



Contents lists available at [ScienceDirect](http://www.sciencedirect.com)

Accident Analysis and Prevention

journal homepage: www.elsevier.com/locate/aap



Driving with advanced vehicle technology: A qualitative investigation of older drivers' perceptions and motivations for use

Jessica Gish^{a,*}, Brenda Vrkljan^b, Amanda Grenier^c, Benita Van Miltenburg^d

^a Department of Health, Aging & Society, Faculty of Social Sciences, Kenneth Taylor Hall, Room 231, Gilbreath Centre for Studies on Aging, McMaster University, Canada

^b Occupational Therapy Program, School of Rehabilitation Science, Faculty of Health Science, Institute of Applied Health Sciences, Room 450, Gilbreath Centre for Studies on Aging, McMaster University, Canada

^c Department of Health, Aging & Society, Faculty of Social Sciences, Gilbreath Chair in Aging & Mental Health, Director, Gilbreath Centre for Studies on Aging, McMaster University, Canada

^d Department of Health, Aging & Society, Faculty of Social Sciences, McMaster University, Canada

ARTICLE INFO

Article history:

Received 29 April 2016

Received in revised form 25 June 2016

Accepted 27 June 2016

Available online xxx

Keywords:

Advanced vehicle technology

Older adults

Embodiment

Driving

Meaning

ABSTRACT

For older drivers, in-vehicle technology offers much potential to improve safety and increase longevity of retaining both licensure and community mobility. However, little is known about how older drivers perceive Advanced Vehicle Technologies (AVTs) based on everyday driving experience. Interviews with 35 older drivers (20 men; 15 women) aged 60–85 who owned a vehicle with at least two AVTs (e.g., backup camera, lane departure warning) were conducted to explore the meanings that older drivers assigned to AVTs and motivations for use, including whether age-related functional changes were part of their automobile purchase decision. Findings indicate that age-related changes are not a primary reason for why older adults seek out AVTs, but they still perceived and experienced AVTs to counteract age-related changes in driving performance based upon changes they felt occurring within the body. Older drivers also described AVTs as generating a sense of comfort behind-the-wheel. Comfort with this technology was equated with convenience, ease of use, and increased feelings of safety. Discussion emphasizes how assessments of the quality of driving performance and value of technology occur in relation to an aging body.

© 2016 Elsevier Ltd. All rights reserved.

1. Introduction

Driving is a complex task that involves the integration of visual, cognitive, motor and perceptual skills. With age, people are more likely to develop health conditions that can impair driving skills and compromise driving safety. Access to an automobile enables seniors to be independent and remain socially active within their communities. Conversely, loss of licensure for this age group is associated with negative outcomes that include reduced out-of-home activity levels (Marottoli et al., 2000), decreased health status (Edwards et al., 2009), social isolation (Chihuri et al., 2015), depression (Fonda et al., 2001), and could lead to premature institutionalization (MacDonald & Hébert, 2010). With concerns of health and mobility in mind, emergent technology-related enhancements in

vehicle design may prolong the driving life of seniors by making driving easier, more pleasurable, and safer.

Canada's federal transportation agency, Transport Canada, uses the term 'advanced vehicle technologies' (AVTs) to classify innovation in the vehicle cockpit across four domains: 1) vehicle control 2) warning and crash mitigation 3) visibility and; 4) other driver assistance technologies. As detailed in Table 1, examples of AVTs include, but are not limited to: forward collision warning (FCW), lane departure systems, blind spot warning systems, and navigation aids. A recent synthesis of research on the impact of sixteen advanced in-vehicle technologies on older drivers concluded that many AVTs can assist older drivers with their everyday performance, including avoiding and/or lessening the severity of a crash as well as better protecting occupants in the event of a collision (Eby et al., 2015). With transformational growth expected in the availability and range of AVTs, it is critical to examine the experience of using AVTs from the perspective of older drivers.

Despite burgeoning literature on AVTs, research examining the first-hand experiences of older drivers is limited. This gap may be due to a focus on effectiveness of safety-related outcomes (e.g.,

* Corresponding author.

E-mail addresses: gishje@mcmaster.ca (J. Gish), vrkljan@mcmaster.ca (B. Vrkljan), grenier@mcmaster.ca (A. Grenier), vanmilb@mcmaster.ca (B. Van Miltenburg).

Table 1
Transport Canada classification and list of advanced vehicle technologies (AVTs).^a

Classification	Type of AVT
Vehicle control	Roll stability control Traction control
Warning and crash mitigation	Blind spot detection Forward collision warning and braking Lane departure warning Lane keeping assistance
Visibility	Advanced forward lighting systems Backing aids Night vision systems Pedestrian detection
Other driver assistance	Adaptive cruise control Brake assist Driver monitoring Speed alert Tire pressure monitors

^a <https://www.tc.gc.ca/eng/motorvehiclesafety/safevehicles-vehicle-safety-related-technologies-1068.htm>.

crash avoidance) and driver performance, rather than exploring older drivers' perspectives in terms of comfort, satisfaction, trust, and adoption. When experiential data were collected, the emphasis has tended to be on numerical ratings on the acceptance of this technology, with a few notable exceptions. For example, drivers in a focus-group study (N = 18; M = 51.78 yrs; age range 39–74) examined the subjective impact of AVTs on driving behaviour (e.g., more relaxed driving style), particularly with regard to usability issues with the technology (Strand et al., 2011). Another study explored the reasons for adoption (or non-adoption) of AVTs among a sample of older drivers who had knowledge of at least one such technology (N = 32, M = 67; age range 50–80). This study found that while awareness of certain AVTs is relatively high, concrete experience with AVTs was low (Trübswetter and Bengler, 2013). They also cited the lack of perceived usefulness, as the most common reason why such technology was rejected (Trübswetter and Bengler, 2013). Although focused on older driver's awareness of AVTs and usage barriers (e.g., lack of system trust, cost of the systems), actual hands-on driving experience with AVTs was not a requirement for study participation. Hence, questions remain about interrelationships between older drivers' perceptions and actual engagement with advanced technological features.

Insights from social studies of aging and embodiment can enrich understandings of older drivers' motivations for using AVTs and the meanings and uses of in-vehicle technologies over time. This study draws on the sociological perspective of symbolic interactionism (Mead, 1934; Blumer, 1969)—the study of how individuals interpret and assign meaning to objects and situations—in order to address gaps in knowledge on the subjective experience of using AVTs. While previous literature indicates that AVTs have safety benefits for older people (e.g., Eby et al., 2015), the purpose of the current study was to explore the interpretations and meanings—or perceived value—that older drivers' assign to these technologies. Exploring the symbolic meanings that older people assign to AVTs can help to understand how and why individuals perform or engage with these technologies. Research on driving in late life must also be considered in relation to the aging body, since the body is the medium by which people perceive and operate within the physical and social world (Merleau-Ponty, 1962). The body filters people's perspectives on the world and is both a "source of meaning and meaning construction" (Komesaroff, 1995: 14). Thus, self-assessments of behind-the-wheel performance can be shaped and constrained by how people feel this experience through their body. A perspective on embodiment can also reveal that interpretations and responses to driving-related situations depend on interrelations between personal experience, shifting physical

realities, and social contexts. Although sociological and gerontological research has explored how social and physical constructs affect older adults' perceptions and experiences of their bodies (Calasanti and King, 2005; Hurd, 1999; Hurd Clarke and Bennett, 2013; Winterich, 2007), less is known about how interactions with technology influence older adults' experiences of their aging bodies through the use and/or adoption of technology. Using an interactionist and embodiment perspective (Mead, 1934; Blumer, 1969; Gilleard and Higgs, 2013), our study aimed to identify the meanings and motivations older drivers assigned to advanced technological features and explore how these interpretations are linked to physical realities and body awareness.

Our research reports first, on older drivers' perceptions of in-vehicle technologies based on everyday driving experience; and second, on how these perceptions relate to an aging body. The following questions guided our analysis: How do older drivers understand and experience AVTs? To what extent are AVTs perceived as having value, and how do these perceptions connect to their everyday driving? What are older driver's motivations for using AVTs? Do they intentionally purchase an automobile that contains AVTs as a result of changes they observe and 'feel' in their bodies? How does their interaction with AVTs influence perceptions of their bodies and, in turn, their driving ability?

2. Methods

2.1. Participants & recruitment

In-depth qualitative interviews were conducted with 35 older drivers (20 men, 15 women) aged 60–85, with 32 unique vehicles included in our sample.¹ Recruitment efforts included community posters/flyers, notices in local e-newsletters of retiree associations (e.g., teachers), and use of a University research database of seniors residing in the community. Participants were deemed eligible to participate if they: (1) possessed a valid driver's license, (2) drove at least one day a week, and (3) owned a vehicle that had at least two advanced vehicle features (e.g., back-up camera, lane departure warning).² Although our recruitment efforts generated interest from drivers aged 70+, our eligibility requirements (i.e., vehicle with at least two AVTs) often excluded many interested seniors from the study. Given these challenges, we reduced the age eligibility criteria from 70 to 60 years of age. Each person received a \$20 honorarium for their involvement. Table 2 provides further detail on the educational and socioeconomic status of the participants.³ Table 3 details the types of advanced vehicle technologies that were present in each of the vehicles. Even though a wide array of AVTs were included in our sample, the most common technologies were the back-up camera, blind-spot monitor, bluetooth wireless connectivity, global positioning systems, lane-departure warning, proximity sensors, and voice control. Most drivers (n = 31) had purchased their vehicle in the last 5 years. Participants had varied levels of experience driving with AVTs; some were interviewed only a few weeks after vehicle purchase, whereas others had more experience using advanced features.

¹ Two couples were included in the study, and in these cases, both participants drove the same vehicle.

² One participant did not personally own a vehicle that contained AVTs, but drove a high-tech car on a daily basis as part of his work.

³ It is important to note that our sample contains a relatively privileged group with high-end automobiles. New relationships to driving and enhanced safety outcomes are not being experienced equally by people from lower socioeconomic backgrounds more likely to own 'low-tech' vehicles that do not contain the latest safety innovations. Our eligibility requirements likely excluded members of the oldest-old, a cohort who is significantly more likely to be living in poverty.

Download English Version:

<https://daneshyari.com/en/article/4978663>

Download Persian Version:

<https://daneshyari.com/article/4978663>

[Daneshyari.com](https://daneshyari.com)