

Health Factors, Driving Confidence, and Perceived Driving-Related Ability Among Older Drivers

This research brief examines the relationship between different indicators of older drivers' health and social support and their perceived driving-related ability and driving confidence using data from the AAA Longitudinal Research on Aging Drivers (LongROAD) study (Kelley-Baker et al., 2017; Molnar et al., 2024). Previous research indicates that driving confidence for older drivers may be associated with self-regulatory driving behaviors and avoidance of more difficult driving situations, such as driving at night, in rush hour traffic, or farther from home (Molnar et al., 2019). Both driving confidence and perceived driving-related ability could influence older drivers' likelihood to drive, which could limit their mobility or, conversely, exacerbate their risk.

The purpose of this study was to examine associations between older drivers' social support, mental health, cognitive health, and physical health and their perceived driving-related ability and driving confidence. The analysis controlled for gender, age group, time at which the data were collected, and collection sites. Results of this study indicate that self-reported social, physical, mental, and cognitive factors were positively associated with perceived driving-related ability. In addition, greater social support and cognitive health were associated with greater driving confidence. By analyzing how health and social support relate to older drivers' perceptions of their driving-related ability and driving confidence, the current study may inform educational interventions that can assist older drivers in safely maintaining their driving independence.

METHOD

Data from 2,989 participants from the AAA LongROAD study were analyzed. The LongROAD study was a multisite prospective cohort study that collected data from older drivers (65–79 years old at enrollment) across five U.S. study sites (Denver, Colorado; San Diego, California; Baltimore, Maryland; Ann Arbor, Michigan; and Cooperstown, New York). Following the initial enrollment period, older drivers provided data for up to five years. Questionnaire data on mental health, physical health, cognitive health, social support, perceived driving-related ability, and driving confidence were collected at baseline and annually throughout the study period.

Participants' perceived driving-related ability was measured by taking the mean of five self-reported driving-related ability ratings, including the ability to remember things; to concentrate on more than one thing at once; to see during the day; to see at night; and their general mobility, strength, or flexibility. These items were measured on a 7-point Likert scale from "Poor" to "Excellent" and were asked in the context of participants' perceptions of their driving ability. Driving confidence was measured using the question "How confident are you that you can safely drive to the places you need?" using a 7-point Likert scale from "Not at all" to "Completely." Physical, mental,

social, and cognitive health were measured using Patient-Reported Outcomes Measurement Information System (PROMIS) short-form instruments (Cella et al., 2010). Physical health was assessed using questions about physical functioning and symptoms, including the ability to perform everyday activities, limitations in strength or movement, fatigue, pain and its interference with daily activities, sleep quality, use of mobility aids, and unintentional weight loss. Mental health was assessed using questions about symptoms of depression, anxiety, and anger during the past 7 days, including feelings of worthlessness, helplessness, hopelessness, fear, overwhelming worry, and irritability. Social health was assessed using questions about social participation and psychosocial well-being, including the ability to participate in work, family, and leisure activities, availability of advice and emotional and practical support, feelings of isolation, confidence in handling challenges, life satisfaction, and ongoing stressors. Cognitive health was assessed using questions and tasks about cognitive functioning, including identifying the date and current political leaders, naming objects from descriptions, counting backward, reporting difficulties with

thinking speed, keeping track of activities, and switching between tasks during the past 7 days.

Two linear mixed-effects regression models were conducted, one predicting perceived driving-related ability and the other predicting driving confidence. Each model included four health-related independent variables (mental, physical, social, and cognitive health), while controlling for age group, gender, time point, and data collection site. To examine whether associations varied by gender or age group, interaction terms between each health-related variable and gender, and between each health-related variable and age group, were included in the models. The analytic sample included 15,087 observations from 2,989 participants. A random intercept for participant was included to account for within-person correlations across repeated observations. Before fitting the regression models, bivariate Pearson correlations were examined among perceived driving-related ability, driving confidence, and physical, mental, social, and cognitive health. Correlations among the four health predictors ranged from $r = 0.31$ to $r = 0.46$, indicating that the predictors were related but not highly redundant. Therefore, all four health factors were retained in the regression models.

RESULTS

Descriptive statistics for perceived driving-related ability and driving confidence are shown in Table 1.

Relationship between Health Factors and Perceived Driving-Related Ability

The fixed effects explained 15.7% of the variance in perceived driving-related ability. When participant-level differences were taken into account through the random intercept, the model explained 64.5% of the variance in perceived driving-related ability, indicating substantial variability in perceived driving-related ability across individuals. Results

indicated significant positive associations between physical, mental, social, and cognitive health factors and self-reported perceived driving-related ability (Table 2). Females reported higher perceived driving-related ability than males (Figure 1). Additionally, age group had a significant effect such that, relative to participants aged 65–69 years, those aged 75–79 years and 80 years and older reported lower perceived driving-related ability, whereas participants aged 70–74 years did not differ significantly from the reference group (Figure 2).

Table 1. Descriptive statistics for driving-related outcomes by gender and age group at baseline

	N	Perceived Driving-Related Ability Mean (SD)	Driving Confidence Mean (SD)
Gender			
Male	1388	5.92 (0.70)	6.83 (0.44)
Female	1564	5.91 (0.66)	6.80 (0.51)
Age group			
65–69	1225	5.95 (0.66)	6.82 (0.46)
70–74	1024	5.92 (0.68)	6.82 (0.47)
75–79	703	5.83 (0.70)	6.80 (0.51)
80+	-	-	-

Note. No participants were 80 years old or older at baseline for this study, but this age group emerged during the time of data collection for this study.

Figure 1. Perceived driving-related ability by gender. Points represent model-adjusted estimated marginal means, with error bars indicating 95% confidence intervals.

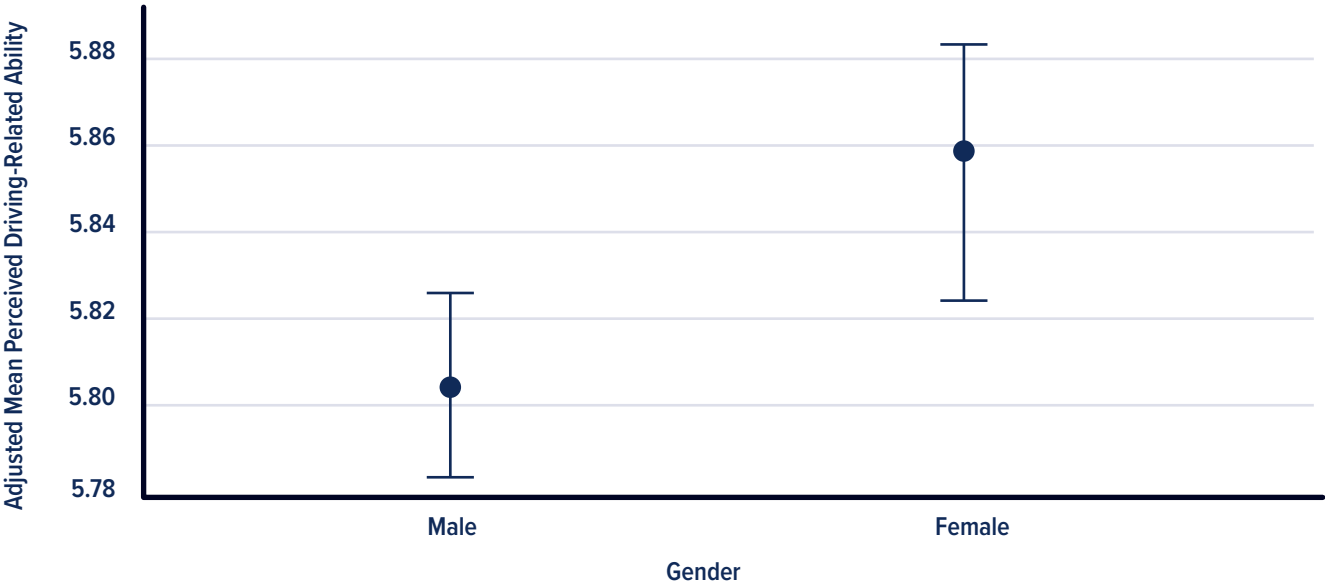
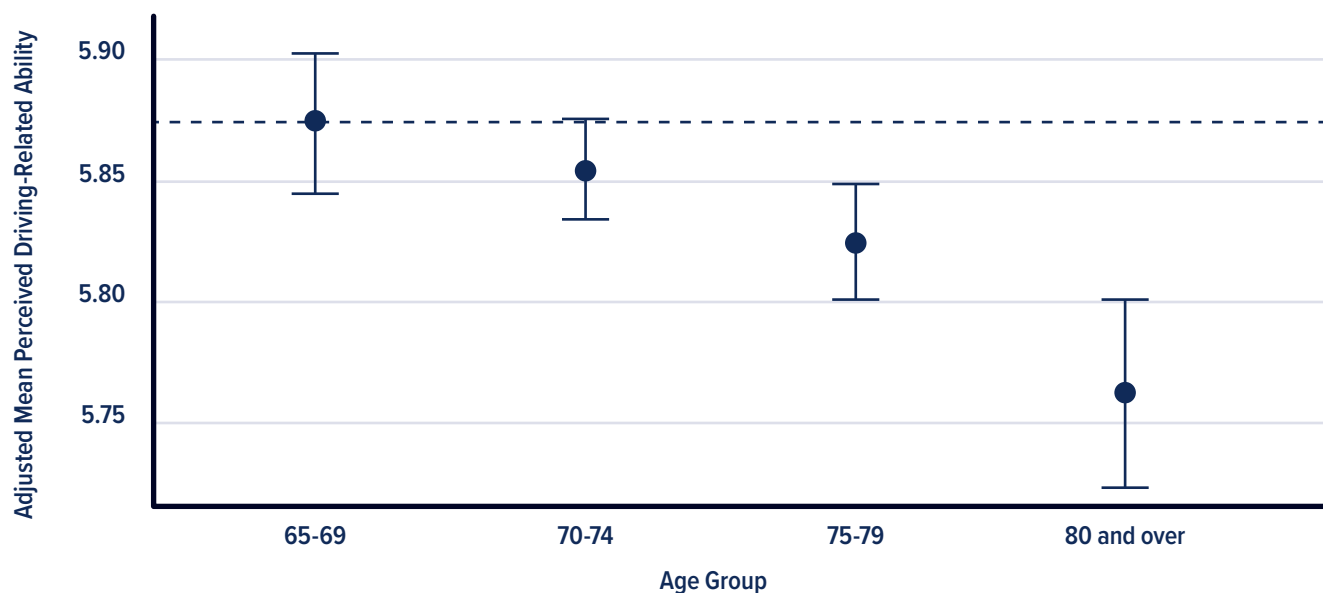


Figure 2. Perceived driving-related ability by age group. Points represent model-adjusted estimated marginal means with 95% confidence intervals. The dashed line represents the adjusted mean for participants aged 65–69 years, the reference group.



Significant interactions were observed between physical and mental factors and gender such that the associations of perceived driving-related ability with physical and mental factors differed between males and females. Although higher physical and mental scores were associated with higher perceived driving-related ability for both males and females, these associations were weaker among females (Figure 3). In contrast, gender did not significantly moderate the associations between social or cognitive factors and perceived driving-related ability. These findings suggest that physical and mental health may play a more prominent role in shaping perceived driving-related ability among males than females. Several interactions with

age group were observed (Figure 4). Compared with participants aged 65–69 years, physical and cognitive factors were more strongly associated with perceived driving-related ability among participants aged 80 years and older. In contrast, the association between social factors and perceived driving-related ability was weaker in the 80 years and older age group. The association between mental factors and perceived driving-related ability did not differ significantly across age groups. The results suggest that perceived driving-related ability among participants aged 80 years and older appeared to be more closely linked to physical and cognitive health than to social health.

Figure 3. Physical and mental health and perceived driving-related ability by gender. Scores were centered such that 0 represents the sample average.

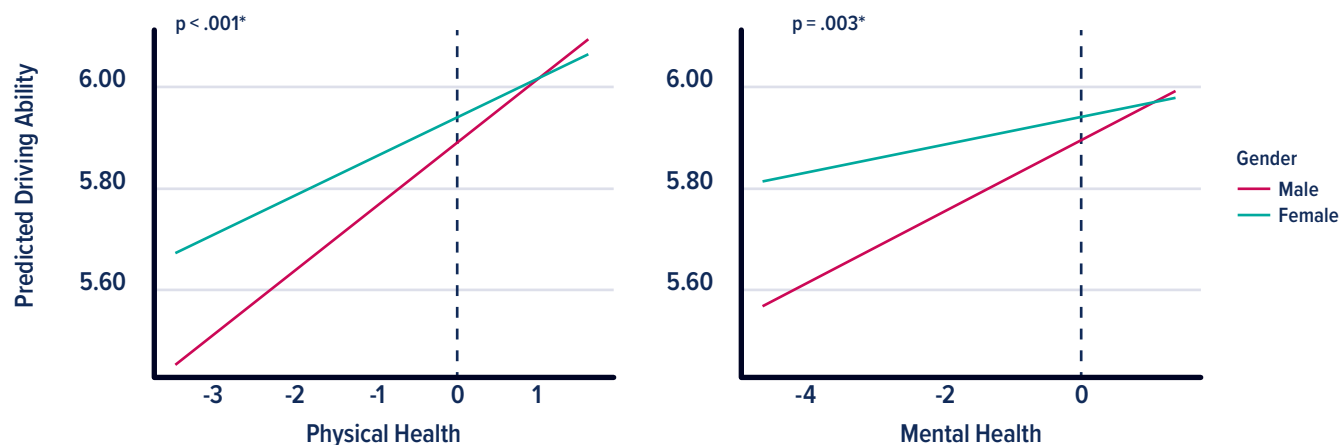
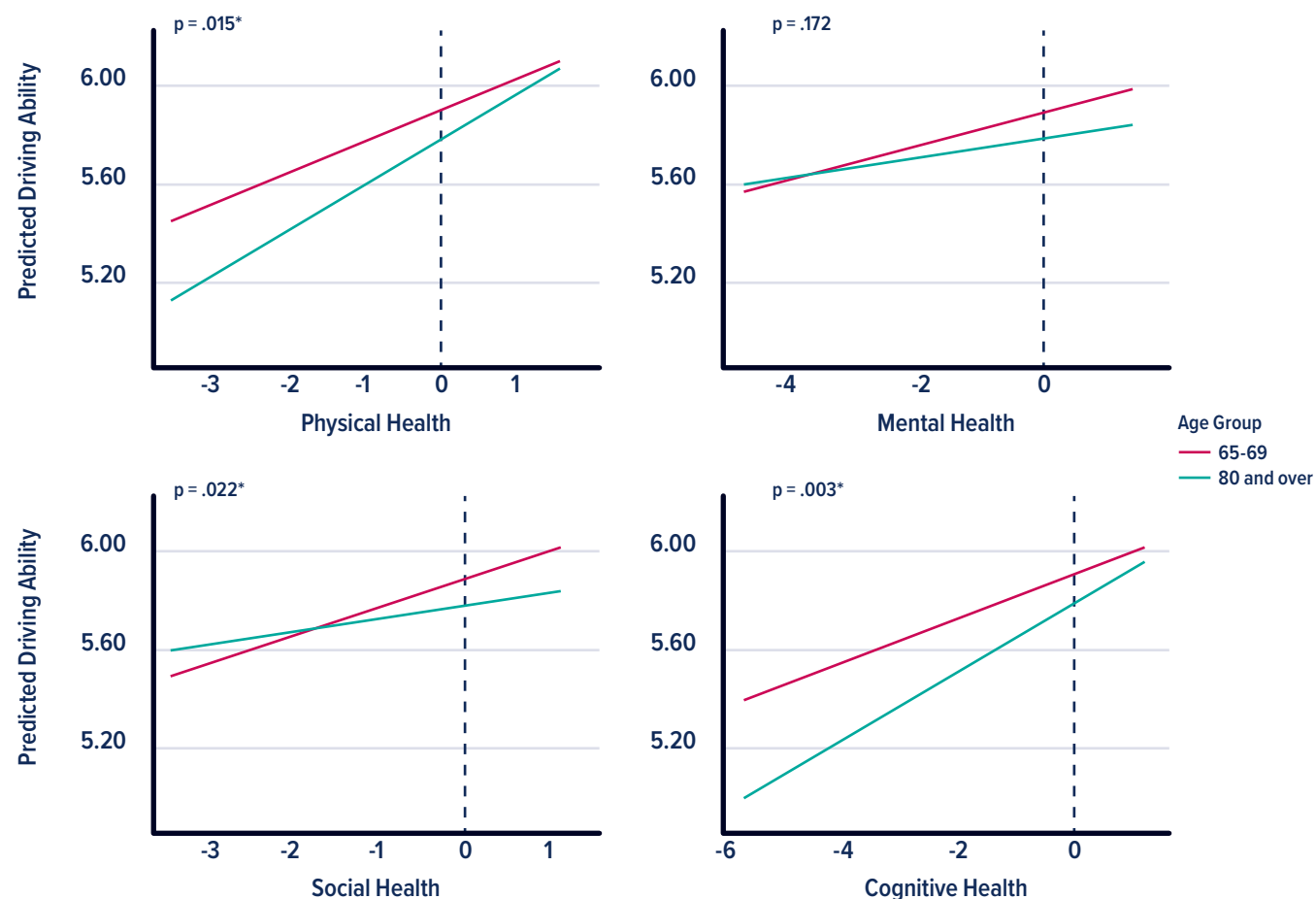


Figure 4. Health factors and perceived driving-related ability by age group. Lines represent model-predicted perceived driving-related ability across levels of physical, mental, social, and cognitive health for participants aged 65–69 years and 80 years and older. Scores were centered such that 0 represents the sample average.



Relationship between Health
Factors and Driving Confidence

A second model examined factors associated with driving confidence (Table 2). The fixed effects explained 5.1% of the variance in driving confidence, and the full model explained 38.5% of the variance when participant-level random effects were included. The results showed that higher social and cognitive scores were associated with greater driving confidence. Physical and mental health scores also showed positive associations with driving confidence, but these associations did not reach statistical significance. Gender was not significantly associated with driving confidence. A significant effect was found for age group; relative to

participants aged 65–69 years, participants aged 75–79 years and 80 years and older reported lower driving confidence (Figure 5).

The relationships between the four health factors and driving confidence did not differ by gender. However, the relationships of physical and cognitive health with driving confidence differed by age group. Compared with participants aged 65–69 years, physical and cognitive factors were more strongly associated with driving confidence among participants aged 80 years and older (Figure 6). No significant age group differences were observed for mental or social health factors. The results suggest that physical and cognitive health may be especially relevant to driving confidence among the oldest participants.

Figure 5. Driving confidence by age group. Points represent model-adjusted mean driving confidence, with error bars indicating 95% confidence intervals. The dashed line represents the adjusted mean for participants aged 65–69 years, the reference group.

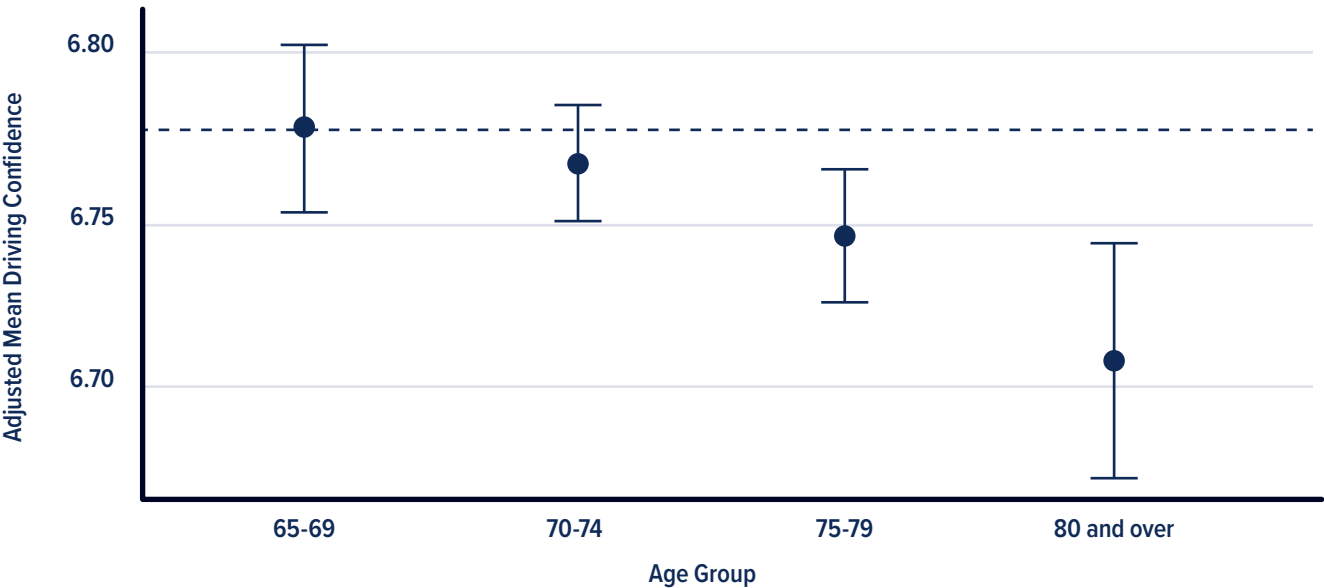


Figure 6. Health factors and driving confidence by age group. Lines represent model-predicted driving confidence across levels of physical, mental, social, and cognitive health for participants aged 65–69 years and 80 years and older. Health factor scores were centered such that 0 represents the sample average.

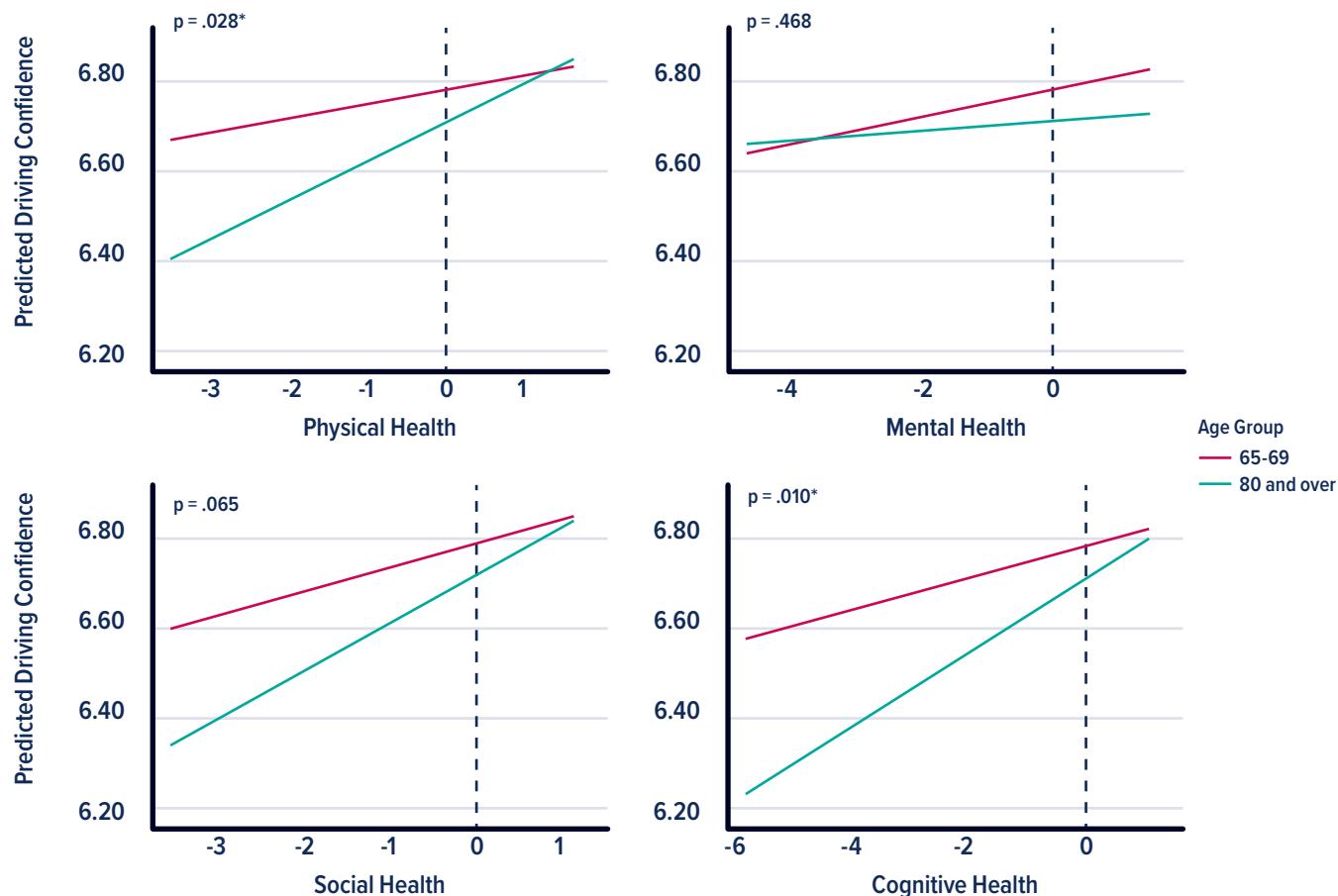


Table 2. Linear mixed-effects regression models predicting perceived driving-related ability and driving confidence

Predictor	Model 1: Perceived Driving-related Ability			Model 2: Driving Confidence		
	b	SE	P-value	b	SE	P-value
(Intercept)	5.893	0.025	<0.001*	6.781	0.020	<0.001*
Health factors						
Physical health	0.127	0.017	<0.001*	0.030	0.017	0.079
Mental health	0.070	0.015	<0.001*	0.029	0.016	0.068
Social health	0.115	0.018	<0.001*	0.052	0.018	0.004*
Cognitive health	0.089	0.012	<0.001*	0.036	0.012	0.003*
Gender						
Female vs. male	0.050	0.018	0.007*	0.009	0.014	0.528
Age group						
70–74 vs. 65–69	–0.020	0.012	0.109	–0.01	0.012	0.399
75–79 vs. 65–69	–0.049	0.018	0.006*	–0.032	0.016	0.049*
80+ vs. 65–69	–0.112	0.026	<0.001*	–0.07	0.024	0.003*
Health × gender						
Physical health × female vs. male	–0.049	0.015	<0.001*	–0.024	0.015	0.104
Mental health × female vs. male	–0.042	0.014	0.003*	–0.005	0.014	0.727
Social health × female vs. male	0.006	0.017	0.748	0.014	0.017	0.402
Cognitive health × female vs. male	0.001	0.010	0.886	0.014	0.01	0.169
Health x age group						
Physical health × 70–74 vs. 65–69	0.000	0.016	0.987	0.021	0.017	0.207
Physical health × 75–79 vs. 65–69	–0.010	0.018	0.596	0.005	0.019	0.789
Physical health × 80+ vs. 65–69	0.059	0.024	0.015*	0.055	0.025	0.028*
Mental health × 70–74 vs. 65–69	–0.010	0.014	0.487	–0.005	0.015	0.734
Mental health × 75–79 vs. 65–69	0.004	0.017	0.824	0.03	0.018	0.092
Mental health × 80+ vs. 65–69	–0.031	0.023	0.172	–0.018	0.024	0.468
Social health × 70–74 vs. 65–69	0.000	0.016	0.990	0.008	0.017	0.642
Social health × 75–79 vs. 65–69	–0.001	0.020	0.966	0.019	0.02	0.342
Social health × 80+ vs. 65–69	–0.062	0.027	0.022*	0.052	0.028	0.065
Cognitive health × 70–74 vs. 65–69	0.003	0.011	0.764	0.006	0.012	0.609
Cognitive health × 75–79 vs. 65–69	0.014	0.013	0.286	–0.008	0.014	0.553
Cognitive health × 80+ vs. 65–69	0.051	0.017	0.003*	0.047	0.018	0.010*

Note. * indicates significant effects at the $p < 0.05$ level.

DISCUSSION

Prior research has identified cognitive, sensory, and physical functioning as important factors for driving safety in older adults (Anstey et al., 2005). The present findings complement prior research by showing that self-reported health and functioning are also related to older adults' driving-related self-ratings and confidence in driving safely. Specifically, social and cognitive health were associated with greater driving confidence, and physical and cognitive health appeared especially relevant to driving confidence among adults aged 80 years and older.

Overall, the findings suggest that perceived driving-related ability and driving confidence are shaped by health differently across demographic groups. Previous research has similarly shown that older adults' evaluations of their driving reflect not only functional abilities but also self-efficacy, driving comfort, and behavioral adaptation (Ackerman et al., 2010; Blanchard & Myers, 2010). The stronger associations of physical and cognitive health with both perceived driving-related ability and confidence among participants aged 80 years and older may indicate that functional health becomes increasingly salient to driving-related self-perceptions at advanced ages, when health limitations are more likely to influence driving behavior and self-regulation (Kostyniuk & Molnar, 2008; Conlon et al., 2017). At the same time, the gender differences observed for perceived driving-related ability may reflect differences in how older adults adapt their driving behavior in response to health changes, as previous studies have found distinct patterns of self-regulation and driving restriction among older men and women (D'Ambrosio et al., 2008; Marie Dit Asse et al., 2014). Taken together, these findings highlight the importance of considering both individual health and demographic context when examining how older adults evaluate their driving capabilities.

These findings have several implications for older drivers. As physical, mental, social,

and cognitive factors were all associated with self-reported perceived driving-related ability, encouraging older drivers to engage in healthy physical activity, incorporating activities that strengthen cognitive health or improve mental health, and seeking social support from others becomes increasingly important. Similarly, as higher social and cognitive scores were associated with greater driving confidence, older drivers may wish to focus on maintaining social interactions and cognitive functions. Additionally, as the genders differed for self-reported perceived driving-related ability, health care providers may wish to focus on different interventions for the genders as they age. Finally, as senior drivers age into their 80s, it becomes more important to consider how to maintain health and social support, especially in terms of physical and cognitive health for both self-reported perceived driving-related ability and driving confidence.

These findings suggest that physical, cognitive, and social health may be useful considerations when supporting older adults' driving confidence and mobility. Interventions or educational materials that help older drivers recognize how health changes relate to driving-related confidence may support safer self-regulation and continued driving independence.

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