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A Study of Driving Cessation and Subjective Well-Being: Predictors, Moderators, and Comprehensive Measures of Well-Being.

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Abstract

This project examined four issues with respect to driving cessation. The issues were: 1) group differences as a function of driving status, 2) prediction of driving cessation, 3) the utility of using comprehensive measure of subjective well-being to assess the impact of driving cessation, and 4) the identification of variables that moderate the relationship between driving cessation and subjective well-being. Non-institutionalized persons age 55 years and older were recruited from community, volunteer, and non-profit organizations in Winnipeg, Manitoba and Thunder Bay, Ontario. Two-hundred and twenty-three participants ranging in age from 55 to 91 years completed the study. Of these, 193 (86.9%) were drivers and 29 (13.1%) participants were non-drivers. Drivers were younger, in better health, and had higher income and education. Drivers also scored higher on extraversion and lower on neuroticism. Drivers also reported higher life control and life purpose and a more internal locus of control. Among current drivers, logistic regression analysis revealed that psychological variables make a significant unique contribution to predicting driving cessation. Higher life purpose and a more internal locus of control decrease the risk of driving cessation. With respect to the third issue, a comprehensive measure of subjective well-being, the MUNSH, provided a more sensitive assessment of the impact of a set of variables associated with driving cessation on subjective well-being. With respect to moderating factors, income health, and psychological variables moderated the impact of cessation on subjective well-being. The findings of this study indicate that psychological variables are important in driving issues and that it is valuable to study positive aspects of driving cessation in future research.

A Study of Driving Cessation and

Well-Being: Predictors, Moderators, and Outcomes

Driving influences the lives of many people, from the teenager who passes a driving test and attains one of the rights of passage into adulthood, to the older individual whose license enables him or her to fulfill basic activities of daily living. The automobile is generally recognized as a symbol of freedom and independence and is the primary means of transportation for many individuals (Bedard, Molloy, Carp, 1971; Guyatt, Stones, & Strang, 1997; Eisenhandler, 1990; Jette & Branch, 1992; Lister, 1999; Marottoli, Mendes de Leon, Glass, Williams, Cooney, Berkman, & Tinetti, 1997; Ralston, Bell, Mote, Rainey, Brayman, & Shotwell, 2001; Stutts, Wilkins, Reinfurt, Rodgman, & Van Heusen-Causey, 2001). Based on the 1995 Nationwide Personal Transportation Survey (NPTS) data, approximately nine out of ten trips are by private vehicle (Hu & Young, 1999). Similarly, Rosenbloom (1993) noted the majority of trips (i.e., 81 to 91%) taken in 1990 were in cars. In Canada, about 9 out of every 10 trips taken by older people are in private vehicles (Bess, 1999). Increased reliance on the automobile is due to dispersed land-use in North America, the growth of suburban living areas resulting in longer travel distances, and a reduction in the usage of public transportation because alternative transportation options to the car often are insufficient, unattractive, or unsafe (Kostyniuk, Shope, & Molnar, 2000; Siren, Hakamies-Blomqvist, & Lindeman, 2004; Stutts, Wilkins, Reinfurt, Rodgman, & Van Heusen-Causey, 2001).

Corresponding with an increased reliance on the automobile is the number of older people who drive, a statistic that is projected to increase as the population continues to age. For instance, in the United Kingdom, there was a 600% increase in the number of older female drivers and a 200% increase in the number of older male drivers between the periods

of 1965 and 1985 (O'Neill, 2000). In Canada, 1.7 million or 60% of older people drive (Bess, 1999). It is estimated that 1/3 of the population over 80 years of age living in the Province of Ontario drive at least once a year (Chipman, Payne, & McDonough, 1998). Drivers over 80 years of age are the fastest growing segment of the driving population in Canada (Canada Safety Council, 2003).

Increasing numbers of older drivers partly reflect lifestyle changes. Improvements in functional status and a general shift towards adopting healthier and more active lifestyles will extend the driving career of many older people (Retchin & Anapolle, 1993). Increases in the number of older drivers also reflect cohort effects. Previously, males were often the main family drivers. Consequently, among older cohorts, it was less likely that females would hold a drivers license (Burkhardt, Berger, & McGavock, 1998). This trend is changing as women who are more likely to drive in their youth continue to drive when they are older (Retchin & Anapolle, 1993). In the NPTS Survey, there were increases in the percentage of women holding a drivers license between 1983 to 1990; the percentage of female drivers increased from 75% to 82% in the 60-64 year-old range and from 12 to 25% in the 85+ age range (Burkhardt, Berger, & McGavock, 1998). This increase also partly reflects a "survivorship bias" among older females. This is most evident by a large gender gap among the oldest-old (i.e., age 85 and older) reflecting the tendency for females to live longer.

Driving Cessation

One natural consequence of the increasing numbers of older drivers is an increase in the number of people facing the experience of stopping driving. It is expected that 15 to 52% of the older population will be non-drivers by 2020 (Koffman, Raphael, & Weiner, 2004). By other estimates, more than 600,000 people aged 70 and older stop driving every year in the

United States (Foley, Heimovitz, Guralnik, & Brock, 2002). In Canada, in 1996 just over two million people aged 65 years and older held a drivers license. However, these rates dropped as people got older. Seventy-one percent of people aged 65-69 years held a drivers license compared to only 23% of people aged 85 years and older (Millar, 1999).

This experience of stopping driving is known by researchers as driving cessation (Marotolli, Mendes, de Leon, Glass, Williams, Cooney, Berkman, & Tinetti, 1997). Driving cessation can occur suddenly, generally in response to a sudden disabling event, such as stroke, or an accident with subsequent physical trauma (Dellinger, Sehgal, Sleet, & Barrett-Connor, 2001; Persson, 1993). In one community study (Dellinger, Sehgal, Sleet, & Barrett-Connor, 2001), 12.1% of participants reported a crash in the 5 years prior to stopping. Another incident causing physical trauma related to driving cessation is falls. Carr, Flood, Steger-May, Schechtman, and Binder (2006) noted a significantly higher prevalence of falls in the last 12 months among former drivers ($p < .05$).

In most instances, the process of driving cessation is gradual with a series of restrictions and modifications preceding the final cessation (Cotrell & Wild, 1999; Liddle & McKenna, 2003; Lyman, McGwin, & Sims, 2001). People with poor eyesight, for instance, will gradually limit their driving, fulfilling transportation needs by receiving rides from other (Lucas-Blaustein, Filipp, Dungan, & Tune, 1988). Other modifications that precede driving cessation include ceasing to drive alone, not driving in bad weather, not driving at night, avoiding heavy traffic, or reducing complex driving behaviours such as left-hand turns (Eisenhandler, 1990; Janke, 1994). Under these circumstances, driving cessation occurs when additional compensation is no longer possible.

Anticipation of Driving Cessation

Research demonstrates that anticipating driving cessation impacts people's lives. Yassuda, Wilson, and vonMering (1997) found among older people still driving that driving cessation was the most discussed topic when evaluating interview transcripts about perceptions of driving. Detailed analysis of content revealed that 10% of responses were related to concerns about independence and 22% of responses were related to safety issues and health factors. Similarly, Kostyniuk, Shope, and Molnar (2000) demonstrated that drivers who anticipated problems with their ability to drive were nearly five times more likely to have thought "a lot" about stopping driving and twice as likely to have "thought some" about stopping driving compared to people who did not anticipate problems.

There is evidence that some older people take specific actions to prepare for driving cessation. Yassuda, Wilson, and vonMering (1997) reported that forty percent of responses were related to preparation for cessation such as finding alternative transportation or moving closer to necessary services. On the other hand, many other researchers demonstrate that older drivers do little to plan for the time when they are no longer able to drive (Burkhardt, Berger, & McGavock, 1998; Kostyniuk & Shope, 2003; Peel, Westmoreland, & Steinberg, 2002). According to Gardezi, Wilson, Man-Son-Hing, Marshall, Molnar, Dobbs, and Tuokko (2006) there is a tendency for older drivers to drive as long as possible because they see no other options, while not planning for driving cessation.

Discrepancy in results across studies may reflect the fact that drivers anticipating driving cessation take only certain steps to prepare for cessation. For instance, Kostyniuk, Shope, and Molnar (2000) compared people who anticipated problems with driving within 5 years and those who did not anticipate problems. Both groups took certain specific actions to

cope with driving cessation (e.g., moving somewhere closer to better transportation moving to senior housing with transportation, moving closer to children) but only drivers anticipating problems were likely to arrange for rides.

Factors Associated with Driving Cessation

There are a number of factors associated with driving cessation. These include age and age-related changes in physical and cognitive functioning, health status and medical conditions, functional status, and demographic variables. Demographic variables include education level, gender, geographical location, income level, and marital status (Campbell, Bush, & Hale, 1993; Jette & Branch, 1992; Kington, Reuben, Rogowski, & Lillar, 1994; Kostyniuk, Trombley, & Shope, 1998; Rosenbloom, 1988). Other variables that have been studied in relation to driving cessation include the influence of family, friends, and professionals on people's decisions about driving cessation, loss of confidence in driving ability, and anxiety about driving (Benekohal, Michaels, Shim, & Resende, 1994; McGwin & Brown, 1999; Persson, 1993).

These variables can have a cumulative effect on driving cessation. Marottolli, Ostfeld, Merrill, Perlman, Foley, and Cooney (1993) examined factors associated with driving cessation such as demographic factors, functional status, and medical conditions. When no risk factors for driving cessation were present no one in the study ceased driving but as the number of risk factors increased so did the proportion of those who ceased driving. If 1 or 2 risk factors were present 17% of older persons ceased driving and if 3 or more risk factors were present 49% ceased driving.

Age and Driving Cessation

Age is associated with driving cessation (Burkhardt, Berger, & McGavock, 1998; Dellinger, Sehgal, Sleet, & Barrett-Connor, 2001; Edwards, Ross, Ackerman, Small, Ball, Bradley, & Dodson, 2008; Gallo, Rebok, & Lesikar, 1999; Marottoli, Ostfeld, Merrill, Perlman, Foley, & Cooney, 1993; Rosenbloom, 1993). In the United States, the proportion of persons limiting or stopping their driving starts to increase after 70 years of age (Burkhardt, Berger, & McGavock, 1996). In a British study, the mean age for people to stop driving was 72 years (Rabbit, Carmichael, Jones, & Holland, 1996). According to Stutts, Wilkins, Reinfurt, Rodgman, and VanHeusen-Carey (2001) part of the contribution of advanced age to cessation of driving reflects reduced work-related travel and possibly declining functional abilities, more medical problems, medication use, and economic concerns. However, age by itself is a strong predictor of driving cessation (Jette & Branch, 1992; Rosenbloom, 1988). In a population cohort of individuals aged 84 years and older those still driving at a follow-up point 9 years later tended to be younger compared to non-drivers even after accounting for other factors such as income or health (Brayne, Dufoil, Ahmed, Dening, Chi, McGee, & Huppert, 2000). Differences were most notable in the 90+ group; out of a sample of 77 people only 3 people still drove. Kostyniuk, Shope, and Molnar (2000) examined a random sample of people age 65 years and older separated into 3 age groups (i.e., 65-74, 75-84, 84+) with currently or recently expired driving licenses in Michigan. Accounting for other factors known to be associated with driving cessation such as health or functional status as age increased so did the percentage of those no longer driving.

Age-Related Changes and Driving Cessation

According to guidelines published by the NHTSA and the American Association of Motor Vehicle Administrators (Staplin & Lococo, 2003) the critical abilities needed for driving can be clustered loosely into visual abilities, mental abilities, and psycho-motor abilities. These contribute to a person's level of functional ability and provide some indication of a person's ability to drive (Dickerson, Molnar, Eby, Adler, Bedard, Berg-Weger, Classen, Foley, Horowitz, Kerschner, Page, Silverstein, Staplin, & Trujillo, 2007; Eby, Molnar, Shope, Vivoda, & Fordyce, 2003). The next section is organized in this manner. Literature examining vision, cognitive functioning, psycho-motor functioning, and functional ability in relation to driving cessation is reviewed. A section on hearing was added as this is an age-related change that is considered by some to be important for driving (Craik & Anderson, 1999).

Vision

With increased age there are a number of changes in people's cognitive, physical, and sensory functioning (Birren & Schaie, 1996). Vision is a sensory function that normally declines with age (Kline & Scialfa, 1996). It is estimated that from 13 to 20% of people age 65 years and older have a self-reported functional vision problem even when wearing corrective lenses (Horowitz, Boerner, & Reinhardt, 2002). The deficits can occur at many levels of the visual system such as lower level components found in the ocular media (e.g., cornea, aqueous humor, lens, and retina) and higher-level sensory-neural components such as the visual cortex (Kline and Scialfa, 1996). The cornea, the primary refractive element in focusing a retinal image, thickens and yellows with age, and the aqueous humor, the principle metabolic support for the eye, decreases in amount with age and may contribute to the intraocular pressure associated with glaucoma (Kline & Scialfa, 1996). Pupil size tends to

decline with age, reducing the amount of light that gets into the eye. The lens becomes less flexible with age diminishing the ability to focus. The retinal image becomes scattered and the number of certain types of retinal receptors (foveal cones, retinal ganglion cell axons) decline in density (Kline & Scialfa, 1996). Declines in adaptation to dark, color discrimination, depth perception, glare recovery, spatial contrast sensitivity, and visual acuity also occur with age. At the sensory-neural level, age-related changes include reduced ability to discriminate between stimuli, less effective cortical integration of binocular information, and less smooth-pursuit eye movements occur with advancing age (Kline & Scialfa, 1996). Self-reports of older people indicate that areas of concern with their vision have to do with visual processing, light sensitivity, dynamic vision, near vision, and visual search (Kline & Scialfa, 1996).

Age-related visual loss can negatively impact a person's ability to drive (Kline, Kline, Fozard, Kosnik, Schieber, & Sekulker 1992; Kosnik, Sekuler, & Kline, 1990; Ragland, Satariano, & MacLeod, 2004; Retchin, Cox, Fox, & Irwin, 1988). Ragland, Satariano, and MacLeod (2004) as part of a community-based study of aging and physical performance reported that problems with eyesight were a major reason many people ceased or limited their driving. A follow-up study indicated that people reporting more problems with routine visual tasks were more likely to have given up driving (Kosnik, Sekulker, & Kline, 1990). Decarlo, Scilley, Wells, and Owsley (2003) interviewed people presenting to a low-vision clinic and found that current drivers had better visual acuity. These acuity differences remained significant even after adjusting for age. Kington, Reuben, Rogowski, and Lillard (1994) examined driving patterns after 50 years of age and observed that people with visual impairments were significantly less likely to drive (OR = 0.47, 95% CI = 0.27- 0.81). Gilhotra, Mitchell, Ivers, and Cumming (2001) demonstrated that the risk of driving cessation

was 1.9 times higher (95% CI = 1.4-2.5) for people who had difficulty seeing in the dark and 1.5 times higher (95% CI = 1.2-1.8) for people who had difficulty with glare. Using measures of visual acuity to assess visual functioning research indicates that as the degree of impairment increases so does the proportion of people who cease driving. Keefe, Jin, Weih, McCarty, and Taylor (2002) demonstrated that 4.6% of participants attributed driving cessation to poor vision when their visual acuity was 6/12 (i.e., normal is 6/6) or better. The percentage of people who attributed stopping driving to poor vision increased to 33% when visual acuity was lower than 6/12, and increased to 43% if visual acuity was less than 6/18.

Hearing

Change in hearing occur as people age. Specifically, hearing thresholds for tones of a higher frequency, a condition known as presbycusis, declines with age as does a person's ability to discriminate between frequencies, particularly in noisy conditions (Kline & Scialfa, 1996). The latter is important to speech perception. Auditory attention also declines with age (Kline & Scialfa, 1996). However, what these findings mean in relation to driving is unclear. There is little research addressing the issue of hearing and driving cessation despite the fact that hearing is proposed to be an important sensory function for driving (Craik & Anderson, 1999). Using data from the Australian Longitudinal Study of Aging, Anstey, Windsor, Luszcz, and Andrews (2006) reported that drivers had better hearing (measured by pure tone thresholds) than non-drivers at baseline ($p < .001$). However, these results should be interpreted cautiously because the investigators did not distinguish between participants who had never been drivers and those who had ceased driving before the study started.

Cognitive Functioning

Research demonstrates structural and functional changes in the aging brain. Structural changes include decline in brain density, ventricular enlargement, and loss of cerebral gray matter (Scheibel, 1996). Neuronal loss and regional changes in areas of the brain also occur with an increase in age (Scheibel, 1996).

In terms of functional change, intellectual changes have also been reported however there is considerable variation in the rate of change observed (Scheibel, 1996). In general, age effects are more pronounced in cross-sectional studies than longitudinal studies in part because of experimental effects such as cohort effects. The latter tend to identify intellectual changes in the mid-60`s or latter (Birren & Schaie, 1990; Perlmutter & Hall, 1992).

With respect to specific cognitive skills, slowed processing of visual and auditory information, declines in reaction time, age effects in attention (divided, selective, and ability to switch attention), working memory, and short-term memory processes have been observed (Perlmutter & Hall, 1992; Salthouse, 1998; Stuart-Anderson, 1999). Fluid intelligence and problem solving also tends to show decline with age (Salthouse, 1998; Stuart-Anderson, 1999). However, again there is wide variation across people`s scores on measures assessing specific cognitive functions. Task factors, such as whether it is timed or untimed, degree of task complexity, and degree of task interference affect people`s scores as they age (Stuart-Anderson, 1999). Person factors, such as physical and mental health, substance use, and motivation also account for individual performance (Perlmutter & Hall, 1992).

Declines in cognitive functioning impact people's ability to drive (Bedard, Molloy, Guyatt, Stones, & Strang, 1997; Carr, Flood, Steger-May, Schechtman, & Binder, 2006; Kostyniuk, Trombley, & Shope, 1998; Stutts, 1998). Lower scores on global measures of

cognitive impairment, such as the Mini-Mental Status Examination (MMSE), predict driving cessation (Adler & Kuskowski, 2003; Carr, Jackson, & Alquire, 1990; Foley, Masaki, Ross, & White, 2000; Forrest, Bunker, Songer, Cohen, & Cauley, 1997; Gilley, Wilson, Bennett, Stebbins, Bernard, Whalen, & Fox, 1991; Hermann, Rapoport, Sambrook, Hebert, McCracken, & Robillard, 2006; Logsdon, Teri, & Larson, 1992; Lucas-Blaustein, Filipp, Dungan, & Tune, 1988; Talbot, Bruce, Cunningham, Coen, Lawlor, Coakley, Walsh, & O'Neill, 2005; Trobe, Waller, Cook-Flanagan, Teshima, & Bieliauskas, 1996). For instance, Carr, Jackson, and Alquire (1990) demonstrated that the mean MMSE score of drivers was 4.8 points higher than that of non-drivers (23.7 compared to 18.9, $p < .0001$). Other studies have found the same pattern of results with the MMSE (Gilley, Wilson, Bennett, Stebbins, Bernard, Whalen, & Fox, 1991; Lucas-Blaustein, Filipp, Duncan, & Tune, 1988).

Using measures other than the MMSE investigators report that non-drivers score lower on tests of cognitive status. With the Cognitive Abilities Screening Instrument (Teng, Hasegawa, Homma, Imai, Larson, Graves, Sugimoto, Yamaguchi, Sasaki, Chiu, & White, 1994), Valcour, Masaki, and Blanchette (2002) found that the percentage of people who stopped driving increased as scores decreased. Specifically, 73.3% of participants with good scores (i.e., ≥ 82) were driving compared to 37.5% of people with intermediate scores (i.e., 74-81.9) and 23.1% of people with poor performance (i.e., < 74). Logsdon, Teri, and Larson (1992) used the Dementia Rating Scale (Mattis, 1988) to assess symptom severity, memory, and specific cognitive abilities such as conceptualization construction, attention, concentration, initiation, and perseveration. Participants no longer driving had significantly lower overall scores ($M = 104$, $S.D. = 20$) than drivers ($M = 117$, $S.D. = 16$) on the Dementia Rating Scale. Non-drivers also obtained lower concentration scores ($M = 3$, $S.D. = 2$) than

drivers reporting either no difficulties with driving ($M = 5$, $S.D. = 1$) or those still driving but experiencing difficulty ($M = 3.4$, $S.D. = 1.7$). In a recent study, slower speed of processing was a significant risk factor for driving cessation 5 years later (Edwards, Ross, Ackerman, Small, Ball, Bradley, & Dodson, 2008). Carr and colleagues (2006) also reported that current drivers did significantly better ($p < .05$) on a measure of processing speed (Cancellation) than former drivers.

Other studies have failed to demonstrate that cognitive status is related to driving cessation. Notably, Marotolli, Ostfeld, and colleagues (1993) examined driving cessation and changes in mileage driven in older drivers and did not find a relationship between cognitive status and driving cessation. The researchers noted that they excluded those likely to have more severe impairments, such as nursing home residents, and this may have affected the results with less decline in cognitive functioning observed. The researchers also added that perhaps participants did not recognize their cognitive deficits and continued to drive. This seems a likely explanation when considering that a significant proportion of older people, reluctant to stop driving, continue to drive even if impaired with a condition that affects cognition and insight such as dementia (Adler & Rottunda, 2006; Brown & Ott, 2004; Carr, Shead, & Storandt, 2005). For instance, combining Ontario Ministry of Transportation driving data, Canadian census data, and dementia prevalence data, the number of drivers with dementia in Ontario has increased from just under 15,000 in 1986, to approximately 34,000 in 2000, with projections for nearly 100,000 in 2028 (Hopkins, Kilik, Day, Rows, & Tseng, 2004). In other studies, estimates of those driving with a dementia range between 22-28% of participants in the samples obtained (Foley, Masaki, Ross, & White, 2000; Hermann, Rapoport, Sambrook, Hebert, McCracken, & Robillard, 2006).

Psychomotor Ability

Psychomotor ability decreases as people age and is associated with driving cessation. There are a number of age-related changes in motor abilities such as reduced muscle strength, reductions in muscle mass and joint flexibility that impedes a driver's ability to do basic driving tasks such as scanning fields of vision and observing blind spots (Bulstrode, 1987; Janke, 1994; Retchin, Cox, Fox, & Irwin, 1988). Looking at particular physical abilities in one study (Foley, Masaki, Ross, & White, 2000) the odds of driving double among those who have grip strength equal or greater than 23 kilograms (OR = 2.33, 95% CI = 1.31-4.16) and could hold a full tandem stand for at least 10 seconds (OR = 2.17, 95% CI = 1.24-3.79). Older people with a walking speed of at least 0.8 metres per second were 3.91 times (95% CI = 2.21-6.93) more likely to drive. Carr and colleagues (2006) also reported that compared to former drivers, current drivers had significantly better grip strength ($p < .001$) and a faster walking speed ($p < .05$). Legh-Smith, Wade, and Hewer (1986) demonstrated that former drivers had a lower mean arm function score ($M = 81.32$, *S. D.* = 31.09) than current drivers ($M = 94.68$, *S.D.* = 14.49, $p < .001$). Reaction time also decreases with age and is related to driving cessation (Dellinger, Sehgal, Sleet, & Barrett-Connor, 2001; Johnson, 1999; Retchin, Cox, Fox, & Irwin, 1988). For instance, Retchin, Cox, Fox, and Irwin (1988) assessed the reaction time of frequent drivers, infrequent drivers, and former drivers. Reaction time was assessed using a timer that simulated traffic lights and measuring the interval between releasing the accelerator and pressing the brake. Former drivers had a significantly longer reaction time (1.33 seconds) than frequent drivers and infrequent drivers (0.66 and 0.84 of a second respectively, $p < .05$).

Reduction in activity level provides some indication of psychomotor ability related to driving cessation (Campbell, Bush, & Hale, 1993; Marotolli, Ostfeld, Merrill, Perlman, Foley, & Cooney, 1993; Siren, Hakamies-Blomqvist, & Lindeman, 2004). Marottolli, Ostfeld, and others (1993) reported that driving cessation was associated with decreased frequency of engaging in activities such as exercise, gardening, walking, and sports among older people. Specifically, those less active were 2.13 times (95% CI = 1.48-3.06) more at risk for driving cessation than other older people who maintained their level of activity. Campbell, Bush, and Hale (1993) also found that activity limitation was associated with driving cessation. People with any activity limitation were 3.37 times (95% CI = 2.4-4.8) more likely to stop driving than those without limitations. Siren, Hakamies-Blomqvist, and Lindeman (2004) demonstrated that older drivers who ceased driving had problems with coordination and walking up stairs.

Another indicator of psychomotor integrity is the presence of a history of falls and fractures. A history of falls and fractures is associated with driving cessation (Carr, Flood, Steger-May, Schechtman, & Binder, 2006; Forrest, Bunker, Songer, Coben, & Cauley, 1997; Marottolli, Ostfeld, Merrill, Perlman, Foley, & Cooney, 1993). Fractures and falls may lead to an increase in driving cessation due to an associated loss in physical function. Forrest and colleagues (1997) found an association between fractures and driving cessation. Female drivers who experienced a fracture were 1.79 times (95% CI = 1.11-2.91) more likely to cease driving than those without a history of fractures. Marottolli, Ostfeld, and others (1993) examined a sample of 600 community-dwelling persons aged 65 years of age and older. Bivariate analyses that compared the potential risk factors for driving cessation to the proportion of people who stopped driving within a 7-year period indicated that the presence of

a hip fracture was significantly associated with driving cessation. In particular, 46.9% of former drivers had a hip fracture compared to 22.9% of current drivers ($p < .05$).

Functional Ability

Research looking at activity limitations includes measures of a person's functional ability. Functional ability relates to the ability to perform tasks of daily living unaided and provides some estimate of a person's physical, mental, or social functioning (Berkow & Beers, 2000). Two main components of functional ability are activities of daily living and instrumental activities of daily living (Berkow & Beers, 2000). Activities of daily living are focused primarily on self-care, including feeding, bathing, dressing, toileting, and basic mobility (Katz, Ford, Moskowitz, Jackson, & Jaffee, 1963). Campbell, Bush, and Hale (1993) using an age-sex adjusted logistic regression found that a significant predictor of driving cessation was activity of daily living deficits (e.g., bathing, dressing, toileting). In particular, deficits played a role in the decision to quit driving for 25% of the former drivers. Carr, Flood, Steger-May, Schechtman, and Binder (2006) reported that former drivers had significantly lower activity of daily living scores ($p <.05$) than current drivers.

Instrumental daily activities of living are viewed, as more complex but essential abilities required in order to be living independently. For instance, managing medications, shopping for necessities, managing one's finances, and using transportation are instrumental activities of daily living. Other instrumental activities of daily living include using the telephone; housekeeping, meal preparation, and nutrition are other examples of instrumental activities of daily living (Lawton & Brody, 1969). Wackerbarth and Johnson (1999) reported that after adjusting for age, risk of driving cessation increased with the number of instrumental activities of daily living people needed assistance. Those needing more

assistance were 1.84 times (95% CI = 1.64-2.06) more likely to cease driving. In another study, Brayne and colleagues (2000) found that among people aged 84 years and older the mean number of IADL limitations was greater for former drivers ($M = 2.3$, $S.D. = 1.8$) than current drivers ($M = 0.7$, $S.D. = 0.9$). Carr and colleagues (2006) also found that former drivers had significantly lower scores than current drivers on a measure of instrumental activities of daily living ($p < .001$).

Other studies report that inability to perform certain instrumental activities does not increase risk of driving cessation (Gallo, Rebok, & Lesikar, 1999; Johnson, 2002; Kington, Reuben, Rogowski, & Lillard, 1994). In one study, the odds of driving increased 6.45 times (95% CI = 1.87- 22.22) for participants who had difficulty with activities of daily living such as meal preparation. The authors surmised that people who relied on their cars to go out for meals were unwilling to give up driving (Johnson, 2002).

Across studies, differences in how activities of daily living and instrumental activities of daily living were measured may account for the discrepant results. Unlike other studies (Campbell, Bush, & Hale, 1993), Gallo and others (1999) defined activities of daily living and instrumental activities of daily living in broad categories and not specific types as is typically measured using common scales such as Katz ADL Scale (Katz, Ford, Moskowitz, Jackson, & Jaffee, 1963) and Lawton and Brody's (1969) IADL scale. Other differences may reflect sample composition. For instance, Kingston and colleague's study (1994) was composed mainly of people under the age of 70. The influence of functional status on driving cessation may vary across age with the impact not emerging until people are older. In fact, decrements in functional ability are not apparent until the mid 70's and even then decline is not inevitable

(Branch, Katz, Kniepmann, & Papisidero, 1984; Crimmins & Saito, 1993; Schaie, 1995, 1994).

Medical Conditions and Driving Cessation

Poor health may be the primary reason why older individuals cease driving (Campbell, Bush, & Hale, 1993; Forrest, Bunker, Songer, Cohen, & Cauley, 1997; Gianturco, Ramm, & Ewen, 1974; Hakamies-Blomqvist & Wahlstrom, 1998; Johnson, 1995; Kington, Reuben, Rogowski, & Lillard, 1994; Marotolli, Ostfeld, Merrill, Perlman, Foley, & Cooney, 1993). Kington, Reuben, Rogowski, and Lillard (1994) noted that health concerns accounted for almost 30% of the variance in driving cessation decisions among older drivers. Some medical conditions that have been studied in relation to driving include cardiovascular disease, stroke and residual paralysis, diabetes, macular degeneration, retinal hemorrhage, and syncope (Campbell, Bush, & Hale, 1993; Forrest, Bunker, Songer, Cohen, & Caulay 1997; Gallo, Rebok, & Lesikar, 1999; Kington, Reuben, Rogowski, & Lillard, 1994; Stewart, Moore, Marks, May, & Hale, 1993).

Campbell, Bush, and Hale (1993) performed bivariate analyses adjusting for age and sex and demonstrated that syncope, macular degeneration, and retinal hemorrhage were more prevalent among former drivers. Although, when using age-sex adjusted multiple regression analyses only syncope and macular degeneration significantly predicted driving cessation. Odds ratio analysis indicated that people with syncope were 1.91 times (95% CI = 1.2-3.0) more likely to stop driving and people with a diagnosis of macular degeneration were 4.25 times (95% CI = 2.6-7.0) more likely to stop driving, compared to former drivers.

Stroke is a common health condition and is a major cause of illness, disability, and death in Canada (Statistics Canada, 2000). The ability to drive following a stroke depends

upon the extent of the damage from the stroke. Some strokes are so severe that cessation of driving is inevitable whereas others strokes can result in partial or incomplete paralysis that makes driving difficult but possible with compensation (Kostyniuk, Trombley, & Shope, 1998). With respect to driving cessation, research demonstrates that the presence of stroke or stroke-related paralysis predicts driving cessation (Campbell, Bush, & Hale, 1993; Marottolli, Ostfeld, Merrill, Perlman, Foley, & Cooney, 1993; Stewart, Moore, Marks, May, & Hale, 1993). Campbell, Bush, and Hale (1993) demonstrated that male drivers with stroke-related residual paralysis were 3.33 times (95% CI = 1.2-9.5) more likely to stop driving. In another study, older individuals with a self-reported history of stroke were 2.70 times (95% CI = 1.54-4.85) more likely to stop driving (Stewart, Moore, Marks, May, & Hale, 1993).

With a prevalence of approximately 18-20% in older adults, diabetes is another medical condition that can influence driving cessation (UMTRI, 2000). Gallo, Rebok, and Lesikar (1999) examined older adults to identify why some older individuals made the decision to stop driving. Former drivers were more likely to report having diabetes than current drivers. Odds ratio analysis demonstrated that former drivers were 1.37 times (95% CI = 1.03-1.83) more likely to have diabetes than current drivers. Furthermore, Forrest, Bunker, Songer, Cohen, and Cauley (1997) investigated driving patterns in older women and found that medical conditions such as diabetes made an independent contribution to driving cessation. Drivers with diabetes were 2.53 times (95% CI = 1.57-4.04) more likely to cease driving.

Heart disease ranks third among the leading chronic conditions limiting physical activity in older adults (Government of Canada Statistics Canada, 2000). Cardiovascular disease is associated with reductions in driving. Waller (1997) reported that drivers with a

history of heart attack or angina reduced the amount they drove before and after hospitalization. Forrest and colleagues (1997) demonstrated that for older female drivers, heart attacks were associated with driving fewer miles and people avoiding trips of more than 100 miles. More recently, Carr, Flood, Steger-May, Schechtman, and Binder (2006) reported a higher incidence of congestive heart failure among former drivers.

Medical conditions that affect vision such as glaucoma, retinal hemorrhage, macular degeneration, and cataracts have also been examined in relation to driving cessation (Decarlo, Scilley, Wells, & Owsley, 2003; Gilhotra, Mitchell, Ivers, & Cumming, 2001; Kington, Reuben, Rogowski, & Lillard, 1994; Marotolli, Ostfeld, Merrill, Perlman, Foley, & Cooney, 1993). Using a community population, Marotolli, Ostfeld, and their colleagues (1993) demonstrated that the presence of cataracts in older drivers was a significant predictor of driving cessation. Participants with cataracts were 2.29 times (95% CI = 1.28-4.10) more likely to cease driving than participants who did not have cataracts. Gilhotra, Mitchell, and others (2001) found that the presence of glaucoma increased the risk of driving cessation 2.2 times (95% CI = 1.3-3.9). However, the relationship between visual functioning and driving cessation is not completely clear. Campbell, Bush, and Hale (1993) found that an individual with macular degeneration was 4.25 (95% CI = 2.6-7.0) times more likely to cease driving but diagnoses of cataracts and glaucoma were unrelated to the decision to cease driving. Differences in how medical data were collected may account for the differences between the studies. Specifically, Campbell, Bush, and Hale (1993) assessed medical conditions annually whereas Marotolli and his colleagues assessed medical conditions every few years. The Campbell, Bush, and Hale (1993) study may be more sensitive to the effects of visual problems, which can change over time, on driving cessation. Kostyniuk, Trombley and Shope

(1998) suggest that cataracts and similar conditions are correctable by surgery and this may explain their inconsistent relationship to driving cessation that has been observed across studies. Specifically, a person may reduce driving due to cataracts, but surgery may relieve their vision difficulties so that people can return to or increase driving after surgery.

Medical conditions that can affect motor ability in older drivers include arthritis, joint pain, and Parkinson's disease (Bulstrode, 1987; Campbell, Bush, & Hale, 1993; Carr, Flood, Steger-May, Schechtman, & Binder, 2006; Roberts & Roberts, 1993; Siren, Hakamies-Blomqvist, & Lindeman, 2004; States, 1985). Campbell, Bush, and Hale (1993) noted that those with Parkinson's disease were 6.36 times more likely (95% CI = 1.9-21.2) to cease driving than drivers without Parkinson's. Siren and colleagues (2004) reported that former older drivers had more joint pain than current drivers. Carr and others (2006) found a higher prevalence of arthritis among former drivers than current drivers, although the difference was not significant ($p < .91$). Medical problems such as arthritis, joint pain, and Parkinson's are believed to affect driving by decreasing flexibility, increasing discomfort and pain, making it more difficult to move limbs and extremities, and causing fatigue (Kostyniuk, Trombley, & Shope, 1998).

Subjective indications such as self-reported health have been studied in relation to driving cessation (Anstey, Windsor, Luszcz, & Andrews, 2006; Dellinger, Sehgal, Sleet, & Barrett-Connor, 2001; Windsor, Anstey, Butterworth, Luszcz, & Andrews, 2007) but there are fewer such studies compared to objective indications of health, such as the presence or absence of a medical condition. Sims, Ahmed, Sawyer, and Allman (2007) used multivariate logistic regression analyses to determine if self-rated health was an independent predictor of driving cessation 2 years later. Using adjusted odds ratios, people with poor to fair health

were 1.93 times more likely to stop driving than people reporting good or excellent health (95% CI = 1.09-3.41). Dellinger, Sehgal, Sleet, and Barrett-Connor (2001) demonstrated those who stopped driving were twice as likely to report fair or poor health in a sample of community dwelling adults.

Demographic Factors and Driving Cessation

Demographic factors such as gender, education, income, geographical location, and marital status have been examined in relation to driving cessation (Burkhardt, Berger, & McGavock, 1998; Campbell, Bush, & Hale, 1993; Hakamies-Blomqvist & Wahlstrom, 1998; Kington, Reuben, Rogowski, & Lillard, 1994; Marotolli, Ostfeld, Merrill, Perlman, Foley, & Cooney, 1993; McGregor, 2002). Social influences such as friends and family and professionals recommendations, often by physicians, to cease driving have also been examined in relation to driving cessation (Adler & Kuskowski, 2003; Dobbs, Carr, & Morris, 2002; Hakamies-Blomqvist, Henriksson, Falkmer, Lundberg, & Braekhus, 2002; Johnson, 1995, 1999; Persson, 1993).

Variables such as education, income, and marital status are often referred to as resource variables. Resource variables refer to conditions (e.g., marriage), financial reserves, as well as social or personal assets that help people cope with difficult and challenging events (Gallo, Bogart, Vranceanu, & Matthews, 2005). Resource variables can be external to the individual, such as income or education, or can be internal resources, strengths within the person, such as health, personality traits, or psychological resources (Pearlin & Schooler, 1978; Shifren & Hooker, 1995).

Education

Less education increases the risk of driving cessation. Marotolli, Ostfeld, and colleagues (1993) using bivariate analyses revealed that a significantly higher percentage (31.4%, $p < .01$) of people with less than Grade 8 education ceased driving compared to people with 9-12 years of education (18.1%) or 13 or more years of education (19.3%). Kington, Reuben, Rogowski, and Lillard (1994) demonstrated that people with an education level of grade 12 and up were 2.24 times (95% CI = 1.21-4.17) more likely to continue driving after 50 years of age. Both studies did not propose an explanation as to why there is a lower risk of cessation among those with more education. Perhaps people with more education have higher incomes that allow them to be able to afford the expense of a car later in life. Research has demonstrated that income level is inversely related to driving cessation (Marotolli, Ostfeld, Merrill, Perlman, Foley, & Cooney, 1993). Another explanation is that people with less education are associated with other risks, poor health for instance, that impacts the ability to drive.

Marital Status

Few studies have examined marital status is relation to driving cessation and the studies that do exist contradict each other. Hakamies-Blomqvist and Wahlstrom (1998) found that driving cessation was related to being divorced, widowed, or single over the age of 70. Kington and others (1994) also found that people who were married were 3.06 times (95% CI = 1.59-5.92) more likely to continue driving after 50 years of age than non-married individuals. On the other hand, Marotolli and his colleagues (1993) using multiple regression procedures, demonstrated that people who were not married were more likely to keep driving than elderly people who were married. It is uncertain why there are differences across studies.

Perhaps differences in how data were analyzed may account for disparate results. In particular, the Kington, Reuben, Rogowski, and Lillard (1994) did not subject marital status to multiple regression procedures with other significant predictors of driving cessation as Marotolli and his colleagues (1993) did.

Social Influences

According to the literature (Chipman, Payne, & McDonough, 1998; Gardezi, Wilson, Man-Son-Hing, Marshall, Molnar, Dobbs, & Tuokko, 2006), many older adults refer to their family, friends, and physicians for advice when making decisions about driving cessation. Johnson (1995, 1999) reported that friends influenced people's decisions about driving cessation. Friends are perceived as empathic and willing to assist with transportation. Older drivers also speak with their friends about driving issues because they are their peers and can identify with the difficulties the person is having (Johnson, 1998). With respect to the impact of family, their role in peoples decisions about driving cessation may be less influential than friends (Johnson, 1999, 1995). Their limited influence may reflect the fact that relationships can become strained when family members are perceived as trying to force the person in question to stop driving (Gardezi, Wilson, et al., 2006; Johnson, 1998; Persson, 1993).

Professional relationships, particularly with physicians, also appear to impact peoples decision to cease driving. Physicians appear to be more influential than family and friends when it comes to people's decisions about driving cessation (Horowitz, Boerner, & Reinhardt, 2002; Persson, 1993). Many people indicate that the physician should have the final say when it comes to decisions about driving cessation (Rothe, 1990; Tuokko, McGee, Gabriel, & Rhodes, 2007). Tuokko, McGee, Gabriel, and Rhodes (2007) asked older drivers attending a driver's education training course about their attitudes and beliefs regarding external

influences on driving behaviour. In their sample, 45% of participants thought a physician should make the final decision, 22% responded by stating that the governmental agency responsible for driver licensing should decide, and 20% of participants indicated the individual driver should make the decision. Similarly, Rothe (1990) noted that 48% of participants said a physician should make the decision to cease driving, compared to 38% of participants stating that the individual driver should decide, and 16% reporting that family members should decide. However, noting this, physicians often do not bring up the issue of driving with their older patients (Hakamies-Blomqvist, Henriksson, Falkmer, Lundberg, & Braekhus, 2002) and when they do the impact of their recommendations is mixed. Adler and Kuskowski (2003) reported that in their sample many people ceased driving abruptly and often on recommendation from their physician. On the other hand, Persson (1993) reported that few physicians brought the topic of driving cessation up with their patients and of those who did make the recommendation to cease driving few patients reported that they stopped because of that recommendation. Similarly, Dobbs, Carr, and Morris (2002) reported that up to 25% of older adults continue driving after a physician recommended driving cessation. The role of a professional's recommendations about driving cessation is not entirely clear at this point.

Gender

Gender is another demographic variable associated with driving cessation. Across many studies, the results suggest that driving cessation occurs earlier for females (Anstey, Windsor, Luszcz, & Andrews, 2006; Burkhardt, Berger, & McGavock, 1998; Campbell, Bush, & Hale, 1993; Chipman, Payne, & McDonough, 1998; Gallo, Rebok, & Lesikar, 1999; Jette & Branch, 1992; Rosenbloom, 1988; Siren, Hakamies-Blomqvist, & Lindeman, 2004;

Stutts, Wilkins, Reinfurt, Rodgman, & VanHeusen-Causey, 2001). Anstey, Windsor, Luszcz, and Andrews (2006) performed a prospective cohort study using logistic regression to identify risk factors for driving cessation. They found that compared to non-drivers drivers were younger and in better health, and were more likely male. Similarly, Stutts, Wilkins, Reinfurt, Rodgman, and VanHeusen-Causey (2001), using five focus groups across the United States, found that a substantially greater percentage of non-drivers were female (79.5 compared to 20.5, $p < .0001$). Gender differences in rates of driving become even more pronounced in higher age brackets. Eberhard (1996) demonstrated that among those 85 years of age and older 25% of all women compared to 55% of all men in his sample continued to drive (Eberhard, 1996).

It is important to note that some women who make the decision to cease driving do so prematurely before they are required to by virtue of a situation such as poor health and functioning (Siren, Hakamies-Blomqvist, & Lindeman, 2004). Females who cease driving prematurely will often cite reasons such as lack of confidence in their ability to drive (Siren, Hakamies-Blomqvist, & Lindeman, 2004). Premature is often defined in terms of ceasing to drive before the presence of factors that make cessation inevitable and beyond a person's choice, such as serious health conditions. Other factors predicting premature driving cessation in female drivers include socioeconomic factors such as income and urban versus rural residence (Glasgow & Brown, 1997). Wilkins, Stutts, and Schatz (1999) conducted a focus group with female participants who ceased driving prematurely and found that some of their participants reported that they quit driving when their husband retired or after they had an accident. What is interesting is that when females are in poor health often the health conditions are not of the type impairing driving ability but rather conditions that decrease

general well-being and physical mobility such as joint pain, high blood pressure, or cancer, for instance (Siren, Hakamies-Blomqvist, & Lindeman, 2004).

Explanations for gender differences have referred to psychological differences and differences in driving habits (Burkhardt, Berger, & McGavock, 1998; Campbell, Bush, & Hale, 1993; Gallo, Rebok, & Lesikar, 1999). Psychological explanations refer to males' greater confidence in their driving ability the corollary being that less confident drivers quit more readily. Differences in driving habits may also explain gender effects. Older males historically have been responsible for driving therefore driving is an activity intimately tied to the identity of many older males and therefore harder to give up. Hakamies-Blomqvist and Siren (2003) noted that one determinant of gender differences was personal driving history. Drivers who had been driving for longer and with a more active driving history tended to be more reluctant to cease driving than others who had not driven as long or as much. Along this line of thought, Siren and Hakamies-Blomqvist (2006) found that females did not have the option to drive as much as males did in their sample.

Gender also affects driving cessation in another manner. Factors affecting a person's decision to continue driving appear to vary as a function of gender. Hu, Young, and Lu (1995) demonstrated that factors such as an inability to fulfill activities of daily living, Parkinson's disease, a first stroke, heart disease, and vision problems affected females decisions to cease driving but not males decisions. Men were more likely to be affected by higher education, gross limitations in mobility, a second stroke, and arthritis. Campbell, Bush, and Hale (1993) also examined factors influencing driving cessation in both males and females and demonstrated that stroke sequelae was a factor only for males while retinal hemorrhaging and Parkinson's disease were influential only in females decisions to cease driving. Both groups

were affected by increasing age, activity limitation, syncope, and macular degeneration. Hakamies-Blomqvist and Wahlstrom (1998) studied Finnish license holders age 70 years and older who did not renew their licenses and a comparison group who renewed their license. Data were obtained by mail survey asking participants about their driving habits, health and living conditions, and reasons to stop driving. The reasons for driving cessation were different for males and females. Males referred most often to health reasons for not renewing their license whereas for females the most common reason for not renewing their license was because they had already stopped driving.

Income Level

Income level is also related to driving cessation. Those who stop driving have substantially lower incomes than people who continue to drive. In one survey of older drivers, 50% of women who stopped driving reported income above $30,000 compared to a cessation rate of 85% among women whose income was less than $30,000, with a similar trend demonstrated among male participants (Rosenbloom, 1993). Marottolli, Ostfeld, Merrill, Perlman, Foley, and Cooney (1993) state the relative expense of an automobile may be too much of a financial burden for people with a fixed or low level of income. Retirement decreases opportunities for obtaining the income needed to maintain an automobile and can reduce a person's mobility needs. For instance, older people still working were more likely to drive high mileages, defined as driving $\geq$ 5000 miles/year, over the course of the study done by Marotolli, Ostfeld, Merrill, Perlman, Foley, and Cooney (1993). In particular, high mileage drivers were 2.03 times more likely (95% CI = 1.08-3.80) to be working than low mileage drivers driving < 5000 miles/year. However, lower levels of income can be related to driving cessation in other ways. As suggested by Marotolli, Ostfeld, Merrill, Perlman, Foley, and

Cooney (1993) people with lower incomes may live in private or public housing complexes and are able to rely on alternate means of transportation reducing the need for an automobile.

Geographical Location

Another variable that may affect the use of alternate transportation is geographical location. Compared to urban adults, rural adults cease driving later in life (Horowitz, Boerner, & Reinhardt, 2002; Johnson, 1995). This is attributed to the limited access to public transportation and therefore greater reliance on personal transportation (Forrest, Bunker, Songer, Cohen, & Cauley, 1997). Other researchers (Sivak, Campbell, Schneider, Sprague, Streff, & Waller, 1995) have noted that as population areas become more decentralized there is a greater emphasis placed on vehicular mobility; new cohorts will experience the effects of decentralization more and so will probably have greater perceived needs and expectations for continued independence through the use of an automobile.

Confidence, Anxiety, and Driving Cessation

Perceptions people hold about their driving ability can affect their decision to continue or stop driving. Loss of confidence regarding one's driving ability can precipitate driving cessation (Brayne, Dufouil, Ahmed, Dening, Chi, McGee, & Huppert, 2000; Rabbitt, Carmichael, Jones, & Holland, 1996; Windsor, Anstey, & Walker, 2008; Winter, 1996). In one study, the third most frequent reason cited as responsible for driving cessation in a cohort of people aged 84 years and older was loss of confidence in one's driving abilities (Brayne, Dufouil, Ahmed, Dening, Chi, McGee, & Huppert, 2000). Rabbitt, Carmichael, Jones, and Holland (1996) interviewed 2,134 current and ex-drivers over the age of 55 in the U.K. and found that in addition to health problems loss of confidence in one's driving ability was the main factor predicting driving cessation. A more recent study indicated that perceived ability

of driving was associated with reduced avoidance of high-risk driving situations (driving at night, driving in wet conditions, turning left, and driving an unfamiliar road) among older male and female drivers (Windsor, Anstey, & Walker, 2008). Burkhardt, Berger, and McGavock (1998) stated that Bandura's efficacy theory provides a theoretical framework to understand the means by which loss of confidence plays a role in driving cessation. A person with low efficacy about a certain task will tend to avoid that task. Similarly, a person who does not feel confident likely will not drive.

Anxiety, exemplified by constructs such as discomfort or nervousness when driving is another factor that can affect driving cessation. Kington, Reuben, Rogowski, and Lillard (1994) examined a sample of people more than 50 years of age from the 1990 Panel Study of Income Dynamics and reported that discomfort with driving was the third most common reason people reported ceasing to drive. Others have demonstrated that discomfort and nervousness are associated with driving cessation (Benekohal, Michaels, Shim, & Resende, 1994; Lonero, Clinton, Wilde, Holden, McKnight, McKnight, Young, & Andersen, 1994; Hakamies-Blomqvist & Wahlstrom, 1998). Hakamies-Blomqvist and Wahlstrom (1998) examined Finnish license holders who did and who did not renew their license by mail survey. Out of the total 3,811 participants, 20% of female and 9% of males reported that discomfort when driving was a reason they stopped driving.

Overview of Factors Associated with Driving Cessation

As the literature indicates there are a number of factors associated with driving cessation such as age, demographic, and health variables. Across studies, the results are fairly consistent. Age is a factor with drivers tending to be younger than their non-driving counterparts. Drivers also tend to be in better physical health and do better on measures of

functional ability. With respect to demographic variables, education, gender, and income appear to play a role in driving cessation. Specifically, drivers are more likely to be male and tend to possess higher income and education than non-drivers. The influence of income speaks to the fact that the inability to afford an automobile, and all that entails, is a limiting factor to the driving career of many older people. The influence of education is less clear but may reflect a positive relationship between education and occupational status that could relate to higher income.

To this point, careful consideration has been given to the role of medical and socio-demographic factors in relation to driving cessation (Horowitz, Boerner, & Reinhardt, 2002). Other types of indicators, psychological factors such as psychological resource variables or personality traits, have been largely overlooked but are invaluable in achieving a better understanding of driving cessation and the impact it has on people for the following reasons. First, responses to driving cessation vary among people in relatively similar life circumstances suggesting that internal, psychological processes may account for some of the variability (Azad, Byszewski, Amos, & Molnar, 2002; Gillins, 1990). Second, psychological resources and personality traits colour people's reactions to life events and the level of subjective well-being people experience (Costa & McCrae, 1980; Hooker, Monahan, Shifren, & Hutchinson, 1992; Magnus, Diener, Fujita, & Pavot, 1993; Smith & MacKenzie, 2006). This is relevant because as will be discussed later, driving cessation is an event that impacts peoples subjective well-being (Carp, 1971; Cutler, 1974; Fonda, Wallace, & Herzog, 2001; Marotolli, Mendes deLeon, Glass, Williams, Cooney, Berkman, & Tinetti, 1997; Siren, Hakamies-Blomqvist, & Lindeman, 2004).

Psychological Resources

Psychological resource variables are internal resources, strengths within the person, that help people manage stressors. They refer to appraisals, coping skills, expectancies, and life attitudes that affect the way people manage stressful life events. The theoretical basis for the psychological resource perspective has its roots in the writings of Victor Frankl and others who define positive psychological functioning (e.g., Allport, 1961; Erikson, 1959; Jahoda, 1958; Jung, 1933; Maslow, 1968; Neugarten, Havighurst, & Tobin, 1961; Rogers, 1961). Resource variables are largely cognitive, involving different ways of viewing and interacting with individuals and the environment (Smith, Fleeson, Geiselmann, Settersten, & Kunzmann, 1999). Psychological resources have protective effects on people's mental health by promoting a sense of control, purpose, and meaning and improving people's sense of subjective well-being (Banken, 1995; Ruth & Coleman, 1996; Smith, Fleeson, Geiselmann, Settersten, & Kunzmann, 1999; Staudinger, Freund, Linden, & Maas, 1999; Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000). For instance, Reker, Peacock, and Wong (1984) examined the correlates of meaning and purpose across the life course. They demonstrated that psychological resource variables, particularly life control and life purpose correlated with subjective well-being.

One perspective emanating from the psychological resource literature looks at the measurement of life attitudes. Life attitudes are conceptualized as individual difference variables that foster subjective well-being by means of a person experiencing good psychological functioning (Kafka & Kozma, 2002). Life attitudes include constructs such as death acceptance (lack of fear or anxiety about death), existential vacuum (lack of goals), future meaning (a determination to make one's life meaningful), goal seeking (a desire to

achieve new goals), life control (freedom to make life choices), life purpose (fulfillment in life, having goals and a sense of direction from the past, in the present, and toward the future), and will to meaning (striving to find meaning in personal existence) (Reker, 2002; Reker & Peacock, 1981).

Other psychological resources include locus of control. Rotter (1966) defined locus of control as a person's expectancies for internal versus external control of reinforcement. Those with an external locus of control believe that events are caused by factors beyond their control such as chance or luck. Internal locus of control is a perception that one's behaviour causes an event. Generally, it is believed that possessing an internal locus of control is favourable. For instance, Kozma and Stones (1978) demonstrated that an internal locus of control was correlated with subjective well-being among older adults. Other research demonstrates that an internal locus of control is related to a positive view of aging even when people experience age-related decrements (Keller, Leventhal, & Larson, 1989). Locus of control has been related to driving patterns among older adults. Winter (1996) noted that older drivers whose license had been revoked had a more external locus of control than people who continued driving.

The locus of control construct is similar to the life control construct with some notable differences. Both constructs refer to people's beliefs about control and expectancies in situations, however the locus of control construct makes reference to a stable characteristic in examining people's preference for adopting either an internal or external control approach in life (Rodin, 1986). Moreover, locus of control adds reference to specific factors that affect situations such as luck, fate, or one's own competence and behaviour (Windle & Woods, 2004). On the other hand, the life control construct refers more to a state as it asks people to

report on their experience of control at a specific time in their life (Reker, Peacock, & Wong, 1981).

With respect to driving, a handful of studies have examined the role of psychological resource variables. Winter (1996) demonstrated that compared to current drivers, former drivers whose license had been revoked had a more external locus of control. Siren, Hakamies-Blomqvist, and Lindeman (2004) reported that Optimism, defined as positive outcome expectancy (Carver & Scheier, 1988), was inversely related to driving cessation. Windsor and colleagues (2007) observed that control beliefs moderated depression in response to driving cessation.

Personality Traits

Personality refers to the emotions, thoughts, and behaviour patterns that a person typically has (Kassin, 2003). Trait approaches to personality assume that people are psychologically different from each other in more or less stable ways across time and situations. Everyday language can be used to capture these trait differences between people. Adjectives such as conscientious or agreeable can be used to describe individual differences. Allport and Odbert (1936) are credited with being the first to systematically identify these differences with a lexical approach (Rodin, 1986).

Within the trait approach a number of researchers have attempted to define the number of elements that constitute personality. Cattell (1965, 1946) proposed sixteen fundamental personality traits that included warmth, stability, dominance, sensitivity, openness to change, perfectionism, and tension among others traits. Eysenck (1967, 1947) and colleagues (1976) said there were three dimensions, also referred to as traits (Funder, 1997), comprising personality: extraversion/introversion, neuroticism/stability, and psychoticism/superego

function. More recently, Costa and McCrae (1980) proposed that personality is separated into five essential traits: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. Some examples of statements that define one of the five traits are "I really enjoy talking to people" (extraversion), "I often feel tense and jittery" (neuroticism), "I try to be courteous to everyone I meet" (agreeableness), "When I make a commitment, I can always be counted on to follow through" (conscientiousness), and "I often enjoy playing with theories or abstract ideas" (openness to experience). Of Costa and McCrae's (1980) five traits, neuroticism and extraversion have received the most attention by researchers, particularly those interested in studying subjective well-being (Diener, Suh, Lucas, & Smith, 1999). Neuroticism, described as negative emotional reactivity, often results in lower levels of subjective well-being whereas extraversion predisposes people to positive affect and higher levels of subjective well-being (Costa & McCrae, 1993; McFatter, 1994).

To the knowledge of the investigator only one study has examined personality factors among older drivers. This study did not address the issue of driving cessation. Strahan, Mercier, Mercier, and O'Boyle (1997) attempted to develop a personality questionnaire that could predict driving performance in older persons. Results did not support the utility of the questionnaire as an assessment tool for driving performance but analyzing the results with factor-analytic procedures resulted in the emergence of two factors, defined as competence and emotionality. According to the authors, the factors corresponded largely to the dimensions of extraversion and neuroticism, respectively.

Group Differences

There appears to be a number of variables relevant to driving issues including psychological variables. The first aim of the study was to identify group differences as a

function of driving status. More specifically, to examine whether significant differences exist between drivers and non-drivers on an array of variables that included age, demographic variables, functional ability, health variables, psychological resources, and personality traits. The same analyses were done to identify whether any group differences exist between those anticipating driving cessation and those not anticipating driving cessation in 2 years and in 5 years. To the knowledge of the investigator this is the first study to examine this array of variables in the context of people anticipating driving cessation. The results should help to clarify whether there are any pre-existing differences between people who expect to cease driving in the future and those who do not expect to cease driving in the future.

Consistent with past research, drivers should be younger, in better health, score higher on a measure of functional ability, and possess higher income and education. There should also be significant gender differences with males more likely to be driving than females. Psychological resource variables exert positive effects therefore drivers, who report better outcomes than non-drivers, are expected to score higher on measures of psychological resources such as life control and life purpose. Drivers are also expected to possess a more internal locus of control. With respect to personality traits, compared to non-drivers, drivers should possess positive personality attributes, such as high extraversion and low neuroticism. The same pattern of results is expected for those who do not anticipate driving cessation.

Predictors of Driving Cessation

The second aim of the study involves the same array of variables and looks at the prediction of driving cessation. Across studies, the same set variables (age, demographics, functional ability, and health) that differentiate drivers and non-drivers also predict driving cessation. However, there is a large amount of unexplained variance in predicting driving

cessation. Kington, Reuben, Rogowski, and Lillard, (1994) found that socio-demographic and health variables accounted for only 30% of the total variance in driving cessation. Therefore, it appears that all relevant variables have not been identified. To enhance prediction of driving cessation there is a need to include other variables that may be relevant to predicting driving cessation such as personality traits and psychological resource variables. It is hypothesized that personality traits and psychological resource variables should make a unique contribution to the prediction of current and future driving cessation over and above age, health variables, demographic variables, and functional ability.

The Impact of Driving Cessation

In addition to research examining predictors and correlates of driving cessation there is a large literature focused on the outcomes of driving cessation. It is evident that the effects of driving cessation impact many areas of an individual's life (Fonda, Wallace, & Herzog, 2001). Most of the outcome research has focused on negative aspects of driving cessation such as declines in activity, difficulties accessing resources, and the impact on people's social functioning by looking at feelings of isolation. A host of negative psychological outcomes also appear to occur such as depression, reduced independence, and lower subjective well-being. The outcome literature is reviewed in the next sections.

Before reviewing the literature looking at outcomes of driving cessation it is important to recognize that driving cessation is an experience that appears to affect not only the former driver but other individuals close to that person. Bonnel (1999) noted that a ripple effect occurs when older people stop driving. Those affected include friends and neighbors who depended on the individual for rides and family members and friends who either received rides or took over the responsibility for driving the former driver. Taylor and Tripodes (2001)

examined changes in household travel patterns and responsibilities as a result of license revocation among older people with dementia. In their sample, 55% of former drivers tended to rely on a spouse and 23% relied on adult children to have their transportation needs met. Furthermore, changes in driving status also affected family members. Specifically, 42% of family members reported that they missed work periodically or gave up work entirely to provide care to former drivers, including transportation.

Declines in Activity and Access to Resources

One outcome often reported after people stop driving is a decline in their level of activity. Rosenbloom (2001) demonstrated that the number of daily trips and distance traveled by older individuals decreased after cessation with men making 2.1 fewer trips and reducing their mileage by 63.3% whereas women made 1.9 fewer trips and reduced their mileage by 60.9%.

Ceasing to drive and the accompanying declines in mobility can reduce older people's access to resources known to buffer quality of life such as work, shopping, leisure pursuits, spiritual/religious activities, social supports and family, volunteering, and health care services (Azad, Byszewski, Amos, & Molnar, 2003; Bonnel, 1999; Carp, 1988; DeCarlo, Scilley, Wells, & Owsley, 2003; Kim & Richardson, 2006; Legh-Smith, 1986; Marottolli, Mendes de Leon, Glass, Williams, Cooney, & Berkman, 2000; Marotolli, Ostfeld, Merrill, Perlman, Foley, & Cooney, 1993; Richardson & Balaswamy, 2004; Rosenbloom, 2001; Taylor & Tripodes, 2001). For instance, using a longitudinal design, Marotolli, Mendes de Leon and others (2000) examined older people's mean activity level three times over a six-year period (1982-1988) to determine the effects of driving cessation on activity level. Results indicated that driving cessation was associated with decreased activity levels on out-of-house activities

like shopping, performing volunteer or paid work, and socializing with friends or family. The mean activity score was assessed at baseline ($M = 6.45$, $S.D. = 3.08$) and declined about 0.36 units ($\beta = -.118$ $p < .001$) between each interview. Random effects analysis indicated that driving cessation was negatively associated with activity ($\beta = -1.293$, $p <. 001$). Adjusting for sociodemographic factors and health-related variables reduced the association between driving cessation and activity level ($\beta = -1.081$, $p < .001$), but the association was still statistically significant. In another study, Kim and Richardson (2006) demonstrated that driving status was related to consumption expenses with former drivers reporting spending less on taking trips and dining out, higher-order consumption needs related to participant's subjective well-being.

Reduced Independence and Enjoyment

When driving cessation does occur people's enjoyment of activities tends to decline. This is because relying on alternative transportation places various restrictions on people such as not being able to get to a place, not being able to stay for as long as they want, needing to wait for a ride, and lack of spontaneity to make plans which often lead to negative emotions such as frustration (Lister & Teri, 1992; Corn & Rosenbloom, 2002). Freund (1996) examined driving alternatives among transportation dependent older people and reported that 75% of the sample reported dissatisfaction with the arrangement.

Driving cessation also tends to reduce people's sense of independence. Rothe (1994) notes that the transition from driver to ex-driver represents a move towards a lifestyle characterized by lasting dependence and increased feelings of depression (Campbell, Bush, & Hale, 1993; Whitehead, Howie, & Lovell, 2006). Whitehead, Howie, and Lovell (2006) using qualitative data from the interviews of five participants who lost their license reported that

loss of the ability to drive was deeply traumatic because it had been a normal and accepted part of their life and the loss meant a loss of their independence.

Isolation

Other negative outcomes have been studied in relation to driving cessation. Isolation is a consequence of driving cessation. Gardezi and colleagues (2006) referring to others work (Coughlin, 2001; Eisenhandler, 1990; Horowitz, Boerner, & Reinhardt, 2002) noted that driving can signify a sense of belonging to the larger community and not driving can leave people feeling socially isolated. Isolation has been defined as decreased involvement in a social network (Weinert, 1987). Marottoli and colleagues (2000) indicated that one commonly reported consequence of driving cessation was social isolation. A feeling of isolation contributes to feelings of loneliness. Johnson (1998) examined rural older people and noted that loneliness was the most frequent consequence of driving cessation. In another study, Johnson (1999) found that 78% of participants reported experiencing isolation and loneliness after ceasing to drive.

Depression

Another negative outcome associated with driving cessation is depression (Carp, 1971; Cutler, 1972; Fonda, Wallace, & Herzog, 2001; Legh-Smith, Wade, & Hewer, 1986; Liddle & McKenna, 2003; Marottoli, Mendes de Leon, Glass, Williams, Cooney, Berkman, & Tinetti, 1997; Ragland, Satariano, & MacLeod, 2005). For instance, Legh-Smith, Wade, and Hewer (1986) demonstrated that patients with a stroke who did not resume driving due to residual disabilities were more likely to be classified as being depressed on the Wakefield Self-Assessment Depression Inventory than those who continued to drive. Thirty-seven percent of participants who stopped driving met criteria for either probable or certain depression

compared to 7% of people reporting probable or certain depression among those resuming driving. However, Legh-Smith, Wade, and Hewer (1986) did not control for the effects of health status so residual disability may have contributed to higher depression scores. Fonda, Wallace, and Herzog (2001) also assessed depression three times over a five-year period between drivers and non-driving older persons. Among participants who quit between the first and second CES-D assessments the risk for depressive symptoms was 1.44 times (95% CI = 1.26-1.57) higher than for participants who continued to drive throughout the study. The risk of depression among non-drivers was not mitigated even if they had a spouse who could drive. With respect to these studies, all of them used a cross-sectional design therefore a causal relationship between driving cessation and depression could not be determined.

Even more persuasive evidence for the negative impact of driving cessation comes from longitudinal studies (Marottoli, Mendes de Leon, Glass, Williams, Cooney, Berkman, & Tinetti, 1997; Ragland, Satariano, & MacLeod, 2005). Marottoli, Mendes de Leon, Glass, Williams, Cooney, Berkman, and Tinetti (1997) demonstrated that individuals who stopped driving over a six-year interval (1982-1988) exhibited increases in depressive symptoms, as measured by the Center for Epidemiologic Studies-Depression Scale (CES-D; Radloff, 1977). The mean CES-D score for those who stopped driving was 7 at the start of the study and increased to a score of 10 at the end of the study six years later. Driving cessation was among the strongest predictors ($\beta = 2.46$, S.E.M. = +- 0.76, $p < .001$) of increased depressive symptoms making an independent contribution even when taking into account socio-demographic factors and health variables. Ragland, Satariano, and MacLeod (2005) also demonstrated that former drivers reported higher levels of depression than did active drivers even after the authors controlled for age, gender, education, health, and marital status.

Both of these studies are particularly important because they examine temporal changes in response to driving cessation. However, there are some shortcomings with these studies. For instance, in Marotolli and colleagues' (1997) study the duration of cessation was not assessed among those who stopped driving before the study started in 1982.

Subjective Well-Being

Another negative outcome of driving cessation is lower reported subjective well-being (Carp, 1971; Cutler, 1972). Larsen (1978) is credited with creating the term subjective well-being to denote global, long-term experiences of positive reactions to life. More recent conceptions define subjective well-being as a broad category of phenomena including people's emotional responses and cognitive evaluations of their life (Diener, Suh, Lucas, & Smith, 1996). Subjective well-being is a construct that has been defined with different terminology that may reflect the different philosophical, conceptual, and methodological orientations of investigators in the area. For example, one approach to subjective well-being gives priority to the affective states that people experience; the central construct in this approach is happiness (Bradburn, 1969). Well-being, or happiness, is simply a matter of a person experiencing a preponderance of positive over negative affect. Measures such as Bradburn's Affect Scale (Bradburn, 1969) and the affective state scales on the MUNSH assess the affective component of well-being. Less formally, depression measures, such as the CES-D (Radloff, 1977), have been used to examine subjective well-being, particularly the negative affective states that make up one part of well-being.

Another approach comes from early work examining adaptation to aging and is known is the contentment, or life satisfaction approach (Kozma & Stones, 1996). Life satisfaction covers a longer temporal span as it defines an overall summary of a person's life,

usually reflected through one's cognitions, attitudes, and beliefs. In this approach, people experiencing well-being evaluate their life favourably. The Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) is a measure of life satisfaction.

Even though subjective well-being has been defined in many ways with each perspective emphasizing a different approach, it is generally accepted that subjective well-being contains both an affective and a cognitive component, each which make an independent contribution to a person's judgments about their level of well-being (Andrews & Withey, 1976; Campbell, Converse, & Rodgers, 1976; Costa & McCrae, 1976; Lucas, Diener, & Suh, 1996; Stock, Okun, & Benin, 1986; Zevon & Tellegen, 1982). One comprehensive measure of well-being is the Memorial University of Newfoundland Scale of Happiness (MUNSH; Kozma & Stones, 1980). The MUNSH is composed of affective and cognitive measures of well-being over the short and long-term.

As noted before, driving cessation is associated with lower levels of subjective well-being (Anstey, Windsor, Luszcz, & Andrews, 2006; Carp, 1971; Cutler, 1972; Fonda, Wallace, & Herzog, 2001; Marotolli, Mendes deLeon, Glass, Williams, Cooney, Berkman, & Tinetti, 1997; Siren, Hakamies-Blomqvist, & Lindeman, 2004). Using a single-item measure of subjective well-being, Carp (1971) demonstrated that former drivers reported lower scores than people still driving. In another study, Cutler (1974) found that participants who had available transportation, either their own car, public transportation, or rides from friends and family had significantly higher scores on the Life Satisfaction Index compared to those who did not have transportation available to them (Neugarten, Havighurst, & Tobin, 1961). More recently, Anstey and colleagues (2006) reported that former older drivers experienced lower general well-being than current drivers in a study that examined various medical and

sensorimotor risk factors. However, rather than a measure of subjective well-being in their study the researchers used self-reported health as an indicator of general subjective well-being.

Comprehensive Measures of Subjective Well-Being

Prior research examining driving cessation and subjective well-being has used primarily depression measures (Fonda, Wallace, Herzog, 2001; Legh-Smith, Wade, & Hewer, 1986; Marotolli, Mendes de Leon, Glass, Williams, Cooney, Berkman, & Tinetti, 1997). Depression measures examine the negative emotional states associated with subjective well-being (Brown, Jose, Ng, & Guo, 2002; Diener, Suh, & Oishi, 1997; Munoz, McBride, Brnabic, Lopez, Hetem, Secin, & Duenas, 2005; Pinquart & Sorenson, 2004; Thase, 2006; VanHemert, Van de Vijer, & Poortinga, 2002). Using depression measures reflect the expectation that most outcomes of driving cessation are negative. To a large extent this may be true, as isolation, loss of independence, and decline in activity and access to resources, are often reported by people who cease driving. However, subjective well-being entails more than negative emotional states and so depression measures only partly assess the subjective well-being construct (Kammann, Farry, & Herbison, 1984; Kozma, Stones, & McNeil, 1991). Other research studies measuring the impact of driving cessation use life satisfaction measures that only assess the cognitive component of subjective well-being (Siren, Hakamies-Blomqvist, & Lindeman, 2004). To the knowledge of this investigator no study has examined both cognitive and affective components of subjective well-being simultaneously in relation to driving cessation. Driving cessation is an experience accompanied by both negative feelings associated with the loss but also negative appraisals often to do with themes of less independence and loss of an identity that staves off negative conceptions of old-age

(Eisenhandler, 1990). Moreover, for a significant number of former drivers, the impact of driving cessation is not negative. If this is the case it may be that current methods of assessing subjective well-being in relation to driving cessation can be improved upon by simultaneously examining both positive and negative affective and cognitive components of subjective well-being. This is the third aim of the current study.

To provide a comprehensive assessment of the effects of driving cessation on subjective well-being this study will employ comprehensive measures assessing both positive and negative affective and cognitive components. This will be done to determine whether comprehensive measures provide a most sensitive assessment of the impact of a set of variables associated with driving cessation on subjective well-being. This will be achieved by comparing comprehensive measures of well-being, such as the MUNSH, to measures that assess cognitive components of subjective well-being, such as the SWLS, and depression measures that assess affect, such as the Geriatric Depression Scale (GDS).

Moderator Variables and Driving Cessation

Although people often report negative consequences from driving cessation there is considerable variability in people's reactions. As Gillins (1990) stated:

> "There is a range of responses in how the person may comply with limiting or relinquishing the ability to drive. The responses may range from acknowledgment of the deficit and acceptance of not driving to struggling and denying." (pp. 14)

Researchers have demonstrated that not all people who stop driving experience negative consequences. Azad, Byszewski, Amos, and Molnar (2002) reported that 15.5% of participants did not feel that driving was important and were not negatively impacted when

they ceased driving. Cutler (1972) reported that 37% of participants experienced high life satisfaction despite not being able to drive or have alternative means of transportation. Buys and Carpenter (2002) obtained qualitative reports from ex-drivers that ran contrary to the expectation that cessation would result in negative effects such as loss of independence and inability to fulfill daily activities. Participants recognized that the initial period of cessation was difficult but they were able to convey a sense of acceptance of the loss of driving in their reports. The ability to adjust varied with the person but many participants reported a theme of ``discovering a new social network via friends/family driving them to places in a climate of friendship, mutuality, and independence`` (pp. 154; Buys & Carpenter, 2002). Other researchers (Burkhardt, McGavock, Nelson, & Mitchell, 2002; Gillins, 1990; Yoshimoto, 1994) note that some positive reasons for giving up driving include getting more exercise and improving their physical health, saving money, avoiding the stress of driving in traffic, and avoiding aggressive, discourteous, or inattentive drivers.

If individuals vary in their response to driving cessation then an aim should be to try to identify and examine variables that moderate the relationship between driving cessation and subjective well-being. Moderator variables are qualitative or quantitative variables that affect the direction and/or strength of the relation between an independent or predictor variable and a dependent or criterion variable (Baron & Kenny, 1986). Within a correlational analysis framework, a moderator is a third variable that affects the zero-order correlation between two other variables (Baron & Kenny, 1986).

To the knowledge of the investigator, only one study has looked at moderators of the relationship between driving cessation and subjective well-being (Windsor, Anstey, Butterworth, Luszcz, & Andrews, 2007). Windsor, Anstey, Butterworths, Luszcz, and

Andrews (2007) examined whether people's expectancy for control moderated the impact of driving cessation on a measure of depression (CES-D). Using data from a prospective community-based cohort study they found that driving cessation was associated with an increase in depressive symptoms. In turn, higher depression scores among those who ceased driving was partly explained by a corresponding decrease in their sense of control.

With respect to other moderator variables, there is an extensive literature demonstrating that physical and demographic variables affect the way a person responds to life events (Birren & Schaie, 1996). These variables may also be candidates for moderating the impact of driving cessation on people's subjective well-being. Higher education and income are beneficial resources that affect people's reactions to life events in a positive manner (Billings & Moos, 1981; Holahan & Moos, 1987; Ruth & Kenyon, 1995). Income and education are associated with driving cessation but whether they moderate its impact is not known. To clarify this issue, analyses will be conducted to determine whether income and education positively moderate the relationship between driving cessation and subjective well-being.

Health is another variable that affects people's responses to events. Better physical health is seen as having a positive effect on people's experience of life events (Birren & Schaie, 1996). For instance, Corn and Rosenbloom (2002) demonstrated that physical health was associated with a reduction with certain types of worry in former drivers. Former drivers without visual problems experienced a higher decrease in worry about maintaining social and leisure activities then former drivers with visual problems. In the current study, health is also expected to positively moderate the relationship between driving cessation and subjective well-being.

Another variable that may play a moderating role is functional ability. Functional ability refers to the individual's capacity to perform daily activities in the physical, psychological, and social domains of life (Leidy, 1994). Higher functional ability is associated with positive outcomes such as better health, cognitive functioning, and higher subjective well-being (Bauco, Cinti, & Raganto, 1996; Beland & Zunsunegui, 1999; Fone & Lundgren-Lindquist, 2003; Rapp, Schnaider, Schmeidler, Sano, Silverman, & Haroutunian, 2005). As a moderator, functional ability should affect the relationship between driving cessation and subjective well-being in a positive way. This may be due to the fact that in spite of having to cease driving people who are more functional may feel the impact of cessation less negatively. Perhaps older people with higher functional ability are more able to access other means of transportation, such as public transport, enabling them to fulfill at least some of their transportation needs important to their subjective well-being. Kozma and Stones (1980) demonstrated that transportation needs were a major determinant of elderly people's subjective well-being.

Psychological resource variables influence how people respond to life events with research demonstrating moderating effects (Connor-Smith & Flachsbart, 2007; Farne, Sebellico, Gnugnoli, & Corallo, 1992; Roberts, Dunkle, & Haug, 1994). For Windsor and colleagues (2007) psychological resource variables, particularly higher levels of control beliefs ameliorated the level of depression people experienced when they ceased driving. Therefore, these types of variables warrant further study as possible moderators of the relationship between driving cessation and subjective well-being. In this study, psychological resource variables such as life control, life purpose, and an internal locus of control should also positively moderate the relationship between driving cessation and subjective well-being.

Personality traits as moderators of driving cessation and subjective well-being are also examined. With respect to driving cessation, neuroticism is expected to negatively moderate the relationship between driving cessation and subjective well-being. Neuroticism predisposes people to experience negative affect in response to life events (Headey & Wearing, 1989; McFatter, 1994). Therefore the expectation is that older persons who score high on neuroticism are more likely to react in a negative fashion, and experience lower levels of well-being when driving cessation does occur. Conversely, previous drivers who score higher on the extraversion dimension may be less likely to experience such dramatic dips in subjective well-being when driving cessation occurs. One reason could be that extraversion predisposes people towards positive affect in response to life events (Headey & Wearing, 1989; McFatter, 1994). The extraversion dimension may also act as a positive resource to help reduce the negative impact cessation may have on people's subjective well-being. People high on the extraversion dimension may draw on social resources to cope with the negative impact of driving cessation. Part of the positive effect from extraversion comes from the sociability component that fosters positive interpersonal relationships as sources of support and well-being (Emmons & Diener, 1986; Myers & Diener, 1995). Social support is found to be an important resource for coping with unpleasant life events and negative emotional states (Abbey & Andrews, 1985; Cohen, 1988; House, Landis, & Umbertson, 1988; Myers, 2000; Willis, 1996; Woods, 1999).

Thesis Statements

The first aim of the research is to demonstrate whether drivers and non-drivers differ in age, demographic, health variables, and functional ability. The aim is to also demonstrate whether group differences exist among drivers who anticipate and do not anticipate driving

cessation in the future. Age, demographic variables, and health variables have been examined in past studies and the expectation is that these results will be replicated with the present sample of participants. In particular, drivers should be younger, in better health, score higher on measures of functional ability, and score higher on demographic variables such as income and education. Drivers are also more likely to be male than female. The same pattern of results is expected for those who do not anticipate driving cessation compared to drivers who do anticipate driving cessation in the future.

Group Differences

To extend the research, group differences between drivers and non-drivers are examined on personality trait variables and psychological resource variables. The expectation is that drivers should possess greater psychological resources such as life control, life purpose, and have a more internal locus of control than non-drivers. Furthermore, compared to non-drivers, drivers should score higher on a measure of extraversion and lower on a measure of neuroticism. Higher levels of extraversion and lower levels of neuroticism are positive personality attributes that have been shown to have a beneficial effect on people's responses to life events.

Predictors of Driving Cessation

The second aim of the study is to examine predictors of both current driving cessation and anticipation of driving cessation. Current driving status and anticipation of driving cessation in 2 years and 5 years were the dependent variables. Independent variables included age, demographic variables (education, gender, and income), functional ability, and health variables. To enhance prediction, personality traits and psychological resource variables were included in the analyses. Personality traits and psychological resource variables should make

a significant independent contribution to predicting current and future driving cessation over and above the effects of age, demographic variables, functional ability, and health variables.

Comprehensive Measures of Subjective Well-Being

The third aim of the study is to determine whether comprehensive measures provide a more sensitive assessment of the impact of driving cessation on subjective well-being. Many of the studies that examined the impact of driving cessation on subjective well-being have used depression measures (Carp, 1971; Fonda, Wallace, Herzog, 2001; Legh-Smith, Wade, & Hewer, 1986; Marotolli, Mendes de Leon, Glass, Williams, Cooney, Berkman, & Tinetti, 1997). Depression measures only partly assess the subjective well-being construct by focusing on negative emotional states (Kammann, Farry, & Herbison, 1984; Kozma, Stones, & McNeil, 1991). Other research has focused on the cognitive component of subjective well-being using measures such as the SWLS (Diener, Emmons, Larsen, & Griffin, 1985). However, subjective well-being is more than negative affect and negative cognitive states (Diener, Suh, Lucas, & Smith, 1999). A more comprehensive model of subjective well-being includes both positive and negative affect and cognitions. A comprehensive measure of subjective well-being assesses both short and long-term affective and cognitive states (Andrews & Withey, 1976; Campbell, Converse, & Rodgers, 1976; Lucas, Diener, & Suh, 1996). One example of a comprehensive measure is the Memorial University of Newfoundland Scale of Happiness (MUNSH, Kozma & Stones, 1980). The MUNSH should provide a more sensitive assessment of the impact of a set of variables associated with driving cessation on subjective well-being compared to depression measures or subjective well-being measures that assess only the cognitive component, such as the SWLS.

Moderators of Driving Cessation and Subjective Well-Being

Identifying variables that moderate the relationship between driving cessation and subjective well-being is the fourth issue addressed in this study. An array of variables was examined including: age, demographics, functional ability, health, and psychological variables such as personality traits and psychological resources. The expectation is personality traits and psychological resources will moderate the relationship between driving cessation and subjective well-being. In particular, low neuroticism, high extraversion, higher levels of life purpose and life control, and an internal locus of control should positively moderate the relationship between driving cessation and subjective well-being. Similarly, better heath and functional ability is expected to affect people's reactions to driving cessation positively. Higher education and income should also positively moderate driving cessation and subjective well-being. Education and income are known to have a positive impact on people's reactions to life events (Billings & Moos, 1981).

Age was included in the analyses but specific predictions were not made. Age is an index for other factors that affect how people respond to events. Rather than chronological age it is the individual's resources, health, and personality that determine people's reactions to driving cessation (Stutts, Wilkins, Reinfurt, Rodgman, & Van Heusen-Causey, 2001).

To restate, there are four main aims in this study:

1) The first aim of the research is to examine group differences in current cessation and anticipation of driving cessation. In particular, drivers should be younger, in better health, score higher on a measure of functional ability, and possess more income and education. Drivers are more likely to be male than female. The same pattern of results is expected for drivers who anticipate cessation in the future. With respect to personality traits, compared to

non-drivers, drivers should score higher on a measure of extraversion and lower on a measure of neuroticism. Moreover, drivers should possess higher levels of psychological resources such as life control and life purpose, and report a more internal locus of control.

2) The second aim of the study is to determine independent predictors of both current driving cessation and anticipation of driving cessation. The following variables were used: age, demographic variables, functional ability, and health variables. To enhance prediction psychological variables were examined. It is hypothesized that personality traits and psychological resource variables will make a significant unique contribution to predicting current driving cessation and anticipation of driving cessation, over and above variables such as age, demographic factors, health variables, and functional ability.

3) The third aim of the study is to determine whether comprehensive measures provide a more sensitive assessment of the impact of a set of variables associated with driving cessation on subjective well-being. A comprehensive measure of subjective well-being assesses both short and long-term affective and cognitive states. The MUNSH is a comprehensive measure and should provide a more sensitive assessment of the impact on subjective well-being of a set of variables associated with driving cessation. This is in comparison to a depression measure, such as the GDS, or a subjective well-being measure that examines only the cognitive component of subjective well-being, such as the SWLS.

4) The fourth aim of the study is to identify moderator variables between driving cessation and subjective well-being. Higher life control and life purpose, a more internal locus of control, higher extraversion, and lower neuroticism will positively moderate the impact of driving cessation on subjective well-being. Better physical health and functional ability, and

higher income and education should all have a positive moderating effect. Age was included but specific predictions were not made.

Method

Participants

The target population was non-institutionalized persons age 55 years and older. Some researchers define old age as people aged 55 and older (Thane, 1989). People that were currently driving or stopped driving within the past 3 years participated. A three-year period of time was selected in order to be consistent with past research (Foley, Heimovitz, Guralnik, & Brock, 2002; Marotolli, Mendes, de Leon, Glass, Williams, Cooney, Berkman, & Tinetti, 1997; Ragland, Satariano, & Macleod, 2005). Participants were older individuals living in the community and recruited from one of a number of community, volunteer, and business organizations in Thunder Bay, Ontario and Winnipeg, Manitoba (See Appendix P). Lifetime non-drivers as well as those people who had stopped driving more than three-years ago were excluded from the analyses.

To recruit participants, the appropriate contact person for each organization was identified and contacted by telephone. Often this was the program coordinator. The purpose of the contact was to ask whether the researcher could do a 10-minute presentation about the study to interested persons. The researcher also asked if a poster could be sent to the organization to increase participation rates. The poster describe the purpose of the study, its affiliation with Lakehead University, participant characteristics, what was required to participate, the email address of the web-based version that participants could complete, and contact information (See Appendix Q). To provide the organizations with a better understanding of the study the researcher sent a package of materials including the

questionnaire, the poster, and when requested a copy of the ethics approval form. Two organizations requested that a cover letter be sent with the package of questionnaires (Appendix R and Appendix S).

Participants had questionnaires distributed to them, and were given an opportunity to fill out the questionnaire at their earliest convenience. Sometimes if participants wanted to give the questionnaires back immediately they would find a private place and finish the questionnaires. The researcher would then wait for the participant to fill out the questionnaires. For participants who took the questionnaires away they were returned to the author by mail in envelopes with postage paid or picked up from the contact person of the organizations who participated. Participants wishing to ask questions or receive results of the study were able to contact researchers via email or telephone.

The first page of the questionnaire was a questionnaire inviting participants to participate in the study, contact information of the researchers was also on the cover letter. There was a version for Thunder Bay, Ontario and a version for Winnipeg, Manitoba (Appendix A and Appendix B). A consent form was part of the questionnaire (Appendix C). The form indicated that by reading the cover letter and signing the consent that participants understood the nature of the study, its purpose, and procedures. The consent form was removed from the completed questionnaire booklet to ensure confidentiality of responses. On the cover letter the voluntary nature of participation was reiterated and participants were informed there was no apparent risk of physical or psychological harm. Participants had the option to withdraw at any time from the study without penalty. Participants were asked to write personal information on only the consent form.

Participants had the option to put down contact information for a follow-up study with participation involving completing the same questionnaire booklet in approximately one year (Appendix B). Participants also had the option to complete a web-version of the questionnaire. The poster and the cover letter on the questionnaire identified the web address. (http://flash.lakeheadu.ca/~gjkafka/). The same set of questionnaires made up the internet version as the paper version.

Instruments (Appendix D to O)

The questionnaire package was pre-tested on ten older adults for clarity of expression and format. Based on the feedback, minor changes in format or wording were made that did not change the content or the conceptual basis of the study.

Demographic Information. Information on age, gender, marital status, education level, income level, current medications, and housing type was obtained for all participants. A question pertaining to geographical location (rural versus urban) was also included. In the literature (Forrest, Bunker, Songer, Cohen, & Cauley, 1997; Johnson, 1995, 1998; Kington, Reuben, Rogowski, & Lillard, 1994; Persson, 1993), there does not appear to be a definitive definition as to what constitutes a rural and urban location to guide the present research. Geographical location is defined according to the population of the place a person lives in; the following categories are used: area away from a major centre (i.e., less than 10,000 people), small urban centre (i.e., more than 10,000 people but less than 50,000), mid-urban centre (i.e., between 50,000 to 100,000 people), and large urban centre (i.e., more than 100,000 people).

Activities of Daily Living Questionnaire. This questionnaire assesses participant's current functional ability. Fourteen items evaluate people's ability to perform a number of daily activities of living such as eating, mobility, grooming, housework, taking own

medication, and going shopping. Seven questions assess physical activities of daily living and 7 questions assess instrumental activities of daily living. For each item, respondents are asked whether they can do these without help, with help, or not at all. The maximum score for most of the items is 2 points. On two items, the maximum score is 1 point. The maximum score for the entire scale is 26. A higher score indicates greater functional ability. Items are taken from the Older Americans Resources and Services Survey (OARS) and were used in the Canadian Study of Health and Aging-2 (1997). Specifically, the physical and instrumental activities of daily living scales used many of the items from the OARS plus some additional items added on during the Canadian Study of Health and Aging-2 (1997). The OARS does have comparison norms obtained from random samples of older people living in the community, attending adult day care programs, and residing in institutions (Fillenbaum, 1988). Five-week test-retest reliability coefficients are .82 for the physical activities of daily living items and .71 for the instrumental activities of daily living items (McDowell & Newell, 1996). Alpha coefficients are .87 for items assessing instrumental activities of daily living and .84 for items assessing physical activities of daily living (Fillenbaum, 1988). Research examining the criterion validity of the OARS demonstrates a spearman correlation of .89 between the self-care capacity section, which includes the instrumental and physical daily activities of living items, and physical therapist ratings (Fillenbaum & Smyer, 1981).

Driving Cessation Questionnaire. This instrument is designed to assess a number of different aspects of older people's driving behaviour. Information to be gathered from participants includes whether a person is currently driving or not, duration of time since cessation, beliefs surrounding future cessation, current driving patterns, reasons for driving cessation, and preparation for driving cessation. Other information that is asked is

participant's support systems as it pertains to fulfilling transportation needs, use of alternate transportation, and transportation services available. The instrument will also assess participant's ratings of the importance of maintaining driving and their level of driving satisfaction. The questionnaire is divided into two parts and each participant is instructed, after answering the initial gate question, to complete one of two versions depending on whether they are still driving or if the person drove in the past but does not presently. The current driver's version is composed of 19 items and the version for people who have stopped driving is composed of 12 items. The Driving Cessation Questionnaire is the product of amalgamating questions from both the Older and Wiser Driver Recruitment Flyer (Tuokko, 2003) and a telephone survey from a study examining premature reductions and cessation of driving conducted by the Highway Safety Research Center, University of North Carolina-Chapel Hill (Stutts, Wilkins, Reinfurt, Rodgman, & Van Heusen-Causey, 2001). This is a new scale and psychometric properties are not available.

Health Questionnaire. This instrument assesses people's health status and includes questions about participant's current health status, previous health status, and the presence of common health problems and medical conditions. The questionnaire also obtains information about the presence of physical pain and whether it interferes with person's activity level, mood, and enjoyment of life. The Health Questionnaire uses items from the Canadian Study of Health and Aging-2 (1997).

Life Attitude Profile (LAP). This scale has 46 items derived from seven dimensions: life purpose, existential vacuum, life control, death acceptance, will to meaning, goal seeking, and future meaning (Reker & Peacock, 1981). The present study will use the life control and life purpose dimensions; these scales have the most significant relationships to well-being

(Reker, Peacock, & Wong, 1984). The life purpose scale consists of 9-items that measure zest for life, fulfillment, and life satisfaction. Examples of items include "I have discovered a satisfying life purpose" and "Basically, I am living the kind of life I want to live". The life control scale is a 6-item measure of freedom to make all life choices, the exercise of personal responsibility, and the perception of internal control (Reker, Peacock, & Wong, 1987). Examples of items include "My life is in my hands and I am in control of it". Life Purpose is internally consistent (alpha= .83) and stable with a test-retest reliability coefficient of .83 (Reker, Peacock, & Wong, 1987). Life Control has satisfactory internal consistency (alpha=.67) and stability with a test-retest reliability coefficient of .61. Convergent validity with other life attitude measures is .66 for Life Purpose and .77 for Life Control (Reker & Peacock, 1981).

Memorial University of Newfoundland Scale of Happiness (MUNSH). The MUNSH is a measure of happiness that assesses adults of all ages (Kozma & Stones, 1988). This scale consists of 24 items composed of 5 positive affect (PA) such as "On top of the world?" and 5 negative affect (NA) type items such as "Bitter about the way your life has turned out?" These items are expected to tap a shorter temporal span with emphasis on current, transitory affective states. The MUNSH also contains items that measure a dispositional component of happiness. Seven items of general positive experience (PE), for example, "I am just as happy as when I was younger", and 7 items of general negative experience (NE), such as "Life is hard for me most of the time" make up the rest of the MUNSH. Scoring the MUNSH consists of assigning a value of two (which indicates that a statement is true for the person), one (which means the person does not know), or zero (which shows that the item does not apply to a particular person) to each item. A composite happiness score is obtained by taking the

difference between positive and negative affect states and summing them with the difference between positive and negative general experiences (i.e., (PA-NA) + (PE-NE) = MUNSH TOTAL). The total score can range from -24 to 24. The MUNSH appears to have good construct validity converging with the Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985) with a correlation of .66 (Kafka & Kozma, 2002). Alpha coefficients average .85 and test-retest-reliability coefficients are .70 (Kozma & Stones, 1980).

NEO Five-Factor Inventory (NEO-FFI). The NEO-FFI (Costa & McCrae, 1989) is a short form of Costa and McCrae's personality inventory. This scale consists of 60 items that measure all domains of the big five personality traits. The domains include Extraversion, Neuroticism, Agreeableness, Openness to Experience, and Conscientiousness. An example of an item from each domain is "I really enjoy talking to people" (Extraversion), "I often feel tense and jittery" (Neuroticism), "I try to be courteous to everyone I meet" (Agreeableness), "I'm pretty good at pacing myself so as to get things done on time" (Conscientiousness), and "I often enjoy playing with theories or abstract ideas" (Openness to Experience). The NEO-FFI provides 12 statements for each of the five factors. Items are measured on a 5-point likert-type scale, ranging from "strongly disagree" to "strongly agree". To control for acquiescence, several items are reverse keyed. The NEO-FFI demonstrates good psychometric properties. Reliabilities are in the high .80's to low .90's for both internal consistency and test-retest reliabilities (Costa & McCrae, 1985). Coefficients range in the .80's from predictive and concurrent validity studies (Kaplan & Saccuzzo, 1993). The present study is employing questions from the Extraversion and Neuroticism domains as these are the factors most relevant to the study of well-being (Diener, Suh, Lucas, & Smith, 1999).

Rotter's Internal-External Locus of Control Scale (I-E Scale). The I-E Scale assesses a person's generalized expectancies for internal versus external control of reinforcement (Rotter, 1966). The I-E Scale is a forced-choice inventory composed of 29-items; six are filler items. Scores range from 0 (indicating the highest level of internal control) to 23 (indicating the highest level of external control). To reduce the amount of time participants spend completing questionnaires filler items were not administered. Reliability coefficients are approximately .70 for Split-half, Kuder-Richardson, and retest reliabilities (Anastasi, 1988). The I-E Scale has adequate convergent validity with other measures assessing locus of control (Dag, 1991; Richards, 1985).

Satisfaction With Life Scale (SWLS). This scale consists of five items that assess a participant's satisfaction with life as a whole (Diener, Emmons, Larsen, & Griffin, 1985). Scoring consists of a 7-point likert scale with a score of 1 indicating strong disagreement with a statement and a score of 7 demonstrating strong agreement with a statement. The SWLS does not assess satisfaction with specific life domains such as health, or finances, but takes into account the fact that individuals have their own personal criteria and set of values for determining life satisfaction (Pavot & Diener, 1993). As a result, the scale allows participants to integrate and weight these domains in whatever way they chose. Examples of items include: "In most ways my life is close to my ideal". The SWLS demonstrates strong internal consistency and moderate temporal stability. Diener, Emmons, Larsen, and Griffin (1985) demonstrated an alpha coefficient of .87 and a 2-month test-retest reliability of .82. The scale appears to have adequate construct validity converging with related measures of well-being such as the Philadelphia Geriatric Morale Scale (Lawton, 1975) and Life Satisfaction Index-A (Neugarten, Havighurst, & Tobin, 1961) with correlations ranging from .65 to .81,

respectively (Pavot & Diener, 1993). The SWLS has shown to be negatively correlated (-.72) with measures of clinical distress such as the Beck Depression Inventory (Blais, Vallerand, Pelletier, & Briere, 1989).

Short Form-12 Health Survey (SF-12). This scale is a 12-item measure of health status that assesses both physical and mental health (Ware, Kosinski, & Keller, 1998). There is a separate Physical Component Summary (PCS-12) and a Mental Component Summary (MCS-12) each with their own scale scores. Four components comprise the PCS-12 and include the following: physical functioning (2 items), role limitations due to physical health problems (2 items), bodily pain (1 item), and general health (1 item). The four components of the MCS-12 are: vitality and energy/fatigue (1 item), social functioning (1item), role limitations due to emotional problems (2 items), and mental health including psychological distress and psychological well-being (2 items). The SF-12 is the abridged version of the 36-Item Short-Form Health Survey (SF-36) and retains the validity, reliability, and responsiveness of the longer version (Ware, 1988). Test-retest reliability coefficients of .88 and .89 have been reported for the PCS-12, and coefficients of .76 and .78 have been reported for the MCS-12 (Brazier, Jones, & Kind, 1993; McHorney, Kosinski, & Ware, 1994). Internal consistency reliability is not generally reported due to the heterogeneous item content of the SF-12. The PCS-12 is able to distinguish between people with poor health compared to those with good health and the MCS-12 is able to differentiate between people who are psychologically distressed and those who are not psychologically distressed (Schofield & Mishra, 1998). On 20 tests of empirical validity between groups known to differ or to change in terms of the presence of seriousness of physical and mental health conditions, self-reported 1-year changes in health, and recovery from depression relative validity estimates on the PCS-12 ranged from

.43 to .93 (median= .67); validity estimates on the MCS-12 ranged from .60 to .98 (median= .97; Ware, Kosinski, & Keller, 1996). The SF-12 demonstrates evidence of convergent validity correlating with another descriptive measure of health status, the EQ-5D (Kind, 1996). The EQ-5D visual analogue scale correlates .55 and .41 with the PCS-12 and the MCS-12, respectively (Johnson & Coons, 1998).

The PCS-12 and the MCS-12 are scored using norm-based methods. Four items (i.e., 1, 8, 9, and 10) are reverse keyed so that a lower score signifies better health. Indicator variables are developed for the item response choice categories. The indicator variables are weighted using regression coefficients from the U.S. general population and then are aggregated. A constant regression intercept is added to the aggregated PCS-12 and MCS-12 scores and the scores are then standardized to have a mean of 50 and a standard deviation of 10 in the general U.S. population.

Geriatric Depression Scale Short Form (GDS-SF). This scale consists of 15-items assessing depression in older people 55+ years of age (McDowell & Newell, 1996; Sheikh & Yesavage, 1986; Weintraub, Saboe, & Matthew, 2007). The GSD-SF is a shortened version of the Geriatric Depression Scale (GDS; Brink, Yesavage, Lum, Heersma, Adey, & Rose, 1982). Both the GDS and GDS-SF do not rely on somatic symptoms that are less useful in diagnosing depression in older populations. Somatic symptoms are less useful because somatic disturbances are common in non-depressed older persons (Brink, Yesavage, Lum, Heersema, Adey, & Rose, 1982; Yesavage, Brink, Rose, Lum, Huang, Adey, & Leirer, 1983). Participants are asked to answer items with reference to how they have felt in the past week. Participants are asked to indicate either "Yes" or "No" to items. Of the 15 items, 10 indicate the presence of depression when answered positively, while the rest (i.e., 1, 5, 7, 11, and 13)

indicate depression when answered negatively (Sheikh & Yesavage, 1986). Scores range from 0 to 15 indicating the number of symptoms endorsed by a participant. Those who score from 0 to 4 symptoms are considered normal, those who score 5 to 9 symptoms are considered mildly depressed, and 10 to 15 indicates moderately to severely depressed (Alden, Austin, & Sturgeon, 1989). Examples of items include "Have you dropped many of your activities and interests?" and "Do you feel that your situation is hopeless?" The GDS-SF demonstrates good psychometric properties. The alpha coefficient is .82 (Iglesias, 2004). The GDS-SF appears to have adequate construct validity converging with the Zung Self-Rating Depression Scale (Zung, 1965) with a correlation of .76 (Iglesias, 2004). Correlations between the GDS and the GDS-SF are .84 and .89 in two studies (Lesher & Berryhill, 1994; Sheikh & Yesavage, 1986).

Design

This study employed a cross-sectional design. This study was the first phase of a larger study examining driving in older persons.

Statistical Analyses

Data were analyzed using Statistical Package for the Social Sciences-Version 16.0 (SPSS).

To examine whether group differences exist as a function of driving status group means testing was conducted using independent samples t-test procedures. Group differences on the following variables were examined: age, education, functional ability, income, and physical health. Group differences on personality traits, psychological resources, and measures of depression and subjective well-being were also examined. Gender differences in driving status were also tested using chi-square analysis for categorical variables.

To identify predictors of driving cessation and anticipation of driving cessation data were analyzed using logistic multiple regression procedures. Logistic regression is a form of regression which is used when the dependent variable is a dichotomy (driver/non-driver) and the independent variables are of any type, categorical or continuous (Garson, 2008b). Whereas procedures such as the t-test also test for differences between groups these procedures are limited to two variables and don't allow the researcher to examine multiple variables at once. Logistic regression aims to find a relationship between an outcome and several possible predictor variables. It adds to the analyses by predicting an outcome from an array of variables. The variables were added using a hierarchical approach; this approach is appropriate in situations where variables are selected on some empirical or theoretical basis (Garson, 2008b). The first set of variables was chosen as they are known to predict driving cessation. The theoretical and empirical rationale for including personality traits and psychological resources is based on literature demonstrating how these variables have a role in people's reactions to life events and people's subjective well-being.

Current cessation and whether a driver expects to cease driving in 2 years or 5 years were the dependent variables. The first block entered into the regression model included the following variables: age, education, gender, income, objective indicators of health (number of health conditions), self-report health variables, and functional ability. After the first block of variables was entered, psychological variables were added to the regression model. The personality trait variables were neuroticism and extraversion and the psychological resource variables were life control, locus of control, and life purpose. Remember that part of the second aim was to enhance prediction of driving cessation over and above the first block of variables. To determine whether each block of variables made a significant and unique

contribution to the prediction of the dependent variable omnibus tests of model coefficients were reported. The omnibus test may be interpreted as a test of the capability of all predictors in the model jointly to predict the dependent variable. A finding of significance corresponds to a conclusion that there is adequate fit of the data to the model and therefore at least one of the predictors is significantly related to the dependent variable. To obtain a measure of effect size of each block of variables Nagelkerke's R^2 was reported (Nagelkerke, 1991). This provides an indication of the contribution a block of variables make to the prediction of driving cessation. The probability of Type I error was set at .05 for all analyses.

To determine whether comprehensive measures provide a more assessment of the impact of driving cessation on subjective well-being, canonical correlation procedures were used. Whereas multiple regression is used for one dependent variable and multiple independent variables, canonical correlation is used for many dependent variables and many independent variables relationships; for instance, a set of variables associated with driving cessation and a set of subjective well-being measures. According to Garson (2008a), "each set may be considered a latent (canonical) variable based on measured indicator variables in its set". Similar to factor analysis, the individual correlation coefficients of each variable provide an indication of how strongly it relates to its respective canonical variable (Statsoft, 2008). In this manner, the canonical correlation is optimized such that the linear correlation between the two latent variables is maximized (Statsoft, 2008). The purpose of canonical correlation is to explain the relation of the two sets of variables. In addition, an estimate of the variance predicted from one set of variables (one canonical variable) by the other set of variables (a second canonical variable) can be obtained from the canonical correlation. To extract a measure of the magnitude of the relationship a redundancy statistic is reported (Alpert &

Peterson, 1972). A redundancy coefficient measures the percent of the variance of the original variables of one set that may be predicted from a canonical variable from the other set (Alpert & Peterson, 1972). High redundancy means high ability to predict. In the current study, the focus is on how well the independent canonical variable predicts values of the dependent canonical variable.

To identify variables that moderate the relationship between driving cessation and subjective well-being, multivariate linear regression procedures were employed. The variables that were examined include age, demographic variables, functional ability, health variables, personality traits, and psychological resource variables. The outcome was a measure of subjective well-being (MUNSH). To construct the regression model, the driving status variable was entered first. Second, an independent variable such as age, education, income, functional ability, physical health, life control and life purpose, locus of control, extraversion, or neuroticism was entered. In the final step, a variable representing the interaction between driving status and the independent variable was entered. The interaction was calculated by multiplying driving status by the independent variable. A moderator influence was determined by examining whether the change in R^2 indicates a significant percentage of the variance when the interaction term is included in the regression equation.

Results

Sample Characteristics

Total Sample

Overall, 223 participants ranging in age from 55 to 91 years, were included in the final sample. Forty-one questionnaires were not included because of missing data. Data on response rates were not obtained.

Of the final sample, 29 (13.1%) were non-drivers and the remaining 193 (86.9%) were drivers. The mean age of the sample was seventy-two ($M = 72.20$, $S.D. = 8.81$). Close to fifty-five percent (54.7%) were female and 45.3% were male. The mean number of years of education was nearly 14 years ($M = 13.86$, $S.D. = 3.61$) and the mean income level was in the $31,000-$40,999 income range on the demographic questionnaire (See Appendix B). A majority of the participants who completed the paper version of the questionnaire were from Winnipeg, Manitoba (61.8%). Twenty-six percent of participants are from Thunder Bay, Ontario. People from areas other than Winnipeg or Thunder Bay composed 2.8% of total participants. Approximately nine percent (9.4%) of the sample completed an internet version of the questionnaire (http://flash.lakeheadu.ca/~gjkafka/).

A significant percentage of participants were married (55.4%). Twenty-seven percent of participants were widowed, 14.9% were divorced or separated, and 2.7% were single. With respect to geographic location, almost eighty percent of participants lived in an urban centre with a population over 100,000 people. Ten percent of participants lived in a location with a population between 50,000-100,000 people and 2.7% percent of participants lived in a location with a population between 10,000-50,000 people. A relatively small percentage

(7.8%) of participants was recruited from rural areas. Descriptive statistics for all the participants are presented in Table 1

Table 1

Descriptive Statistics of Participants

	Total Sample			Drivers			Non-Drivers		
Variable	Mean (SD)	Range	N	Mean (SD)	Range	N	Mean (SD)	Range	N
ADL Total	24.52 (3.20)	14-26	221	24.76 (3.04)	14-26	192	22.90 (3.74)	15-26	29
Age	72.20 (8.82)	55-91	222	71.44 (8.59)	55-91	193	77.28 (8.74)	59-88	29
Education	13.86 (3.61)	5-24	222	14.09 (3.47)	6-24	193	12.28 (4.20)	5-23	29
Extraversion	29.18 (5.67)	12-43	217	29.52 (5.54)	15-43	188	26.97 (6.01)	12-42	29
GDS	2.09 (2.67)	0-13	208	1.80 (2.41)	0-13	184	4.33 (3.46)	0-13	24
Health These Days	1.89 (.74)	1-5	222	1.83 (.71)	1-5	193	2.31 (.80)	1-5	29
Income	4.64 (2.08)	1-10	222	4.78 (2.10)	1-10	193	3.69 (1.67)	2-7	29
Life Control	10.20 (2.43)	2-12	219	10.35 (2.40)	2-12	190	9.24 (2.44)	4-12	29
Life Purpose	13.20 (3.60)	1-16	219	13.65 (3.13)	3-16	190	10.21 (4.86)	1-16	29
Locus of Control	8.01 (3.89)	0-20	216	7.77 (3.75)	0-20	189	9.67 (4.48)	0-18	27
MUNSH Total	16.02 (9.85)	-24-24	198	16.93 (9.00)	-24-24	175	9.04 (13.05)	-17-24	23
MUNSH PE	11.61 (3.25)	0-14	209	11.84 (3.11)	0-14	184	9.92 (3.78)	3-14	25

* Higher scores are better for: ADL, Education, Income, Life Control, Life Purpose, MUNSH Positive Affect (PA), MUNSH Positive Experience (PE), MUNSH Total, SWLS, Extraversion; Physical and Mental Health (SF-12) ; Lower scores are better for Depression (GDS), Locus of Control (LOC), MUNSH Negative Affect (NA), MUNSH Negative Experience (NE), Neuroticism, Health These Days, and Number of Health Conditions

Table 1 continued

Descriptive Statistics of Participants

	Total Sample			Drivers			Non-Drivers		
Variable	Mean (SD)	Range	N	Mean (SD)	Range	N	Mean (SD)	Range	N
MUNSH NE	2.06 (2.96)	0-14	209	1.73 (2.63)	0-14	181	4.18 (3.97)	0-12	28
MUNSH PA	8.10 (2.59)	0-10	210	8.28 (2.50)	0-10	184	6.85 (2.92)	1-10	26
MUNSH NA	1.78 (2.69)	0-10	210	1.42 (2.30)	0-10	183	4.22 (3.76)	0-10	27
Neuroticism	15.67 (7.77)	0-42	217	15.28 (7.70)	0-42	188	18.21 (7.89)	3-40	29
SWLS	24.92 (6.78)	5-35	217	25.18 (6.71)	5-35	189	23.14 (7.09)	8-35	28
SF-12 PCS	44.63 (10.37)	17-65	222	45.78 (9.95)	19-65	193	36.94 (9.98)	17-57	29
SF-12 MCS	53.64 (8.27)	21-70	222	53.88 (7.81)	21-70	193	52.02 (10.84)	22-69	29
Total # of Health Conditions	3.74 (2.85)	0-14	222	3.40 (2.69)	0-14	193	6.00 (2.87)	0-11	29

* Higher scores are better for: ADL, Education,; Income, Life Control, Life Purpose, MUNSH Positive Affect (PA), MUNSH Positive Experience (PE), MUNSH Total, SWLS, Extraversion; Physical and Mental Health (SF-12) ; Lower scores are better for Depression (GDS), MUNSH Negative Affect (NA), MUNSH Negative Experience (NE), Neuroticism, Health These Days and Number of Health Conditions

Sample Characteristics of Drivers

One hundred ninety-three participants ranging in age from 55 to 91 years were included in the final sample. The mean age of the sample was seventy-one years of age (M = 71.44, $S.D.$ = 8.59). Close to fifty-five percent (54.6%) were female and 45.4% were male. The mean number of years of education was above 14 years (M = 14.09, $S.D.$ = 3.47) and the

mean income level ($M = 4.78$, *S.D.* = 2.10) corresponds roughly to the $31,000-$40,999 income range on the demographic questionnaire. Descriptive statistics for drivers are presented in Table 1.

Sample Characteristics of Non-Drivers

Thirty participants ranging in age from 59 to 88 years were included in the final sample. The mean age of the sample was approximately 77 years old ($M = 77.28$, *S.D.* = 8.74). Fifty-five percent (55.2%) were female and 44.8% were male. The mean number of years of education was above 12 years ($M = 12.28$, *S.D.* = 4.20) and the mean income level ($M = 3.69$, *S.D.* = 1.67) corresponds roughly to the $21,000-$30,999 income range (See Appendix B). Descriptive statistics for non-drivers are in Table 1.

Group Differences

The first aim involved examining if group differences exist as a function of driving status. This study extends past research looking at group differences between drivers and non-drivers by examining whether group differences exist on personality trait and psychological resource variables.

Driving Status Groups. Drivers and non-drivers differed significantly on a number of variables including age, level of functional ability, education and income levels, and physical health. Group differences were observed on personality trait and psychological resources variables, and outcomes such as depression and level of subjective well-being (Table 2). Geographical location was not examined due to the small percentage (8%) of participants from rural areas.

Drivers, compared to non-drivers, were younger ($M = 71.44$, *S.D.* = 8.59, $M = 77.28$, *S.D.* = 8.74, $t = 3.40$, $df = 220$, $p < .001$), more educated ($M = 14.09$, *S.D.* = 3.47, $M = 12.28$,

S.D. = 4.20, t = -2.55, df = 220, $p < .05$) and had higher incomes (M = 4.78, *S.D.* = 2.10, M = 3.69, *S.D.* = 1.67, t = -2.67, df = 220, $p < .01$). Drivers also reported higher functional ability (M = 24.76, *S.D.* = 3.04, M = 22.90, *S.D.* = 3.74, t = -2.97, df = 219, $p < .01$), and better self-reported physical health (M = 1.83, *S.D.* = .71, M = 2.31, *S.D.* = .80, t = 3.33, df = 220, $p < .001$; M = 45.78, *S.D.* = 9.95, M = 36.94, *S.D.* = 9.98, t = -4.45, df = 220, $p < .05$). Drivers reported fewer health conditions than non-drivers (M = 3.40, *S.D.* = 2.69, M = 6.00, *S.D.* = 2.87, t = 4.79, df = 220, $p < .001$). Moreover, drivers also indicated higher scores than non-drivers on scales measuring psychological resource variables. Drivers scored higher on both life control (M = 10.35, *S.D.* = 2.40, M = 9.24, *S.D.* = 2.44, t = -2.30, df = 217, $p < .05$) and life purpose (M = 10.36, *S.D.* = 2.42, M = 9.24, S.D. = 2.44, t = -5.07, df = 217, $p < .001$), and had a more internal locus of control (M = 7.77, *S.D.* = 3.75, M = 9.67, *S.D.* = 4.48, t = 2.39, df = 214, $p < .05$). In terms of personality traits, drivers scored significantly higher on a measure of extraversion, compared to non-drivers (M = 29.52, *S.D.* = 5.54, M = 26.97, *S.D.* = 6.01, t = -2.27, df = 215, $p < .05$). Drivers scored lower on the GDS (M = 1.80, *S.D.* = 2.41, M = 4.33, *S.D.* = 3.46, t = 4.57, df = 206, $p < .001$) and had higher scores on the MUNSH Total (M = 16.93, *S.D.* = 9.00, M = 9.04, *S.D.* = 13.05, t = -3.72, df = 196, $p < .001$). The drivers' group also scored higher on both positive components of the MUNSH, positive affect (M = 8.28, *S.D.* = 2.50, M = 6.85, *S.D.* = 2.92, t = - 2.68, df = 208, $p < .01$) and positive experience (M = 11.84, *S.D.* = 3.11, M = 9.92, *S.D.* = 3.78, t = -2.81, df = 207, $p < .01$). Driver's scored lower on the negative components of the MUNSH (negative affect, M = 1.42, *S.D.* = 2.30, M = 4.22, *S.D.* = 3.76, t = 5.37, df = 208, $p < .001$; negative experience, M = 1.73, *S.D.* = 2.63, M = 4.18, *S.D.* = 3.97, t = 4.22, df = 207, $p < .001$).

A chi-square test of association was conducted to determine whether there were any gender differences in driving cessation. There was no significant difference between females and males in terms of driving status ($\chi = 0.006$, $df = 1$, $p = .93$).

Table 2

Mean Comparisons between Drivers and Non-drivers

Variable	Mean Difference	T	df	p
ADL Total	-1.86	-2.97	219	<.01
Age	5.85	3.40	220	<.001
Education	-1.81	-2.55	220	<.05
Extraversion	-2.55	-2.27	215	<.05
GDS	2.53	4.57	206	<.001
Health These Days	0.48	3.33	220	<.001
Income	-1.09	-2.67	220	<.01
Life Control	-1.10	-2.30	217	<.05
Life Purpose	-3.44	-5.07	217	<.001
Locus of Control	1.89	2.39	214	<.05
MUNSH Total	-7.88	-3.72	196	<.001
MUNSH PE	-1.91	-2.81	207	<.01
MUNSH NE	2.44	4.22	207	<.001
MUNSH PA	-1.43	-2.68	208	<.01
MUNSH NA	2.80	5.37	208	<.001
Neuroticism	2.92	1.89	215	.059
SWLS	-2.03	-1.48	215	.13
SF-12 PCS	-8.83	-4.45	220	<.001
SF-12 MCS	-1.86	-1.13	198	.25
Total # of Health Conditions	2.59	4.79	220	<.001

To examine anticipation of driving cessation further distinctions were made among current drivers. From the Driving Questionnaire-Drivers Version two questions were used to indicate whether someone anticipated driving cessation. On one question, drivers were asked whether "they planned to stop driving in the next 2 years". Participants who answered the following: "definitely", "probably", or "maybe/maybe not" made up a group of drivers anticipating driving cessation in 2 years. Participants who answered "probably not" or "definitely not" made up the group of drivers who did not anticipate driving cessation in 2 years. The decision to split the groups in this way was for statistical reasons. Not combining undecided participants with drivers anticipating cessation in 2 years would have resulted in a sample size much too small to draw any meaningful conclusions.

There were significant group differences between drivers anticipating driving cessation in 2 years and drivers not anticipating driving cessation in 2 years (See Table 3). Those who anticipated driving in the next 2 years were younger ($M = 69.61$, $S.D. = 7.85$, $M = 79.59$, $S.D. = 6.83$, $t = 6.68$, $df = 188$, $p < .001$), had higher income ($M = 4.94$, $S.D. = 2.14$, $M = 3.88$, $S.D. = 1.54$, $t = -2.68$, $df = 188$, $p < .01$), and experienced better health, as measured by the SF-12 ($M = 46.75$, $S.D. = 9.75$, $M = 39.28$, $S.D. = 10.85$, $t = -3.87$, $df = 188$, $p < .001$), a self-reported health measure (health these days; $M = 1.76$, $S.D. = .70$, $M = 2.31$, $S.D. = .78$, $t = 3.95$, $df = 188$, $p < .001$), and the number of health conditions a participant reported ($M = 3.03$, $S.D. = 2.35$, $M = 5.00$, $S.D. = 2.94$, $t = 4.13$, $df = 188$, $p < .001$).

To test whether males were more likely to report they would be driving in 2 years a chi-square test of association for frequency data was conducted. There was no significant difference between females and males in terms of anticipation of driving cessation in 2 years ($\chi = 0.71$, $df = 1$, $p = .39$).

Table 3

Mean Comparisons-Current Drivers Likely To/Not Likely To Cease Driving in 2 Years

Variable	Mean Difference	t	df	p
ADL Total	0.46	0.76	188	.44
Age	9.98	6.68	189	<.001
Education	-1.07	-1.59	188	.11
Extraversion	-0.84	-0.78	185	.43
GDS	0.67	1.36	179	.17
Health These Days	0.55	3.95	188	<.001
Income	-1.06	-2.68	188	<.01
Life Control	-0.06	-0.14	186	.88
Life Purpose	0.35	0.56	186	.57
Locus of Control	0.22	0.29	186	.76
MUNSH Total	0.02	0.01	170	.99
MUNSH PE	-0.11	-0.19	179	.84
MUNSH NE	0.27	0.52	176	.59
MUNSH PA	-0.14	-0.29	179	.77
MUNSH NA	-0.21	-0.46	178	.64
Neuroticism	1.77	1.16	185	.24
SWLS	-0.36	-0.28	184	.77
SF-12 PCS	-7.47	-3.87	188	<.001
SF-12 MCS	-0.70	-0.46	188	.64
Total # of Health Conditions	1.96	4.13	188	<.001

With respect to anticipation of driving cessation, participants were also asked whether they "expect to be driving 5 years from now". Participants who answered either "probably", "definitely", or "unsure" were combined to make a group composed of drivers anticipating driving in 5 years. On the other hand, participants who answered "probably not", or "definitely not" were combined to make a group composed of drivers who anticipated that they would cease driving in 5 years. The decision to split the groups in this way was for statistical reasons. Not combining undecided participants with drivers anticipating driving in 5 years would have resulted in a sample size much too small to draw any meaningful conclusions.

Mean comparisons between drivers anticipating driving in 5 years and drivers not anticipating driving in 5 years are presented in Table 4. Drivers who anticipated driving in 5 years were younger ($M = 69.54$, $S.D. = 7.14$, $M = 75.71$, $S.D. = 9.80$, $t = 4.82$, $df = 188$, $p < .01$), had better functional ability ($M = 25.51$, $S.D. = 1.83$, $M = 22.91$, $S.D. = 4.38$, $t = -5.78$, $df = 188$, $p < .001$), were more extraverted ($M = 30.09$, $S.D. = 5.35$, $M = 28.28$, $S.D. = 5.58$, $t = -2.05$, $df = 184$, $p < .05$), and had lower depression scores ($M = 1.50$, $S.D. = 2.25$, $M = 2.73$, $S.D. = 2.72$, $t = 3.04$, $df = 179$, $p < .01$). Furthermore, drivers anticipating that they would be driving in 5 years reported higher scores on measures of life control ($M = 10.60$, $S.D. = 2.32$, $M = 9.83$, $S.D. = 2.40$, $t = -2.03$, $df = 186$, $p < .05$), life purpose ($M = 14.18$, $S.D. = 2.52$, $M = 12.43$, $S.D. = 4.05$, $t = -3.57$, $df = 186$, $p < .001$), and health, as measured by the SF-12 ($M = 47.33$, $S.D. = 9.19$, $M = 41.06$, $S.D. = 11.13$, $t = -4.00$, $df = 188$, $p < .001$), a self-report item ($M = 1.71$, $S.D. = .65$, $M = 2.16$, $S.D. = .81$, $t = 4.01$, $df = 188$, $p < .001$), and number of health conditions ($M = 2.98$, $S.D. = 2.41$, $M = 4.49$, $S.D. = 2.82$, $t = 3.72$, df

= 188, p <.001. Drivers expecting to be driving in 5 years demonstrated significantly higher MUNSH scores (M = 18.02, *S.D.* = 8.03, M = 14.10, *S.D.* = 10.74, t = -2.64, df = 170, p <.01) as well as higher scores on the positive affect (M = 8.57, *S.D.* = 2.11, M = 7.51, *S.D.* = 3.17, t = -2.62, df = 179, p <.01) and positive experience (M = 12.26, *S.D.* = 2.86, M = 10.79, *S.D.* = 3.48 , t = -2.93, df = 179, p <.01) subscale scores on the MUNSH. These same drivers scored significantly lower on the negative affect (M = 1.25, *S.D.* = 2.13, M = 2.02, *S.D.* = 2.77, t = 2.00, df = 178, p <.05) and negative experience (M = 1.46, *S.D.* = 2.39, M = 2.40, *S.D.* = 3.10, t = 2.18, df = 176, p <.05) subscales on the MUNSH.

To test whether males were more likely to report they would be driving in 5 years a chi-square test of association for frequency data was conducted. There was no gender difference in terms of anticipating driving cessation in 5 years (χ = 0.36, df = 1, p = .54).

Table 4

Mean Comparisons-Current Drivers Likely To/Not Likely To Cease Driving in 5 Years

Variable	Mean Difference	t	Df	P
ADL Total	-2.60	-5.78	188	<.001
Age	6.16	4.82	188	<.001
Education	-0.70	-1.24	188	.21
Extraversion	-1.80	-2.05	184	<.05
GDS	1.23	3.04	179	<.01
Health These Days	0.45	4.01	188	<.001
Income	-0.14	-0.43	188	.66
Life Control	-0.77	-2.03	186	<.05
Life Purpose	-1.75	-3.57	186	<.001
Locus of Control	0.35	0.58	185	.56
MUNSH Total	-3.92	-2.64	170	<.01
MUNSH PE	-1.46	-2.93	179	<.01
MUNSH NE	0.94	2.18	176	<.05
MUNSH PA	-1.06	-2.62	179	<.01
MUNSH NA	0.77	2.00	178	<.05
Neuroticism	1.88	1.49	184	.13
SWLS	-1.77	-1.68	184	.09
SF-12 PCS	-6.26	-4.00	188	<.001
SF-12 MCS	-2.10	-1.67	188	.09
Total # of Health Conditions	1.51	3.72	188	<.001

With respect to the first aim of the study group differences existed between drivers and non-drivers on age, demographics, functional ability, health, and psychological variables. Significant group differences also existed among drivers with respect to anticipation of driving cessation. Drivers anticipating cessation in 2 years exhibited significant differences on demographics and health variables. However, there was no group difference with respect to people's functional ability, psychological resource or personality trait variables. Group differences in subjective well-being were also not observed.

On the other hand, when comparisons were made between those drivers anticipating driving in 5 years and those anticipating driving cessation in 5 years the pattern of differences were similar to analyses between current drivers and non-drivers. Significant group differences were reported for demographic variables, health variables, functional ability, personality traits and psychological resources variables, and measures of well-being.

Predictors of Driving Cessation

The second aim of the study was to identify independent predictors of driving cessation. The predictors were selected from an array of variables that included personality traits and psychological resources. It was predicted that personality traits and psychological resources would have significant and unique effects over and above other variables known to predict driving cessation. Logistic regression procedures were used with an "Enter" method in a hierarchical fashion to add variables to the regression model.

Crude unadjusted odds ratios were computed first. Crude unadjusted odds ratio demonstrate the relationship of a predictor to an outcome. Odds ratio were computed for the following variables: age, education, gender, income, self-reported health ("health these days", SF-12), total number of physical health conditions, and functional ability. These variables

were selected because of their relationship to driving cessation (Campbell, Bush, & Hale, 1993; Marotolli, Mendes, de Leon, Glass, Williams, Cooney, Berkman, & Tinetti, 1997). Crude unadjusted odds ratios were also computed for psychological resource variables (life control, life purpose, and locus of control) and personality traits (extraversion and neuroticism). Although there is little research looking at driving cessation and psychological variables other research shows that these variables types predict people's reactions to life events. In particular, these variables may affect how people cope, interpret life events, or the emotional states people experience (Cohen & Hebert, 1996; Emmons & Diener, 1986; Headey & Wearing, 1989). Therefore, personality traits and psychological resources may help predict their reaction to driving cessation, another type of life event. The probability of a Type I error was set at .05 for this and all subsequent analyses.

After crude unadjusted odds ratios were obtained adjusted odds ratios where calculated by including all variables in the regression model regardless of significance level. By examining all the variables at the same time the most relevant predictors of driving cessation can be identified. To determine whether psychological variables make a unique contribution to the prediction of driving cessation the variables were added in two blocks. The first block consisted of age, demographics, functional ability, and health measures. The second block included personality trait and psychological resource variables. The decision to include the array of variables was based on research demonstrating their relevance for driving cessation and theoretical knowledge demonstrating the importance psychological variables play in people's reactions to life events.

To detect multi-collinearity, a correlation matrix was computed to determine inter-correlation among variables (See Table 5). One way to address multicollinearity is to look at

the correlation coefficients of variables and eliminate those that are highly correlated. Typically, a value ranging from .60 to .70 is set as the cutoff (Pedhazur & Schmelkin, 1991). For the present study, the cutoff was set at .60. If a correlation was higher than .60, one of the variables was eliminated to ensure there are no redundant measures of a construct. Results indicate that all correlations were below .60.

Table 5

Correlation Coefficients for Variables in the Logistic Regression Analyses

Variable	ADL	Age	Education	Gender	NEO-E	Health These Days	Income	Life Control	Life Purpose	LOC	MCS SF-12	NEO-N	PCS SF-12	# of Health Conditions
ADL	1.00	.13*	-.00	.03	.10	-.26**	.01	.10	.28**	-.09	.14*	-.14**	.17*	-.22**
AGE	.13*	1.00	-.16*	.05	.00	.07	-.18*	.48	.00	-.09	.04	-.02	-.16*	.21**
Education	-.00	-.16*	1.00	.06	.07	-.12	.46**	.09	.12	-.02	-.15*	-.19**	.18**	.19**
NEO-E	.10	.00	.07	.03	1.00	-.23**	.15*	.35**	.50**	-.14*	.26**	-.50**	.13	.14*
Health These Days	-.26*	.07	-.12	-.07	-.23**	1.00	-.13*	-.16*	-.32**	.06	-.22**	.24**	.51**	.52**
Income	.01	-.18*	.46**	-.24**	.15*	-.13*	1.00	.05	.08	-.04	.15*	-.21**	.20**	-.22**
Life Control	.10	.48	.09	-.01	.35**	-.16*	.05	1.00	.46*	-.20**	.29**	-.37**	.06	-.16*
Life Purpose	.28**	.00	.12	.06	.50**	-.32**	.08	.46*	1.00	-.25**	.53**	-.45*	.17*	-.26**
LOC	-.09	-.09	-.02	.14*	-.14*	.06	-.04	-.20**	-.25**	1.00	-.16*	.32**	-.03	.08
MCS-12	.14*	.04	-15*	.03	.26**	-.22**	.15*	.29**	.53**	-.16*	1.00	-.51**	-.05	-.24**
NEO-N	-.14*	-.02	-.19**	-.02	-.50**	.24**	-.21**	-.37**	-.45*	.32**	-.51**	1.00	.29**	.29**
PCS-12	.17*	-.16*	.18**	.004	.13	.51**	.20**	.06	.17*	-.03	-.05	.29**	1.00	-.54**
# Health Conditions	.22**	.21**	.19**	.08	.14*	.52**	-.22**	-.16*	-.26**	.08	-.24**	.29**	-.54**	1.00

* <.05 ** <.01

Crude Unadjusted Odds Ratios of Driving Cessation

Results indicated that older age (OR = 0.67, 95% CI = 0.52-0.85), poor physical health by self-report (SF-12 PCS; OR = 1.08, 95% CI = 1.04-1.12; health these days; OR = 0.45, 95% CI = 0.27-0.53), and total number of health conditions (OR = 0.75, 95% CI = 0.65-0.85) predicted driving cessation. Lower income and education level increased risk of driving cessation (OR = 1.17, 95% CI = 1.03-1.32; OR = 1.36, 95% CI = 1.07-1.72) as did lower functional ability (OR = 1.14, 95% CI = 1.04-1.26).

Psychological resource variables also predicted driving cessation. Lower scores on measures of extraversion (OR = 1.08, 95% CI = 1.01-1.16), life control (OR = 1.06, 95% CI = 1.03-1.16), and life purpose (OR = 1.24, 95% CI = 1.12-1.36) increased risk of driving cessation. People with a more external locus of control were also at higher risk for driving cessation (OR = 1.17, 95% CI = 1.02-1.35). Refer to Table 6.

Table 6

Crude Unadjusted Odds Ratios of Driving Cessation

Variable	Unadjusted Odds Ratio	95% Confidence Interval	p
ADL Total	1.14	1.04-1.26	<.01
Age	0.67	0.52-0.85	<.001
Education	1.36	1.07-1.72	<.01
Extraversion	1.08	1.01-1.16	<.05
Gender	0.96	0.44-2.12	.93
Health These Days	0.45	0.27-0.53	<.001
Income	1.17	1.03-1.32	<.05
Life Control	1.06	1.03-1.16	<.05
Life Purpose	1.24	1.12-1.35	<.001
Locus of Control	1.17	1.02-1.35	<.05
Neuroticism	0.95	0.90-1.00	.27
SF-12 PCS	1.08	1.04-1.12	<.001
SF-12 MCS	1.02	0.98-1.07	.78
Total Number of Health Conditions	0.75	0.65-0.85	<.001

Logistic Regression Analysis of Driving Cessation

According to the omnibus test of model coefficients, the overall regression model was significant ($\chi^2 = 50.62$, $df = 14$, $p < .001$). The omnibus tests for the first and second block of variables were also significant ($\chi^2 = 36.37$, $df = 9$, $p < .001$, $\chi^2 = 14.24$, $df = 9$, $p < .001$). In the final model, the following variables made a significant independent contribution to predicting driving cessation: age, life purpose, and locus of control. Increased age (OR = 0.65, 95% CI = 0.47-0.91), lower scores on a measure of life purpose (OR = 1.21, 95% CI = 1.01-1.46), and possessing a more external locus of control (OR = 0.86, 95% CI = 0.75-0.99) were all risk factors for driving cessation. The results of the analysis are presented in Table 7.

With respect to the second aim of the study, the hypothesis was supported. Psychological variables did make a significant unique contribution to the prediction of driving cessation over and above age, health variables, demographics, and functional ability. The first block of variables accounted for twenty-nine percent of the variance in driving cessation (Nagelkerke's $R^2 = .29$). Personality traits and psychological resource variables accounted for a further 10% of the variance in driving cessation (Nagelkerke's $R^2 = .39$).

Table 7

Logistic Regression Analysis of Driving Cessation

Variable	Adjusted Odds Ratio	95% Confidence Interval	p
Block 1			
ADL Total	1.12	0.97-1.30	.11
Age	0.65	0.47-0.91	<.05
Education	1.02	0.87-1.20	.77
Gender	0.91	0.32-2.63	.91
Health These Days	1.28	0.54-3.03	.56
Income	1.19	0.86-1.65	.27
SF-12 MCS	0.96	0.89-1.04	.36
SF-12 PCS	1.05	0.99-1.12	.08
Total Number of Health Conditions	0.84	0.68-1.03	.09
Block 2			
Extraversion	1.06	0.94-1.18	.31
Life Control	0.94	0.73-1.21	.65
Life Purpose	1.21	1.01-1.46	<.05
Locus of Control	0.86	0.75-0.99	<.05
Neuroticism	1.01	0.92-1.11	.76
OMNIBUS TEST	CHI-SQUARE	DF	P
Step1 Block	36.37	9	<.001
Step 2 Block	14.24	9	<.001
Model	50.62	14	<.001
	NAGELKERKE R^2		
Step 1 Block R^2	.29		
Step 2 Block R^2	.39		

Crude Unadjusted Odds Ratios for Predictors of Driving Cessation in 2 Years

Crude unadjusted odds ratios indicate that lower self-reported health (health these days, OR = 0.39, 95% CI = 0.23-0.66; SF-12 PCS, OR = 1.07, 95% CI = 1.03 = 1.11) and higher total number of medical conditions (OR = 0.75, 95% CI = 0.65-0.87) increase the risk that a driver will anticipate driving cessation in 2 years. Lower income was also a risk factor for anticipating driving cessation in 2 years (OR = 1.34, 95% CI = 1.07-1.67). Refer to Table 8.

Table 8

Crude Unadjusted Odds Ratios of Driving Cessation in 2 Years

Variable	Unadjusted Odds Ratio	95% Confidence Interval	p
ADL Total	1.03	0.82-1.30	.76
Age	0.61	0.36-1.02	.06
Education	1.12	0.87-1.45	.36
Extraversion	0.96	0.82-1.11	.59
Gender	0.72	0.03-1.54	.39
Health These Days	0.03	0.02-0.06	<.001
Income	1.34	1.07-1.61	<.05
Life Control	0.97	0.68-1.39	.89
Life Purpose	1.04	0.83-1.32	.68
Locus of Control	0.95	0.77-1.17	.67
Neuroticism	1.00	0.90-1.12	.88
SF-12 PCS	1.07	1.03-1.11	<.001
SF-12 MCS	1.01	0.91-1.11	.85
Total Number of Health Conditions	0.75	0.65-0.87	<.001

Logistic Regression Analysis of Driving Cessation in 2 Years

According to the omnibus test of model coefficients, a model including only the first block of variables made a significant contribution to predicting anticipation of driving cessation in 2 years ($\chi^2 = 62.89$, $df = 9$, $p < .001$). Psychological variables did not make a statistically significant contribution to predicting anticipation of driving cessation in 2 years ($\chi^2 = 5.71$, $df = 5$, $p = .33$). In the first block, three variables made a significant unique contribution towards explaining anticipation of driving cessation in 2 years. Age, income, and self-reported health were related to anticipation of driving cessation in 2-years. Specifically increased age (OR = 0.33, 95 CI% = 0.20- 0.52), lower income (OR = 1.56, 95% CI = 1.02-2.37) and poor physical health (OR = 0.19, 95 CI% = 0.05-0.69) increased the risk of people anticipating driving cessation in 2 years. See Table 9.

With respect to the second aim of the study, the hypothesis was not supported. Psychological variables did not make a significant unique contribution to the prediction of anticipation of driving cessation in 2 years over and above age, health, demographics, and functional ability. The first block of variable accounted for forty-nine percent of the variance (Nagelkerke's $R^2 = .49$). Adding personality trait and psychological resource variables to the model only added 4% to the total amount of variance explained (Nagelkerke's $R^2 = .53$).

Table 9

Logistic Regression Analysis of Driving Cessation in 2 Years

Variable	Adjusted Odds Ratio	95% Confidence Interval	p
Block 1			
ADL Total	0.93	0.73-1.18	.55
Age	0.33	0.20-0.52	<.001
Education	0.89	0.75-1.07	.23
Gender	0.81	0.26-2.54	.72
Health These Days	0.19	0.05-0.69	<.05
Income	1.56	1.02-2.37	<.05
SF-12 MCS	1.01	0.93-1.10	.72
SF-12 PCS	1.03	0.96-1.10	.35
Total Number of Health Conditions	1.01	0.76-1.34	.92
Block 2			
Extraversion	1.01	0.90-1.14	.80
Life Control	1.18	0.91-1.53	.19
Life Purpose	0.78	0.06-1.00	.056
Locus of Control	0.95	0.82-1.11	.52
Neuroticism	0.98	0.89-1.08	.75
OMNIBUS TEST	CHI-SQUARE	DF	p
Step 1 Block	62.89	9	<.001
Step 2 Block	5.71	9	.33
Model	68.61	14	<.001
	NAGELKERKE R^2		
Step 1 Block R^2	.49		
Step 2 Block R^2	.53		

Crude Unadjusted Odds Ratios for Predictors of Driving Cessation in 5 Years

Results indicated that increased age (OR = 0.60, 95% CI = 0.42-0.87) and higher total number of health conditions (OR = 0.81, 95% CI = 0.71-0.91) increased risk of anticipating driving cessation in 5 years.

In terms of psychological resources, lower scores on measures of life control and life purpose increased risk of anticipating driving cessation in 5 years (OR = 1.13, 95% CI = 1.001-1.29; OR = 1.18, 95% CI = 1.06-1.30). Refer to Table 10.

Table 10

Crude Unadjusted Odds Ratios of Driving Cessation in 5 Years

Variable	Unadjusted Odds Ratio	95% Confidence Interval	p
ADL Total	1.06	0.90-1.23	.46
Age	0.60	0.42-0.87	<.01
Education	1.01	0.86-1.19	.83
Extraversion	0.92	0.83-1.03	.17
Gender	0.70	0.22-2.18	.54
Health These Days	0.27	0.02-1.00	.053
Income	0.99	0.76-1.30	.98
Life Control	1.13	1.00-1.29	<.05
Life Purpose	1.18	1.06-1.30	<.001
Locus of Control	0.95	0.77-1.17	.67
Neuroticism	1.01	0.93-1.09	.73
SF-12 PCS	1.04	0.99-1.10	.08
SF-12 MCS	1.01	0.95-1.08	.44
Total Number of Health Conditions	0.81	0.71-0.91	<.01

Logistic Regression Analysis for Predictors of Driving Cessation in 5 Years

According to the omnibus test of model coefficients, the first block of variables did not make a significant contribution to predicting anticipation of driving cessation in 5 years ($\chi^2 = 14.48$, $df = 9$, p =.10). Psychological variables also did not make a statistically significant contribution ($\chi^2 = 6.16$, $df = 5$, p = .29). Although the first block of variable

accounted for twenty percent of the variance in anticipation of driving cessation in 5 years (Nagelkerke's $R^2 = .20$) and personality trait and psychological resources accounted for a further 8% of the total variance (Nagelkerke's $R^2 = .28$) the overall model did not achieve statistical significance.

With respect to the second aim of the study, the hypothesis was not supported. Psychological variables did not make a significant unique contribution to predicting anticipation of driving cessation in 5 years.

Table 11

Logistic Regression Analysis of Driving Cessation in 5Years

Variable	Adjusted Odds Ratio	95% Confidence Interval	p
Block 1			
ADL Total	1.11	0.90-1.36	.32
Age	0.62	0.41-0.92	<.05
Education	1.00	0.79-1.26	.96
Gender	0.55	0.12-2.35	.42
Health These Days	0.65	0.19-2.25	.50
Income	0.99	0.65-1.51	.97
SF-12 MCS	0.98	0.88-1.10	.81
SF-12 PCS	0.96	0.88-1.06	.50
Total Number of Health Conditions	0.68	0.45-1.01	.06
Block 2			
Extraversion	0.89	0.76-1.04	.15
Life Control	1.31	0.94-1.82	.09
Life Purpose	0.91	0.66-1.23	.53
Locus of Control	0.95	0.77-1.18	.69
Neuroticism	1.03	0.91-1.17	.53
OMNIBUS TEST	CHI-SQUARE	DF	P
Step 1 Block	14.48	9	.10
Step 2 Block	6.16	9	.29
Model	20.64	14	.11
	NAGELKERKE'S R^2		
Step 1 Block R^2	.20		
Step 2 Block R^2	.28		

Comprehensive Measures of Subjective Well-Being

The third aim of the study was to determine whether comprehensive measures of subjective well-being provide a more sensitive assessment of the impact of driving cessation. Previous research used depression measures and single-item measures to assess the effects of driving cessation on subjective well-being (Carp, 1971; Fonda, Wallace, Herzog, 2001; Legh-Smith, Wade, & Hewer, 1986; Marotolli, Mendes de Leon, Glass, Williams, Cooney, Berkman, & Tinetti, 1997). Depression measures only partly assess the subjective well-being construct by focusing on negative emotional states (Kozma, Stones, & McNeil, 1991). Single-item measures possess unknown reliability in terms of internal consistency and lower validity (Kozma, Stones, & McNeil, 1991). Other studies used employed measures that assess only the cognitive aspect of subjective well-being (Marottoli, Mendes de Leon, Glass, Williams, Cooney, & Berkman, 2004; Siren, Hakamies-Blomqvist, & Lindeman, 2004). Measures of subjective well-being that assess both short and long-term affective and cognitive states, such as the Memorial University of Newfoundland Scale of Happiness (Kozma & Stones, 1980) should provide a more sensitive assessment of the impact of a set of variables associated with driving cessation on subjective well-being than depression measures or a measure of subjective well-being that is not as comprehensive such as the Satisfaction with Life Scale (SWLS).

To test this hypothesis, canonical correlation procedures were used. A canonical correlation represents the relationship between two canonical (latent) variables, one set of independent variables, and one set of dependent variables (Garson, 2008a; Hair, Anderson, Tathom, & Black, 1998); for instance, a set of variables associated with driving cessation and a set of subjective well-being measures. The procedure is also useful when using instruments

that have unequal variances (Statsoft, 2008). An aim of canonical correlation is to clarify the relationship between the two sets of canonical variables (Statsoft, 2008).

To explain the relationship between the set of independent variables and the set of dependent variables the first step is to identify how many roots, or canonical variates, are needed to account for the relationship between the sets of variables (Statsoft, 2008). Canonical correlation finds the linear array of variables that produces the largest correlation with the second set of variables. In other words, the combination of variables that maximizes the linear relationship between the weighted sums of each set of variables is the canonical correlation (Garson, 2008a). Garson (2008a) also notes that ``the linear combination, or "root," is extracted and the process is repeated for the residual data, with the constraint that the second linear combination of variables must not correlate with the first one. The process is repeated until a successive linear combination is no longer significant``. Wilk's Lambda is used to determine significance of a canonical correlation (Tabachnick & Fiddell, 1996).

Canonical correlation procedures were performed between a set of variables associated with driving cessation and a set of subjective well-being measures using SPSS CANCORR. The driving cessation set included age, driving status, education, functional status, health, income, life control, and life purpose, locus of control, neuroticism, and extraversion. These variables were selected because they are shown to be associated with driving cessation. Neuroticism was included because of the theoretical interest in psychological variables in relation to driving cessation in this study.

The driving cessation set is the independent variable. The well-being set included the Geriatric Depression Scale (GDS), Satisfaction with Life Scale (SWLS), and the Memorial

University of Newfoundland Scale of Happiness (MUNSH). The set of well-being measures is the dependent variable.

Analyses revealed two significant canonical variates (roots). Refer to Table 12. Wilk's Lambda for the remaining canonical correlation was not significant. The first canonical correlation always explains most of the relationship between the latent variables, variables associated with driving cessation and subjective well-being. The correlation for the first canonical variable was .88 and the correlation for the second canonical variable was .39. Refer to Table 13.

Table 12

Significance Tests of the Canonical Correlations

Dimension	Wilk's Lambda	Chi-Square	DF	Significance
1	.174	298.71	36	>.001
2	.762	46.51	22	.01
3	.902	17.61	10	.06

In addition to determining the number of significant roots, how to interpret each significant root is important. One way to interpret the meaning of each canonical root is to look at the canonical weights for each variable in a set. In general, the larger the absolute value of the weight the greater is the respective variable's unique positive or negative contribution to the weighted sum. To facilitate comparisons between weights, standardized variables with a mean of 0 and a standard deviation of 1 are reported (See Table 13). For those familiar with multiple regression procedures, canonical weights can be interpreted in the same manner as beta weights in a multiple regression equation (Statsoft, 2008). In one sense,

they represent the partial correlations of the variables with the respective canonical root. Correlation values of .3 and above are considered meaningful to interpret (Tabachnick & Fiddell, 1996).

Cessation variables with the highest standardized canonical weights on the first canonical variate were: life purpose (.60) and neuroticism (-.38). Among the well-being measures, the MUNSH had the largest canonical weight (.63) indicating that it makes the greatest contribution to the weighted sum of the subjective well-being measures. The cessation variables with the largest canonical weights on the second canonical variate included driving status (.58), life purpose (.35), locus of control (.37), and extraversion (-.45). Among the subjective well-being measures, the SWLS (-1.31) was most strongly related to the second canonical variate.

The MUNSH contributes the most to maximizing the linear relationship between a set of variables associated with driving cessation and subjective well-being. This is observed by looking at the first canonical correlation.

On the second canonical variate the canonical weights for the other outcome measures, the GDS and the SWLS, were above .3 with the SWLS having the highest standardized canonical weight (-1.31) among the three subjective well-being measures. It appears that on the second canonical variate, the GDS, the MUNSH, and the SWLS all contribute to the weighted sum of the subjective well-being measures.

An estimate of the proportion of variance in one set of variables (subjective well-being) explained by the other set of variables (driving cessation) can be obtained by conducting a redundancy analysis. A redundancy index of the dependent variate represents the proportion of variance in the dependent variables explained by the independent canonical

variate (Statsoft, 2008). Results indicate that the proportion of variance in subjective well-being measures explained by the driving cessation variables is quite significant. On the first canonical root, sixty percent of the variance in subjective well-being was explained by the set of variables associated with driving cessation. On the second canonical root, the variance accounted for was substantially less. About two percent (2.4%) of the variance associated with the subjective well-being measures was explained by the set of variables associated with driving cessation variables (See Table 13).

Table 13

Canonical Correlations between Driving Cessation and Well-Being

	1st Canonical Variable	2nd Canonical Variable
Canonical Correlation	.88	.39
Variables Associated with Driving Cessation:		
ADL Total	.061	-.263
Age	.063	-.064
Driving Status	.021	.587
Education	-.021	-.13
Extraversion	-.109	-.459
Income	.105	-.287
Health Now	-.054	.151
Health These Days	-.138	.127
Life Control	.106	.024
Life Purpose	.602	.351
Locus of Control	-.062	.371
Neuroticism	-.388	-.097
Well-Being:		
GDS	-.270	-.429
MUNSH	.637	.619
SWLS	.178	-1.313
Redundancy Coefficient	.60	.024

Moderator Variables and Driving Cessation

Identifying variables that moderate the relationship between driving cessation and subjective well-being is the fourth issue addressed in this study. Age, demographics, functional ability, health, and psychological variables were tested to see whether they moderate the relationship between driving cessation and subjective well-being. Specific personality attributes such as low neuroticism and high extraversion will have a positive moderating influence. Higher scores on psychological resource measures should positively moderate the relationship between driving cessation and subjective well-being as well. Better health and functional ability should also have a positive moderating influence on the relationship between driving cessation and subjective well-being. Higher education and income should also moderate the impact of driving cessation in a positive way. With respect to age, no specific predictions were made. Age is an index for other factors that affect how people respond to events rather than chronological age it is the individual's resources, health, and personality that determine people's reactions to driving cessation. This is borne out in research demonstrating that age has both positive and negative attributes ascribed to it that affect people's responses to events (Birren & Schaie, 1996).

A series of "enter" multiple regression analyses procedures were conducted on the MUNSH. The MUNSH was used because it measures both positive and negative affective and cognitive states. The GDS only measures negative states and the SWLS focuses on the cognitive states of subjective well-being.

Variables were entered into the multiple regression analyses in three-steps. First the driving status variable was entered by itself. Second, one of the predictors was entered on the second-step. On the third step, a variable representing the interaction term between driving

status and the predictor variable was entered. A moderator influence was determined by examining whether the change in R^2 indicates a significant percentage of the variance when the interaction term is included in the regression equation. Incremental R^2 change in variance was reported.

Four significant interactions were demonstrated. The interaction between driving status and income using the MUNSH was significant, F (1, 194) = 7.76, p <.05 (See Table 14). With respect to psychological resource variables, Life control interacted with driving status in the analysis, F (1, 190) = 5.98, p < .05 (See Table 15). Two health variables, PCS (SF-12) and total number of health conditions, had a significant interaction with driving status, F (1, 194) = 8.66, p < .05; F (1, 194) = 4.72, p < .05 (See Table 16 and 17). The remaining variables did not have a significant interaction term (See Tables 18 to 26).

Some predictions about what variables would moderate the relationship between driving cessation and subjective well-being were supported. Higher levels of income, better health, and higher scores on a measure of life control had a positive moderating influence.

Table 14

Overall MUNSH Scores by Driving Status and Income

Model	Variable	Coefficient	p-Value	Incremental R^2	p-Value
1	Driving Status	.25	<.001	.06	<.001
2	Driving Status	.24	<.001		
	Income	.08	.20	.08	.20
3	Driving Status	-.16	.30		
	Income	-.53	.02		
	Driving Status *Income	.82	>.01	.04	<.01

Table 15

Overall MUNSH Scores by Driving Status and Life Control

Model	Variable	Coefficient	p-Value	Incremental R^2	p-Value
1	Driving Status	.25	<.05	.07	<.001
2	Driving Status	.19	<.01		
	Life Control	.48	<.001	.22	<.001
3	Driving Status	.74	<.01		
	Life Control	-.02	.89		
	Driving Status*Life Control	.71	<.05	.02	<.05

Table 16

Overall MUNSH Scores by Driving Status and Physical Health (SF-12)

Model	Variable	Coefficient	p-Value	Incremental R^2	p-Value
1	Driving Status	.25	<.001	.07	<.001
2	Driving Status	.19	<.01		
	Physical Health	.26	<.001	.06	<.001
3	Driving Status	-.51	<.05		
	Physical Health	-.27	.15		
	Driving Status*Physical Health	.27	<.01	.04	<.01

Table 17

Overall MUNSH Scores by Driving Status and Total Number of Health Conditions

Model	Variable	Coefficient	p-Value	Incremental R^2	p-Value
1	Driving Status	.25	<.001	.07	<.001
2	Driving Status	.15	<.05		
	Health Conditions	-.38	<.001	.14	<.001
3	Driving Status	.41	<.01		
	Health Conditions	-.15	.93		
	Driving Status*Health Conditions	-.41	<.05	.02	<.05

Table 18

Overall MUNSH Scores by Driving Status and ADL's

Model	Variable	Coefficient	p-Value	Incremental R^2	p-Value
1	Driving Status	.25	<.001	.07	<.001
2	Driving Status	.21	.01		
	ADL Total	.22	<.001	.05	<.001
3	Driving Status	.05	.89		
	ADL Total	.17	.31		
	Driving Status *ADL Total	.17	.72	.01	.72

Table 19

Overall MUNSH Scores by Driving Status and Age

Model	Variable	Coefficient	p-Value	Incremental R^2	p-Value
1	Driving Status	.25	<.05	.07	<.001
2	Driving Status	.28	<.001		
	Age	.15	.05	.02	.05
3	Driving Status	.37	.05		
	Age	.50	.01		
	Driving Status*Age	-.09	.06	.02	.06

Table 20

Overall MUNSH Scores by Driving Status and Education

Model	Variable	Coefficient	p-Value	Incremental R^2	p-Value
1	Driving Status	.25	<.001	.06	<.001
2	Driving Status	.24	.001		
	Education	.08	.25	.01	.25
3	Driving Status	.24	.26		
	Education	.08	.64		
	Driving Status*Education	.01	.99	.000	.99

Table 21

Overall MUNSH Scores by Driving Status and Extraversion

Model	Variable	Coefficient	p-Value	Incremental R^2	p-Value
1	Driving Status	.25	<.001	.07	<.001
2	Driving Status	.19	.01		
	Extraversion	.37	<.001	.13	<.001
3	Driving Status	.37	.23		
	Extraversion	.23	.32		
	Driving Status*Extraversion	.21	.54	.002	.54

Table 22

Overall MUNSH Scores by Driving Status and Health These Days

Model	Variable	Coefficient	p-Value	Incremental R^2	p-Value
1	Driving Status	.25	<.001	.07	<.001
2	Driving Status	.19	.01		
	Health These Days	-.35	<.001	.12	<.001
3	Driving Status	.46	.05		
	Health These Days	-.68	.01		
	Driving Status*Health These Days	.47	.12	.01	.12

Table 23

Overall MUNSH Scores by Driving Status and Life Purpose

Model	Variable	Coefficient	p-Value	Incremental R^2	p-Value
1	Driving Status	.26	<.001	.07	<.001
2	Driving Status	.04	.38		
	Life Purpose	.78	<.001	.56	<.001
3	Driving Status	.04	.72		
	Life Purpose	.78	<.001		
	Driving Status*Life Purpose	.005	.97	.001	.97

Table 24

Overall MUNSH Scores by Driving Status and Locus of Control

Model	Variable	Coefficient	p-Value	Incremental R^2	p-Value
1	Driving Status	.29	<.001	.09	<.001
2	Driving Status	.24	<.001		
	Locus of Control	-.27	<.001	.07	<.001
3	Driving Status	.08	.64		
	Locus of Control	-.03	.87		
	Driving Status*Locus of Control	-.31	.31	.005	.31

Table 25

Overall MUNSH Scores by Driving Status and Mental Health (SF-12)

Model	Variable	Coefficient	p-Value	Incremental R^2	P -Value
1	Driving Status	.25	<.001	.07	<.001
2	Driving Status	.20	<.001		
	Mental Health	.62	<.001	.38	<.001
3	Driving Status	.59	.05		
	Mental Health	.77	.001		
	Driving Status*Mental Health	-.44	.13	.006	.13

Table 26

Overall MUNSH Scores by Driving Status and Neuroticism

Model	Variable	Coefficient	p-Value	Incremenal R^2	p-Value
1	Driving Status	.26	<.001	.07	<.001
2	Driving Status	.18	.01		
	Neuroticism	-.59	<.001	.35	<.001
3	Driving Status	-.03	.82		
	Neuroticism	-.28	.15		
	Driving Status*Neuroticism	-.41	.09	.009	.09

Discussion

This project examined four issues with respect to driving cessation: 1) group differences as a function of driving status, 2) prediction of driving cessation, 3) the utility of using comprehensive measures of subjective well-being to assess the impact of driving cessation, and 4) variables that moderate the relationship between driving cessation and subjective well-being.

Group Differences

The current research added to the existing literature by examining group differences between drivers and non-drivers on psychological variables such as personality traits and psychological resources. The analysis also extended current knowledge by focusing on both current driving cessation and those anticipating driving cessation.

Current Driving Cessation

Drivers differed from non-drivers on many variables. Overall, drivers were younger, more educated, wealthier, and had better health. Drivers also reported higher scores on a measure of functional ability. These findings replicate past studies on driving cessation (Brayne, Dufouil, Ahmed, Dening, Chi, McGee, & Huppert, 2000; Burkhardt, Berger, & McGavock, 1998; Campbell, Bush, & Hale, 1993; Dellinger, Sehgal, Sleet, & Barrett-Connor, 2001); Forrest, Bunker, Songer, Coben, & Cauley, 1997; Gallo, Rebok, & Lesikar, 1999; Gianturco, Ramm, & Erwin, 1974; Marotolli, Ostfeld, Merrill, Perlman, Foley, & Cooney, 1993; Wackerbarth & Johnson, 1999).

Age contributes to driving cessation in many ways. First and foremost, age has a direct effect on driving cessation (Brayne, Dufoil, Ahmed, Dening, Chi, McGee, & Huppert, 2000; Jette & Branch, 1992; Kostyniuk, Shope, & Molnar, 2000; Rosenbloom, 1988). Group

differences in age may also reflect other effects such as differences in health status and income level. With age, declines in functional ability and increases in the number of medical problems can occur to interfere with a person's ability to drive (Campbell, Bush, & Hale, 1993). Economic concerns also become more salient as people age, particularly for those no longer working and on fixed incomes. For people who can't afford their automobile the challenge to keep driving is great and often will contribute to their decision to cease driving (Campbell, Bush, & Hale, 1993).

Income level can impact driving cessation beyond being able to afford an automobile. Evidence suggests that income level is associated with good health. Therefore, people with higher incomes experience better health that extends their driving career. Using data from the National Survey of Families and Households, the Survey of Income and Program Participation, and the National Health Interview Survey, Ettner (1999) demonstrated that increases in income significantly improved mental and physical health. According to Pritchett and Summer (1993), income and health are related as healthy people are more productive and achieve higher incomes. Predictably, active people have healthier lifestyle habits and are more engaged in social and leisure pursuits, factors that both extend people's driving career and motivate older people to maintain their driving licenses (Campbell, Bush, & Hale, 1993; Murtha, 2007; O'Neill, 2000; Sims, Ahmed, Sawyer, & Allman, 2007).

Group differences emerged between drivers and non-drivers on other variables. Drivers reported higher education levels. Better educated people may possess higher incomes that allow them to afford their automobile later in life. However, there may be other mechanisms through which education accounts for differences between drivers and non-drivers. Education may be a proxy for other factors that increase the risk of driving cessation.

For instance, in community-based prevalence and incidence studies low education level is associated with increased substance (mis)use (Blow, Walton, Barry, Coyne, Mudd, & Copeland, 2000; Crum, Helzer, & Anthony, 1993). In older population this can occur with illicit drugs but more so with over-the counter medications such as laxative, analgesics, or antihistamines and prescription medications such as diuretics or benzodiazepines (Abrams & Alexopoulos, 1988; Atkinson & Kofoed, 1982; Lisansky-Gomberg & Zucker, 1998). Use of sedatives and diuretics contribute to higher rates of driving cessation (Carr, Flood, Steger-May, Schechtman, & Binder, 2006; Stewart, Moore, Marks, May, & Hale, 1993). Alcohol misuse also occurs among older people and can compromise cognitive functioning and physical health (Atkinson & Kofoed, 1982; Blow, Walton, Barry, Coyne, Mudd, & Copeland, 2000; Crum, Helzer, & Anthony, 1993; Guttman, 1978; Saunders, Copeland, Dewey, Davidson, McWilliams, & Sharma, V. K., 1989; Temple & Leino, 1989). With respect to driving, alcohol appears to compromise the cognitive faculties and physical functioning necessary to drive safely and predicts driving cessation (Moore, Morton, Beck, Hays, Oishi, Partridge, Genovese, & Fink, 1999; Stewart, Moore, Marks, May, & Hale, 1993). This is relevant for driving because alcohol abuse is one of the most common mental health problems in older people (Zarit & Zarit, 1998). In the context of the current study, an issue that remains unexplored is whether alcohol use continues to be a problem after people have stopped driving. It may be that former drivers self-medicate with alcohol to cope with the negative feelings. This is plausible considering that a third of all problem drinkers are older people who increased their use later in life, often in response to stress or a negative life event (Atkinson, Tolson, & Turner, 1990; Zarit & Zarit, 1998).

Health differences also emerged between drivers and non-drivers. Drivers reported better health than non-drivers. This finding underscores the importance health has for driving and replicates past research (Campbell, Bush, & Hale, 1993; Marotolli, Ostfeld, Merrill, Perlman, Foley, & Cooney, 1993).

Functional ability was another area where group difference between drivers and non-drivers emerged. Drivers reported higher levels of functional ability. Previous research also found that limitations in the ability to perform everyday activities contribute to driving cessation (Brayne, Dufouil, Ahmed, Dening, Chi, McGee, & Huppert, 2000; Campbell, Bush, & Hale, 1993; Marotolli, Ostfeld, Merrill, Perlman, Foley, & Cooney, 1993). With respect to driving cessation, those with lower functional ability may not manage to drive well due to the demands it makes on physical and cognitive abilities. Functional ability correlates with cognitive and physical impairment (Ferrucci, Guralnick, Baroni, Tesi, Antonini, & Marchionni, 1991; Lee, 2000; Sabbagh, Lahti, Connor, Caviness, Shill, Vedders, & Mahant, 2007).

The current study extends the literature by demonstrating differences on psychological variables as a function of driving status. Driver's reported higher levels of life control and life purpose. There was also a significant difference between drivers and non-drivers on locus of control. People with a more internal locus of control were likely to be drivers. Similarly, Winter (1996) reported that older people with a higher internal locus of control were less likely to have their license revoked.

Psychological resources refer to the coping styles people use to deal with the negative environmental effects they experience (Alday, 1998; Lachman & Weaver, 1998). Psychological resources appear to have positive effects on people's mental and physical

health (Taylor, Kemeny, Reed, Bower, Gruenewald, 2000). When it comes to driving cessation, one potential positive effect of psychological resource variables is to enable a longer driving career by improving people's health. People with positive self-worth and optimism about the future are likely to practice conscientious health habits and use health services appropriately to their benefit (Carlisle-Frank, 1991; Lefcourt & Davidson-Katz, 1991; Taylor, Kemeny, Aspinwall, Schneider, Rodriguez, & Herbert, 1992; Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000). Other psychological resource variables such as control beliefs also affect people's health. An internal health locus of control is a belief that one's health status is influenced by one's own behaviour and is associated with positive outcomes such as better physical health (Wallston & Wallston, 1982). One way this is likely to occur is by more frequent physical activity. Physical activity is a health-facilitating behaviour. Sonstrom and Walker (1973) and others (Carlisle & Frank, 1991), have studied locus of control and attitudes towards physical activity and found that those with an internal locus of control obtained significantly better fitness scores and did more voluntary physical activity. Better health is a factor that appears to extend the driving career of older people. Retchin and Anapolle (1993) suggest that improvements in functional status and a general shift towards adopting healthier and more active lifestyles will extend the driving career of many older people.

Another manner in which psychological resources can have protective effects is through coping effectiveness. The presence of positive psychological resources such as life control and locus of control has been tied to active coping efforts that enable people to offset stressful events (Deisinger, Cassissi, & Whitaker, 2003; Gibbs, 1989; Roberts, Dunkle, & Haug, 1994). It may be that drivers, who reported a greater sense of control compared to non-

drivers, exhibit more effective strategies for offsetting the adverse effects of stressors that may shorten a person's driving career. For instance, this may involve making the effort to secure other alternative means of transportation.

A psychological resource variable, such as life purpose, involves goals and a sense of direction from the past, in the present, and toward the future (Reker, 2002). The salutary effects of possessing goals is well documented (King, 2008). Telic models propose that goal fulfillment is related to higher subjective well-being (Brunstein, 1993; Diener, 1984; Emmons, 1986; Lepper, 1996). Within a Telic framework of personal goal constructs, striving toward personal goals provides a person's life with structure and meaning (Little, 1989). It may be that drivers have more goals, making them happy and motivating them to engage in activities that provides physical, social, or emotional benefit. For instance, drivers have more opportunity to engage in social and leisure pursuits where they can develop goals (develop hobbies, join a club, volunteer). The last point relates to an activity theory of subjective well-being. Whereas telic theories place the locus of well-being in certain-end states, such as achieving meaning and a purpose in life, activity theories maintain that happiness is a by-product of human activity (Diener, 1984). As Diener (1984) notes, the activity of climbing a mountain might bring greater happiness than reaching the summit.

All explanations to this point assume that psychological resources influence cessation. However, the direction of the causal relationship between psychological resources and driving cessation is unclear. It is also possible higher psychological resources are a consequence of older people continuing to drive. Eisenhandler (1990) and others (Adler & Rottunda, 2006; Johnson, 2002; Liddle & McKenna, 2003; Persson, 1993; Whitehead, Howie, & Lovell, 2006; Yassuda, Wilson, & VonMering, 1997) note that a driver's license gives people a sense of

independence and control in their lives. For instance, Whitehead and colleagues (2006) demonstrated that driver license cancellation was a deeply traumatic and shocking experience. Driving had been a normal and accepted part of life, and cancellation of their driver licenses meant the loss of their independence and sense of control.

On personality trait measures, drivers scored higher on a measure of extraversion than non-drivers. One explanation is that extraverts may have a greater need to maintain relationships, something central to their sense of subjective well-being. Research suggests that extraverts report greater need for social contact and it is the sociability component of extraversion that positively correlates with subjective well-being (Dubuy, Uppal, & Verma, 1982; Emmons & Diener, 1986; Lucas & Dyrenforth, 2006; Olson & Weber, 2004; Watson, Clark, McIntyre, & Hamaker, 1992; Zautra, Finch, Reich, & Guarnaccia, 1991). Driving would make it easier for people to fulfill these social needs by attending social outings and visiting family and friends. In fact, when driving cessation occurs people report a decline in resources known to buffer well-being, including social resources such as social supports, family, and volunteer opportunities (Bonnel, 1999; Kim & Richardson, 2006; Marotolli, Mendes de Leon, Glass, Williams, Cooney, Berkman, & Tinetti, 1997; Marotolli, Ostfeld, Merrill, Perlman, Foley, & Cooney, 1993; Richardson & Balaswamy, 2004). The extravert's need for social contact in some sense may influence their decision to not cease driving.

Another explanation for group differences may have to do with the positive emotions associated with extraversion (Headey & Wearing, 1989). Positive emotions lead people to think, feel, and act in ways that promote personal resources (Carver & Scheier, 1998; Clore, Wyer, Dienes, & Fredrickson, 2001; Elliot & Thrash, 2002; Lyubormirsky, 2001). Fredrickson (2001) proposed a broaden-and-build model suggesting that positive emotions

increase people's resources by broadening the individual's attentional focus and behavioural repertoire. Resources help people manage future challenges and can be financial, personal (e.g., health, psychological resources), or social resources (Fredrickson, 2001). This study demonstrated that people with more resources (health, income, psychological resources), are less likely to cease driving. Other studies demonstrate that people with more social supports are also less likely to cease driving (Murtha, 2007).

Group differences on outcome measures were also observed. Drivers reported higher subjective well-being and lower levels of depression than non-drivers. This is consistent with past research demonstrating that non-drivers tend to experience more negative emotional states than their driving counterparts (Campbell, Bush, & Hale, 1993; Carp, 1971; Cutler, 1972; Fonda, Wallace, & Herzog, 2001; Legh-Smith, Wade, & Hewer, 1986; Liddle & McKenna, 2003; Marottoli, Mendes de Leon, Glass, Williams, Cooney, Berkman, & Tinetti, 1997).

Driving cessation analyses were also conducted on the components that contribute to the overall score on the MUNSH: short-term positive and negative affect states and long-term positive and negative experiences. As expected, drivers reported less negative affect and negative experiences however they also experienced more positive affect and positive experiences. Past research did not use instruments that measure positive affective and cognitive states. This finding highlights the importance of studying positive emotional states in relation to driving cessation using comprehensive measures of subjective well-being.

Contrary to expectations, there were no gender differences in driving cessation. This runs counter to past research demonstrating that driving cessation tends to occur earlier for females (Anstey, Windsor, Luszcz, & Andrews, 2006; Burkhardt, Berger, & McGavock,

1998; Jette & Branch, 1992; Rosenbloom, 1988; Stutts, Wilkins, Reinfurt, Rodgman, & VanHeusen-Causey, 2001). The following explanations may help to clarify why gender differences did not occur in this study. First, with a small number of non-drivers the sample may have lacked statistical power to detect group differences. The second explanation as to why gender differences did not occur reflects the fact that most significant gender effects in driving occur among people who are 85 years of age and older (Eberhard, 1996). The current sample was predominantly "young-old", defined as seventy-four years of age and younger so gender differences were not likely to emerge. The results may also reflect cohort differences for male and female drivers. Previously, males were often the main driver performing the majority of driving responsibilities (Burkhardt, Berger, & McGavock, 1998). Among these cohorts, females were less likely to hold a drivers license. Now more women who drove in their youth continue to drive when they are older (Burkhardt, Berger, & McGavock, 1998; Retchin & Anapolle, 1993). In the current sample, the majority of participants were female. Close to fifty-five percent were female and 45.3% were male. With respect to generalizing these findings to the larger population, compared to the Canadian population, the current sample was fairly representative with respect to the split in gender. Specifically, in 2001, women made up fifty-six percent of the Canadian senior`s population (Government of Canada, 2002).

Anticipation of Driving Cessation

Group differences were also observed between people anticipating driving cessation in 2 years or in 5 years. At both the 2-year and 5-year mark, participants who anticipate that they would be driving in the future were younger and had better physical health. These results suggest that regardless of the time age and health variables play an important role in driving

cessation. This replicates previous research (Campbell, Bush, & Hale, 1993; Forrest, Bunker, Songer, Coben, & Cauley, 1997; Gianturco, Ramm, & Erwin, 1974; Hakamies-Blomqvist & Wahlstrom, 1998; Johnson, 1995; Kington, Reuben, Rogowski, & Lillard, 1994; Marotolli, Ostfeld, Merrill, Perlman, Foley, & Cooney, 1993) but further adds to the literature demonstrating that age and health variables influence people's thoughts about driving cessation even before it actually occurs.

Other than age and health variables, the only significant difference between people anticipating and not anticipating driving cessation in 2 years was income. People with lower incomes were more likely to report anticipating driving cessation in 2 years. Other researchers have found that anticipation of future positive events is related to income level (MacLeod & Conway, 2005). MacLeod and Conway (2005) examined a community sample of older people and reported that people's subjective well-being was related to having more anticipated positive experiences, which in turn was related to factors such as higher household income. Perhaps, as some authors propose, income provides a resource to obtain universal needs that help maintain people's health, subjective well-being, and positive view of the future (Cantor & Sanderson, 1999; Diener & Fujita, 1995; Diener, Sandvik, Seidlitz, & Diener, 1993). It is easy to imagine that people with higher incomes can foresee being able to afford their automobile in the future and continue driving, a future positive event.

It is important to try and address why many variables were not significantly different between people anticipating and people who did not anticipate driving cessation to drive in 2 years. One explanation is that asking people to consider driving cessation in 2 years is not sufficiently remote in time to generate meaningful differences between groups. Many of the variables that did not reach significance relate to stable factors that are unlikely to change

appreciably over a short period of time. Variables such as personality traits and psychological resources show considerable stability (Costa & McCrae, 1985; Reker, Peacock, & Wong, 1981). Moreover, functional ability, barring significant illness or injury does not decline significantly over the short-term for many people (Holstein, Avlund, Due, Martinussen, & Keiding, 2006). Age changes in cognitive function, which contributes to performance on adaptive function measures, is a rather slow process, with a number of short-term longitudinal studies demonstrating virtual stability over 3 years (Hultsch, Hammer, & Small, 1993; Zelinski, Gilewski, & Schaie, 1993). Moreover, the decrements in cognitive functioning are of small magnitude until the mid-70's are reached (Seattle Longitudinal Study; Schaie, 1994, 1995); the average age of the participants in this study was the early seventies (M = 72.19, $S.D.$ = 8.80). Regarding physical decline, although many older people experience deterioration, it is not necessarily true for all older people. A number of studies indicate that when health changes, as measured by the ability to perform daily functions, improvement as well as deterioration was a fairly common occurrence (Branch, Katz, Kniepmann, & Papisidero, 1984; Crimmins & Saito, 1993). With respect to depression and subjective well-being significant differences were not observed at the two-year mark. This may reflect the fact that the GDS focuses on the short-term (within the last week) although some items make reference to more stable long-term periods of time ("Are you basically satisfied with your life?", "Do you feel that your life is empty?"). The MUNSH asks about both short and long-term states so it is not certain why a significant difference did not emerge. Speculating, 2 years is a point in time that is longer than a state effect but may not be long enough to be relevant to people's judgments of long-term subjective well-being.

With respect to anticipating driving cessation in 5 years, there were a number of significant group differences. Similar to those currently driving, younger drivers and those with better health reported that they did not anticipate driving in 5 years. Finally, drivers anticipating cessation in 5 years reported lower subjective well-being and higher depression scores. These results replicate past studies looking at predictors of driving cessation (Burkhardt, Berger, & McGavock, 1998; Campbell, Bush, & Hale, 1993; Carp, 1971; Cutler, 1972; Dellinger, Sehgal, Sleet, & Barrett-Connor, 2001; Edwards, Ross, Ackerman, Small, Ball, Bradley, & Dodson, 2008; Fonda, Wallace, & Herzog, 2001; Gallo, Rebok, & Lesikar, 1999; Legh-Smith, Wade, & Hewer, 1986; Liddle & McKenna, 2003; Marottoli, Mendes de Leon, Glass, Williams, Cooney, Berkman, & Tinetti, 1997; Marottoli, Ostfeld, Merrill, Perlman, Foley, & Cooney, 1993; Ragland, Satariano, & MacLeod, 2005; Rosenbloom, 1993).

Functional ability was also related to anticipating driving cessation in 5 years. Past research indicates that people with lower functional ability are more likely to cease driving (Brayne, Dufouil, Ahmed, Dening, Chi, McGee, & Huppert, 2000; Campbell, Bush, & Hale, 1993; Wackerbarth & Johnson, 1999). In the current study, significant differences in functional ability were reported between groups but not as expected. People who did not anticipate ceasing to drive had lower functional capacity. Perhaps some people who score lower on measures of functional ability realize that this does not bode well for their driving career and are unwilling to acknowledge it. They may avoid thinking about cessation and the difficulties that come with no longer driving (e.g., reduced subjective well-being, loss of independence, declines in activity). These same people may overestimate their ability to drive in the future. Research shows that decisions about driving cessation are largely determined by

the drivers, that most drivers are reluctant to prepare for driving cessation, and that confidence in one's ability to drive is inversely related to cessation irrespective of actual ability (Johnson, 2002, 1998; Rabbitt, Carmichael, Jones, & Holland, 1996; Yassuda, Wilson, & VonMering, 1997).

With respect to psychological variables there were significant differences between people anticipating and not anticipating driving cessation in 5 years. As with current cessation, people who do not anticipate driving cessation in 5 years scored higher on a measure of extraversion. These differences may reflect the fact that variables such as personality traits show both state and traits effects (Brown & Moscowitz 1998; Carver & Scheier, 1998; Funder, 2001; Hobfoll, 2002; Pinquart, Frohlich, & Silbereisen, 2006). Personality states are the counterparts of personality traits, reflecting short term, concrete patterns of acting, feeling, and thinking compared to more abstract and enduring trait conceptions (Heller, Komar, & Lee, 2007). A state effect is reflected by personality factors affecting current driving cessation. Traits reflect a large number of corresponding states observed repeatedly over time and that are stable across the lifespan (Buss & Craik, 1983; Funder, 2001; Costa & McCrae, 1997). Trait effects become more relevant the longer the interval of time considered, such as when participants were asked to think about driving cessation in the future.

As with current driving cessation, extraversion may be related to not anticipating driving cessation in the future by virtue of the emotional states often experienced by extraverts. It has been suggested that a basic requirement for anticipating positive experiences is the capacity to experience pleasurable emotions (MacLeod & Conway, 2005). The emotional states of extraverts, which according to the research are biased towards the positive,

may predispose people to anticipate positive future events such as continuing to drive. Being able to anticipate future positive experiences is also related to sociability. MacLeod and Conway (2005) demonstrated that the size of social networks contributed to people's positive future thinking. Cohen and Wills (1985) argued that large social networks provide persons with regular positive experiences and a set of stable social roles. A range of social roles and contacts will provide extensive opportunity to anticipate positive interactions and experiences which extraverts will benefit from (Cohen & Wills, 1985). Extraverts tend to take advantage of these positive contacts and are more likely to anticipate positive experiences and interactions from them. Such results may help to explain why people scoring higher on extraversion were less likely to anticipate a negative future experience such as driving cessation.

Another explanation why extraverts experience positive anticipation of future events may be due to their positive attributional style for future events. Attributions are the thoughts and beliefs people hold about the relationships between observations and events (Poropat, 2002). Mitchell (1989) and others (Cheng & Furnham, 2001; Corr & Gray, 1996; Rim, 1991) have demonstrated that extraversion is a propensity to possess an internal, stable, and global attribution style for positive events. In turn, such a positive attributional style accrues benefits for the bearer. Cheng and Furnham (2001) examined the extent to which attributional style and personality traits predicted happiness and psychiatric symptoms. Attributional style was significantly associated with extraversion and neuroticism. Extraversion was related to having an optimistic attributional style for events whereas neuroticism was related to a pessimistic style for interpreting situations. Neuroticism and extraversion predicted happiness and mental

health with higher subjective well-being attributed to people who reported higher levels of extraversion and lower levels of neuroticism.

Surprisingly, there was no group difference between drivers and non-drivers on a scale measuring neuroticism. Neuroticism is associated with various negative outcomes such as poor health that contribute to driving cessation (Smith, 2006). However, when it comes to anticipating the future neuroticism may not be as influential. Personality traits such as neuroticism are inversely related to people's tendency to engage in future consideration and planning (Prenda & Lachman, 2001). Prenda and Lachman (2001) found that older people scoring higher on a measure of neuroticism were less motivated to think about the future and adopt a future planning perspective. They surmised that perhaps individuals who are more neurotic may be more likely to be consumed with problems and worries in the present and may be less inclined to think too far ahead.

Psychological resources variables were also significantly different between those anticipating and those not anticipating cessation in 5 years. People who anticipated cessation in 5 years reported lower scores on measures of life control and life purpose. Psychological resources have been related to how people perceive future life events. People scoring higher on life control and life purpose measures tend to perceive events more positively and expect positive outcomes (Abbey & Halman, 1995; Darke & Freedman, 1997; Darvill & Johnson, 1991; Emmons, 2003; Rapaport, 1993). It appears that this holds for driving cessation as well.

It appears that psychological resource variables are important for understanding current driving cessation and the anticipation of driving cessation. This may be because psychological resources have state (Pinquart, Frohlich, & Silbereisen, 2006) and trait effects (Tipton & Worthington, 1984). Psychological resources influence how people respond to

specific events (Alday, 1998) but stable differences between people are also observed (Emmons, 1993). These stable differences have been explained as resource caravans. Resources tend to come together for a person, for instance, social, financial, or psychological resources, and combine to have an impact that holds across time and circumstance (Hobfall, 2002; Holahon, Moos, Holahan, & Cronkite, 1999; Norris & Murrell, 1987).

There were no gender differences with respect to anticipating driving cessation in 2 years and in 5 years. Methodological problems, in particular how participants were divided into groups (i.e., anticipating, not anticipating driving cessation) may account for the null findings. Dividing up an already small sample of participants left too few participants for meaningful differences to emerge in chi-square analyses. For instance, the number of females and males anticipating driving cessation in 2 years was sixteen and seventeen respectively. Another explanation for the null findings may be due to a cohort effect. Gender differences in driving cessation are not as apparent in younger cohorts (Retchin & Annapolle, 1993). Drivers in this study were significantly younger than non-drivers. As noted earlier, the current sample was representative of the Canadian population with respect to gender and so results are likely to generalize to the general population (Government of Canada, 2002).

With respect to the influence of education and income level on driving cessation this appears to be restricted to shorter periods of time. It appears that 5-years is too long a period of time for people to make judgments based on current education and income level about whether they will be able to drive or not.

Predictors of Driving Cessation

Current Driving Cessation

The second aim of the study was to identify predictors of driving cessation and predictors of anticipation of driving cessation. Age, demographic variables, functional status, health, personality traits, and psychological resources were examined. To the author`s knowledge, this is the first study to use personality traits and psychological resource variables as predictors of driving cessation. It was predicted that personality traits and psychological resources would make a significant and unique contribution to the prediction of driving cessation and anticipation of driving cessation over and above age, demographic variables, functional ability, and health variables. The hypothesis was supported. The first block of variable accounted for twenty-nine percent of the variance driving cessation (Nagelkerke's R^2 = .29). Adding personality trait and psychological resource variables to the model accounted for a further 10% of the variance in driving cessation (Nagelkerke's R^2 = .39).

When all variables were examined simultaneously three variables emerged as unique predictors of driving cessation. Age and two psychological resource variables, life purpose and locus of control predicted driving cessation. Older participants, those with lower scores on a measure of life purpose, and participants with a more external locus of control were at increased risk for driving cessation.

A number of studies demonstrate that advanced age increases the risk of driving cessation (Brayne, Dufoil, Ahmed, Dening, Chi, McGee, & Huppert, 2000; Burkhardt, Berger, & McGavock, 1998; Dellinger, Sehgal, Sleet, & Barrett-Connor, 2001; Gallo, Rebok, & Lesikar, 1999; Jette & Branch, 1992; Kostyniuk, Shope, & Molnar, 2000; Marottoli, Ostfeld, Merrill, Perlman, Foley, & Cooney, 1993; Rabbit, Carmichael, Jones, & Holland,

1996; Rosenbloom, 1993, 1988; Stutts, Wilkins, Reinfurt, Rodgman, & vanHeusen-Carey, 2001). Age has direct effects on driving cessation but there are also indirect effects. Part of the contribution of advanced age to cessation of driving reflects reduced work-related travel and possibly declining functional abilities, more medical problems, medication use, and economic concerns. This may explain why variables such as functional ability, health, and income did not make a significant contribution to the prediction of driving cessation when in other studies these variables consistently predict driving cessation.

Psychological resource variables had a protective effect on driving cessation. This is consistent with the positive influence of resources on people's lives (Alday, 1998; Banken, 1995; Ruth & Coleman, 1996; Smith, Fleeson, Geiselmann, Settersten, & Kunzmann, 1999; Staudinger, Freund, Linden, & Maas, 1999; Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000. Psychological resources are related to positive behaviors, positive appraisals of current and future events, and positive coping (Abbey & Halman, 1995; Alday, 1998; Darke & Freedman, 1997; Darvill & Johnson, 1991; Emmons, 2003; Lazarus & Folkman, 1984; Rapaport, 1993; Scott, 2003).

Anticipation of Driving Cessation

The second part of the study also attempts to identify who anticipates driving cessation. People were asked whether they anticipated driving cessation in 2 years and whether they anticipated driving cessation in 5 years. Psychological variables such as personality traits and psychological resources were expected to make a significant and unique contribution to predicting anticipation of driving cessation over and above age, demographic variables, functional ability, and health variables.

With respect to anticipation of driving cessation in 2 years, the hypothesis was not supported. A model including only the first block of variables made a significant contribution to predicting anticipation of driving cessation in 2 years. Psychological variables did not make a statistically significant contribution to predicting anticipation of driving cessation in 2 years. However, compared with past research studies, which accounted for approximately 30% of the variance in driving cessation (Kington, Reuben, Rogowski, & Lillard, 1994), a significantly greater proportion of variance was accounted for (49%). This may reflect the fact that a greater array of variables was examined in the first block. The current analysis included gender, functional ability, and measures of subjective and objective health that were not included in previous studies (Kington, Reuben, Rogowski, & Lollard, 1994).

Three variables made a significant unique contribution to predicting anticipation of driving cessation in 2 years. Age, income, and self-reported health ("health these days") were related to anticipation of driving cessation in 2-years. Specifically higher age, lower income, and poorer physical health increased the risk that people would anticipate driving cessation in 2 years.

The influence that age has in predicting anticipation of driving cessation in 2 years may reflect attitudes and beliefs held by some that old age is a period of decline (Angus & Reeve, 2006; Connidis, 1989; Gekoski & Knox, 1990; Milligan, Prescott, Powell, & Furchtgott, 1989; Perlmutter & Hall, 1992; Pinquart, 2001; Uttall & Perlmutter, 1989). According to disengagement theory, such beliefs have consequences for activity in that limited physical and psychic energy supposedly lead older adult to withdraw from active participation in social roles associated with youth and virility (Cumming & Henry, 1961).

Driving may be considered just such an activity. For instance, Eisenhandler (1990) did note that driving was an activity that staved off an identity associated with old age.

Income level is another predictor that made a significant and unique contribution to predicting anticipation of driving cessation in 2 years. Lower income increased risk of anticipating future cessation. As noted earlier, anticipation of future positive events is related to income level (MacLeod & Conway, 2005). This is because income provides a resource to obtain universal needs that help maintain people's health, well-being, and positive view of the future (Cantor & Sanderson, 1999; Diener & Fujita, 1995; Diener, Sandvik, Seidlitz, & Diener, 1993). People with lower income levels may be aware that they will not be able to afford an automobile as they get older and this may contribute to their reporting that they anticipate driving cessation in the next 2 years.

Finally, self-reported health also made a significant and unique contribution. People with lower self-reported health were at a greater risk of anticipating driving cessation in 2 years. As people age, declines in health become more frequent and severe to the point where they can become disabling (Perlmutter & Hall, 1992). Frequently occurring, disabling conditions among elderly people include arthritis, cardiovascular disease, and diabetes (Birren & Schaie, 1996). In relation to driving cessation, arthritis, cardiovascular disease, and diabetes increase risk of driving cessation (Campbell, Bush, & Hale, 1993; Forrest, Bunker, Songer, Cohen, & Cauley, 1997; Gallo, Rebok, & Lesikar, 1999; Kington, Reuben, Rogowski, & Lillard, 1994; Stewart, Moore, Marks, May, & Hale, 1993). Poor health is also related to pessimistic expectations independent of other factors such as socio-demographic factors, mental health, or negative affect (Freres & Gillham, 2007; Moyer, Fontana, Hussain, Lok, & Schwartz, 2003; Steptoe, Wright, Kunz-Ebrecht, & Lliffe, 2006). Drivers in poor health may

be at greater risk of negative outcomes such as driving cessation. These expectations are realistic on some level because medical conditions may affect the sensory, motor, and cognitive abilities required to drive.

Psychological variables did not make a significant contribution to the prediction of driving cessation in 5 years. A block of variables that included age, demographic variables, health, and functional ability did not reach statistical significance with regards to predicting anticipation of driving cessation in 5 years. Even the total variance accounted for by both blocks of predictors was not different from past research studies (Kington, Reuben, Rogowski, & Lollard, 2004). Twenty-nine percent of the variance was accounted for in the current study by a block of variables that included age, demographic variables, health, and functional ability.

The results from this study suggest that psychological factors do not influence people's decisions about future driving cessation. This is unexpected considering that earlier analyses revealed group differences on personality traits and psychological resource variables on items asking about anticipating driving cessation. Furthermore, psychological variables such as personality traits and psychological resources exert short (state) and long-term (trait) effects so there was theoretical rationale for expecting psychological variables to impact participant's judgments about current and future cessation (Brown & Moscowitz 1998; Buss & Craik, 1983; Carver & Scheier, 1998; Costa & McCrae, 1997; Funder, 2001; Heller, Komar, & Lee, 2007; Hobfall, 2002; Pinquart, Frohlich, & Silbereisen, 2006). It is possible that people's judgments about future driving cessation rely on more tangible sources of information such as health status, income level, and chronological age. These variables significantly predicted anticipation of driving cessation in 2 years. However, even these

variables may have a limited impact as shown by the analysis to predict driving cessation at the five year mark.

Comprehensive Measures of Subjective Well-Being

The third issue examined in this study was to determine whether a comprehensive measure of subjective well-being provided a more sensitive assessment of the impact of a set of variables associated with driving cessation. Prior research examining driving cessation and subjective well-being used depression measures that only assess negative affective states, single-item measures of subjective well-being, with unknown reliability and low validity, or life satisfaction measures, that don't assess the cognitive aspects of subjective well-being (Carp, 1971; Fonda, Wallace, Herzog, 2001; Legh-Smith, Wade, & Hewer, 1986; Marotolli, Mendes de Leon, Glass, Williams, Cooney, Berkman, & Tinetti, 1997; Siren, Hakamies-Blomqvist, & Lindeman, 2004). A comprehensive measure that assesses both positive and negative affective and cognitive states was expected to provide a more sensitive assessment of the impact of a set of variables associated with driving cessation on subjective well-being.

This hypothesis was supported. Using canonical correlation procedures with the MUNSH, SWLS, and the GDS two canonical correlates emerged with the first correlate having the strongest relationship to the MUNSH. The first canonical correlation always explains most of the relationship between the latent variables, driving cessation and subjective well-being. The correlation for the first canonical variable was .88 and the correlation for the second canonical variable was .39. Furthermore, redundancy analysis, which estimates the proportion of variance in subjective well-being explained by variables associated with driving cessation, revealed that the MUNSH accounted for the highest proportion of variance.

By demonstrating that comprehensive measures of subjective well-being are most sensitive to variables associated with driving cessation this finding follows with the notion that people have various responses to driving cessation. Others (Azad, Byszewski, Amos, & Molnar, 2002; Cutler, 1972; Gillins, 1990) note that driving cessation has negative and positive outcomes. For instance, Gillins (1990) noted that some drivers reported positive outcomes after cessation such as saving money on car expenses or avoiding the stress of driving in traffic. Other positive outcomes may be avoiding the risk of crashes or the stress of driver re-testing. Yoshimoto (1994) reported that one reason older people gave up driving was to get more physical exercise.

Some of the benefits of driving cessation may be psychological in nature. One possibility is that driving cessation may provoke a positive psychological change, such as an enhanced sense of self-efficacy. According to Bandura (1994), the most effective way to enhance self-efficacy is through mastery experiences, by successfully coping with challenges and difficulties. Therefore, rather than seeing driving cessation as a loss some former drivers may see it is a challenge and an opportunity for growth. For people who are relatively successful at coping with the challenges and inconveniences of driving cessation a greater sense of self-efficacy may be gained when they recognize how resourceful they are to manage this difficult situation. For instance, securing transportation, planning one's daily schedule around not having an automobile, and coping with the negative emotions of driving cessation are just some of the challenges faced. Other researchers have noted that being able to manage stressful and challenging situations enhance older people's sense of self-efficacy and esteem and decrease feelings of depression (Affleck & Tannen, 1996; Cox, Green, Seo, Inaba, &

Quillen, 2006; Folkman & Moscowitz, 2000; Kraaji, Garnefski, & Maes, 2002; Zautra, Hoffman, & Reich, 1997).

Moderator of Driving Cessation and Subjective Well-Being

Moderators of Current Driving Cessation

Identifying variables that moderate relationships between driving cessation and subjective well-being is the final issue that was addressed in this study. An array of variables was examined including: age, demographic variables, functional ability, health, and psychological variables such as personality traits and psychological resources.

Using a measure of subjective well-being (MUNSH), income positively moderated the impact of driving cessation. The positive moderating effect may reflect the fact that non-drivers with higher income can afford things that offset the negative impact of driving cessation. For instance, people with more income can afford transportation, such as taxis or paying friends for rides, which is convenient and does not reduce people's sense of freedom, independence, and control unlike public transportation (buses) does (Kostyniuk, Shope, & Molnar, 2000; Siren, Hakamies-Blomqvist, & Lindeman, 2004; Stutts, Wilkins, Reinfurt, Rodgman, & Van Heusen-Causey, 2001. People with more income can also move close to services, such as shopping malls, leisure centres and hospitals, so the need to drive is less. With less need to drive the negative impact of cessation may not be as great.

Health also moderated the impact of driving cessation on subjective well-being. As expected, higher ratings of health positively moderated the effects of driving cessation. This can occur because health is a resource that affects many other aspects of a person's life such as mobility, activity level, and sense of independence and control (Bennett, 2005; Hinterlong, Morrow-Howell, & Rozario, 2007; Johannson, Ek, & Bachrach-Lindstrom, 2007; Mathieson,

Kronenfeld, & Keith, 2002; Parslow, Jorm, Christensen, & MacKinnon, 2006). Moreover, mobility, independence, and control in turn help people maintain their level of subjective well-being (DeNeve & Cooper, 1998; Reker, Peacock, & Wong, 1984; Sheldon, Kasser, Houser-Marko, Jones, & Turban, 2005). If people stop driving and they are healthy their capacity to be active and mobile and maintain their independence can offset the negative consequences of driving cessation and improve their subjective well-being. To use an example, a healthy older individual who gives up driving because of insufficient income or feeling a lack of confidence in their ability to drive will still be active and mobile to access public transportation. These adults will also be able to perform activities both in the home and outside the home to maintain their sense of independence and control over their life.

It is important to note that both objective and subjective measures of health moderated the impact of driving cessation on subjective well-being. This adds to the literature demonstrating the importance of people's subjective interpretations of health in relation to driving (Anstey, Windsor, Luszcz, & Andrews, 2006; Dellinger, Sehgal, Sleet, & Barrett-Connor, 2001; Windsor, Anstey, Butterworth, Luszcz, & Andrews, 2007).

In this study, psychological variables moderated the impact of driving cessation on subjective well-being. On the MUNSH, the impact of driving cessation was moderated by life control. Higher life control had a positive moderating influence on subjective well-being. Life control involves the freedom to make life choices and to exercise personal responsibility (Reker, Peacock, & Wong, 1987). People high on life control may work to maintain control over other aspects of their life to offset the negative consequences of driving cessation. People's understanding of how much control they can exert over important events in their lives has been shown to affect how they behave and evaluate themselves and their

environments (Skinner, 1985). In particular, people who possess higher life control are more likely to exert effort, initiate a response, and be persistent in relation to goals (Lefcourt, 1976). For instance, non-drivers higher in life control may be more likely to put forth more effort to secure alternate means of transportation and persist in their efforts to find transportation if they are unable to secure it from friends or family. Those higher in control may also be more active and make greater efforts to get to access resources known to buffer quality of life such as work, shopping, leisure pursuits, spiritual/religious activities, social supports and family, volunteering, and health care services (Azad, Byszewski, & Molnar, 2003; Bonnel, 1999; Carp, 1988; DeCarlo, Scilley, Wells, & Owsley, 2003; Kim & Richardson, 2006; Legh-Smith, Wade, & Hewer, 1986; Marotolli, Mendes de Leon, Glass, Williams, Cooney, Berkman, & Tinetti, 1997; Marotolli, Ostfeld, Merrill, Perlman, Foley, & Cooney, 1993; Richardson & Balaswamy, 2004; Rosenbloom, 2001; Taylor & Tripodes, 2001). Hence, non-drivers who feel more in control may be less likely to experience declining activity levels. This group of people may also report less isolation and more independence than many who cease driving (Campbell, Bush, & Hale, 1993; Johnson, 1999; Rothe, 1994; Whitehead, Howie, & Lovell, 2006). The influence of control beliefs on people's activity and independence after driving cessation are issues that would be interesting to explore further.

Contrary to expectations, age, education, functional ability, and personality traits did not moderate the relationship between driving cessation and subjective well-being. Psychological resources such as life purpose and locus of control also did not have a moderating influence.

The results indicate that age does not moderate the impact of driving cessation. It appears that in looking at moderators more important than age are some of its correlates such

as health. This explanation is consistent with what is known about age being an index variable (Birren & Schaie, 1996).

With respect to education level, it is a resource that positively impacts people's reactions to many life events (Billings & Moos, 1981; Holahan & Moos, 1987; Ruth & Kenyon, 1995). Therefore, there was a rationale for expecting that it would positively moderate the impact of driving cessation on subjective well-being. However, while education does not have a direct effect on subjective well-being it may have indirect effects by giving people the opportunities to secure other resources (income) that directly moderate the effects of driving cessation.

In this study, functional ability did not moderate the relationship between driving cessation and subjective well-being. This is surprising because functional ability helps predict driving cessation and is related to health, a factor that positively moderates driving cessation (Ferrucci, Guralnik, Boroni, Tess, Antonini, & Marchionni, 2006; Gill, Williams, Richardson, & Tinetti, 1996; Hoeymans, Feskens, & Kromhout, 1997; Idler & Kasl, 1995). There is also some content overlap on measures of functional ability and measures of health. However, many of the items on measures of functional ability involve activities unrelated to driving (using a telephone, being able to cook a meal). Therefore, whether someone is able to do many of these activities may not be directly relevant to people's subjective well-being when driving cessation does occur.

In terms of psychological resource variables, locus of control did not moderate the relationship between driving cessation and subjective well-being. This is unexpected because another control variable, life control, moderated the relationship between driving cessation and subjective well-being. The different result may reflect a fundamental difference between

the two constructs. Locus of control refers to generalized expectancy for control (Rotter, 1966) and reflects a stable difference between people. Life control, as measured by Reker and Peacock (1981), makes specific reference to the amount of control a person's experiences in their life at that time and is likely to change as people's circumstances change. Therefore, life control should be more sensitive to the impact of driving cessation. Driving cessation is accompanied by change in people's social functioning, occupational functioning, psychological functioning, and access to resources that buffer people's subjective well-being. Moreover, the change that a person undergoes recurs as the person is repeatedly faced with the frustrations, inconveniences, isolation, and awareness of their loss of independence. Unlike driving cessation, the negative effects of other major life events that do impact people's subjective well-being are circumscribed and tend to dissipate over time (Brickman, Coates, & Janoff-Bulman, 1978; Costa, McCrae, & Zonderman, 1987; Headey & Wearing, 1989; Suh, Diener, & Fujita, 1999).

Life purpose also did not moderate the effect of driving cessation on subjective well-being. Life purpose refers to possessing goals and having a sense of direction from the past, in the present, and toward the future (Reker, 2002). Possessing goals has a salutary effect on people's subjective well-being (Emmons, 2003) so it is surprising that it did not emerge as a significant moderator. With respect to the role of psychological resources in driving cessation, a person's sense of control seems more important in how they will be impacted by driving cessation. This explanation is consistent with past research demonstrating that driving cessation impacts people's sense of control and independence (Campbell, Bush, & Hale, 1993; Whitehead, Howie, & Lovell, 2006).

Contrary to expectations, personality traits such as extraversion and neuroticism did not moderate the relationship between driving cessation and subjective well-being. Extraversion is a correlate and predictor of subjective well-being, so there was some justification for proposing that extraversion would moderate the impact of driving cessation on well-being (Schimmack, Oishi, Furr, & Funder, 2004). Extraversion is a superordinate construct comprised of many sub-components some of which may be relevant to how people respond to driving cessation. Howard and Howard's (2001) model of extraversion includes six parts: 1) enthusiasm, the extent to which a person displays positive feelings, 2) sociability, degree of preference for social contact, 3) energy mode, amount of physical activity, 4) taking charge, extent to which a person displays leadership, 5) extent to which a person trusts other, and 6) interpersonal tact. By definition, the experience of positive emotions increases people's subjective well-being to positively moderate the impact of driving cessation (Costa & McCrae, 1989). Physical activity and social relationships also accrue benefits to increase people's subjective well-being (Diener, 1984) and to positively moderate the impact of driving cessation. It is also difficult to explain why neuroticism did not moderate driving cessation. Neuroticism by definition is negative reactivity including anxiety, hostility, depression, self-consciousness, and vulnerability (Costa & McCrae, 1989). Many of the facets of neuroticism should bias people towards lower subjective well-being in reaction to driving cessation. Generally, people with higher scores on a measure of neuroticism report lower subjective well-being and more depression than their less neurotic counterparts (Costa & McCrae, 1989). As happened with other variables (education), extraversion and neuroticism may not directly moderate driving cessation but have an indirect effect influencing other variables such as health (Jorm, Christensen, Henderson, & Korten, 1993).

Study Limitations

A number of study limitations should be acknowledged. One limitation is that some variables relevant to driving cessation were not examined. Geographical location, the incidence of falls, and social influences were reviewed but not included in this study. There were not enough participants from rural areas to permit meaningful analyses. The incidence of falls, an indication of physical integrity, was not included in favour of a broader construct, functional ability that provides information on people's cognitive and social functioning as well as providing some indication of physical functioning (Vance, Ball, Roenker, Wadley, Edwards, & Cissell, 2006). The influence of family, friends and professionals on driving cessation also was not examined. This was done in order to focus on other demographic variables whose role in driving cessation is more established in the literature. Some of the other variables not included in the current study were people's ratings of confidence in their driving ability and ratings of anxiety about driving. Anxiety and lack of confidence are negatively related to driving cessation (Brayne, Dufouil, Ahmed, Dening, Chi, McGee, & Huppert, 2000; Kington, Reuben, Rogowski, & Lillard, 1994; Rabbitt, Carmichael, Jones, & Holland, 1996). People scoring higher on measures of anxiety and those not as confident in their driving abilities are more likely to cease driving than their more relaxed, confident counterparts. Not including variables such as confidence and anxiety was a conscious choice given the large number of variables already included in the analyses. Instead, other psychological variables with theoretical and empirical rationales related to driving cessation and well-being were examined. This was done to extend the literature on the role of psychological factors in driving cessation.

Another limitation was the small sample of non-drivers. Because there are many ways in which people experience driving cessation a small sample is unlikely to adequately capture all the relevant facets. Some people experience cessation as a gradual process whereas for other people cessation can be sudden, often in response to a medical problem or an accident (Cotrell & Wild, 1999; Dellinger, Sehgal, Sleet, & Barrett-Connor, 2001; Liddle & McKenna, 2003; Lyman, McGwin, & Sims, 2001; Persson, 1993). Differences in whether cessation was gradual or sudden are likely to impact older driver's subjective well-being in different ways. The expectation would be that those who experience driving cessation suddenly are less prepared for the sudden change in their life and would report greater declines in their level of subjective well-being than other drivers who take the time to prepare for driving cessation. Another difference in people's experience of driving cessation is whether they choose to cease driving or if cessation is imposed on them by external agents such as driver's licensing agencies, physicians, and family (Johnson, 1998). In general, people who are in control of their decisions about driving cessation differ in some important ways from drivers who have cessation imposed on them (higher external locus of control) and this has implications for how people adapt (Bauer, Rottunda, & Adler, 2003; Winter, 1996). People who are able to decide when to cease driving appear to adapt best (Bauer, Rottunda, & Adler, 2003). To address this issue, future research requires a larger sample of non-drivers to better account for all the different patterns of driving cessation that older drivers experience.

Another limitation had to do with how participants were recruited. Participants were recruited by convenience from a number of community organizations. Older people who attend community organizations may differ from those who do not participate in community activities in some fundamental ways that could affect rates of driving cessation. People who

join community organizations tend to be younger, in better mental and physical health, and report higher functional ability (Idler & Benyamini, 1997; Kawamoto, Yoshida, & Oka, 2004; Madigan, Mise, & Maynard, 1996; Mendes deLeon, Glass, & Berkman, 2003). Therefore, there are limits on the generalizability of the results.

Furthermore, results cannot be generalized to rural older persons because participants were recruited primarily from urban centres. Geographical location is an important variable when it comes to driving patterns and decisions about driving cessation (Forrest, Bunker, Songer, Cohen, & Cauley, 1997; Johnson, 1998, 1995; Persson, 1993). Noting this, a more focused effort to canvas rural populations should occur in the future.

On a related note, a small number of participants were recruited from the internet but it is unclear whether this affected the outcomes. Regardless, it is important to note that older people who use the internet represent a distinct sub-sample of older people. Research suggests that older people accessing the internet tend to be younger, better educated, possess more income, and are in better health than their counterparts who do not use the internet (Eastman & Iyer, 2005; Tacken, Marcellini, Mollenkopf, Ruoppila, & Szeman, 2005). Optimally, more people would have completed the internet version allowing separate analyses for people completing the paper version of and the internet version of the questionnaire to see whether any differences exist.

Greater care should have also been taken to ensure that all participants were cognitively intact. This is particularly important considering that many people with significant cognitive decline continue to drive (Foley, Masaki, Ross, & White, 2000; Hopkins, Kilik, Day, Rows, & Tseng, 2004). This study did not assess people's cognitive status, an important predictor of driving cessation. This was done for practical reasons. Given that participants

were able to take questionnaires home it would have not been feasible for the examiner to obtain an indication of people's cognitive status. Measures such as the MMSE (Folstein, Folstein, & McHugh, 1975) or the Dementia Rating Scale (Mattis, 1988) require someone to administer them. Unfortunately, providing a self-report measure of cognition would not have been much better. Self-reported cognitive status does not provide the most accurate estimates; evidence indicates that older people evaluation overestimate their cognitive abilities (Farias, Mungas, & Jagust, 2005; Jorm, Christensen, Henderson, Korten, Mackinnon, & Scott, 1994; O`Conner, Pollitt, Roth, Brook, & Reiss, 1990). However, it was assumed that those with the most severe cognitive deficits would not have participated in the study thereby reducing the confounding effects of cognitive status. The length of the questionnaire and the heavy reliance on verbal language ability would likely have deterred people with all but the mildest cases of dementia from completing the questionnaires. There is some evidence to suggest that the relationship between cognitive status and driving cessation is only apparent among those with the most severe deficits (Marotolli, Ostfeld, and colleagues (1993). It is quite possible that many of the incomplete questionnaires reflect the efforts of people with significant cognitive deficits.

Another limitation of the present study is the cross-sectional design. Cross-sectional designs allow comparisons between two or more groups at a single point in time. Such a research design does not permit one to look at causal relationships. Longitudinal research designs are recommended for future research because they involve repeated time-ordered observations to identify processes and causes of behaviour (Pedhazur & Pedhazur-Schmelkin, 1991).

One other limitation of the present study is that data on response rate was not obtained. In other words, the percentage of people solicited in the study who actually did participate was not recorded; this is relevant to how adequate sampling is (Groves, 1989). To correct this, response rates will be recorded when asking people to participate in the future.

Future Avenues of Research

This study was the first phase of a larger study examining driving cessation in people 55 years and older. When the second phase of the study is completed prospective data will be obtained that will allow causal relationships between variables to be examined. For instance, the relationship between a sense of control and driving cessation can be clarified. The issue of causality can apply to the other variables we looked at such as functional ability, health, or subjective well-being.

Another area of future research will be to continue to examine positive aspects of driving cessation. The focus of the research to this point has been on the negative consequences of driving cessation. This is to be expected as most people report some negative outcome when they stop driving. However, and as noted before, negative aspects represent only one side of people's experience with driving cessation (Azad, Byszewski, Amos, & Molnar, 2002; Cutler, 1972; Gillins, 1990). Some former drivers are able to identify benefits to driving cessation such as increased exercise, saving money, avoiding the stress of driving in traffic, or discovering a new social network via their friends and family (Buys & Carpenter, 2002; Gillins, 1990; Yoshimoto, 1994). Perhaps there are other benefits to driving cessation that have not been identified yet. For instance, former drivers may experience positive feelings because they are reducing their ecological impact on the planet by choosing to give up their automobile and use public transportation. Future research should continue to identify

additional benefits of driving cessation to provide people a more balanced perspective on the issue. This may help them cope more effectively with driving cessation.

As this study is one of the first to demonstrate the importance of psychological variables it sets the groundwork for future research looking at other psychological variables relevant to driving cessation. One variable that was not studied but may relate to how people react to driving cessation is coping style. Coping refers to the person's cognitive and behavioural efforts to manage (reduce, minimize, master, or tolerate) the internal and external demands of the person-environment transaction appraised as taxing or exceeding the person's resources (Folkman, Lazarus, Gruen, & DeLongis, 1986). Two main coping styles have been identified: problem-focused coping is dealing with the problem causing the distress and emotion-focused coping is people regulating their emotional reaction to a stressor (Folkman & Lazarus, 1985, 1980). Weiten and Lloyd (2006) identified a third coping style, appraisal-focused coping. Appraisal-focused coping involves a person changing how they think about a situation by altering their goals and values.

Problem focused coping mechanisms allow an individual greater perceived control over their problem, while emotion-focused coping more often lead to a reduction in perceived control. Therefore, it has been suggested that problem-focused coping is more effective and leads to better physical and mental health (Billings & Moos, 1981; McCrae & Costa, 1986; Suls, David, & Harvey, 1996). With respect to driving cessation, the expectation would be that former drivers adopting a problem-focused approach would adjust better whereas those adopting an emotion-focused approach would likely experience more negative outcomes. For example, people with a problem-focused approach would work to improve their situation by securing alternate transportation whereas people with an emotion-focused approach would

focus on the negative emotions associated with the loss of driving. People using an appraisal-focused coping approach may effectively cope with the impact of driving cessation to the extent that they are able to set realistic goals and appropriately modify their expectations. The ability to set realistic goals and modify expectations as the situation dictates are markers for positive functioning (Jahoda, 1958; Prochaska & Norcross, 2001).

With respect to anticipating driving cessation, people with a problem-focused coping style may be more likely to anticipate driving in the future. This is because they would employ strategies that are effective in solving a problem (possibility of driving cessation) such as physical exercise or budgeting to afford their automobile. When driving cessation needs to happen, because of a serious medical condition for example, using a problem-focused coping approach may also be of benefit to people. People with a problem-focused coping style may not see cessation as threatening and be more likely to stop driving. This is because they are able to think of effective strategies to cope with driving cessation such as asking family and friends for rides. People employing an emotion-focused approach may be more likely to anticipate driving cessation in the future. One possible explanation is that the negative emotions experienced by people using an emotion-focused coping approach will negatively bias their judgments about whether they will still be driving in the future. Another explanation is people adopting an emotion-focused coping style do not direct their energies towards generating solutions to deal with future cessation. By not generating solutions to the problem and focusing on the negative emotions the situation does not change and driving cessation becomes a self-fulfilling prophecy. The role that an appraisal-focused coping approach would have in anticipating driving cessation is less clear. Rather than making future judgments about driving cessation perhaps people using an appraisal-focused coping style modify their goals

and expectations as the process of driving cessation unfolds. People using an appraisal-based coping style may be more likely to state that they are unsure about whether they anticipate driving cessation. Future research is needed to test these hypotheses.

Another avenue for future consideration is the identification of other demographic variables relevant to driving cessation. This study focused on variables (education, gender, income) used in past research, partly as a means to replicate past findings, to the exclusion of cultural considerations such as ethnicity. Among the few studies examining ethnicity and driving cessation consistent differences in rates of driving cessation and use of public transportation have been observed across ethnic groups (Freeman, Munoz, Turano, & West, 2005; Mann, McCarthy, Wu, & Tomita, 2005; Rosenbloom, 2001). Across studies, African Americans and Hispanics are more likely to stop driving than Caucasians (Freeman, Munoz, Turano, & West, 2005; Freund & Szinovacz, 2002; Rosenbloom, 2001). Caucasian seniors also tend to travel more frequently by car, and are less likely to utilize public transportation (Raymond, Knoblauch, & Nitzburg, 2001). What is missing from the current literature is an examination of driving cessation among Aboriginal populations. Based on figures from the 1990 U.S. Census, Aboriginal people are becoming the fastest growing ethnic minority in the United States (Tseng, 2003). In Canada, Aboriginal individuals constitute about 1 million people or approximately 4% of the Canadian population. To the knowledge of this author, no research has been conducted to examine the experience of Aboriginal people who give up driving. The absence of research may partly reflect the fact that Aboriginal peoples are a very young demographic group. According to some estimates, the median age of Aboriginal populations is 25 years of age, compared to a median age of 35 years of age for all Canadians (Government of Canada Department of Indian and Northern Affairs Development Projections,

1997). Regardless, it may be fruitful to examine how Aboriginal people experience driving cessation.

The role of social influences should be examined in future research. This will help clarify the role that family and friends and physician recommendations have on people's decisions about driving cessation. Advice from family or friends and recommendations from physicians seem to have little impact on people`s decision to cease driving (Dobbs, Carr, & Morris, 2002). Medical conditions that impact cognitive functioning, such as dementia appear to be partially responsible for some older people`s reluctance to accept advice and recommendations from others (Adler & Kuskowski, 2003). Unfortunately, people with dementia do not always make the best decisions about driving because of their lack of insight, poor judgment, and loss of reasoning ability (Adler & Kuskowski, 2003). Future research may want to look at other conditions that impact cognitive functioning to see whether that impacts willingness to receive advice and recommendations from others about driving cessation. Some health conditions for study may include depression. Depression is one of the most prevalent mental health concerns in older populations (Birren & Schaie, 1996; Zarit & Zarit, 1998). It is well-documented that depression left untreated can affect cognitive functioning (Zarit & Zarit, 1998).

As noted previously, this study used both subjective and objective measures of health. The subjective measure was a global judgment of health whereas the objective measure was self-reported number of medical conditions people had been diagnosed with. Other indicators of health that could be used include frequency and types of medication used. Few studies have looked at the role of medications in driving cessation (Carr, Flood, Steger-May, Schnechtman, & Binder, 2006; Currie, Patten, Williams, Wang, Beck, El-Guebaly, & Maxwell, 2005; Ray,

Thapa, & Shorr, 1993; Swendsen & Merikangas, 2000). Ray, Thapa, and Shorr (1993) note that the medications used to treat various diseases may affect older people's ability to drive. For instance, Carr, Flood, Steger-May, Schnechtman, and Binder (2006) compared characteristics of older frail adult drivers and former drivers and found that former drivers were more likely to use sedating medications. In another study, Stewart, Moore, Marks, May, and Hale (1993) reported two drugs predicted driving status, alcohol and magnesium hydroxide. It is not certain how increased use of medications such as magnesium hydroxide (Milk of Magnesia) relates to driving cessation but alcohol does affect the cognitive functions needed to drive (attention, memory, reaction time). The relationship between alcohol use and cognitive decline may be dose-dependent though. Mild-to-moderate doses of alcohol appear to slow the rate of cognitive decline whereas chronic severe alcohol use is related to cognitive decline in older people (Acker, 1986; Barnes, Cauley, Lui, Fink, McCulloch, Stone, & Yaffe, 2007; Cermak, 1990; Ganguli, Vander Bilt, Saxton, Shen, & Dodge, 2005; Rourke & Loberg, 1996; Wright, Elkind, Luo, Paik, & Sacco, 2006). Overall, the relationship between alcohol use and driving cessation remains unexplained. This issue and others related to medication could be clarified with future research.

With respect to health, future research should look at other health issues that may impact an older person's ability to drive. One health condition that remains largely unexplored is cardiovascular disease. Heart disease ranks third among leading chronic conditions limiting activity in older adults (Government of Canada Statistics Canada, 2000). Cardiovascular disease is associated with reductions in driving (Forrest, Bunker, Songer, Coben, & Cauley, 1997; Waller, 1987) and only recently has it received attention as a risk factor for driving cessation (Carr, Flood, Schnechtman, & Binder, 2006). However, given the

prevalence of cardiovascular conditions and the impact they have on physical health this topic warrants further examination as a risk factor for driving cessation.

Another medical condition that has not been studied in relation to driving cessation is Chronic Obstructive Pulmonary Disease (COPD). This is a disease of the lungs in which the airways become narrowed, leading to a limitation of the flow of air to and from the lungs causing shortness of breath (Canadian Lung Association, 2008). Conditions such as chronic bronchitis and emphysema are types of COPD. People usually notice symptoms of COPD in their 50's and 60's. A recent report commissioned by The Lung Association shows that 1.5 million Canadians have been diagnosed with COPD. Another 1.6 million Canadians may have COPD but haven't yet been diagnosed (Canadian Lung Association, 2008). Future research should examine whether COPD is associated with driving cessation.

Conclusion and Implications

As Canada's population ages the number of former drivers is expected to increase; up to 52% of people 65 years and older will be non-drivers by 2020 (Koffman, Raphael, & Weiner, 2004). Driving cessation will continue to be an important issue for older people. This study contributes to better understanding driving cessation in a few ways. This study is the first to show group differences in personality traits and psychological resources. Most research to date has examined variables such as age, demographic factors, and health overlooking the importance of psychological factors in driving cessation (Horowitz, Boerner, & Reinhardt, 2002). This study contributes to a small literature demonstrating that psychological variables play an important role in driving cessation (Siren, Hakamies-Blomqvist, & Lindeman, 2004; Windsor, Anstey, Butterworth, Luszcz, & Andrews, 2007; Winter, 1996). Moreover, this is the only study to demonstrate group differences in

personality traits between drivers and non-drivers. It appears that people's decisions about driving cessation is a complex process involving age, demographic factors, health, and psychological factors such as personality traits and psychological resource variables.

With respect to the prediction of driving cessation, this study also contributed to the literature by including psychological variables in the analyses. By simultaneously examining a wide array of age, demographic, health, and psychological variables associated with driving cessation we were able to identify the most relevant factors with respect to risk of driving cessation.

Another contribution this study makes to the literature is the examination of factors that moderate the impact of driving cessation. There is an assumption that the impact of driving cessation is inevitably negative. This overlooks the point that some people report few negative consequences and high subjective well-being even after ceasing to drive (Azad, Byszewski, Amos, & Molnar, 2002; Buys & Carpenter, 2002; Cutler, 1972; Gillins, 1990; Johnson, 1999). To the knowledge of the investigator, there has only been one study that has looked at moderating factors between driving cessation and an outcome measure (Windsor, Anstey, Butterworth, Luszcz, & Andrews, 2007). What is different from the current study is that Winsdor and colleagues (2007) did not examine a wide array of variables such as age, demographic variables, functional ability, or personality traits. In this study, higher life control positively moderated the impact of driving cessation on people's subjective well-being. Furthermore, the results suggest that besides control beliefs other variables including higher income and better health positively moderate the impact of driving cessation. Examining moderators helps clarify what factors are responsible for the different responses to driving cessation.

Finally, this study was the first to show that comprehensive measures of subjective well-being provide a more sensitive assessment of the impact of driving cessation. This lends support to the idea that people respond differently to driving cessation and that focusing on only the negative overlooks the fact that some people adjust with little consequence.

The results of this study can be used to inform the development of recommendations that can help people cope with the negative consequences of driving cessation. One recommendation may be to help prevent premature driving cessation. A subsection of drivers, more often females, prematurely cease driving despite their young age and good health (Burkhardt, Berger, & McGavock, 1996; Rabbit, Carmichael, Jones, & Holland, 1996). From the current study, identifying the factors that make people more likely to anticipate driving cessation may be useful in identifying people who prematurely cease driving. For instance, drivers who are older may be at-risk for giving up their license prematurely despite having the mental and physical capabilities to drive. Awareness of risk factors will alert professionals, family, and friends to the possibility that they may have to intervene to ensure the person in question is aware of the consequences of premature driving cessation. Such interventions are likely to benefit from an educational approach that make people aware of risk factors because they can stimulate discussions about driving in a less threatening way than direct conversation (Kostyniuk & Shope, 2003). Discussions surrounding driving cessation can seem like an imposition on the person in question because of the potential threat to their sense of control and independence (Yassuda, Wilson, & von Mering, 1997).

Another recommendation to help people adjust to driving cessation is to find ways to enhance positive resources that mitigate the negatives consequences of driving cessation. One way this can be achieved is by enhancing physical health. In the current study, physical health

was an important factor predicting driving cessation and the anticipation of driving cessation. People who make active efforts to improve their physical health with exercise, proper diet, stress management, and regular medical evaluation may experience a longer driving career and adjust better to driving cessation when it does occur. Encouraging people to improve their physical health may have the added benefit of managing the negative feelings associated with driving cessation. Driving cessation is related to the experience of negative emotional states such as increased risk of depression (Fonda, Wallace, & Herzog, 2001; Marottolli, Mendes de Leon, Glass, Williams, Cooney, Berkman, & Tinetti, 1997). The tonic effects of exercise and stress management on mood and depression in elderly populations is well established (Pinquart, Duberstein, & Lyness, 2007; Ruthig, Chipperfield, Newall, Perry, & Hall, 2007; VanCool, Kempen, Bosma, VanBoxtel, Jolles, & VanEjik, 2007).

Enhancing people's social resources may be another way to help people deal with the negative consequences of driving cessation. The current study did not examine social activity *per se* but rather a construct related to sociability (i.e., extraversion) was an important factor in driving cessation. Enhancing social resources may include providing rides to former drivers so they can attend social engagements or help others connect with social organizations to maintain relationships (Windsor & Anstey, 2006). Such actions can help with isolation and loneliness that tends to occur with driving cessation (Marottolli, Mendes de Leon, Glass, Williams, Cooney, & Berkman, 2000). With respect to managing other negative emotions such as depression social activity also has a positive effect (Bedford, 2003; McGue & Christensen, 2007).

Enhancing a person's psychological resources may also help a person deal with the negative consequences of driving cessation. Giving up driving is frequently seen as

representing lost independence, or as signaling a transition into a final dependent phase of life (Yassusa, Wilson, & Von Mering, 1997). In this study, drivers and those who did not anticipate driving cessation scored higher on measures of life control and locus of control. Interventions that look at people's control beliefs may be one way to enhance a person's psychological resources. Windsor and Anstey (2006) noted that one intervention to reduce the impact of driving cessation is to promote a sense of control to maximize positive health outcomes. Based on social cognitive theory, which emphasizes self-efficacy, self-regulation, and exertion of control over the environment, interventions that promote a sense of personal agency are likely to help people adjust to driving cessation (Bandura, 2005). The promotion of control has been identified as a key element for success in interventions designed to reduce depressive symptoms in late life (Windsor & Anstey, 2006). Specific interventions may include the temporal extension of agency through intentionality and forethought (Bandura, 2001). For instance, active drivers who take responsibility to plan for future driving cessation will experience a sense of control and avoid some of the practical and psychological consequences that may emanate from sudden driving cessation. Strategies involved in planning for driving cessation could include familiarization with transport alternatives such as public transport, consideration of residential relocation, and discussing future transportation arrangement with family and friends (Windsor & Anstey, 2006). Woods (1999) notes that anticipation of a negative event as part of a normal transitional process is likely to result in better adjustment than the experience of loss as sudden and unplanned for.

Another approach to enhancing positive aspects is drawing on people's positive strengths and attributes to foster good psychological functioning and subjective well-being. This is the philosophy behind the positive psychology school of thought (Seligman, 2000;

Seligman, Steen, Park, & Peterson, 2005). The current study identified some psychological resources and positive personality attributes that people could use to help them adjust to the impact of driving cessation. Life control is one resource that has positive psychological benefit. Assisting non-drivers to become aware of the aspects of their life they do have control over may help to mitigate the sense of loss of independence that people often report in response to driving cessation. A positive personality attribute that may help people adjust to driving cessation is extraversion. By fostering client's extraverted behaviour this may help them develop relationships to socialize with and obtain rides from. This approach is similar to Solution Focused Therapies whose key task is to help clients identify their skills, abilities, and resources and use these to solve problems and improve psychological functioning (Miller, Hubble, & Duncan, 1996; O'Connell, 1998). The process helps the person to construct a narrative of the person as a competent individual, but also helps the client identify new ways of bringing these abilities and resource to bear upon the problem.

In conclusion, this study provides a better understanding of the risks and protective factors of driving cessation. This information can be used to help extend the driving career of those still able to safely drive and help others adjust to driving cessation when it is the only option. Helping people who are able to drive safely is important because of the positive benefits driving provides in terms of maintaining a sense of independence and accessing resources that buffer their quality of life. Helping others adjust to driving cessation better is also important because in many cases driving cessation does decrease people's sense of well-being. The next step from this research should be to use this knowledge to further develop interventions that help people adjust to driving cessation. At the current time, information on

interventions for driving cessation is relatively sparse owing to the fact that it is only recently that investigators have begun to research this topic.

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Appendix A

Cover Letter-Thunder Bay Version

Dear Participant:

You have been invited to participate in a study conducted by Lakehead University Professor Dr. Michel Bedard and his doctoral thesis student, Garrett Kafka. The study is entitled: "*A study of driving cessation in older drivers*". Driving cessation is an important issue because the number of seniors living in Canada is increasing and ceasing to drive can be a very stressful experience that can have far-reaching implications for the quality of life people experience. For this reason, your participation in this study is important in order to understand more about factors that can improve the quality of life of those who no longer drive. The purpose of this study is to look at how people adapt when they are ceasing driving and any factors that worsen or improve the experience of driving cessation.

Drivers over 55 years of age and older who are currently driving or who have stopped driving in the past 3 years, are being asked to participate in this study. Participation will involve taking approximately one hour to complete a questionnaire booklet. We will also be contacting participants in approximately one year to participate in the second-half of this study by completing another questionnaire booklet. Agreeing to participate at this time does not obligate you to participate in the second part of the study. However, by signing the consent form you are giving us permission to contact you in the future. Your participation is completely voluntary. You may withdraw at any time without consequence. All responses will be accepted.

Please sign and date the consent form before starting the questionnaire and provide contact information. This page will be detached from the questionnaires to ensure confidentiality. Please do not include any personal information on the questionnaires. Access to the data will be restricted to the principal investigators and project staff and data will be stored in a secured location at Lakehead University for a period of seven years. It is anticipated that the results of this study will be shared with others in the following ways: evaluation by a thesis committee, presentation at scientific conferences, and publishing in scientific journals. If participants have further questions or wish to obtain results of the study you can contact Dr. Bedard by calling 807-343-8630 or Garrett Kafka at 807-344-9138.

Thank you,

Garrett Kafka, M.Sc.
PhD. Student in Psychology
Lakehead University

Michel Bedard, Ph.D.
Canada Research Chair in Aging and Health
Lakehead University

Appendix B

Cover Letter-Winnipeg Version

Dear Participant:

You have been invited to participate in a study conducted by Lakehead University Professor Dr. Michel Bedard and his doctoral thesis student, Garrett Kafka. The study is entitled: "*A study of driving cessation in older drivers*". Driving cessation is an important issue because the number of seniors living in Canada is increasing and ceasing to drive can be a very stressful experience that can have far-reaching implications for the quality of life people experience. For this reason, your participation in this study is important in order to understand more about factors that can improve the quality of life of those who no longer drive. The purpose of this study is to look at how people adapt when they are ceasing driving and any factors that worsen or improve the experience of driving cessation.

Drivers over 55 years of age and older who are currently driving or who have stopped driving in the past 3 years, are being asked to participate in this study. Participation will involve taking approximately one hour to complete a questionnaire booklet. We will also be contacting participants in approximately one year to participate in the second-half of this study by completing another questionnaire booklet. Agreeing to participate at this time does not obligate you to participate in the second part of the study. However, by signing the consent form you are giving us permission to contact you in the future. Your participation is completely voluntary. You may withdraw at any time without consequence. All responses will be accepted.

Please sign and date the consent form before starting the questionnaire and provide contact information. This page will be detached from the questionnaires to ensure confidentiality. Please do not include any personal information on the questionnaires. Access to the data will be restricted to the principal investigators and project staff and data will be stored in a secured location at Lakehead University for a period of seven years. It is anticipated that the results of this study will be shared with others in the following ways: evaluation by a thesis committee, presentation at scientific conferences, and publishing in scientific journals. If participants have further questions or wish to obtain results of the study you can contact Dr. Bedard by calling 807-343-8630 or Garrett Kafka at 204-801-0500.

Thank you,

Garrett Kafka, M.Sc.
PhD. Student in Psychology
Lakehead University

Michel Bedard, Ph.D.
Canada Research Chair in Aging and Health
Lakehead University

Appendix C

Consent Form

A Study of Driving Cessation in Older Drivers.

I _____ consent to take part in a study that will examine driving cessation in older drivers. The purpose of this research is to look at how people adapt to when they are ceasing driving and any factors that worsen or make better the experience of driving cessation.

I have read the cover letter provided with the questionnaire and understand the nature of the study, its purpose, and procedures. I also understand that participation entails spending approximately one hour completing a questionnaire booklet and that I will be contacted in about one year to participate in the second-half of this study by completing another questionnaire booklet. I also understand that my participation in the first half of the study does not obligate me to participate in the second-half but do realize that by signing this form I will be contacted and asked to participate again.

I understand that there will be no direct benefit to me participating in this study. I also understand that my participation is voluntary and can withdraw at any time from the study without consequence. I understand that there is no apparent risk of physical or psychological harm, that the data I provide will be confidential. I also understand that I will receive a summary of the project, upon request, following the completion of the study.

_____ _____

Signature of Participant Date

_____

Contact information-Telephone number and/or email address

Appendix D

Demographic Information

For this study we need to know some information about you. All responses are completely confidential.

1) Date of completion of Questionnaire: _ _ / _ _ / _ _ _ _
MM DD YYYY

2) Gender: Check only one ❑ Male$_1$ ❑ Female$_2$

3) Date of Birth: _ _ / _ _ / _ _ _ _
MM DD YYYY

4) Marital Status: Check only one

❑ Married/Cohabitating$_1$
❑ Single$_2$
❑ Widowed$_3$
❑ Separated$_4$
❑ Divorced$_5$

5) Please indicate ***each*** education level that you have completed:

	Yes	No
Elementary	❑$_1$	❑$_2$
Secondary	❑$_1$	❑$_2$
College	❑$_1$	❑$_2$
University	❑$_1$	❑$_2$

5b) Please indicate your total years of education: ___ ___

Appendix D Continued

Demographic Information

6) Please indicate your total household pre-tax income. Check only one:

- ☐ 0-$10,999 $_1$
- ☐ $11,000-$20,999 $_2$
- ☐ $21,000-$30,999 $_3$
- ☐ $31,000-$40,999 $_4$
- ☐ $41,000-$50,999 $_5$
- ☐ $51,000-$60,999 $_6$
- ☐ $61,000-$70,999 $_7$
- ☐ $71,000-$80,999 $_8$
- ☐ $81,000-$90,999 $_9$
- ☐ ≥$100,000 $_{10}$

7) Indicate your principle place of residence. Check only one:

- ☐ House$_1$
- ☐ Apartment$_2$
- ☐ Senior Citizens Home$_3$
- ☐ Retirement Community$_4$
- ☐ Assisted Living Facility$_5$

Appendix D Continued

Demographic Information

8) Do you live alone: ❑ Yes$_1$ ❑ No$_2$

IF NO, please indicate the people that live in your household and if they hold drivers licenses.

	Live With		Drivers License	
	Yes	No	Yes	No
Spouse	❑$_1$	❑$_2$	❑$_1$	❑$_2$
Daughter	❑$_1$	❑$_2$	❑$_1$	❑$_2$
Son	❑$_1$	❑$_2$	❑$_1$	❑$_2$
Another Relative	❑$_1$	❑$_2$	❑$_1$	❑$_2$
Friend	❑$_1$	❑$_2$	❑$_1$	❑$_2$
Other	❑$_1$	❑$_2$	❑$_1$	❑$_2$

If other, Please Specify: _____

_____

9) Please indicate, as best as possible, Check only one:

❑ Area away from a major centre - population less than 10,000$_1$
❑ Small urban centre - population more than 10,000 but less than 50,000$_2$
❑ Mid-urban centre - population between 50,000 to 100,000$_3$
❑ Large urban centre - population more than 100,000$_4$

Appendix D Continued

Demographic Information

10) Which of the following conditions do you believe affect a person's ability to drive safely?

	Yes	No
Diabetes or high blood sugar	❑1	❑2
Heart disease	❑1	❑2
Stroke	❑1	❑2
Seizures or epilepsy	❑1	❑2
Parkinson's disease	❑1	❑2
Sleep apnea or sleeping sickness	❑1	❑2
Narcolepsy	❑1	❑2
Dementia (e.g., Alzheimer disease)	❑1	❑2
Physical Frailty (reduced flexibility or reduced muscle strength)	❑1	❑2
Poor hearing	❑1	❑2
Poor vision	❑1	❑2
Arthritis	❑1	❑2
Broken bones	❑1	❑2
Sudden lapses in consciousness (Syncope)	❑1	❑2
Other	❑1	❑2

Please specify for other:

_____

11) Please list all your current medications; write the specific name(s) as printed on the label(s) and then indicate whether you believe these would affect a person's ability to drive safely.

A) Medication Name	**B) Affects Driving**	
	Yes	No
1) _____	❑1	❑2
2) _____	❑1	❑2
3) _____	❑1	❑2
4) _____	❑1	❑2
5) _____	❑1	❑2
6) _____	❑1	❑2
7) _____	❑1	❑2
8) _____	❑1	❑2

Appendix D Continued

Demographic Information

11) Please list all your current medications; write the specific name(s) as printed on the label(s) and then indicate whether you believe these would affect a person's ability to drive safely.

A) Medication Name	**B) Affects Driving**	
	Yes	No
9) _____	❑$_1$	❑$_2$
10) _____	❑$_1$	❑$_2$

12) Do you currently own a vehicle? ❑ Yes$_1$ ❑ No$_2$

If **YES**, please ***estimate*** the cost to maintain your vehicle for one year: $ _ _ _ _ _ _

13) Compared to other drivers in your age group, how would you rate your driving abilities: Check only one.

❑ A lot better$_1$
❑ Better$_2$
❑ The same$_3$
❑ Worse$_4$
❑ Much worse$_5$

Appendix E

Driving Cessation Questionnaire (Driver's Version)

1) Please circle the most appropriate statement:

a) I currently have a valid driver's license $_1$ **(Go to the set of questions below)**
b) I have had a driver's license in the past, but I do not at this present time $_2$ **(Go to page 12)**

** If you answered that you currently have a valid driver's license in question #1 please complete the following questions:

2) What might cause you to think about stopping driving. Check all that apply:

- ☐ Being in an accident/almost being in an accident $_1$
- ☐ Causing an accident/almost causing an accident $_2$
- ☐ Advice from family members or close friends $_3$
- ☐ A physician or eye doctor's advice $_4$
- ☐ Too expensive to keep up a car, paying insurance, etc $_5$
- ☐ Decided should not be driving on own $_6$

Other…Specify_____

3) If you were to stop driving how likely would someone be able to drive you. Check only one:

- ☐ Very likely $_1$
- ☐ Somewhat likely $_2$
- ☐ Somewhat unlikely $_3$
- ☐ Not at all $_4$

3b) IF YOU indicated that someone would be able to drive you please indicate the number of people that would be able to drive you _____

Appendix E

Driving Cessation Questionnaire (Driver's Version)

4) Do you ever feel that you need more support. Check only one:

- ☐ All the time 1
- ☐ Often 2
- ☐ Sometimes 3
- ☐ Never 4

5) Currently, how often would you say you drive. Check only one:

- ☐ Daily/almost daily 1
- ☐ 2-3 times a week 2
- ☐ Once a week or less 3
- ☐ Never 4

6) Approximately, how many kilometers (miles) do you drive per week. Check only one:

- ☐ 0-35 (0-56) 1
- ☐ 36-70 (57.6-112) 2
- ☐ 71-100 (113.6-160) 3
- ☐ 101-150 (161.6-240) 4
- ☐ 151-199 (241.6-318.4) 5
- ☐ Over 200 (Over 320) 5

7) Would you say you are driving… Check only one:

- ☐ Much more than you would like 1
- ☐ More than you would like 2
- ☐ About as much as you would like 3
- ☐ Less than you would like 4
- ☐ A lot less than you would like 5

Appendix E

Driving Cessation Questionnaire (Driver's Version)

8) Which driving situation (s) do you find stressful, uncomfortable, or avoid when possible. Check all that apply:

- ☐ Turning left at intersections 1
- ☐ Driving at night 2
- ☐ Maintaining the speed limit 3
- ☐ Driving in unfamiliar situations 4
- ☐ Driving with passengers in cars 5
- ☐ Navigating parking lots 6
- ☐ Changing lanes/merging 7
- ☐ Parallel parking 8
- ☐ Driving in heavy traffic 9
- ☐ Backing up 10
- ☐ In bad weather 11
- ☐ None of these 12

Other_____

9) Was there a time in your life when you drove more or less often than you do now, or is this about how often you have always driven. Check only one:

- ☐ Used to drive more 1
- ☐ Same as always driven 2
- ☐ Used to drive less 3

10) If you are driving less now, did you cut back gradually or all at once. Check only one:

- ☐ Gradually 1
- ☐ All at once 2

Appendix E

Driving Cessation Questionnaire (Driver's Version)

11) Do you think you may stop driving within the next two years. Check only one:

- ❑ Definitely 1
- ❑ Probably 2
- ❑ Maybe/maybe not 3
- ❑ Probably not 4
- ❑ Definitely not 5

12) Do you expect to be driving 5 years from now. Check only one:

- ❑ Definitely 1
- ❑ Probably 2
- ❑ Unsure 3
- ❑ Probably not 4
- ❑ Definitely not 5

13) How much thought have you given to how you would get to places if you could no longer drive. Check only one:

- ❑ A lot of thought 1
- ❑ Some thought 2
- ❑ Not much thought 3
- ❑ Not at all 4

Appendix E

Driving Cessation Questionnaire (Driver's Version)

14) A) How often do you go to the following locations.
AND
B) How long, on average, it takes you to make a return visit to all that apply. Please indicate driving time only.

	A) How Often (check only one time per location)					**B) How Long**	
	Daily	Weekly	Monthly	Less than once a month	Does Not Apply	Hours	Minutes
Grocery Store	❑ 1	❑ 2	❑ 3	❑ 4	❑ 5	__ __	__ __
Family Doctor	❑ 1	❑ 2	❑ 3	❑ 4	❑ 5	__ __	__ __
Hospital	❑ 1	❑ 2	❑ 3	❑ 4	❑ 5	__ __	__ __
Seniors Centre	❑ 1	❑ 2	❑ 3	❑ 4	❑ 5	__ __	__ __
Other	❑ 1	❑ 2	❑ 3	❑ 4	❑ 5	__ __	__ __

If other, please specify: _____

---

15) Overall, how able are you to get to places you want to go. Check only one:

❑ Very able 1
❑ Somewhat able 2
❑ Not very able 3
❑ Not at all able 4

16) How important is it for you to keep driving as long as you can. Check only one:

❑ Very important 1
❑ Somewhat important 2
❑ Not very important 3
❑ Not at all important 4

Appendix E

Driving Cessation Questionnaire (Driver's Version)

17) How do you feel about driving. Check only one:

- ❑ Have always enjoyed it 1
- ❑ Used to enjoy driving, but not as much now 2
- ❑ Neither like nor dislike driving 3
- ❑ Never did like driving that much 4
- ❑ Did not like driving at all 5

18) Which form (s) of transportation are available in your community. Check all that apply:

- ❑ Buses 1
- ❑ Taxis 2
- ❑ Volunteer drivers 3

Other…. Specify_____ 4

Go to page 16 and continue with the questionnaire please.

Appendix F

Driving Cessation Questionnaire (Non-Driver's Version)

If you answered that you had a driver's license in the past, but not at this present time for **question #1** on **page 7** please complete the following questions.

1) Why did you stop driving. Check all that apply:

- ☐ Being in an accident/almost being in an accident 1
- ☐ Causing an accident/almost causing an accident 2
- ☐ Advice from family members or close friends 3
- ☐ A physician or eye doctor's advice 4
- ☐ Too expensive to keep up a car, paying insurance, etc. 5
- ☐ Decided should not be driving on own 6

Other....Specify_____ 7

2) When did you stop driving. Check only one:

- ☐ Within the last year 1
- ☐ Between 1 to 2 years ago 2
- ☐ Between 2 to 3 years ago 3
- ☐ Over 3 years ago 4

3) Did you stop driving suddenly or gradually. Check only one:

- ☐ Suddenly 1
- ☐ Gradually 2 (For example, adjusting your driving patterns such as not driving at night)

Appendix F Continued

Driving Cessation Questionnaire (Non-Driver's Version)

4a) Taking into account your experience as a non-driver, is there anything that you would have done differently to help yourself be better prepared for getting along without driving. Check only one:

❑ No 1 ❑ Yes 2

4b) IF YOU answered YES here are some things people do to prepare themselves for not driving. PLEASE CHECK ALL THAT APPLY:

❑ Move somewhere with better transportation 1
❑ Move closer to relatives 2
❑ Move into housing that provides transportation 3
❑ Move closer to shopping, other destinations 4
❑ Develop a network of friends and/or neighbours for rides 5
❑ Save more money to pay for transportation 6
❑ Encourage my partner to drive/drive more 7
Other…..Specify_____ 8

7) Do you feel that if you had taken steps to help yourself become better prepared for getting along without driving this would have lessened the impact on your life. Check only one:

❑ Yes, quite a bit 1
❑ Yes, somewhat 2
❑ Yes, a little bit 3
❑ It would have made no difference 4

6a) How likely is someone able to drive you. Check only one:

❑ Very likely 1
❑ Somewhat likely 2
❑ Somewhat unlikely 3
❑ Not at all 4

Appendix F Continued

Driving Cessation Questionnaire (Non-Driver's Version)

6b) IF YOU INDICATED that someone would be ABLE TO drive you, either VERY LIKELY or SOMEWHAT LIKELY , please indicate the NUMBER OF PEOPLE that would be able to drive you: ___ ___ ___

7) Do you ever feel that you need more support. Check only one:

- ☐ All the time 1
- ☐ Often 2
- ☐ Sometimes 3
- ☐ Never 4

8) A) How often do you go to the following locations.
AND
B) How long, on average, it takes you to make a return visit to all that apply. Please indicate driving time only.

	A) How Often (check only one time per location)					**B How Long**	
	Daily	Weekly	Monthly	Less than once a month	Does Not Apply	Hours	Minutes
Grocery Store	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	__ __	__ __
Family Doctor	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	__ __	__ __
Hospital	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	__ __	__ __
Seniors Centre	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	__ __	__ __
Other	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	__ __	__ __

If other, please specify: _____

_____

Appendix F Continued

Driving Cessation Questionnaire (Non-Driver's Version)

9) Overall, how able are you to get to places you want to go. Check only one:

- ☐ Very able 1
- ☐ Somewhat able 2
- ☐ Not very able 3
- ☐ Not at all able 4

10) Which form (s) of transportation are available in your community. Check all that apply:

- ☐ Buses 1
- ☐ Volunteer drivers 2
- ☐ Taxis 3

Other....Specify_____ 4

11) Which form (s) of transportation do you use. Check all that apply:

- ☐ Car as passenger 1
- ☐ Bus 2
- ☐ Taxi 3
- ☐ Walk 4
- ☐ Bicycle 5
- ☐ Handi-transit 6
- ☐ Volunteer driver 7

Go to page 16 and continue with the questionnaire please.

Appendix G

Life Attitude Profile

The following questions are concerned with life attitudes. Whenever a statement is true for you, please circle "Yes"; if it is untrue for you circle "No"; if you can't decide about a question, circle "Don't Know".

1) My life is running over with good things	Yes_1	No_2	$Don't\ know_3$
2) My life is in my hands and I am in control.	Yes_1	No_2	$Don't\ know_3$
3) Life to me seems very exciting.	Yes_1	No_2	$Don't\ know_3$
4) I determine what happens in my life.	Yes_1	No_2	$Don't\ know_3$
5) Basically, I am living the kind of life I want.	Yes_1	No_2	$Don't\ know_3$
6) I believe I am absolutely free to make all my life choices.	Yes_1	No_2	$Don't\ know_3$
7) I get a great thrill out of just being alive.	Yes_1	No_2	$Don't\ know_3$
8) My accomplishments in life are largely determined by my own efforts.	Yes_1	No_2	$Don't\ know_3$
9) Every day is constantly new and different.	Yes_1	No_2	$Don't\ know_3$
10) I regard the opportunity to direct my life as very important.	Yes_1	No_2	$Don't\ know_3$
11) I have discovered a satisfying life purpose.	Yes_1	No_2	$Don't\ know_3$
12) It is possible for me to live my life in terms of what I want to do.	Yes_1	No_2	$Don't\ know_3$
13) In thinking of my life, I see a reason for existing.	Yes_1	No_2	$Don't\ know_3$
14) The meaning of life is evident in the world around us.	Yes_1	No_2	$Don't\ know_3$

Appendix H

Memorial University of Newfoundland Scale of Happiness

The following questions are concerned with several aspects of well-being. Whenever a statement is true for you, circle "Yes"; if it is untrue for you circle "No"; if you can't decide about a question, circle "Don't know".

In the past month have you ever felt:

1) On top of the world?	Yes$_1$	No$_2$	Don't know$_3$
2) In high spirits?	Yes$_1$	No$_2$	Don't know$_3$
3) Particularly content with your life?	Yes$_1$	No$_2$	Don't know$_3$
4) Lucky?	Yes$_1$	No$_2$	Don't know$_3$
5) Very lonely or remote from people?	Yes$_1$	No$_2$	Don't know$_3$
6) Bored?	Yes$_1$	No$_2$	Don't know$_3$
7) Depressed or very unhappy?	Yes$_1$	No$_2$	Don't know$_3$
8) Flustered because you didn't know what to do?	Yes$_1$	No$_2$	Don't know$_3$
9) Bitter about the way your life has turned out?	Yes$_1$	No$_2$	Don't know$_3$
10) Generally satisfied with the way your life has turned out?	Yes$_1$	No$_2$	Don't know$_3$

Appendix H Continued

Memorial University of Newfoundland Scale of Happiness

The next set of questions has to do with more general life experiences.

11) This is the dreariest time of my life.	Yes_1	No_2	$Don't\ know_3$
12) I am just as happy as when I was younger.	Yes_1	No_2	$Don't\ know_3$
13) Most of the things I do are boring and monotonous.	Yes_1	No_2	$Don't\ know_3$
14) The things I do are as interesting to me as they ever were.	Yes_1	No_2	$Don't\ know_3$
15) As I look back on my life I am fairly well satisfied.	Yes_1	No_2	$Don't\ know_3$
16) Things keep getting worse as I get older.	Yes_1	No_2	$Don't\ know_3$
17) Do you often feel lonely?	Yes_1	No_2	$Don't\ know_3$
18) Little things bother me more this year.	Yes_1	No_2	$Don't\ know_3$
19) Do you like living in this city (town, etc.)?	Yes_1	No_2	$Don't\ know_3$
20) I sometimes feel that life isn't worth living.	Yes_1	No_2	$Don't\ know_3$
21) I am as happy now as I was when I was younger.	Yes_1	No_2	$Don't\ know_3$
22) Life is hard for me most of the time.	Yes_1	No_2	$Don't\ know_3$
23) Are you satisfied with your life today?	Yes_1	No_2	$Don't\ know_3$
24) My health is at least as good as most people's my age.	Yes_1	No_2	$Don't\ know_3$

Appendix I

NEO-FFI

Instructions:

Please rate how much you agree or disagree with each statement below by circling one of the scale categories. Use the scale categories as shown below. Be sure to chose the scale category that most accurately describes you as you really are. Answer fairly quickly, and make use of all levels of the scale in your answers.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
SD 1	D 2	N 3	A 4	SA 5

1. I am not a worrier.	SD	D	N	A	SA
2. I like to have a lot of people around me.	SD	D	N	A	SA
3. I often feel inferior to others.	SD	D	N	A	SA
4. I laugh easily.	SD	D	N	A	SA
5. When I'm under a great deal of stress, sometimes I feel like I'm going to pieces.	SD	D	N	A	SA
6. I don't consider myself especially "light-hearted."	SD	D	N	A	SA
7. I rarely feel lonely or blue.	SD	D	N	A	SA
8. I really enjoy talking to people.	SD	D	N	A	SA
9. I often feel tense and jittery.	SD	D	N	A	SA
10. I like to be where the action is.	SD	D	N	A	SA
11. Sometimes I feel completely worthless.	SD	D	N	A	SA

Appendix I Continued

NEO-FFI

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
SD $_1$	D $_2$	N $_3$	A $_4$	SA $_5$

12. I usually prefer to do things alone.	SD	D	N	A	SA
13. I rarely feel fearful or anxious.	SD	D	N	A	SA
14. I often feel as if I'm bursting with energy.	SD	D	N	A	SA
15. I often get angry at the way people treat me.	SD	D	N	A	SA
16. I am a cheerful, high-spirited person.	SD	D	N	A	SA
17. Too often, when things go wrong, I get discouraged and feel like giving up.	SD	D	N	A	SA
18. I am not a cheerful optimist.	SD	D	N	A	SA
19. I am seldom sad or depressed.	SD	D	N	A	SA
20. My life is fast-paced.	SD	D	N	A	SA
21. I often feel helpless and want someone else to solve my problems.	SD	D	N	A	SA
22. I am a very active person.	SD	D	N	A	SA
23. At times I have been so ashamed I just wanted to hide.	SD	D	N	A	SA
24. I would rather go my own way than be a leader of others.	SD	D	N	A	SA

Appendix J

Satisfaction with Life Scale

Below are five statements that you may agree or disagree with. Using the 1-7 scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item.

1- Strongly disagree

2- Disagree

3- Slightly disagree

4- Neither agree nor disagree

5- Slightly agree

6- Agree

7- Strongly agree

_____ (A) In most ways my life is close to my ideal.

_____ (B) The conditions of my life are excellent.

_____ (C) I am satisfied with my life.

_____ (D) So far I have gotten the important things I want out of life.

_____ (E) If I could live my life over, I would change almost nothing.

Appendix K

Health Questionnaire

1) How is your health these days? Check only one:

- ❑ Very good$_1$
- ❑ Pretty good $_2$
- ❑ Not too good$_3$
- ❑ Poor$_4$
- ❑ Very poor$_5$

2) Compared to one year ago, how would you rate your health in general now? Check only one:

- ❑ Much better$_1$
- ❑ Somewhat better$_2$
- ❑ About the same$_3$
- ❑ Poor$_4$
- ❑ Very poor$_5$

THE FOLLOWING ARE HEALTH PROBLEMS THAT PEOPLE OFTEN HAVE. A PHYSICIAN MAY HAVE DIAGNOSED SOME OF THESE HEALTH PROBLEMS OR YOU MAY HAVE BEEN HOSPITALIZED FOR THESE PROBLEMS. FOR EACH PROBLEM, PLEASE STATE WHETHER YOU HAVE HAD IT IN THE PAST YEAR. YOU CAN CIRCLE YES OR NO. IF THE PROBLEM STARTED A LONG TIME AGO BUT SYMPTOMS LASTED INTO THE PAST YEAR, CHOOSE YES.

	YES	**NO**
3) High blood pressure (whether controlled by medication or not)	❑$_1$	❑$_2$
4) Heart and circulation problems (hardened arteries, heart problems)	❑$_1$	❑$_2$

Appendix K Continued

Health Questionnaire

	YES	NO
5) Stroke or effects of stroke	❑1	❑2
6) Arthritis or rheumatism	❑1	❑2
7) Parkinson's disease or other neurological disease (except stroke)	❑1	❑2
8) Eye trouble not relieved by glasses (glaucoma, cataracts)	❑1	❑2
9) Ear trouble (hearing loss)	❑1	❑2
10) Dental problems	❑1	❑2
11) Chest problems (asthma, pneumonia, emphysema, bronchitis)	❑1	❑2
12) Stomach problems	❑1	❑2
13) Bladder control problems	❑1	❑2
14) Bowel control problems	❑1	❑2
15) Trouble with feet or ankles	❑1	❑2
16) Skin problems	❑1	❑2
17) Fractures (broken bones)	❑1	❑2
18) Diabetes or high blood sugar	❑1	❑2
19) Seizures or epilepsy	❑1	❑2
20) Sleep apnea or sleeping sickness	❑1	❑2
21) Narcolepsy	❑1	❑2

Appendix K Continued

Health Questionnaire

	YES	NO
22) Dementia (Alzheimer's disease)	❑$_1$	❑$_2$
23) Physical frailty (reduced flexibility or reduced muscle strength)	❑$_1$	❑$_2$
24) Syncope	❑$_1$	❑$_2$

25) Other…….Specify_____

26) I have not been diagnosed with any medical conditions or suffer from any health problems. Check only one:

❑ Yes$_1$
❑ No$_2$

27) How much bodily pain have you had during the past 4 weeks. Check only one:

❑ None$_1$
❑ Very mild$_2$
❑ Moderate$_3$
❑ Severe$_4$
❑ Very severe$_5$

Appendix K Continued

Health Questionnaire

28) If you have experienced bodily pain during the past 4 weeks, how much did pain interfere with the following things. Check only one for each item:

	Not at all	**A little bit**	**Moderately**	**Quite a bit**	**Extremely**
a) Mood	❑1	❑2	❑3	❑4	❑5
b) Ability to move about	❑1	❑2	❑3	❑4	❑5
c) Sleep	❑1	❑2	❑3	❑4	❑5
d) Normal tasks	❑1	❑2	❑3	❑4	❑5
e) Recreational activities	❑1	❑2	❑3	❑4	❑5
f) Enjoyment of life	❑1	❑2	❑3	❑4	❑5

Appendix L

Activities of Daily Living Questionnaire

Here are some questions about things we all need to do as a part of our daily lives. Please indicate whether you can do these activities without help, if you need some help to do them, or if you can't do them at all. Tell us about your present situation when answering these questions. Check only one:

1) Can you eat:

❑ Without help$_2$

❑ With some help$_1$

❑ Unable to feed yourself$_0$

2) Can you dress and undress yourself:

❑ Without help $_2$

❑ With some help $_1$

❑ Unable to dress self $_0$

3) Can you take care of your own personal appearance:

❑ Without help $_2$

❑ With some help $_1$

❑ Unable to take care of own appearance $_0$

4) Can you walk:

❑ Without help $_2$

❑ With some help $_1$

❑ Unable to walk without help $_0$

Appendix L Continued

Activities of Daily Living Questionnaire

5) Can you get in and out of bed:

❑ Without help $_2$

❑ With some help $_1$

❑ Unable to get out of bed without help $_0$

6) Can you go to the bathroom:

❑ Without help $_2$

❑ With some help $_1$

❑ Unable to go to bathroom on own $_0$

7) Can you use the telephone:

❑ Without help $_2$

❑ With some help $_1$

❑ Unable to use telephone on own $_0$

8) Can you go shopping for your groceries or clothing:

❑ Without help $_2$

❑ With some help $_1$

❑ Unable to go shopping on own $_0$

9) Can you prepare your own meals:

❑ Without help $_2$

❑ With some help $_1$

❑ Unable to prepare own meals $_0$

Appendix L Continued

Activities of Daily Living Questionnaire

10) Can you do your housework:

❑ Without help 2

❑ With some help 1

❑ Unable to do own housework 0

11) Can you take your own medicine:

❑ Without help 2

❑ With some help 1

❑ Unable to take own medicine 0

12) Do you ever use a walker or 4-pronged cane to get around.

❑ Yes 1

❑ No 2

13) Do you ever use a wheelchair:

❑ Yes 1

❑ No 2

14) During the last month, how many days have you gone out of the house or building in which you live:

❑ Two or more days a week 1

❑ One day a week or less 2

❑ Never 3

Appendix M

Rotter's Internal-External Locus of Control Scale (I-E Scale)

This is a measure of personal belief. Each item consists of a pair of alternatives. Please check the one statement of each pair which you more strongly *believe* to be the case as far as your concerned. Be sure to select the one you actually *believe* to be more true rather than the one you think you should chose or the one you would like to be true. Please answer these items carefully but do not spend too much time on any one item. Be sure to answer every item.

1)

❑ Many of the unhappy things in people's lives are partly due to bad luck.

or

❑ People's misfortunes result from the mistakes they make.

2)

❑ One of the major reasons why we have wars is because people don't take enough interest in politics.

or

❑ There will always be wars, no matter how hard people try to prevent them.

3)

❑ In the long run people get the respect they deserve in this world.

or

❑ Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

4)

❑ The idea that teachers are unfair to students is nonsense.

or

❑ Most students don't realize the extent to which their grades are influenced by accidental happenings.

5)

❑ Without the right breaks one cannot be an effective leader.

or

❑ Capable people who fail to become leaders have not taken advantage of their opportunities.

Appendix M Continued

Rotter's Internal-External Locus of Control Scale (I-E Scale)

6)

❑ No matter how hard you try some people just don't like you.

or

❑ People who can't get others to like them don't understand how to get along with others.

7)

❑ I have often found that what is going to happen will happen.

or

❑ Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

8)

❑ In the case of the well-prepared student there is rarely if ever such a thing as an unfair test.

or

❑ Many times exam questions tend to be so unrelated to course work that studying is really useless.

9)

❑ Becoming a success is a matter of hard work, luck has little or nothing to do with it

or

❑ Getting a good job depends mainly on being in the right place at the right time.

10)

❑ The average citizen can have an influence in government decisions.

or

❑ This world is run by the few people in power, and there is not much the little guy can do about it.

11)

❑ When I make plans, I am almost certain that I can make them work.

or

❑ It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

Appendix M Continued

Rotter's Internal-External Locus of Control Scale (I-E Scale)

12)

❑ In my case getting what I want has little or nothing to do with luck.

or

❑ Many times we might just as well decide what to do by flipping a coin.

13)

❑ Who gets to be the boss often depends on who was lucky enough to be in the right place first.

or

❑ Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.

14)

❑ As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.

or

❑ By taking an active part in political and social affairs the people can control world events

15)

❑ Most people don't realize the extent to which their lives are controlled by accidental happenings.

or

❑ There really is no such thing as "luck".

16)

❑ One should always be willing to admit mistakes.

or

❑ It is usually best to cover up one's mistakes.

17)

❑ It is hard to know whether or not a person really likes you.

or

❑ How many friends you have depends upon how nice a person you are.

Appendix M Continued

Rotter's Internal-External Locus of Control Scale (I-E Scale)

18)

❑ In the long run the bad things that happen to us are balanced by the good ones.

or

❑ Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

19)

❑ With enough effort we can wipe out political corruption.

or

❑ It is difficult for people to have much control over the things politicians do in office

20)

❑ Sometimes I can't understand how teachers arrive at the grades they give.

or

❑ There is a direct connection between how hard I study and the grades I get.

21)

❑ Many times I feel that I have little influence over the things that happen to me.

or

❑ It is impossible for me to believe that chance or luck plays an important role in my life.

22)

❑ People are lonely because they don't try to be friendly.

or

❑ There's not much use in trying too hard to please people, if they like you, they like you.

23)

❑ What happens to me is my own doing.

or

❑ Sometimes I feel that I don't have enough control over the direction my life is taking.

24)

❑ Most of the time I can't understand why politicians behave the way they do.

or

❑ In the long run the people are responsible for bad government on a national as well as on a local level.

Appendix N

Geriatric Depression Scale Short Form (GDS-SF)

Choose the best answer for how you felt this past week.

	YES	NO
1) Are you basically satisfied with your life?	❑$_1$	❑$_2$
2) Have you dropped many of your activities and interests?	❑$_1$	❑$_2$
3) Do you feel that your life is empty?	❑$_1$	❑$_2$
4) Do you often get bored?	❑$_1$	❑$_2$
5) Are you in good spirits most of the time?	❑$_1$	❑$_2$
6) Are you afraid that something bad is going to happen to you?	❑$_1$	❑$_2$
7) Do you feel happy most of the time?	❑$_1$	❑$_2$
8) Do you often feel helpless?	❑$_1$	❑$_2$
9) Do you prefer to stay at home, rather than going out and doing new things?	❑$_1$	❑$_2$
10) Do you feel that you have more problems with memory than most?	❑$_1$	❑$_2$
11) Do you think it is wonderful to be alive now?	❑$_1$	❑$_2$
12) Do you feel pretty worthless the way you are now?	❑$_1$	❑$_2$
13) Do you feel full of energy?	❑$_1$	❑$_2$
14) Do you feel that your situation is hopeless?	❑$_1$	❑$_2$
15) Do you think that most people are better off than you are?	❑$_1$	❑$_2$

Appendix O

SF-12 Health Survey

INSTRUCTIONS: This questionnaire asks you about your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities.

Please answer every question by marking one box. If you are unsure about how to answer, please give the best answer you can.

1) In general, would you say your health is:

❑₁	❑₂	❑₃	❑₄	❑₅
Excellent	**Very good**	**Good**	**Fair**	**Poor**

The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

	Yes, Limited A lot	**Yes, Limited A little**	**No, Not Limited At all**
2) **Moderate activities**, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	❑₁	❑₂	❑₃
3) Climbing **several** flights of stairs	❑₁	❑₂	❑₃

During the past 4 weeks have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

	YES	**NO**
4) Accomplished less than you would like	❑₁	❑₂
5) Were limited in the **kind** of work or other activities	❑₁	❑₂

Appendix O Continued

SF-12 Health Survey

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

	YES	NO
6) **Accomplished less** than you would like	❑1	❑2
7) Didn't do work or other activities as **carefully** as usual	❑1	❑2

8) During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

❑1	❑2	❑3	❑4	❑5
Not at all	**A little bit**	**Moderately**	**Quite a bit**	**Extremely**

These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks-

	All of the time	**Most of the time**	**A good bit of the time**	**Some of the time**	**A little of the time**	**None of the time**
9) Have you felt calm and peaceful?	❑1	❑2	❑3	❑4	❑5	❑6
10) Did you have a lot of energy?	❑1	❑2	❑3	❑4	❑5	❑6
11) Have you felt downhearted and blue?	❑1	❑2	❑3	❑4	❑5	❑6

Appendix O Continued

SF-12 Health Survey

12) During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?

❑1	❑2	❑3	❑4	❑5
All of the time	**Most of the time**	**Some of the time**	**A little of the time**	**None of the time**

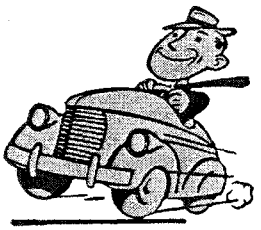
Appendix P

Organizations Involved in Recruitment

Age and Opportunity Centre-700 River Street	Thunder Bay, Ontario
Age and Opportunity Centre-Smith Street	Winnipeg, Manitoba
Age and Opportunity Centre-St. Vital	Winnipeg, Manitoba
Age and Opportunity Centre-Stradbrook	Winnipeg, Manitoba
Age and Opportunity Centre-West End	Winnipeg, Manitoba
Age-In-Action	Winnipeg, Manitoba
Arthritis Society of Manitoba	Winnipeg, Manitoba
Bonivital Council for Seniors	Winnipeg, Manitoba
Broadway Seniors Resource Council	Winnipeg, Manitoba
Canadian Automobile Association	Thunder Bay, Ontario
Charleswood Senior Centre	Winnipeg, Manitoba
Concordia General Hospital	Winnipeg, Manitoba
Crescentwood Community Centre	Winnipeg, Manitoba
Downtown Seniors Council	Winnipeg, Manitoba
Fort Garry Rotary Services	Winnipeg, Manitoba
Good Neighbour Seniors Centre	Winnipeg, Manitoba
Grace General Hospital	Winnipeg, Manitoba
Inksters Seniors Group	Winnipeg, Manitoba
Manitoba Heart and Stroke Foundation	Winnipeg, Manitoba
North Centennial Seniors Centre	Winnipeg, Manitoba
Norwin 55+ Active Living Centre	Winnipeg, Manitoba
Rady Senior Centre	Winnipeg, Manitoba
River East Council for Seniors	Winnipeg, Manitoba
Seven Oaks General Hospital	Winnipeg, Manitoba
South Winnipeg Seniors Resource Council	Winnipeg, Manitoba
St. James Assinaboine Senior Centre	Winnipeg, Manitoba
Stroke Recovery Association of Manitoba	Winnipeg, Manitoba
Transcona Council for Seniors	Winnipeg, Manitoba
Transcona Retired Citizens Centre	Winnipeg, Manitoba
Transcona Seniors Cooperative	Winnipeg, Manitoba
University of Manitoba Centre of Aging	Winnipeg, Manitoba
Victoria Hospital	Winnipeg, Manitoba

Appendix Q

Thesis Poster

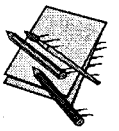


ARE YOU 55 YEARS OF AGE OR OLDER?

DO YOU DRIVE or HAVE RECENTLY CEASED DRIVING IN THE LAST 3 YEARS?

Your participation would be appreciated in a Lakehead University study examining the quality of life of drivers and recent non-drivers over 55 years of age.

If you are willing to participate, you will simply be asked to fill out a CONFIDENTIAL questionnaire now and a second one in one year's time.



Please contact the following for more information or to receive a questionnaire:

Thunder Bay: (807) 343-8630

Winnipeg: (204) 801-0500

E-mail: gjkafka@lakeheadu.ca

The questionnaire can also be accessed on-line at:

http://flash.lakeheadu.ca/~gjkafka

Appendix R

Fort Garry Service Inc Cover Letter

February 9, 2006

Ms. Anne Cherewyk
Fort Garry Services Inc.
528 Hudson Street
Winnipeg, MB
R3T 4E3

Dear Ms. Cherewyk:

I received your letter dated January 27, 2006 outlining your request for verification of my research study. I have provided a copy of a letter stating that the particulars of my study have been approved by the Lakehead University Research Ethics Board. I have also provided a questionnaire booklet that includes a cover letter describing my project and a copy of the consent form that I use. I hope that the information I provide is sufficient for your purposes.

If you have any further questions please do not hesitate to contact me by phone (478-4401) or by email at (gjkafka@lakeheadu.ca).

Sincerely,

Garrett Kafka

Appendix S

Broadway Seniors Council Cover Letter

January 9, 2006

Attention: Ms. Brenda Friesen
Broadway Seniors Resource Centre
[illegible] Wolseley Avenue
Winnipeg, Manitoba
R3G 1C5
Fax: 204-775-5835

Dear Ms. Friesen:

Thank you for your quick response to my telephone message. Please find a copy of my poster for your newsletter. To give you a better idea of what my research project is about I have included the cover letter that accompanies my questionnaire. I was wondering if you could send me a copy of your newsletter when my poster has been added, this would be appreciated.

Thank you,

Lorraine Kafka
Home Phone: 204-478-4401
Email: lkafka@lakeheadu.ca
[illegible] Avenue
Winnipeg, Manitoba
R3L 1G6