



UMTRI

**Self-Regulation of Driving by Older
Adults: What Do We Know**

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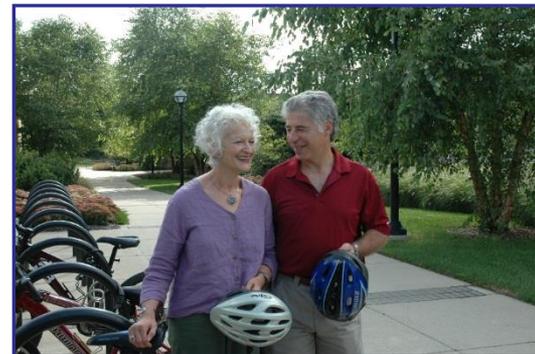
Background

- Driving is complex task requiring visual/cognitive/motor abilities
- Most people experience some loss in these abilities with aging due to medical conditions/medications
- There is considerable variation in this process
- Self-regulation shows promise for extending safe driving
 - Often defined as avoiding driving situations considered challenging
 - Generally seen as response to declining health/functional abilities



Background

- At least some older drivers are aware of functional declines and self-regulate – however:
 - There is considerable variation across studies
 - Most focus on relatively narrow set of self-regulatory practices
 - Measures generally do not delve deeper into motivations for avoidance behavior
- Large knowledge gaps about self-regulation and related individual, social, environmental factors



Research Overview

- Overall purpose: to better understand process of driving self-regulation among older adults
- Research questions:
 - What is the nature and extent of self-regulation
 - What are the individual, social, and environmental factors that affect self-regulation
 - How do self reports of self-regulation compare with objective driving data



Unique Contributions

- Explored motivations for avoidance behavior to disentangling self-regulation from simple avoidance of various driving situations
- Examined self-regulation at multiple levels of driver performance and decision making
 - Strategic self-regulation: pre-trip decisions about when to drive and under what conditions (e.g., at night, on the freeway)
 - Tactical self-regulation: decisions while driving in response to conditions in the environment (e.g., gap acceptance, secondary tasks)
- Compared self-reports with objective driving data of relatively large sample of older drivers

Data Collection Methods

- Early work: survey of 1,000 Michigan drivers age 65+; in-person interviews with 100 drivers referred for comprehensive driving assessment
- Pilot testing of questionnaire with 135 older drivers recruited from specialty clinics at U-M/general population
- Pilot testing of protocols for naturalistic driving data collection among older drivers in SE MI
- Collection and analysis of questionnaire, naturalistic driving, and clinical assessment data from Australian sample of 257 drivers age 75+



Sample Characteristics

- Mean age: 79.7 (sd=3.5, range 75-94)
- 71.5% male
- 61.7% married, 25% widowed
- 77.1% live in own home, condo, or apartment
- 96.2% retired; 65.3% volunteer in community
- 65.9% had household income <\$50,000
- 53.4% high school/technical school grad or less, 26.1% University degree, 20.6% post grad



Key Findings to Date

- Motivations for driving avoidance are varied and differ across driving situations
- Reasons often more closely linked to lifestyle/preferences
- Not all avoidance behavior constitutes self-regulation
- To better understand self-regulation among older adults, it is important to understand the reasons people have for avoiding driving situations or modifying their driving



Molnar, Eby, Charlton, Langford, Koppel, Marshall, Man-Son-Hing. (2013). Driving Avoidance by Older Adults: Is It Always Self-Regulation? *Accident Analysis and Prevention*, 57, 96-104.

Key Findings to Date

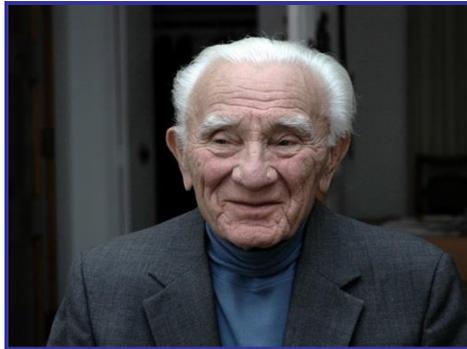
- **Self-regulation is a multi-dimensional concept, with self-regulation tied closely to specific driving situations, as well as level of decision making**
 - **Avoidance at strategic level: driving alone (2%); on freeway (4%); on busy roads (5%); making unprotected right turns (7%); in rush hour (13%); at night (17%); in bad weather (20%); at night in bad weather (29%)**
 - **Avoidance at tactical level: changing radio station (10%); chatting with passengers (14%); personal grooming (24%); eating (34%); leaving more room between the car ahead (34%); talking on mobile phone (37%); reading a road map (41%)**

Molnar, Charlton, Eby, Langford, Koppel, Kolenic, Marshall. (2014). Factors Affecting Self-Regulatory Driving Practices among Older Adults. *Traffic Injury Prevention*, 15, 262-272.

Molnar, Eby, Langford, Charlton, St. Louis, Roberts. (2013). Tactical, Strategic, and Life-Goal Self-Regulation of Driving by Older Adults: Development and Testing of a Questionnaire. *Journal of Safety Research*, 46, 107-117.

Key Findings to Date

- Strategic and tactical self-regulation influenced by different sets of individual and social factors
 - Strategic self-regulation associated with self-perceived abilities, feelings of driving comfort and confidence, gender
 - Tactical associated with age, contrast sensitivity, and self-perceived abilities



Molnar & Eby. (2008). The relationship between self-regulation and driving-related abilities in older drivers: An exploratory study. *Traffic Injury Prevention*, 9(4), 314-319.

Kostyniuk & Molnar. (2008). Driving self-restriction among older adults: Health, age, and sex effects. *Accident Analysis and Prevention*, 40, 1576-1580.

Key Findings to Date

- Self-report found to be poor measure of driving exposure – with participants underreporting driving
- However, self-report may have role in providing context for understanding and helping interpret naturalistic driving data w/ regard to specific self-regulatory driving practices
 - Modest correspondence between some objective driving measures and their comparable self-reported measures - driving at night, driving in unfamiliar areas, and on high speed roads
 - For each driving situation, participants' actual driving predicted the likelihood of reporting trying to avoid that situation

Molnar, Charlton, Eby, Bogard, Langford, Koppel, Kolenic, Marshall, Man-Son-Hing. (2013). Self-Regulation of Driving by Older Adults: Comparison of Self-Report and Objective Driving Data. *Transportation Research Part F*, 20, 29-38.

Conclusions and Further Research

- It is not enough to ask people if they avoid various driving situations - it is important to understand their motivations
- Further work is needed to tease out differences between older adults who do not avoid, avoid for self-regulatory reasons, and avoid for other reasons
- Strategic and tactical self-regulation appear to represent separate constructs – this should be taken into account
- Self-perceptions of abilities are important and may be better predictors than actual functioning
- Exploratory work on comparisons of self-report and objective driving needs to be followed up
- Continuing efforts to understand self-regulation will provide insights into improving older adult safety and mobility

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THANK YOU

