereafter. The instructor of the educational session can, based on the results of the written test and observation, request further testing, including an on-road test, but this is rarely done. Other rules apply for those who are involved in a crash or who have driving infractions.

Information Collection

Focus groups were conducted from October 2001 through May 2002, by a trained interviewer, using a semi-structured interview guide. As recommended by Krueger (1994), each group was homogeneous; in this case, with respect to age range and driving status. In total, five focus groups were held with pre-senior drivers, four with senior drivers, and five with senior ex-drivers. Groups consisted of a mean of 5.6 informants, with a range of 3 to 8 informants. The interview guide addressed driving behaviour, influences on driving, and the regulation of driving, with specific wording adaptations for each type of group. On average, the groups lasted one-and-a-half hours. Not reported here, but part of the larger study, were three focus groups with family doctors. In addition, informants completed a descriptive information questionnaire (Friedland, Laliberte Rudman, Chipman, & Steen, 2006).

Sample

Seventy-nine informants participated in the study. There were 29 pre-seniors, 24 senior drivers, and 26 ex-drivers, with a mean age and range for each group of 59.6 (55–64), 75.5 (66–92), and 81.75 (65–94) years, respectively. The majority of informants were female, had two or more children, and were financially comfortable (see Table 1). Considering that only 38.8 per cent of Canadian seniors have completed a high school education (Fawcett & Roberts, 1998), our informants were well educated, with 81 per cent having more than a high school diploma (senior ex-drivers, 73.0 per cent; senior drivers, 91.6 per cent;

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Table 1: Characteristics of the sample by group[a]

Characteristic	Senior Ex-drivers ($n = 26$)	Senior Drivers ($n = 24$)	Pre-senior Drivers ($n = 29$)
Gender			
Female	76.9%	50.0%	65.5%
Martial Status			
Married	15.4%	45.8%	58.6%
Widowed	69.2%	41.7%	17.2%
Single/Separated/Divorced	11.5%	8.3%	24.1%
Living Situation			
Alone	73.1%	37.5%	27.6%
With Spouse	7.7%	50.0%	55.2%
With Child / Family Member	7.7%	12.5%	17.2%
Other	11.5%	0.0%	0.0%
Type of Residence[b]			
Private Home	15.4%	62.5%	55.2%
Apartment/Condominium	23.1%	20.8%	41.4%
Supportive Housing	57.7%	4.2%	3.4%
Cooperative Housing	0.0%	8.4%	0.0%
Income per Month			
>$3,000	23.1%	66.7%	69.0%
$1,000–$2,999	50.0%	20.8%	10.3%
<$1,000	11.5%	0.0%	10.3%
Children			
0	3.8%	8.3%	10.3%
1	19.2%	12.5%	13.8%
2 or More	73.1%	75.0%	75.9%

a Columns do not add to 100 per cent due to missing responses resulting from participants' choosing not to respond to specific questionnaire items.
b Categories for type of residence are not mutually exclusive.

pre-senior drivers, 79.3 per cent). Most informants rated their health as *excellent* or *very good*, although they reported several types of health problems, with arthritis, hypertension, and heart disease, in that order, being most common.

Data Analysis

All focus groups were audiotaped and transcribed in full. An inductive data-analysis approach, based on techniques associated with the constant comparative method (Lincoln & Guba, 1985), was used. Using the software program QSR-N5, the analysis process involved breaking the data into meaningful units of information, combining units into categories, and then combining categories into themes. This analysis process was initially conducted separately for transcripts of each type of focus group and then categories and themes were combined across the three types of groups. A research assistant and two study investigators separately coded the transcripts, discussed evolving categories, and finalized themes.

Results

Transcripts were analysed for each type of focus group separately and the data were then combined to create themes that cut across the groups (i.e., pre-senior drivers, senior drivers, and senior non-drivers). This analysis resulted in four major themes, illustrated below using quotes from transcripts, as well as a preliminary model of the process of driving self-regulation. The model draws together findings from all four themes to map out interpersonal, intra-personal, and environmental factors affecting how aging drivers monitor and regulate their driving. An anecdotal finding, based on observational notes made by the focus-group leader and investigators attending the groups, was that participants had a high level of interest in the discussion topic. There were also unsolicited comments from participants, noting that the groups were helpful.

Theme 1: The Practical and Symbolic Meaning of Driving

Informants discussed their desire to remain in the driver's seat for as long as possible for practical reasons, as well as because of the symbolic meaning associated with driving. Driving was described as a means to maintain control over and spontaneity in daily life and activities. Informants in all groups viewed driving as an indicator of independence and well-being and stopping driving as an indicator of dependence and decline: "less of a . . . independent, viable human being that can do your own stuff by yourself" (senior). Losing the ability to drive was linked to becoming "old"—"one more thing about old age" (ex-driver); "[I]t's a sign that you're growing old and you're going downhill" (pre-senior).

When discussing what they thought life would be like if they could not drive, senior drivers stressed decreased social contact and unwelcome lifestyle changes: "I live by myself . . . I don't know what I'd do without the car. I think I'd just give up, go live in a home probably." They thought that making the decision to stop driving would affect their sense of self negatively: "[Y]ou've lost part of yourself when you don't have the mobility when you're used to it."

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They also expressed distress in relation to the decision to cease driving: ''[I]f I lost the ability [to drive], I think . . . there's not much left to life.'' Indeed, a common opinion was that one would attempt to drive for as long as possible: ''I will drive until the day I'm physically restrained.''

When they were asked to discuss what they thought life would be like if they could not drive, pre-seniors either stressed how not driving would restrict their lives or had difficulty envisioning what it would be like. For example, one pre-senior stated, ''[Y]our vehicle is your magic carpet ride to getting out there in the world. And without it, you're kind of imprisoned in your own home.'' Another pre-senior stated, ''I can't imagine not driving.''

Ex-drivers often reported that they had, indeed, experienced the types of losses envisioned by current drivers. They described how they struggled to maintain their independence and sense of self when having to rely on others to maintain their mobility. One ex-driver described how she had to work around her family's schedule, stating, ''I would like to be back [at home] at 10:00 . . .. Well, I can't sort of say, well we all have to leave at 10:00. So, I get home when they do . . .''. Ex-drivers described giving up driving as ''discouraging'', feeling ''deprived'', having little ''freedom of choice'', and losing ''independence''. However, several ex-drivers also indicated that they had learned to adapt to the change over time, often noting they had had to deal with other significant life changes, such as the death of a spouse, almost simultaneously. Some ex-drivers could also see benefits from stopping driving, such as decreased stress and expense.

Theme 2: Monitoring and Regulating the Self

The second theme focused on strategies of self-monitoring and self-regulation used to maximize safety and remain a licensed driver. While pre-seniors had noted few changes in their driving abilities, many senior drivers had experienced changes and had begun to monitor their driving abilities. Both senior drivers and ex-drivers highlighted their perceived level of comfort as an important factor to monitor. A senior driver said, ''If I felt uncomfortable, I would stop'', while an ex-driver stated, ''If you don't feel comfortable and right, you certainly shouldn't be doing it [driving].'' When there were changes in comfort level, most drivers implemented strategies of self-regulation. For example, one senior reported, ''I find I'm not comfortable at night, so I don't go out a lot at night.'' Some senior drivers and ex-drivers were more precise about the specific indicators of ability they monitored, noting vision, reaction time, and ''thinking ability''. One ex-driver described how she decided to avoid highway driving during ''heavy weekends'' when she noticed her ''reaction time [was] not as fast''. Ex-drivers noted that it was also a decreased level of comfort that led, ultimately, to the decision to stop driving.

Another indicator of the need to discontinue driving, seen as important by all types of participants, was experiencing an accident or near accident, particularly one in which they viewed themselves as ''at fault''. Indeed, this experience was often framed as the only factor that would lead to the voluntary cessation of driving. A senior indicated that he would stop driving ''only if I had an accident or caused an accident'', and a pre-senior indicated he would only stop ''if I had a really close call''. Several ex-drivers shared that their ultimate decision to cease driving was tied to experiencing a ''shocking'' near accident; for example, ''a girl was jay-walking from my blind side and walked in front of my car. Now, she was in the wrong, but . . . that's no excuse for injuring her. So, I was able to stop without injuring her and I said, 'Well, driver's test or not [I'm stopping].' ''

Although there was high agreement within all groups that certain medical conditions, particularly those involving cognitive or vision changes, should require cessation of driving, opinions differed on how age itself should be considered; some stressed that age was definitely a factor, while others felt it had no relation to driving ability. An ex-driver stated, ''[A]ge does terrible things to everybody. And it starts at about 75 and nobody should be driving past that.'' One senior stated that regulations were important as ''they [older people] may lose their sense of judgement, or they may be so desperate that they want to get out and they still want to live that they'll do it [drive] even though they know they are not very good.'' In contrast, another senior driver stated, ''There are good drivers who are old and there are awful drivers who are young. It's not a question of age.''

Theme 3: Whose Opinion Is Worth Listening To?

For many informants, their own opinion about their ability to drive was the only one that counted. A pre-senior driver, contemplating the hypothetical event of stopping driving, said, ''[I]t's my decision. I don't . . . accept the fact that someone else should be making that decision for me.'' One senior stated, ''I'm not sure that anybody could tell me to stop driving, I think I should tell myself if indeed I did something really stupid . . .''. Ex-drivers, who all perceived that they had voluntarily stopped driving, stressed how they had maintained control over that decision.

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One ex-driver brought his driving record to the focus group to show that he had incurred no demerit points, saying, "I voluntarily quit driving; I wasn't forced to."

At the same time, there was variability in how confident informants were about future decisions. While most pre-seniors appeared quite certain they would know when it was time to cease driving, some senior drivers expressed concern that they might unknowingly experience cognitive decline, in which case somebody else would have to stop them. For example, one senior stated, "I'm not certain that I will [know enough to quit driving]. I hope I will, but I'll be told when I mustn't . . .".

The primary sources of feedback regarding driving were family members and physicians. With regard to family members, most pre-seniors thought that they might listen to their spouses, while seniors, especially those who were widowed, thought there was a possible role for their children. Some ex-drivers shared how they changed their driving behaviour on the basis of family feedback or how they consulted with family members after they began to perceive their driving was worsening: "I began to think . . . maybe I'm not reacting, even though I thought I was, I may not be reacting well enough to be a good driver . . . I spoke to my family and they agreed; they said, 'Dad, you better quit.' "

However, there was much ambivalence about these interactions and a concern about resulting shifts in family relationships. One pre-senior, thinking it inappropriate for a child to tell a parent what to do, indicated that this direction of feedback "upsets the balance in the family". A senior stated, "Some family members have had such difficulty taking Dad's car keys away . . . it's just created such heartbreak in the whole family situation." Senior informants also questioned whether one should rely on feedback from spouses and children, which may come too late: "[T]he family would not want to hurt your feelings and might hold back a bit too much." Some ex-drivers, who thought they had had no input from family members, found that when they stopped driving their family expressed relief. Overall, across the groups, the most common opinion was that, while family members might be able to provide useful feedback about driving, the responsibility for doing so should not rest with them.

There were varying opinions about the ability of family physicians to be accurate judges of driving abilities. Pre-seniors were the most likely to question physicians' abilities to assess driving; for example, one pre-senior stated, "[I]f he [the physician] just said, 'Well, you know, you're 72, you might want to think about not driving.' Well, he never drives with me; how can he possibly have any idea?" However, many senior drivers felt their doctor knew them well and viewed their physicians' opinions as authoritative. As stated by one, "I know if a doctor told me I couldn't drive, I certainly wouldn't drive." Across groups, informants thought that ophthalmologists provided the most valid opinions, citing the objectivity of their tests.

While informants suggested that it would be preferable to have physicians rather than family members monitor driving, they noted that physicians might also be reluctant to intervene. For example, a senior stated, "I have a feeling they [physicians] feel sorry for people and let them drive beyond the point where they really should." An ex-driver whose spouse had been diagnosed with early-stage dementia shared his experience with a physician as follows: "And the doctor was just always saying, well, still driving . . . you should have her stop. So, he didn't tell her. I told her." Another ex-driver stated, "I never had a doctor ask me if I drive."

Theme 4: The Need for Better Testing Procedures

Many informants felt able to regulate their own driving but expressed concern that "other" older drivers, especially those with dementia, were unable to self-regulate. Concern regarding "other" drivers resulted in the majority of informants supporting the need for an enhanced regulatory system. As stated by one senior, "I don't think you can depend on individuals to quit driving when maybe they should quit driving because it's a power thing." Similarly, a pre-senior stated, "It's really counter-intuitive to expect older people to, well any age, to have the objectivity to decide."

Consistent with variability in opinions regarding whether or not age is an indicator of potential driving ability, opinions varied on whether regulations should be age-based or applicable to all drivers. A commonly expressed opinion was that there should be regular re-testing for *all* drivers, with the re-testing occurring at more frequent intervals for older drivers.

While pre-seniors tended to have little knowledge regarding the existing system of driver regulation, some seniors and ex-drivers acknowledged the potential benefits of written tests and education required by the current system, while others thought it allowed them to renew their licences too easily. For example, an ex-driver said, "We didn't have a test, we just sat and listened to that fellow . . . I had that twice and then you went out, singing away." Many expressed concern about on-road tests, pointing to opportunities to abuse the system. One ex-driver shared the following story: "I have a lady

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friend who was . . . refused [her driver's licence] at . . . [specific city], she was refused at some other place, and then she went to . . . [specific city] and got it. Two weeks later she bumped into a wall at a supermarket. Police came; no more driving.''

Despite acknowledgements of the stress-provoking nature of on-road testing, there was almost unanimous agreement that it should be required. A pre-senior stated, ''You should be in a car with a competent, qualified person who can judge whether or not you have the ability'', while an ex-driver stated, ''I didn't have to take a road test at 80, but I think everyone should''.

Informants had suggestions for making testing less threatening, such as linking testing with training and implementing a standard schedule of re-testing throughout a driver's career. They also recommended providing financial incentives for voluntary participation in refresher education and training. Ex-drivers discussed factors that had made it easier for them to decide to stop driving, such as having accessible public transportation, living in a place where daily needs could be easily met without a car, having access to numerous activities, and having a family member or friend who offered rides without being asked.

The Process of Self-regulation of Driving

By examining these comments, we developed a preliminary model of the process of self-regulation of driving as it is experienced by aging drivers (see Figure 1). Intrapersonal, interpersonal, and environmental factors affect how the well elderly monitor and regulate their driving throughout the process, moving from little awareness or experience of the impact of aging on driving to the decision to cease driving.

On the whole, pre-senior drivers had given little or no thought to changes in driving as they aged. They were certain they would be able to decide on their own when to stop. Senior drivers had a greater awareness of physical, visual, and cognitive changes within themselves. *Intrapersonal* changes became a cause for self-monitoring among senior drivers. As they became aware of potential problems, seniors began to regulate their driving behaviours and the environments in which they drove and thereby maintained an acceptable level of comfort. The practical importance of driving and its symbolic meaning, in interaction with *environmental factors* such as the availability of acceptable alternative transportation, also influenced decisions regarding how to regulate their driving and whether they could envision discontinuing driving as a viable option. Though anxious to make their own decisions about when to restrict their driving or to stop, *interpersonal factors* were also at work, as, in comparison to pre-seniors, seniors appeared somewhat more open to feedback from family and quite open to advice from their family doctors. Ex-drivers acknowledged that it was their decreasing level of comfort that had become unacceptable and forced them to stop, sometimes coupled with an accident or near-accident that intensified their discomfort. Some ex-drivers also noted that feedback from family members and the environment (e.g., motor vehicle crashes and near misses) helped them make the decision. Several environmental factors, such as perceptions of hazards (e.g., weather, traffic), social beliefs regarding aging drivers and their abilities, and the regulatory system, also played a role in how aging drivers monitored and regulated their driving.

Discussion

As has been found in other studies, there was strong agreement among our informants on the importance of continuing to drive for as long as possible. Although media stories often argue against seniors continuing to drive (e.g., Richards, 2005; ''Inquest sidesteps age issue'', 2002), there is support among policy makers, researchers, and health care professionals for maintaining driving for as long as possible to enhance the health of our aging population (Kostyniuk & Shope, 2003). In concert with that goal are the goals of helping seniors to stop driving when safety is at risk and assisting them in making the transition from driver to ex-driver (Eby, Molnar, Shope, Vivoda, & Fordyce, 2003; Stutts & Wilkins, 2003).

While many of the themes that emerged within this study—such as the importance of driving and the implementation of driving strategies (Lyman et al., 2001; Yassuda et al., 1997)—build upon previous research, this study adds to the literature by generating a preliminary model of the process of self-regulation of driving by the well elderly. As discussed below, this model (see Figure 1) suggests areas for further study and intervention.

In terms of understanding how, why, and when aging drivers adapt and cease driving, this study, like others (e.g., Brayne et al., 2000; Dellinger et al., 2001; Eby et al., 2003; Hakamies-Blomqvist & Wahlstrom, 1998) underscores the importance of self-confidence. Our informants noted that their subjective level of comfort, which can be considered a form of self-confidence, influenced when they would change (or had changed) their driving behaviours and when they would decide (or had decided) to cease driving. Our model points to the variety of personal and

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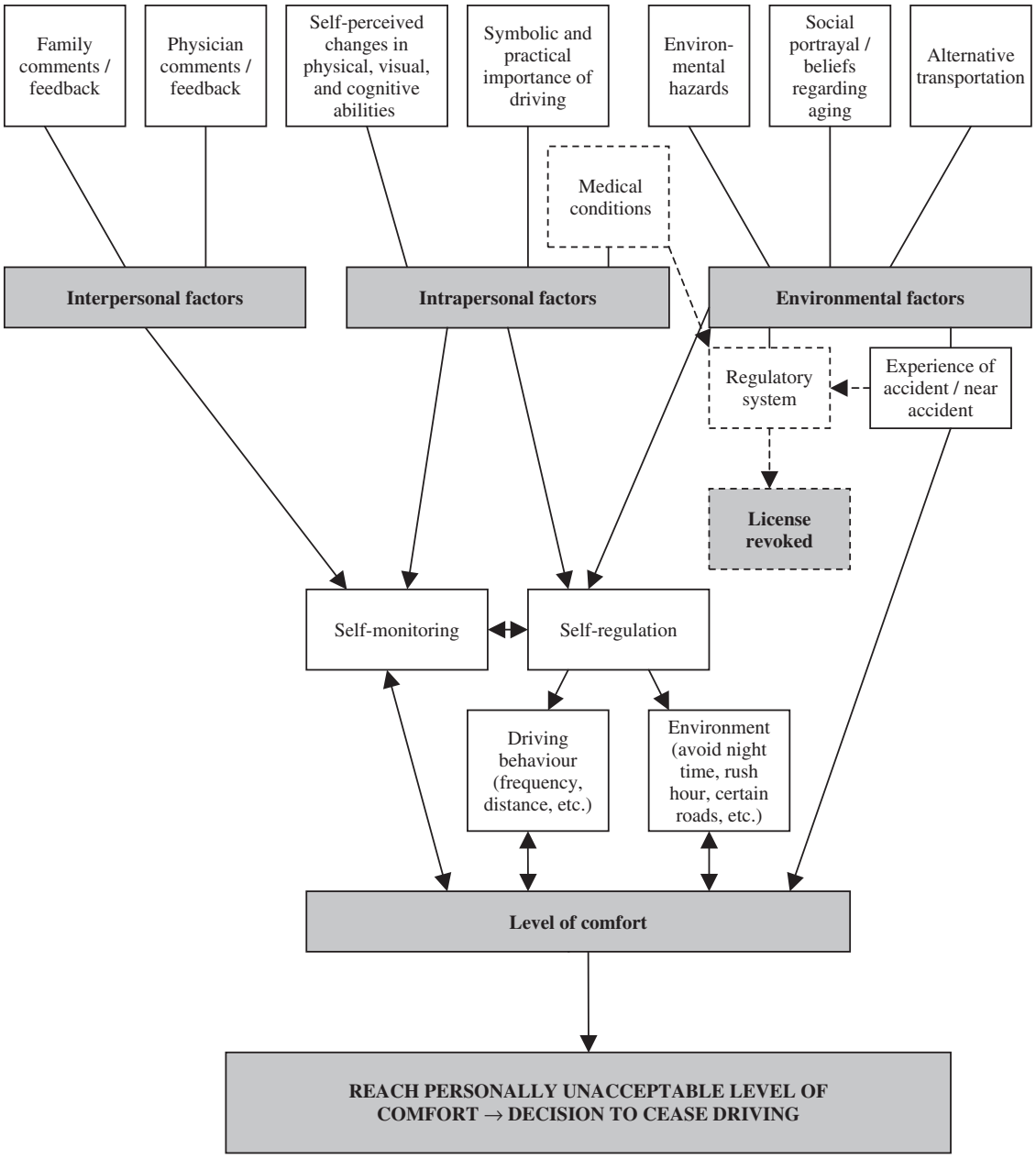

Figure 1: Model of the process of driving self-regulation with aging

environmental factors that can affect an aging driver's level of confidence. However, studies of the relationship between self-confidence and driving abilities in older drivers have had somewhat conflicting findings. Marottoli and Richardson (1998) found that confidence in driving ability was significantly related to self-rated driving ability but not to crash history or driving performance on an on-road test. In contrast, Parker et al. (2001) found that a low level of confidence was associated with a high level of self-reported lapses in driving behaviour and a perceived lack of ability. Both Marottoli and Richardson (1998) and Parker et al. (2001) found a positive association between level of confidence and miles driven such that those who were more confident tended to drive more. Further research is needed to determine the direction of the relationship between confidence and performance, as well as the complex interaction of factors that influences how aging drivers rate their level of comfort.

Our preliminary model demonstrates the need for research to move beyond intrapersonal factors, such as medical problems, bodily changes, and level of confidence. Our results, in concert with other qualitative studies examining driving cessation in

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later life (Persson, 1993; Yassuda et al., 1997), point to the need for more emphasis on interpersonal and environmental factors, such as the influence of family members and physicians, the demands of driving environments, and involvement in near-accidents. By including informants at various points in the driving self-regulation process and by considering the entire process, this study also highlights the importance of considering where individuals are within this process to understand what factors they consider relevant; for example, whether they have begun to experience and acknowledge the impact of intrapersonal factors and from whom they are willing to accept feedback.

In our study, family members and family physicians were considered important influences on driving behaviour; however, in both cases, there was concern about their reluctance to provide feedback as well as about the potential negative effects on interpersonal relationships. Environmental factors, such as the media's negative depiction of aging drivers and the general public's lack of knowledge about seniors' driving abilities, likely militates against the involvement of family and physicians. Thus, public information campaigns that brought the issue of safety for senior drivers into prominence in a *constructive* manner could facilitate the ability of family members and physicians to provide timely and acceptable feedback. As well, work by Eby et al. (2003) suggests that self-assessment workbooks may provide another means to facilitate constructive communication between older drivers and their families.

Previous research has demonstrated that physicians themselves are uncomfortable with their role in the regulation of aging drivers because of their self-perceived lack of knowledge and their concerns for the physician–patient relationship (Kelly, Warke, & Steele, 1999; Marshall & Gilbert, 1999). A partial remedy would involve the implementation of continuing education programs to enhance physicians' knowledge as well as increase their awareness of existing guidelines and assessment tools. However, the regulatory system could also incorporate other health professionals who have expertise in assessing driving and who do not have at stake a long-term relationship with the senior being assessed. For example, family physicians could refer at-risk patients to occupational therapists; they have a broad understanding of aging, can analyse the demands of driving tasks, and can recommend adaptations to optimize safety. However, referral for such assessments is generally not covered by public health insurance and to be effective, the system would have to cover the costs in the name of health promotion.

In terms of the environment, there was agreement among our informants on the need for a better regulatory system, one that should involve, among other changes, on-road testing, perhaps for all potentially unsafe drivers. Although the idea of ongoing, periodic testing for all drivers has not been studied, the effectiveness of on-road testing for senior drivers has been examined and found to be lacking (Hakamies-Blomqvist & Walstrom, 1998; Grabowski, Campbell, & Morrisey, 2004). Others have suggested re-framing the role of on-road driving evaluations, shifting away from an emphasis on determining whether the driver is safe or not safe to an emphasis on providing feedback and remedial training (Stutts & Wilkins, 2003). Our informants had similar suggestions for linking testing to education and re-training; however, the issue of the cost to aging drivers remains to be addressed.

Many senior drivers in this study, while not preparing for driving cessation per se, had begun to implement strategies similar to those that our ex-drivers reported having used and that are also reported in the literature, such as avoiding highway driving and night driving (Ball et al., 1998). However, De Raedt and Ponjaert-Kristofferson (2000) note that not all older drivers adapt their driving, and research is needed to investigate why that is. Distinguishing between older drivers who recognize and adapt to factors affecting driving ability and those who do not can identify aging drivers who are most at risk for causing harm to self or others.

While it may be laudable that many of our informants regulated their driving with respect to factors such as vision and cognition, many questions remain regarding the appropriateness and effectiveness of self-regulation (Eby et al., 2003). For example, does decreasing miles driven decrease risk by leading to avoidance of risky situations or increase risk, as a decrease in practice driving contributes to the deterioration of skills (Chipman, 1982)? A study by De Raedt and Ponjaert-Kristoffersen (2000) of older drivers without cognitive impairment suggests that self-regulatory strategies can decrease crash risk. They found that drivers rated as *bad* on a standardized road test who had no history of crashes in the previous year used significantly more preparation, avoidance, and tactical strategies than bad drivers who had experienced a crash.

If self-regulation is indeed an effective mechanism, then how and when should aging drivers be educated about these strategies? Owsley, Stalvey, and Phillips (2003) evaluated an individualized educational program promoting safe driving behaviours in visually impaired older drivers who had previously

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had a crash. Six months after the program, they found that their intervention group engaged in more self-regulatory practices, avoided more hazardous situations, and reduced their driving to a greater extent than did their control group. However, the more typical refresher courses offered to seniors (e.g., by the Canadian Automobile Association or 55 Alive) are not individualized and may not be as effective. Thus, a first step in this line of inquiry would be to examine the content of refresher programs to ensure they are based on sound evidence. Evaluation of the programs' impacts on knowledge and behaviour should then follow.

In agreement with previous findings (Kostyniuk & Shope, 2003; Stutts & Wilkins, 2003), our findings suggest that while seniors may have an increasing awareness of changes in their ability to drive and may acknowledge the potentially devastating impact of stopping driving, many aging drivers do not plan for the cessation of driving. Indeed, it is of concern that many seniors and ex-drivers explained that only an accident or near-accident would lead or had led them to cease driving. This finding suggests the need to consider interventions, as suggested by Kostyniuk and Shope (2003), that promote proactive planning for driving cessation and lessen the psychosocial and health consequences of the transition to ex-driver. The idea that support from other older drivers can be helpful in preparing for the transition to ex-driver has been raised by Fonda et al. (2001) in relation to older drivers with depressive symptoms and by Yassuda et al. (1997) in relation to older drivers in general. Of interest is the fact that several of our pre-senior and senior participants made a point, at the end of the focus groups, of telling us that participation in the focus groups had prompted them to think about driving-related issues and that it was helpful to share views with others. Thus, it appears that providing opportunities to discuss driving—a topic that may otherwise be considered taboo—may be one useful strategy for raising awareness among the well elderly and for promoting further proactive management of driving. In addition, media coverage and guest speakers at seniors' gatherings could raise awareness of the issues involved.

Limitations

Limitations on our study may have resulted from our selection of informants. For example, their relatively high educational level may have influenced their awareness of the need for self-monitoring and self-regulation. The fact that they volunteered to participate may have meant that they were more outgoing, active, and interested or were more aware of issues related to aging and driving. Because informants were primarily from an urban location with access to alternative modes of transportation, they may have been more ready to adapt their driving. Although integrating member checking would have further enhanced the credibility of the findings, the time limitations and the difficulty of informants' travelling meant this option was not feasible. The cross-sectional design was also a limitation on the development of our model; the ideal design for examining a process occurring over time is longitudinal. However, several steps were taken to maximize the trustworthiness of the findings, including verbatim transcription of focus groups, the use of an experienced focus-group facilitator, and the involvement of multiple investigators in the analysis process. Thus, the preliminary model that evolved warrants further investigation.

Conclusion

The themes found in our study describe a process of self-regulation that seems to evolve over time for well elderly drivers. This process, which includes ongoing self-monitoring and regulation as well as the ultimate decision to cease driving, appears to be influenced by intrapersonal, interpersonal, and environmental factors. The process is open to intervention at various points. The urgency of ongoing research in this field is underscored by our finding that many drivers felt that only an accident or near accident would make them stop driving—obviously a poor strategy for reducing morbidity and mortality in seniors.

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