



The influence of age-related health difficulties and attitudes toward driving on driving self-regulation in the baby boomer and older adult generations



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ABSTRACT

Our study aimed to determine how age- and disease-related difficulties were associated with attitudes and beliefs about driving self-regulation in men and women in the baby boomer and older generations. Three hundred and ninety-nine men ($n = 204$) and women ($n = 195$) aged between 48 and 91 years participated in a cross-sectional study of Australian drivers. Demographic characteristics and measures of driving confidence, driving difficulty and driving self-regulation; perceptions of visual, physical and cognitive capacity; and attitudes and beliefs about driving were obtained. Driving self-regulation in men and women was explained by different mechanisms. For men, self-report of visual and cognitive difficulties and poor driving confidence predicted driving self-regulation. For women, negative attitudes toward driving mediated the associations found between health-related difficulties and driving self-regulation. Barriers to driving self-regulation were not associated with the driving self-regulatory practices of men or women. Regardless of generation, women reported poorer driving confidence, greater driving difficulty and more driving self-regulation than men. We concluded that age- and disease-related difficulties are related to increasing driving self-regulation in mature men and women. These results indicate that different pathways are needed in models of driving self-regulation for men and women regardless of generational cohort.

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1. Introduction

Currently, there are 14.7% of Australians aged over 65 years, a percentage that will exponentially increase with the entry of the 'baby boomer' generation into older adulthood (Australian Bureau of Statistics, 2015). Access to a motor vehicle is considered a necessity for these drivers, who will continue to drive longer distances and maintain licensure for longer than the current older generation (Rosenbloom, 2006). When distance travelled is considered, older drivers have a disproportionately high crash rate (Lam and Lam, 2005; Rakotonirainy et al., 2012; Yee et al., 2006). These statistics have promoted research into the efficacy of the use of voluntary strategies to reduce on-road dangers for these individuals (Charlton et al., 2006; Langford et al., 2006).

1.1. Driving Self-Regulation

Some older adults show a gradual decline in driving mobility through reduced driving exposure and increased situational avoidance (e.g., avoiding driving in congested traffic; Baldock et al., 2006; Ball et al., 1998; Charlton et al., 2006; Marshall et al., 2007; Molnar and Eby, 2008; Molnar et al., 2013a; Molnar et al., 2013b). Described collectively as *driving self-regulation*, these techniques can be used as compensatory strategies to better match driving skills with the demands imposed by the driving environment (Blanchard and Myers, 2010; Donorfio et al., 2009; Hakamies-Blomqvist and Wahlström, 1998). If used accurately, this process could allow older drivers to continue driving, while reducing accident risk.

Older age, reports of poorer general health, more negative attitudes toward driving and reduced driving confidence are associated increased driving self-regulation (Anstey et al., 2006; Charlton et al., 2006; Myers et al., 2008; Okonkwo et al., 2008; Rimmö and Hakamies-Blomqvist, 2002; Tuokko et al., 2013). Relative to men, women drive less (Bauer et al., 2003; Hakamies-Blomqvist and Siren, 2003), practice greater situational avoidance (D'Ambrosio et al., 2008) and cease driving at an earlier age (Marie Dit Asse et al.,

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2014). Although reduced driving experience and poorer driving confidence in the current generation of older women is one explanation for these gender differences in driving practices (D'Ambrosio et al., 2008; Rosenbloom, 2006), attitudes towards driving and different responses of men and women to age- and disease-related difficulties contribute.

Driving behaviour that corresponds to and does not exceed actual driving skill has been argued to be dependent upon a driver's awareness of age- or disease-related difficulties alongside an understanding of how these changes might impact their driving safety (Anstey et al., 2005). Awareness is central to models of driving self-regulation (Kowalski et al., 2014; Rudman et al., 2006; Tuokko et al., 2007; Wong et al., 2014). Individuals who self-regulate or cease driving often have poorer general health, visual functioning and physical strength than those who continue to drive (Anstey et al., 2006; Braitman and McCartt, 2008; Emerson et al., 2012; Holland and Rabbitt, 1992; Keay et al., 2009; MacDonald et al., 2008; Molnar et al., 2014; Ross et al., 2009; West et al., 2003). Reports of increased driving self-regulation has also been associated with perceptions of subjective cognitive difficulties (Braitman and McCartt, 2008; Braitman and Williams, 2011; Meng and Siren, 2012). Older individuals with multiple cognitive deficits either self-regulate or cease driving relative to individuals with little evidence of cognitive decline (Kowalski et al., 2012; O'Connor et al., 2010).

Few studies have investigated how perceived health-related difficulties are associated with driving self-regulation in men and women. Reduced strength and flexibility, and poorer vision are strongly associated with driving self-regulation in women (Bauer et al., 2003; Choi et al., 2012), with reports of increased difficulties with cognitive functioning the strongest predictor for men (Freund and Szinovacz, 2002; Marie Dit Asse et al., 2014). The latter finding could be explained by the tendency of women in the early stages of cognitive decline to cease driving, while men experiencing the same difficulties are more likely to self-regulate driving (Freund and Szinovacz, 2002; Marie Dit Asse et al., 2014).

1.2. Attitudes and beliefs about driving

Alongside their actual driving skill set and awareness of these skills, an older adult's experience of, feelings toward and beliefs about driving also contribute to the practice of driving self-regulation (Donorfio et al., 2009; Myers et al., 2008; Rudman et al., 2006; Tuokko et al., 2006, 2013). Driving comfort or confidence is a self-efficacy belief that concerns an individual's perception of their capacity to perform aspects of the driving task (Baldock et al., 2006; McCarthy, 2005; Myers et al., 2008). Poorer driving confidence has been associated with increased driving self-regulation (Charlton et al., 2006; Myers et al., 2008, 2011). Women report lower driving confidence than men, a finding that might contribute to their more frequent reports of driving self-regulation (Blanchard and Myers, 2010; Charlton et al., 2006; Kostyniuk and Molnar, 2008; Myers et al., 2011).

Negative attitudes towards driving (e.g., 'I dislike driving') are associated with greater driving self-regulation (Lindstrom-Forneri et al., 2007; Tuokko et al., 2006, 2007, 2013, 2014). Poorer health and reduced driving confidence have been associated with more negative attitudes towards driving, with women reporting more negative attitudes than men (Tuokko et al., 2013, 2014). Negative feedback from others, (e.g., "Some people think I should stop driving"), the environment (e.g., "I have had more near misses lately") or health practitioners concerning driving ability is also associated with increased driving self-regulation (Ackerman et al., 2011; Ross et al., 2009; Stalvey and Owsley, 2000; Tuokko et al., 2014). However, social influences concerning the maintenance of lifestyle and independence have been found to serve as barriers to driving self-regulation (Gwyther and Holland, 2012), with older women

reporting more barriers to driving self-regulation than older men (Tuokko et al., 2014). Using the current generation of older individuals, these findings are consistent with research that suggests men and women self-regulate driving for different reasons. For men, driving self-regulation could be associated with health-related difficulties and for women driving self-regulation could be associated with reduced driving confidence and increased stress on the road and life-style factors (Hakamies-Blomqvist and Wahlström, 1998).

One topic of current interest is how the attitudes, beliefs and driving confidence of baby boomer women influence their decisions to self-regulate driving (e.g., Dobbs, 2008; Donorfio et al., 2009; Rees and Lyth, 2004). These women were the first generation to make lifestyle decisions based on the availability of a personal motor vehicle (Rees and Lyth, 2004). Unlike women in the older generation, there are no differences found between baby boomer men and women regarding frequency of driving in busy traffic or on freeways (Naumann et al., 2011). These findings might indicate that baby boomer women have different attitudes toward driving and driving self-regulation than older women.

1.3. Model of driving self-regulation

The Model of Driving Self-Regulation (Rudman et al., 2006) combines perceptions of health-related difficulties with attitudes, feedback about driving, and driving confidence to produce a comprehensive account of the variables that promote or limit driving self-regulation. These variables influence driving self-regulation behaviour directly, or indirectly through increasing awareness of the difficulties experienced (Rudman et al., 2006). The relationship between driving self-regulation and the components from the interpersonal, intrapersonal and environmental factors proposed in this model has been demonstrated (Anstey et al., 2005; Donorfio et al., 2009; Myers et al., 2008; Tuokko et al., 2006, 2013, 2014). There has been limited investigation into the way these variables work together to influence the decision to self-regulate driving. For example, perceived health difficulties mediate the association between age and driving self-regulation (Gwyther and Holland, 2012; Vance et al., 2006) and negative attitudes toward driving might mediate the association between health-related difficulties and driving self-regulation (Tuokko et al., 2013).

1.4. The present study

The first aim of the current study was to investigate how perceived difficulties in vision, physical strength and flexibility, cognition and attitudes and beliefs about driving influence driving self-regulation in older men and women. The second aim was to determine whether the gender differences reported on measures of attitudes and beliefs about driving in the older generation are maintained in the baby boomer generation. The following hypotheses were tested:

Hypothesis 1. For men, reports of health-related difficulties would have the strongest association with driving self-regulation. For women, reports of negative attitudes and beliefs about driving would be most strongly associated with driving self-regulation.

Hypothesis 2. The associations between age and driving self-regulation would be mediated by reports of perceived health-related difficulties.

Hypothesis 3. The association between self-reported declines in visual, physical and cognitive functioning and driving self-regulation would be mediated by attitudes toward driving.

Hypothesis 4. Driving confidence was expected to explain unique variance in driving self-regulation after all other variables were controlled.

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