The Role of Perceived Control in Explaining Depressive Symptoms Associated With Driving Cessation in a Longitudinal Study

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Purpose: The purpose of this article was to investigate the role of control beliefs in mediating the relationship between driving cessation and change in depressive symptoms in a population-based sample of older adults. **Design and Methods:** We report results from a prospective, community-based cohort study that included two waves of data collected in 1992 and 1994. Participants consisted of 700 men and women aged 70 and older, including 647 drivers and 53 participants who ceased driving between baseline (1992) and follow-up (1994). Participants took part in interviews that included assessments of driving status, sociodemographic characteristics, self-rated health, sensory function, depressive symptoms (through the Center for Epidemiologic Studies–Depression scale), and expectancy of control. Using multilevel general linear models, we examined the extent to which driving status, expectancy of control, and relevant covariates explained change in depressive-symptom scores between baseline and follow-up. **Results:** Driving cessation was associated with an increase in depressive symptoms from baseline to follow-up. The higher depressive-symptom scores of ceased drivers relative to those of individuals who remained drivers at both waves was partly explained by a corresponding decrease in the sense of control among ceased drivers, and increased control beliefs among drivers. **Implications:** Interventions aimed at promoting the maintenance of personal agency and associated control beliefs could be protective against the negative psychological concomitants of driving cessation.

Key Words: Automobile driving, Internal–External control, Depression, Longitudinal studies, Self-efficacy

In industrialized Western society, the ability to drive represents an important function of daily adult life that is associated with autonomy and social capability (Persson, 1993). Consequently, the necessity for older adults to stop driving as a result of failing health or reduced cognitive or sensory capacity often results in a significant threat to self-concept (Yassuda, Wilson, & von Mering, 1997). Despite a growing literature concerned with factors that precipitate the decision among older adults to stop driving (Anstey, Windsor, Luszcz, & Andrews, 2006; Campbell, Bush, & Hale, 1993; Forrest, 1997; West et al., 2003), relatively few studies have examined the consequences of driving cessation for older adults. Those studies that have investigated the impact of driving cessation have typically reported negative social and psychological outcomes for ceased drivers (Fonda, Wallace, & Herzog, 2001; Marottoli et al., 2000; Marottoli et al., 1997; Ragland, Satariano, & MacLeod, 2005).

This article reports on a longitudinal investigation of the relationships between driving cessation, the sense of control, and depressive symptoms in a

population-based sample of older adults. Previous studies have reported higher levels of depressive symptoms among ceased drivers relative to drivers (Fonda, Wallace, & Herzog, 2001; Marottoli et al., 1997; Ragland et al., 2005). However, we are not aware of research that has explored specific social–cognitive mechanisms that could link driving cessation to negative affect independent of physical functioning. We examined one such mechanism by investigating the extent to which driving cessation is associated with a reduced sense of control, which could in turn result in increased depressive symptoms.

Theoretical Background

The desire to establish a sense of control over the environment is a fundamental component of human motivation that influences behavior and affect throughout the life course (Heckhausen & Schulz, 1995; Skinner, 1996) and is represented by numerous psychological constructs, including effectance motivation (White, 1959), mastery motivation (Harter, 1978), and the need for competence (Connell & Wellborn, 1991; cf. Skinner, 1996). The motivation for control is the principal force that encourages interactions with the environment for the purpose of achieving desired outcomes, with successful interactions promoting positive affirmations and emotional experiences as well as feelings of efficacy. In due course, individuals' cumulative experiences related to interactions with the environment, and their subjective interpretations of associated outcomes, result in the development of enduring perceptions of control (Skinner, 1996).

When failure or loss of control in a given context frustrate or undermine the motivation for control, the result is often distress accompanied by efforts to reestablish control or to escape the situation (Skinner, 1996). The negative psychological consequences of both real and perceived loss of control are well established in the context of the learned helplessness paradigm, wherein a weakened sense of control over the environment results in disruption to adaptive behavior and an increase in depressive symptoms (Abramson, Seligman, & Teasdale, 1978; Seligman, 1975). A number of studies have reinforced the importance of maintaining control beliefs in the context of successful aging by finding that strong control beliefs in older age have benefits for physical and psychological health (Luszcz, 1996) and are associated with increased longevity (e.g. Anstey, Luszcz, & Andrews, 2002; Lachman, 2005). In the present study, we focused on driving cessation as a normative change occurring in late life that not only was likely to be associated with depressive symptoms due to comorbidity with physical and functional decline but could also impact indirectly on mental health by undermining generalized perceived control.

Driving Cessation, Control, and Depressive Symptoms

For many adults, both young and old, the capacity to drive represents a fundamental mechanism for engaging with the external world, thereby providing the necessary means for the environmental interactions that both fulfill the motivation for control and contribute to the maintenance of perceived control. Consequently, the need to retire from driving in response to functional decline is likely to result in a significant undermining of control beliefs. Threats to the sense of personal control over outcomes arising from driving cessation could result from more limited opportunities to reinforce behavior–event contingencies due to decreased engagement with the external environment through out-of-home activity or an increased significance of the role of "powerful others" in providing transport alternatives. For many, the symbolic significance of lost independence, coupled with the finality of no longer holding a valid license and a real or perceived absence of practical avenues for reestablishing out-of-home mobility, could also work to undermine control beliefs. In keeping with research into control beliefs and affect (Abramson, Seligman, & Teasdale, 1978), one of the results of a weakened sense of control associated with driving cessation is likely to be an increase in levels of psychological distress.

Our aim was to investigate the extent to which driving cessation, and a corresponding reduction in perceived control, was associated with an increase in depressive symptoms among older ceased drivers. To this end, we used a population-based sample of older Australians to conduct a longitudinal investigation of the relationships between driving status, control beliefs, and depressive symptoms.

Several factors in addition to a reduction in perceived control are likely to be associated with driving cessation and could also contribute to an increase in depressive symptoms. These include sociodemographic characteristics such as age, gender, education, marital and coresident status, and income; along with physical health and sensory functioning. We statistically controlled for the effects of these potential confounders in order to investigate the relationships between driving status, control beliefs, and depressive symptoms independent of sociodemographic and health-related factors.

In keeping with previous research (Fonda, Wallace, & Herzog, 2001; Marottoli et al., 1997; Ragland et al., 2005), we hypothesized that driving cessation would be associated with an increase in depressive symptoms. Given the threat to perceptions of personal control likely to arise from driving cessation, we further hypothesized that driving cessation would be associated with a more externally oriented sense of control. Recognizing the established links between control beliefs and affect (Abramson et al., 1978; Luszcz, 1996), we also hypothesized that

a more externally oriented sense of control would be associated with increased depressive symptoms. Finally, in keeping with the concept of statistical mediation (Baron & Kenny, 1986), we hypothesized that the relationships described here would be reflected in a model that showed the relationship between driving status and depressive symptoms being mediated by the sense of control.

Methods

Participants

The data for the study came from the Australian Longitudinal Study of Aging (ALSA; Andrews, Cheok, & Carr, 1989; Luszcz, Bryan, & Kent, 1997), a population-based longitudinal study of 1,947 adults aged 70 and older. Study organizers used the South Australian Electoral Roll as a sampling frame to identify primary respondents; additional household members in the appropriate age range also had the opportunity to participate. This article reports results from those ALSA participants who provided information at both baseline (1992) and a 2-year follow-up (1994). We excluded cases from the analysis if information on driving status was not available at one or both waves, or if participants lived in residential care (e.g., nursing home or hostel). We also excluded participants who reported being nondrivers at baseline, as it was not possible to determine whether individuals in this group had ceased driving before baseline or had never driven. We also excluded respondents who scored poorly on the Mini-Mental State Examination (Folstein, Folstein, & McHugh, 1975). We set the cutoff in accord with the recommendation of Folstein, Anthony, Parhad, Duffy, and Gruenberg (1985). Hence, the criteria for exclusion was less than 16 (max = 21) or 76% correct for baseline (Luszcz et al., 1997), which was slightly more conservative compared to the 80% correct that corresponds to the full Mini-Mental State Examination, which was administered at follow-up. The final sample consisted of 700 community-dwelling participants: 544 primary respondents, 153 spouses of primary respondents, and 3 other household members. The mean age at baseline was 76.12 years (SD = 4.68).

Both waves of data collection used in this study included clinical and cognitive assessments. In-home interviews generated information using a range of measures, including sociodemographic variables, health, cognitive and sensory function, social and physical activities, and psychological well-being. We describe here only those measures used to test the current hypotheses. Participants provided written consent before taking part in the study. The Clinical Investigations Committee of the Flinders Medical Center granted ethical approval. Participants could decline to answer any question or withdraw at any point.

Measures

Demographic Characteristics.—Demographic characteristics assessed included age (in years), gender, marital status (0 = married or partnered, 1 = not married, 2 = widowed), dichotomized years of education (0 = 15 years or more, 1 = less than 15 years), coresident status (0 = lives with others, 1 = lives alone), and income (0 = greater than $12,000 Australian dollars per year, 1 = less than or equal to $12,000 Australian dollars per year).

Health and Sensory Function.—Interviewers obtained self-rated health by asking participants to rate their general health on a 5-point scale. We dichotomized responses to form a variable representing good, very good, or excellent health (0) or poor or fair health (1). Researchers measured hearing by assessing pure tone thresholds in left and right ears at 0.5, 1, 2, 3, 4, 6, and 8 kHz, using portable audiometers with standard earphones. Testing began in the better ear and used a standard bracketing technique. For this study, we created a composite hearing variable comprising the average of the best ear at each of three frequencies that are important for speech recognition and everyday function. These included 2, 3, and 4 kHz (Anstey, Luszcz, Giles, & Andrews, 2001). Interviewers tested corrected distance visual acuity at 3 m for each eye using a well-illuminated Snellen chart. The vision variable identified those with poor vision in their better eye (1 = 6/18 or worse, 0 = other).

Perceived Control.—A 12-item Expectancy of Control subscale of the Desired Control Measure (Luszcz, 1997; adapted from Reid & Zeigler, 1981) measured perceived control. Items from the subscale ask respondents to indicate the extent to which they believe they have control in areas of involvement with others, engagement in activities, and health. Responses are on 5-point scales ranging from strongly agree (1) to strongly disagree (5). Total scale scores range from 12 to 60, with lower scores indicating a more internal expectancy of control.

Depressive Symptoms.—The Center for Epidemiologic Studies–Depression scale (CES-D; Radloff, 1977; Radloff & Teri, 1986) assessed depressive symptoms. This scale comprises 20 items assessing symptoms experienced in the past week. Respondents answer questions on a 4-point scale from rarely or none of the time (0) to most of the time (3), with total scale scores ranging from 0 to 60 and higher scores indicating higher levels of depressive symptoms. For statistical modeling, we square-root transformed total CES-D scores to improve the distribution in order to better satisfy statistical assumptions.

Driving Status.—We used responses to items concerned with driving frequency at baseline and

follow-up to categorize participants as current drivers (driving at baseline and at follow-up) or ceased drivers (driving at baseline but not driving at follow-up).

Analysis

We made baseline comparisons between driving groups using independent sample t tests and chi-square tests. We initially explored changes in scores from baseline to follow-up using paired sample t tests. We conducted multivariate examination of the extent to which differences in the depressive symptoms of drivers and ceased drivers at follow-up could be explained by the effects of a reduced sense of control and other relevant covariates by using multilevel general linear modeling techniques using MLwiN software (Rasbash, Steele, Browne, & Prosser, 2004). Multilevel modeling provides statistical adjustment for the nonindependence of data, whether reflecting repeated measurement within the same individual (Twisk, 2003) or clustering of observations within hierarchies (e.g., multiple individuals within households; Rowe, 2003). Modeling the variance in depressive symptoms using multilevel modeling accounted for issues of nonindependence of observations arising from repeated measurement and the complex sampling procedure.

We initially modeled variance in depressive symptoms attributable to three random components: (a) changes across measurement occasion within individuals, (b) differences between individuals, and (c) differences between households. The variance attributable to between-household differences in depressive symptoms was not significant in an initial variance components model. Consequently, we excluded this level from subsequent modeling. We modeled the effects of both fixed (baseline age, gender, and education) and time-dependent (time, marital status, coresident status, income, self-rated health, vision, hearing, and control) covariates on change in depressive symptoms.

The component of the interaction between driving status and measurement occasion that was of central interest was represented by two dummy variables that contrasted CES-D scores of drivers (the reference category) with (a) ceased drivers at baseline (before cessation), and (b) ceased drivers at follow-up (after cessation). We assessed the extent to which the relationship between driving status and CES-D scores was explained by the effects of the covariates by using a sequential approach to the addition of covariates, focusing on any subsequent reduction in the coefficients representing differences between depressive-symptom scores of drivers and ceased drivers. This approach corresponds to techniques used in testing statistical mediation (Baron & Kenny, 1986).

Most variables had missing values for less than 5% of cases at baseline and less than 10% of cases at follow-up. The exceptions were measures of hearing at baseline (missing 14.4%), expectancy of control (missing 21.3% at baseline, 21.1% at follow-up), and vision (missing 30.4% baseline, 22.9% at follow-up). Interviewers collected data on vision and hearing in a second home visit and those for expectancy of control in response to a self-complete mail-back questionnaire, rather than in the face-to-face in-home interview, which accounted for the relatively larger number of missing data points for these variables as compared to others. As we could not assume that data were missing at random, we did not impute missing data; rather, we excluded cases with missing values analysis by analysis, cross-checking the results against those obtained using a sample based on listwise deletion.

Results

Characteristics of Driving Groups at Baseline

Of the 700 eligible participants, 647 (56.1%) were drivers in 1992 and 53 (4.6%) ceased driving between baseline in 1992 and follow-up in 1994. Table 1 shows characteristics of the driving groups at baseline.

Relative to participants who were drivers at both waves, those who ceased driving between baseline and follow-up were older and had poorer self-rated health at baseline. Participants who ceased driving by follow-up were also more likely to be women and more likely to report a more externally oriented sense of control relative to those who remained drivers.

Effect of Change in Driving Status on CES-D Depressive Symptoms and Expectancy of Control

Figure 1 illustrates changes in CES-D scores and expectancy of control over time for drivers and ceased drivers.

CES-D scores did not change significantly for those who remained drivers over the 2-year study interval. In contrast, relative to continuing drivers, ceased drivers exhibited more depressive symptoms at baseline and showed a statistically significant increase in depressive symptoms between baseline and follow-up, $t(50) = 3.41$, $p < .01$.

Comparisons of unadjusted expectancy of control scores indicated that participants who were drivers at both waves reported an increased internal control orientation at follow-up, $t(429) = 4.06$, $p < .001$. Ceased drivers reported a more externally oriented sense of control at follow-up relative to baseline; however, given the smaller number of participants in the ceased-driver group and its associated low statistical power, this difference did not reach significance.

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Table 1. Sample Characteristics at Baseline (1992) by Driving Status

Characteristic	Total, 1992 ($n = 487–700$)[a]	Drivers, 1992–1994 ($n = 450–647$)[a]	Ceased Drivers, 1992–1994 ($n = 37–53$)[a]	p
Demographics				
Age, M (SD)	76.12 (4.68)	75.86 (4.60)	79.26 (4.62)	<.001
Female (%)	27.4	26.4	39.6	.038
Less than 15 years education (%)	50.1	49.8	54.7	.488
Marital status				
Married or partnered (%)	75.3	75.1	77.4	.565
Not married (%)	5.3	5.1	7.5	
Widowed (%)	19.4	19.8	15.1	
Living alone (%)	23.1	23.1	23.1	.998
Income $\leq$ \$12,000 per year (%)	27.4	26.9	34.0	.279
Health and sensory function				
Poor or fair health	18.7	17.2	37.7	<.001
Vision $\leq$ 6/18, Snellen (%)	14.4	14.0	18.9	.412
Hearing, kHz, M (SD)[b]	39.15 (17.04)	38.98 (16.92)	41.50 (18.72)	.366
Expectancy of control, M (SD)	26.00 (4.80)	25.88 (4.83)	27.47 (4.15)	.046
CES-D, M (SD)	6.33 (6.13)	6.23 (6.10)	7.57 (6.40)	.126
CES-D (square root), M (SD)	2.18 (1.26)	2.15 (1.27)	2.49 (1.19)	.063

Notes: Currency is in Australian dollars. CES-D = Center for Epidemiologic Studies–Depression scale; SD = standard deviation.
[a]Ranges are presented for group ns due to different patterns of missing data.
[b]Average of best ear at 2, 3, and 4 kHz.

Multivariate Analyses

We used multilevel modeling to assess the extent to which the effects of socioeconomic covariates, health-related factors, and control beliefs could explain the increase in CES-D scores between baseline and follow-up for ceased drivers represented in Figure 1. We created two dummy variables to contrast the CES-D scores of participants who were drivers at both waves (the reference category) with those of ceased drivers at baseline (when this group was still driving) and at follow-up (after cessation). Table 2 presents results of the analyses.

Step 1 of the model included fixed effects for time and dummy-coded driving status. Results mirrored the pattern shown in Figure 1, with ceased drivers reporting higher CES-D scores relative to drivers at both baseline and follow-up; this difference was more pronounced at follow-up, when the ceased-driver group was no longer driving.

We added sociodemographic variables to the model at Step 2. Only coresident status was significantly associated with CES-D scores, with participants who lived alone reporting higher CES-D scores relative to those who lived with one or more coresidents.

We added health and sensory variables to the model at Step 3. Poorer self-rated health was significantly associated with higher CES-D scores. The coefficient representing the difference in CES-D scores of ceased drivers at follow-up and drivers decreased by 26%, and the difference in depressive symptoms of ceased drivers at baseline and drivers decreased by 53%, becoming nonsignificant.

We added expectancy of control to the model at Step 4. A more externally oriented expectancy of control was significantly associated with higher CES-D scores. At this final step, the coefficient representing the difference between CES-D scores of drivers and ceased drivers at follow-up decreased by a further 42%, becoming nonsignificant.

In a final series of analyses, we reestimated Models 1 through 4 using a subsample with complete data at both waves ($n = 502$). This allowed for computation of likelihood-ratio tests in order to estimate whether the addition of predictors at each step resulted in a significant increment to prediction. Results confirmed a significant improvement to fit at Step 2 ($\Delta - 2\log(\text{lh}) = 24.98$, $df = 7$, $p < .001$), Step 3 ($\Delta - 2\log(\text{lh}) = 64.14$, $df = 3$, $p < .001$), and Step 4 ($\Delta - 2\log(\text{lh}) = 25.51$, $df = 1$, $p < .001$), with the substantive associations between ceased driving at follow-up; other covariates and CES-D scores already reported remaining unchanged.

Discussion

In this sample of older Australian adults, participants who ceased driving during a 2-year interval reported higher levels of depressive symptoms relative to those who remained drivers, with this difference magnified at follow-up (1994) after driving cessation had occurred. Statistically controlling for
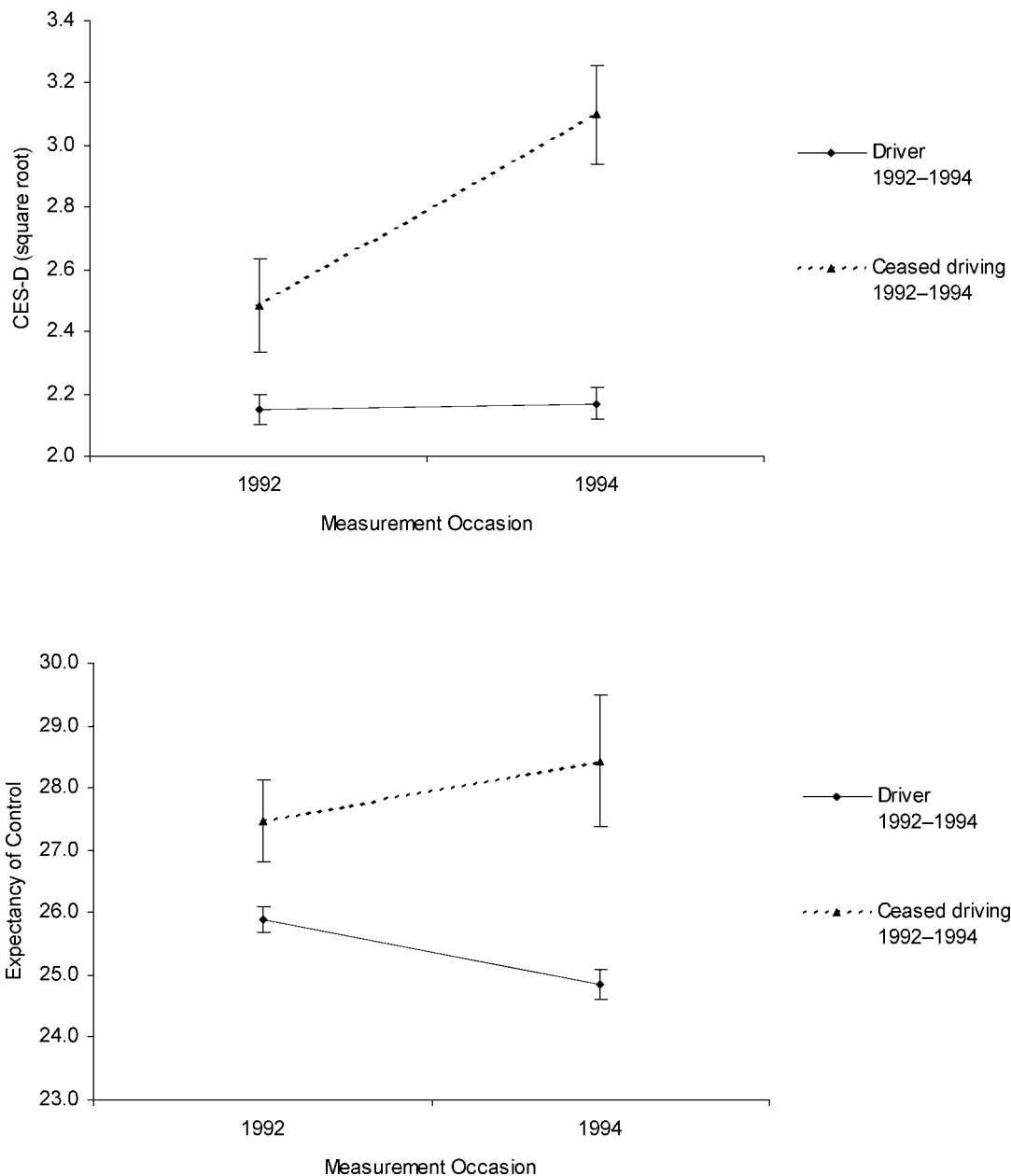
Figure 1. Mean Center for Epidemiologic Studies–Depression scale (CES-D) and expectancy of control scores (with standard errors) by driving status at baseline and follow-up.

the effects of sociodemographic characteristics and self-rated health reduced the magnitude of, but did not eliminate, differences in the depressive-symptom scores of drivers and ceased drivers at follow-up. The addition of expectancy of control to the multi-level general linear models at a final step enhanced prediction of depressive-symptom scores over and above the effects of the other covariates. The addition of perceived control at the final step of the model reduced to a nonsignificant level the co-efficient representing differences in the depressive-symptom scores of drivers and ceased drivers at follow-up.

The results provide support for our hypothesis that driving cessation is associated with an increase in depressive symptoms and are in keeping with studies that have reported negative psychological consequences of driving cessation (Fonda et al., 2001; Marottoli et al., 1997; Ragland et al., 2005). However, the findings also provide important new information about the factors that covary with driving status and depressive symptomatology, as well as mechanisms that appear to underlie the negative impact of driving cessation on psychological health. Self-rated health and expectancy of control emerged as the predictors that played a significant

Table 2. Effects of Driving Status, Demographic Characteristics, Health, and Expectancy of Control on Depression as Measured by the Center for Epidemiologic Studies–Depression Scale

Explanatory Variable	Step 1	Step 2	Step 3	Step 4
Fixed				
Constant	2.14 (0.08)*	1.55 (0.75)*	0.76 (0.77)	−0.64 (0.80)
Time	0.02 (0.05)	−0.04 (0.05)	−0.09 (0.06)	−0.06 (0.07)
Driving status (continuing vs ceased)[a]				
Ceased drivers before cessation (at baseline)	0.34 (0.18)*	0.34 (0.19)*	0.16 (0.20)	0.08 (0.21)
Ceased drivers after cessation (at follow-up)	0.95 (0.18)*	0.91 (0.21)*	0.67 (0.22)*	0.39 (0.24)
Sociodemographic variables				
Age		0.01 (0.01)	0.02 (0.01)	0.02 (0.01)
Female gender		−0.04 (0.10)	−0.02 (0.10)	0.07 (0.10)
Education (< 15 years)		−0.03 (0.09)	−0.14 (0.09)	−0.08 (0.08)
Marital status[b]				
Not married		−0.13 (0.24)	−0.06 (0.25)	−0.10 (0.27)
Widowed		−0.03 (0.17)	−0.12 (0.19)	−0.09 (0.20)
Living alone		0.54 (0.17)*	0.63 (0.19)*	0.61 (0.20)*
Income ≤ $12,000 per year		−0.01 (0.08)	0.03 (0.09)	0.03 (0.10)
Health and sensory function				
Poor or fair health			1.00 (0.09)*	1.05 (0.10)*
Vision ≤ 6/18 (Snellen)			−0.06 (0.11)	−0.15 (0.11)
Hearing in kHz[c]			1.0E −3 (3.0E −3)	−1.0E −3 (2.3E −3)
Expectancy of control				0.06 (0.01)*
Random				
Individual level	0.87 (0.07)*	0.78 (0.07)*	0.50 (0.07)*	0.29 (0.07)*
Measurement occasion	0.74 (0.04)*	0.72 (0.04)*	0.72 (0.05)*	0.83 (0.07)*

Notes: Data are iterative generalized least-squares estimations (standard errors). Coefficients are analogous to those produced in ordinary least squares regression. Currency is in Australian dollars.
[a]Continuing drivers is the reference category.
[b]Married or partnered is the reference category.
[c]Average of best ear at 2, 3, and 4 kHz.
*$p < .05$.

role in mediating the association between driving cessation and depressive symptoms. The substantial extent to which perceived control mediated the association between driving status and depressive symptoms above and beyond the influence of the other covariates provides support for our final hypothesis, suggesting that driving cessation represents a significant threat to perceived control, which is in turn associated with an increase in depressive symptoms.

The change in control beliefs of ceased drivers from baseline to follow-up did not reach statistical significance, thereby providing only partial support for our hypothesis that driving cessation would result in a more externally oriented sense of control. It is therefore noteworthy that the mediational effect of control on the relationship between driving cessation and depressive symptoms was not driven solely by a reduced sense of control among ceased drivers. Participants who were drivers at both waves also showed a corresponding increase in sense of control across the time interval (Figure 1). Post-hoc

multilevel analysis indicated that this effect remained significant after adjustment for covariates (results available upon request).

Inconsistencies in the definition and measurement of control, and a dearth of longitudinal research in this area, make the association between aging and control beliefs a topic of some controversy (Wolinsky, Wyrwich, Babu, Kroenke, & Tierney, 2003). One possible explanation for the increase in control beliefs of drivers from baseline to follow-up is the operation of cognitive processes of downward social comparison (Wills, 1981). Such processes would be characterized by drivers creating an enhanced cognitive representation of their own competencies by recognizing the more limited competencies of age peers who either may have ceased driving or may not have retained similar levels of sensory, cognitive, or functional capacity. It is also possible that with advancing age, the day-to-day environmental interactions that are both initiated as a result of motivation for control and enabled by the capacity to drive take on a greater significance in contributing to general

perceived control. These explanations are speculative; a task for future research is a comprehensive examination of the mechanisms through which remaining a driver into very old age could act to not only maintain, but also enhance, one's sense of control. Whatever the underlying mechanisms, the increase in internality expressed by drivers over time indicates a substantial psychological importance attached to driving in adulthood that is in keeping with the findings of a number of qualitative studies with older adults (Persson, 1993; Yassuda et al., 1997). Furthermore, to the extent that the pattern of control beliefs expressed by drivers in our study represents a normative change, our results indicate that driving cessation results in a significant departure from this norm.

The study included several limitations. For participants who ceased driving between 1992 and 1994, we did not have information on the specific timing of their cessation. It is possible that those who had ceased driving shortly before follow-up would have been experiencing a different range of emotional responses relative to those who had ceased soon after baseline. Similarly, we did not know whether participants ceased driving voluntarily or had their license renewal refused by relevant authorities. It would have also been desirable to include a comparison group of "never drivers" in the study; however, we did not have sufficient information to distinguish between never drivers and ceased drivers among those participants who identified themselves as nondrivers at baseline.

Notwithstanding these limitations, this article reports important initial longitudinal findings regarding the associations between social–cognitive changes and depressive symptoms among older drivers and ceased drivers. The results indicate that although driving cessation may be a normative change in late life, its potential contribution to adverse psychological outcomes remains considerable.

Our findings also suggest that maintaining control beliefs following driving cessation could be protective against the development of depressive symptoms. Given that perceived control is modifiable, this finding has implications for interventions that target high-risk groups in an effort to reduce the prevalence of late-life depression (Smit, Ederveen, Cuijpers, Deeg, & Beekman, 2006). Interventions that aim to address practical consequences of driving cessation such as enabling out-of-home social participation may not be maximally effective in reducing depressive symptoms if they do not also address relevant psychosocial issues, including control beliefs. Intervention frameworks that emphasize the promotion of personal agency as a means of maximizing positive health outcomes (Bandura, 2001) could provide an efficacious component of such strategies. In addition, older adults who take responsibility to actively plan for the probability of eventual driving cessation could help to satisfy motivation for control, in addition to avoiding some of the undesirable practical and emotional consequences that could result from a sudden and unexpected need to retire from driving.

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