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Predictors of Readiness for Mobility Transition in Older Drivers

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Abstract

Objectives: To examine attitudinal readiness for mobility transition (e.g., driving retirement) in a healthy older driver sample.

Methods: 301 older (65 years) adults who were not cognitively impaired and were currently driving, recruited from three internal medicine clinics, completed the short-form Assessment of Readiness for Mobility Transition, a previously-validated tool. Total scores were compared by demographic and other participant characteristics.

Results: Median age was 72 (range: 65–93). Half were male (53%) and most were White (89%). According to the Assessment of Readiness for Mobility Transition total scores, 18% were not attitudinally ready for mobility transition, 63% were intermediately ready, and 19% were very ready. Participants who were hospitalized in the past year were either very attitudinally ready for mobility transition (20% vs 14% without hospitalizations) or not ready at all (30% vs 17%). Other characteristics were not related significantly to total score.

Conclusion: Sudden life events, like hospitalization, may elicit polarized reactions about views toward and coping with mobility transition. Individualizing communication based on driving cessation readiness may help clinicians to properly address such differing views. In the future, ARMT could be utilized in an intervention to consider its effectiveness as an instrument of mobility transition counseling.

Keywords

Driving cessation; mobility transition counseling; older drivers

Introduction

The older adult population in America is expected to double to 89 million by 2050 (U.S. Census Bureau, 2011). By then, this sub-population will represent one-fourth of drivers on roads, driving more miles yearly than previous older adult populations (Mizenko, Tefft,

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Arnold, & Grabowski, 2014). While older drivers have lower crash rates overall, they experience higher rates of injuries from motor vehicle crashes because of age-related frailty. Although some will maintain driving ability until death, most must eventually stop driving because of physical, cognitive, or visual factors (Pomidor, 2016).

Driving cessation may ultimately improve some health outcomes for older adults, particularly for those who anticipate and prepare for the event (Betz, Scott, Jones, & DiGuseppi, 2016; Pomidor, 2016). Unfortunately, many older adults do not plan for this change, leading to negative outcomes like increased depressive symptoms and decreased sense of independence, life satisfaction, and social integration (Chihuri et al., 2015; Mezuk & Rebok, 2008). Considering older adults' readiness to cease driving could help connect individuals to the services and programs most likely to benefit them and help them maintain quality of life during driving transitions (Berg-Weger, Meuser, & Stowe, 2013).

Because the older driver population is growing and many must eventually cease driving, clinicians need short, relevant tools to inform conversations about present and future driving cessation. The Assessment for Readiness for Mobility Transition (ARMT) was developed specifically to counsel older adults through mobility transitions (Meuser, Berg-Weger, Chibnall, Harmon, & Stowe, 2013). Based on the trans-theoretical model (TTM) of behavior change, the ARMT is a 24-item (or short-form, 8-item) scale measuring older adults' emotional and attitudinal readiness for mobility transition (Meuser et al., 2013). Items, answered on 5-point Likert scales, measure four subscales: anticipatory anxiety, perceived burden, avoidance, and adverse situation. Although the ARMT approaches the concept of mobility loss broadly, the primary means of mobility in the United States is the personal automobile. Therefore, clinicians might consider using the ARMT when gauging older adults' receptiveness to discussing driving cessation in facilitating relevant mobility transition counseling.

Additionally, determining if demographic characteristics or health contexts affect driving cessation attitudes may allow clinicians to efficiently direct mobility transition counseling efforts. The purpose of this study was (1) to examine the distribution of ARMT scores in a sample of healthy older drivers, and (2) to identify predictors of these scores. Prior work explored the ARMT through any type of mobility change, using a convenience sample of community-dwelling older adults aged 60, including non-drivers; our study focuses solely on driving cessation, posing ARMT questions to current drivers recruited from a medical clinic setting.

Design and Methods

Participants and Recruitment

As part of a larger observational study, older drivers were recruited at three internal medicine clinics affiliated with an urban, academic hospital (Betz et al., 2017). Inclusion criteria included: being 65 years old, having driven a car in the past month, speaking English, and lacking significant cognitive impairment (Six-Item Screener scores <4) (Callahan, Unverzagt, Hui, Perkins, & Hendrie, 2002). Potentially eligible patients were randomized based on clinic rosters and were contacted via informational letters and,

subsequently, up to three telephone calls to assess eligibility. Interested, eligible older drivers scheduled in-person sessions, where informed consent was obtained. The Colorado Multiple Institution Review Board approved this study.

Procedures and Variables

Participants completed the short-form (8-item) ARMT questionnaire as part of a larger baseline driving assessment involving a battery of physical, mental, and sensory functioning tests (Table 1) (Betz et al., 2017). The baseline assessment considered standard demographic characteristics, living situation, education, and healthcare experiences. Participants received \$25 gift cards for study completion. Research staff entered all data into a secure online database hosted by the Colorado Clinical and Translational Sciences Institute.

Analysis

Participants could score 5–40 points on the short-form ARMT questionnaire; each question was worth five points. In prior work, a low total ARMT score (<29 points) suggested receptiveness to mobility transition (e.g. attitudinal or emotional openness to driving cessation), while a high score (≥ 29 points) indicated resistance to mobility transition (Meuser et al., 2013). We compared ARMT scores using this dichotomous system (low/high), as well as ordinal (low/medium/high) by adding and subtracting the ARMT standard deviations (SD) from the mean. Ordinal scores allowed for consideration of an intermediate category of participants who were likely ambivalent about mobility transitions. Descriptive statistics were generated for each group (low/high and low/medium/high) based on demographic questions. Bivariate correlations were completed to identify associations between score groups and population characteristics.

Results

This study had 315 participants (65% participation); 301 completed the ARMT questionnaire and were included in our analyses. Demographic characteristics (Table 2) included a median age of 72 (range: 65–93). Half of participants were male (53%; 95%CI: 48–59%), and most were White (89%; 95%CI: 85–92%), married (60%; 95%CI: 54–65%) and had at least a college degree (68%; 95%CI: 62–73%). Over three-quarters of participants (79%; 95%CI: 74–83%) had not been hospitalized in the past year. Only 13% (95%CI: 9–17%) reported having had conversations with anyone about eventual mobility transition (e.g., driving cessation).

ARMT scores (Figure 1) ranged from 8–40 (median: 25; IQR: 21–28). 75% of participants scored <29 points (95%CI: 70–80%), suggesting attitudinal readiness for mobility transition, while 25% scored ≥ 29 points (95%CI: 20–30%). When divided into ordinal groups, 18% of participants (n=53; 95%CI: 14–23%) were in the high-readiness group (scoring 8–19 points), 63% (n=190; 95%CI: 57–69%) in the medium-readiness group (20–29 points), and 19% (n=58; 95%CI: 15–24%) in the low-readiness group (30–40 points).

In bivariate correlations (Table 2), participants who had been hospitalized in the last year were more likely to have high ARMT scores (30% vs 17% in those not hospitalized; 95%CI: 18.2–41.2% versus 11.7–21.2%) or low ARMT scores (20% vs 14%; $p = 0.03$; 95%CI:

10.2–30.4% versus 12.1–21.7%). No other demographic characteristics were significantly associated with ARMT score.

Discussion and Implications

In this study, we examined the distribution of ARMT scores in a sample of relatively healthy, community-dwelling older drivers. We also compared older drivers' attitudinal readiness for mobility transition with demographic and health characteristics to determine receptivity towards mobility transition discussions. We found that ARMT scores were distributed normally, with most participants being ambivalent about driving cessation. Unexpectedly, the only significant relationship was between ARMT total score and having been hospitalized in the past year.

The lowest and highest ARMT ordinal groups each contained <20% of participants. Considering that driving cessation is a major life event, we expected more polarized views on this subject. Participants also live in an area where alternative transportation services are sparsely available, which we would have expected to contribute to decreased readiness for driving cessation (Colorado Health Institute, 2016). Our sample's demographics characteristics may have influenced the lack of stronger attitudes towards mobility transition. Participants were well-educated and likely to live with someone in their own home. Many had not been hospitalized in the past year. These characteristics indicate fair health status, meaning this sample may not be considering or strongly opinionated about driving cessation (Grundy & Holt, 2001). The sample might not yet feel threatened by mobility transition, resulting in fewer participants either resisting or being primed to engage with mobility counseling. Finally, the ARMT considers all types of mobility transition, so scores may not be synonymous with driving cessation attitudes. Future research should consider the overlaps and distinctions between general and driving-specific mobility loss attitudes.

High percentages of participants who had been hospitalized in the past year were on extreme ends of the ARMT spectrum, either being very attitudinally ready for mobility transition or not ready at all. A sudden life event like hospitalization may elicit a threat-appraisal reaction in an older adult, a process that reflects an individual's attitudes, beliefs, and knowledge in how they choose to cope with a situation (Folkman, Lazarus, Gruen, & DeLongis, 1986). This could justify the presence of both extremes of the ARMT total score range in this sample subset.

Other demographic factors, including age, gender, and race, were not significantly associated with driving cessation readiness in our sample. Previous research similarly found no associations between demographic factors and ARMT score, which may indicate that clinicians can reasonably utilize the ARMT measure among older adults, regardless of gender, without concern for significant measurement differences (Meuser et al., 2013). However, lack of racial diversity in our and previous samples limits the ability to consider the measure's effectiveness among older adults of other races or ethnicities.

One possible confounder, or upstream factor, is education level, which is often utilized as an indicator of socioeconomic status (Duncan, Daly, McDonough, & Williams, 2002). In our study, education level was significantly associated with hospitalizations in the past year and marginally tied to ARMT score, indicating potential relationships with mobility transition readiness. Previous research has found conflicting results, showing both low and high socioeconomic statuses correlating with premature driving reduction or cessation (Ragland, Satariano, & MacLeod, 2004; Ross et al., 2009). Examining this variable's role may help clinicians to better counsel older drivers of different economic backgrounds.

Additionally, most study participants had not had significant discussions about prospective mobility transition with anyone, which is in line with prior work (Betz et al., 2016). Because conversations may help older drivers to better anticipate mobility change, educating clinicians about the positive effects of mobility transition counseling for this sub-population is vital. Providing resources may better equip clinicians who are in a position to speak with older drivers about this eventual driving transition (Betz et al., 2016).

Study limitations include a lack of comprehensive individual information that may affect mobility transition attitudes. Because the ARMT is based on the TTM, which is an attitudinal model affected by personality, future research should examine personality effects on ARMT scores and subscales to consider whether certain characteristics may support some older adults in coping better with eventual driving cessation than others (De Vries, Truong, & Evers, 2016). Additionally, while TTM operates with an implied linearity of attitudes and behaviors, real world attitudes (including readiness) may shift with individuals' changing contexts. This study's cross-sectional nature does not allow us to track and quantify such changes (Littell & Girvin, 2002). The study also did not delve deeper into the types of conversations that older adults were having regarding mobility transition, including how and when these conversations were occurring. Examining these discussions may help to account for the role of social norms in the process of older adult mobility transition. Because the study population was mostly White, the role of race in mobility transition could not truly be measured. Finally, the function of socioeconomic status with regards to mobility transition readiness was not truly considered and may provide valuable insight.

In summary, clinicians should account for the varying effects of sudden life events on older driver attitudes towards mobility transition. Researching the ARMT in real-world settings will be important to understand how and where best to use the tool. Utilizing the measure in clinical and private settings may help to clarify its effectiveness by identifying the needs of older adult populations for mobility transition counseling.

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Figure 1.
Distribution of ARMT Scores (n=301)

Table 1.**ARMT Short-Form Questions**

Question	
1	I am a burden if I ask others for help with transportation.
2	It is devastating for older people to have someone take away their car keys
3	I feel depressed at the thought of being limited in my mobility.
4	There is no way to plan for loss of mobility in aging.
5	My future independence hinges on my ability to get myself around.
6	I have not thought much about my future mobility before today.
7	I've seen others become frail and immobile in older age, and I am determined to avoid this fate at whatever cost.
8	It is not easy for me to ask for help with transportation when I need it.

All questions were answered on a 5-point Likert scale.

Table 2.
Percentage of Participants with Standard Deviation-Based Low, Medium, and High ARMT Scores by Demographic Characteristic

Characteristic	Total			Low ARMT Score (8–19)			Medium ARMT Score (20–29)			High ARMT Score (30–40)			p
	n	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	
Overall	301	100		53	17.6	13.6–22.5	190	63.1	57.4–68.5	58	19.3	15.1–24.3	
Age (years)													
65–74	184	61.1	55.6–66.7	32	17.4	11.9–22.9	116	63	56.0–70.1	36	19.6	13.8–25.4	
75–79	62	20.6	16.0–25.2	14	22.6	11.9–33.3	38	61.3	48.8–73.8	10	16.1	6.7–25.5	0.70
80+	55	18.3	13.9–22.7	7	12.7	3.6–21.8	36	65.5	52.5–78.4	12	21.8	10.6–33.1	
Gender													
Male	160	53.2	47.5–58.8	26	16.3	10.5–22.0	101	63.1	55.6–70.7	33	20.6	14.3–27.0	0.71
Female	141	46.8	41.2–52.5	27	19.1	12.6–25.7	89	63.1	55.1–71.2	25	17.7	11.3–24.1	
Race													
White	267	88.7	85.1–92.3	44	16.5	12.0–21.0	176	65.9	60.2–71.6	47	17.6	13.0–22.2	
Black	23	7.6	4.6–10.7	6	26.1	6.7–45.5	10	43.5	21.6–65.4	7	30.4	10.1–50.8	0.08
Other	11	3.7	1.5–5.8	3	27.3	0.0–58.7	4	36.4	2.5–70.3	4	36.4	2.5–70.3	
Hispanic Ethnicity													
Yes	14	4.7	2.3–7.2	1	7.1	0.0–22.6	8	57.1	27.5–86.8	5	35.7	7.0–64.4	0.21
No	282	93.7	92.8–97.7	52	18.4	13.9–23.0	178	63.1	57.5–68.8	52	18.4	13.9–23.0	
Current Marital Status													
Married	180	59.8	54.2–65.4	29	16.1	10.7–21.5	118	65.6	58.5–72.6	33	18.3	12.6–24.0	0.55
Other	121	40.2	34.6–45.8	24	19.8	12.6–27.0	72	59.5	50.6–68.4	25	20.7	13.3–28.0	
Living Situation													
With Someone	213	70.8	65.8–76.2	40	18.8	13.5–24.1	136	63.8	57.3–70.4	37	17.4	12.2–22.5	
Alone	87	28.9	23.8–34.1	13	14.9	7.3–22.6	5	62.1	51.7–72.5	20	23	14.0–32.0	
Home Type													
Private Home/Apartment	285	94.7	92.1–97.2	50	17.5	13.1–22.0	182	63.9	58.2–69.5	53	18.6	14.1–23.1	0.42
Other	16	5.3	2.8–7.9	3	18.8	0.0–40.2	8	50	22.5–77.5	5	31.3	5.7–56.8	
Highest Grade Completed in School													
Less than College Graduate	97	32.2	27.1–37.8	21	21.6	13.3–30.0	52	53.6	43.5–63.7	24	24.7	16.0–33.5	0.07
College Graduate or Higher	202	67.1	62.2–72.9	32	15.8	10.8–20.9	136	67.3	60.8–73.8	34	16.8	11.6–22.0	

Characteristic	Total			Low ARMT Score (8–19)			Medium ARMT Score (20–29)			High ARMT Score (30–40)			p
	n	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	
Employment Status													
Employed	51	16.9	12.8–25.9	5	9.8	1.4–18.3	34	66.7	53.3–80.1	12	23.5	11.5–35.6	0.24
Not Employed	251	83.4	78.7–87.2	48	19.4	14.4–24.3	154	62.1	56.0–68.2	46	18.5	13.7–23.4	
Hospitalizations in Past Year													
Yes	64	21.3	16.6–25.9	13	20.3	10.2–30.4	32	50	37.4–62.6	19	29.7	18.2–41.2	0.03
No	237	78.7	74.1–83.4	40	13.9	12.1–21.7	158	66.7	60.6–72.7	39	16.5	11.7–21.2	
Have a PCP													
Yes	288	95.7	95.0–99.0	52	18.1	13.9–23.1	180	62.5	56.6–68.4	56	19.4	15.1–24.6	0.86
No	9	3	1.2–5.0	1	11.1	0.6–19.3	6	66.7	30.9–91.0	2	22.2	3.9–59.8	
Spoke with Someone About Mobility Transitions													
Yes	39	13	9.2–16.9	8	20.5	7.3–33.8	24	61.5	45.6–77.5	7	17.9	5.3–30.6	0.85
No	260	86.4	83.1–90.8	44	16.9	12.3–21.5	165	63.5	57.6–69.4	51	19.6	14.8–24.5	