Behavioral Aspects of Self-Regulation among Older Drivers

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Older Drivers: Vehicle, Roadway, and Driver Perspectives

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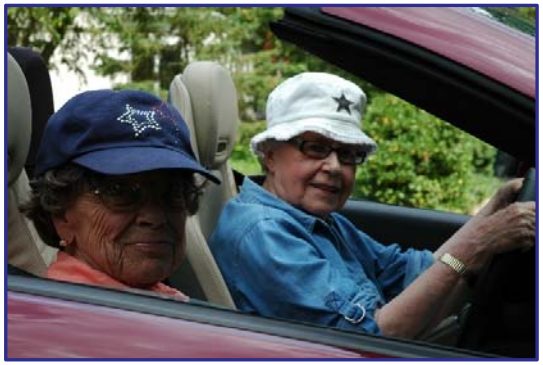
Background

- 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

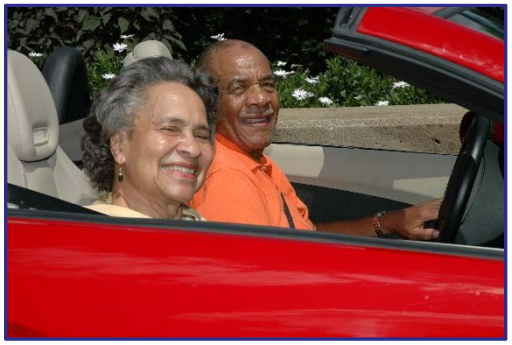
Background

- **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

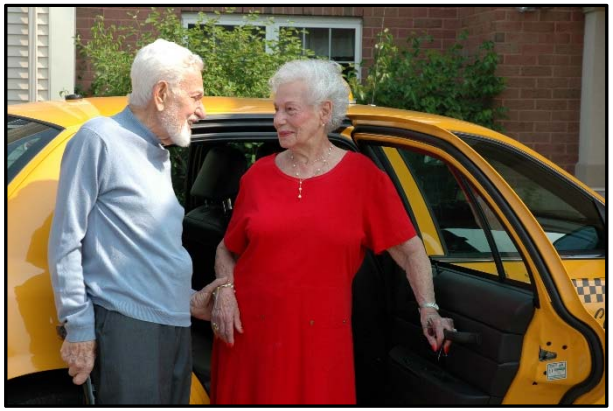
- **Explored motivations for avoidance behavior to disentangling self-regulation from simple avoidance of various driving situations**
- **Examined self-regulation at multiple levels of driver performance and decision making**
  - **Strategic self-regulation: pre-trip decisions about when to drive and 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+**

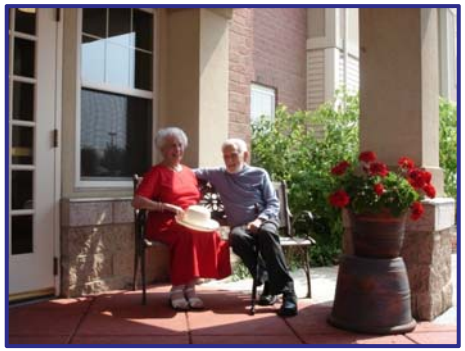
Sample Characteristics

- **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 AlwaysSelf-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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