AN EXAMINATION OF THE GENERAL MOBILITY OF OLDER ADULTS

BASED ON LATE-LIFE DEPRESSION AND ITS TREATMENT

A Thesis

Presented to

The Faculty of the Department of Psychology

Western Kentucky University

Bowling Green, Kentucky

In Partial Fulfillment

Of the Requirements for the Degree

Master of Arts

By

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May 2006

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Date Recommended *May 8, 2006*

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Acknowledgements

I would first like to thank my graduate advisor, Dr. Dan Roenker, for all of his support throughout the last four years of my education. Dan, I have often referred to you as my "academic father" as you saw potential in me long before anyone else, including myself. I will never forget the unconditional kindness and guidance you gave to me throughout my undergraduate and graduate years. You taught me many lessons about furthering my education, but also taught me important lessons about living life to its fullest. I will be forever grateful to you for helping me become the person that I am today. Second, I must also thank my fellow colleagues – Gayla Cissell, Melissa Mathews, Leslie Sidebottom, and Emily Bloesch. Gayla, without your dedicated efforts, encouragement, and patience, this thesis would not be what it is. Mel, thank you for informing me of the things I needed to know about graduate school, as I have looked up to you like a "big sister" throughout this experience. Most importantly, thank you for showing me that graduate school is not just about hard work and dedication, but also about the life-long friendships you make along the way. Leslie and Emily, thank you for all your help with data collection and for the fun and excitement you brought to the lab. Thanks to my other committee members, Dr. Rick Grieve and Dr. Melissa Hakman, for your help in making this thesis a successful finished product. I'd also like to thank my family for supporting me in everything I do and for always believing that I could accomplish great things in life. Last but not least, I'd like to thank my fiancé Justin. Your love, encouragement, and praise has meant so much to me, and thank you for always reminding me to laugh when I need it most.

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Heather A. Kossick   May 2006   59 pages

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Older adults experience a variety of cognitive and physical declines as they age. Consequently, these changes can impact mobility and mental health (i.e., depression). Studies have suggested a relationship between driving habits changes (in particular, driving cessation) and depression (Fonda, Wallace & Herzog, 2001; Marottoli et al., 1997). Very little research has been conducted to examine the relationship between depression and other mobility changes in treated and untreated community dwelling older adults. Older drivers who ranged in age from 65 to 91 with a mean age of 73 completed the Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977), Life Space Questionnaire (LSQ) (Stalvey, Owlsley, Sloane, and Ball, 1999) and a health questionnaire, including medication usage. Mobility measures used from the LSQ were life space (i.e., have you been to places outside your neighborhood?) and driving space (i.e., have you driven to places outside your neighborhood?). Analyses of covariance revealed that either the presence of depression or the taking of antidepressant medication reduces driving mobility but not life space mobility.

Chapter 1

Introduction

Older adults experience a variety of cognitive and physical declines in abilities as they age. Consequently, these changes can impact mental health. Depression specifically has been linked to the aging process (Birrer & Vemuri, 2004). Late-life depression refers to the depressive syndromes defined in the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV) and in the International Classification of Diseases (ICD-10) that arise in adults older than age 65 years (Alexopoulos, 2005). It has been documented (Reynolds & Kupfer, 1999) that geriatric depression is a common problem affecting one in six individuals treated in general medical practice with an even higher rate in hospitals and nursing homes. Depression in later life has been found to lead to a variety of problems which include patient and caregiver distress, an increase in disabilities related to medical and cognitive disorders in later life, increased costs in health care, and increased mortality related to suicide and medical illness (Reynolds & Kupfer, 1999).

Despite the numerous pathways to late-life depression, as well as the complex medical and psychosocial context in which it occurs, it can be effectively diagnosed and treated. Many studies (e.g., Birrer & Vemuri, 2004; Harwood, Barker, Ownby, Mullan, & Duara, 1999; Lasser, Siegel, Dukoff, & Sunderland, 1998) have been conducted to understand the origins and the impact of late-life depression. Depression often occurs as part of the aging process, and many factors play critical and overlapping roles in its development. An examination of the literature of these factors will provide a background for the central question of this thesis – an examination of the general mobility of older

adults based on late-life depression and its treatment.

Depression and Aging

According to Birrer and Vemuri (2004), depression in later life is not considered to be a standard part of aging as many may assume. Depression in older adults may often be missed by health care providers due to the fact that symptomology may be more subtle as displayed by insomnia, loss of appetite, and fatigue. When determining whether an older adult has depression, physicians may be more likely to look for more obvious symptoms of depression, such as sadness. As a result of these misinterpretations, patients are less likely to discuss depressive symptoms with their health care providers.

Birrer and Vemuri (2004) discussed the epidemiology of depression in terms of major depression and minor depression. The prevalence rate for depression (including both major and minor depression) in the United States population is one percent; however, nearly five million out of 31 million Americans aged 65 and older meet diagnostic criteria for clinical depression, with one million meeting criteria for major depression. The prevalence of depression is about three percent in the general community-dwelling elderly population. Considering the negative consequences that depression can lead to, the study stated that suicide rates in older adults are practically twice as much as those of younger individuals. While depression is more likely to be diagnosed in females, those males who are diagnosed are actually at a greater risk of committing suicide. Caucasian males make up sixty-three percent of suicides that occur in the elderly, with 85% having a psychiatric or medical problem. In comparison, younger adults who commit suicide are often substance abusers or have a psychosis diagnosis either alone or with a comorbid mood disorder. The risk factors associated

with depression in elderly adults include the following: having a previous history of depression, having a chronic medical illness, being female, being single and/or divorced, having brain disease, abusing alcohol, using certain medications, and experiencing stressful life events. Stressful events may include the death of a spouse which may result in serious depression in up to 15% of widowed adults for a year or longer (Boswell & Stoudemire, 1996).

Birrer and Vemuri (2004) define minor depression as a clinically substantial depressive disorder that does not meet criteria or symptomology needed for a diagnosis of major depression. Minor depression occurs more frequently in older persons than full-blown major depressive episodes and may be seen just after a major depressive episode. It may also predict an episode of major depression within a two-year time frame for anywhere from 15% to 50% of patients. Minor depression may also result from stressors that older individuals face on a regular basis. Like major depression, minor depression is more common in females. While suicide and hospitalization are less common in individuals with minor depression than individuals with major depression, 51% of individuals suffering from minor depression report a higher number of disability days than individuals with major depression.

Birrer and Vemuri (2004) discussed pathophysiology/pathogensis for people of all ages in terms of evidence that suggests a genetic basis for depression. In addition, significant evidence suggests that if an individual has a history of depression, he/she is at risk for depression in later life. Older adults who have been identified as having depression have increased rates of cognitive impairment as well as comorbid medical issues in general.

In terms of evaluation, the DSM-IV-TR (APA, 2000) states that five of nine symptoms occurring nearly every day during the same two-week period are needed to meet the criteria for major depression. These symptoms include depressed mood, lack of interest or pleasure in activities one once found enjoyable, disturbance in sleep, feelings of worthlessness and/or guilt, decreased or lack of energy, concentration problems and problems making decisions, weight loss or anorexia, psychomotor agitation or retardation, and suicidal ideation. Typical methods of evaluation include the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and the Geriatric Depression Scale (GDS; Yesavage, 1982-1983).

Birrer and Vemuri (2004) suggest that 65 to 75% of depressed older adults are treatable, and that this treatment should involve a combination of drugs and psychotherapy. "Therapy generally results in improved quality of life, enhanced functional capacity, possible improvement in medical health status, increased longevity, and lower health care costs" (p. 2377). It is also recommended that older persons continue with therapy longer than younger persons due to the fact that it may take longer for treatment to start working for older individuals. Selective Serotonin Reuptake Inhibitors (SSRIs) are the most common form of medication prescribed for depression, due to the fact that the dosage does not have to be adjusted as much as with other forms of medication. There also seem to be fewer deleterious side effects. Another form of treatment includes electroconvulsive therapy which is often used for those who have been resistant to medication treatment and for those with severe or psychotic depression. In addition, psychosocial treatments are available which have been shown to help older persons deal with stressful life events and the loss of social support that may occur with

aging. The major treatment techniques are cognitive behavioral therapy (CBT), supportive psychotherapy, problem-solving therapy, and interpersonal therapy.

Although depression in older adults is not a normal part of aging and may be a diagnostic and therapeutic challenge, what variables contribute to whether or not an elderly individual becomes depressed? Harwood et al. (1999) considered the impact of several variables upon mood disturbance in a sample of community-dwelling elderly. These variables were age, education, gender, ethnicity, marital status, apolipoprotein E genotype (APOE), and memory complaints. Participants consisted of 506 older adults (60+) who volunteered to participate in a free community memory screening. The sample was made up of 106 Cuban Americans and 400 white-non-Hispanic Americans, all of which were non-demented. The study used a variety of instruments including the Hamilton Depression Rating Scale (HAM-D; Hamilton, 1960) and a self report Memory Questionnaire assessing observation of changes in memory. The study also assessed for the presence and frequency of APOE genotype, since previous research suggested that its presence may be associated with depressive symptoms in older adults (Krishnan et al., 1996).

The results of Harwood et al.'s (1999) study indicated that 12% of participants displayed significant depressive symptoms defined by the HAM-D. This symptomatology was associated more in females of Cuban American descent with a higher number of memory complaints. They found that age, education, marital status (including widowed), and APOE genotype were not related to depression. Regarding the authors' finding about ethnicity, they theorized that this may be due to financial difficulties or degree of acculturation. Also, Cuban Americans may be less likely to use

mental health services in general. Regarding APOE genotype, the authors discussed that this is typically found in late-onset depression specifically, and age of onset was not taken into consideration in their study. Regarding the memory complaints as a correlate, the sample was recruited from those who volunteered for a free memory screen; hence, a number of memory complaints were expected. In fact, at least 90% of those participants reported at least one symptom related to memory. Interestingly, the study showed that as the number of symptoms related to memory increased, so did the presence of depression.

In a similar study conducted to determine what variables influence depression, Alpass and Neville (2003) examined relationships between loneliness, health, and depression in 217 older men (aged 65 years and older). The authors stated that in past research, factors such as social isolation and loneliness had been shown to contribute to psychosocial well-being in older adults. Loneliness had been identified as a significant issue correlating with chronic illness and self-rated health. In this study, self-report measures of loneliness, social support, depression, and physical health were completed by all participants. Depression was measured using the Geriatric Depression Scale (GDS; Yesavage, 1982-83). Results indicated that age-related losses (e.g., loss of professional identity, physical mobility, and the inevitable loss of family and friends) may influence an individual's ability to maintain relationships and independence. The inability to maintain such things may consequently lead to an increase in depression. Self-reported health was found to relate to depression, with depression growing more significant as health deteriorated; however, diagnosis of illness, disability, or degree of social support were not found to be related to depression. In this study, loneliness was found to hold the most significant relationship to depression based on reports of depressive symptoms on the

GDS.

Finally, gender may also be related to whether or not an elderly individual develops depression. A study examining the influence of gender and depression on mortality risk was conducted by Anstey (2002). The study focused on gender and different pattern variations in depressive status over a two year period and whether or not there were any associations with different risks of mortality in the six years following the study. The authors used the Center for Epidemiologic Studies-Depression scale (CES-D; Radloff, 1977) to assess depression in 1,947 participants in 1992 and a smaller portion of the sample again in 1994. The mortality risk related to depression and change in depression was estimated using proportional hazards models. After controlling for demographic variables such as tobacco use, alcohol use, and medical conditions, depression was not correlated with mortality in women; however, it was correlated with mortality in men. Mortality was also related to chronic depression and remitted depression; however, this result was explained by medical conditions. In addition, variation in depressive status was not associated with mortality in women. The authors concluded that depression relates to a greater risk of mortality for men than women with the highest risk for men being incident depression in old age.

The literature thus far indicates that depression is a problem among community-dwelling older adults, occurs differently across gender, and that specific variables contribute to whether or not an individual becomes depressed. The next question to address is how depression in the elderly is diagnosed and what treatment options are available. A study conducted by Lasser, Siegel, Dukoff, and Sunderland (1998) examined the diagnosis and treatment of geriatric depression.

Depressive-spectrum disorders, which are made up of bereavement, minor depression, dysthymia, and anxiety and depression together have been found more often in older persons than major depression (Kennedy, 1995). In addition, rates of depressive-spectrum disorders have increased up to 20% in community-dwelling older adults. Depressive-spectrum disorders may appear to be subclinical due to the higher prevalence of somatic symptoms, and older persons may be unfamiliar with affective signs; therefore, older adults may not express them to health care providers and may go undetected and undiagnosed. The symptoms presented by geriatric patients may manifest as increased irritability and anxiety rather than depressed mood or sadness. Therefore, the authors suggest that perhaps the threshold at which treatment is typically suggested should be lowered in geriatric patients.

The study discussed early verses late onset depression, defining early onset as having an episode of depression occur prior to age 50 and late onset as having the first episode occur after age 50. During late onset, individuals are likely to have a biological correlate (i.e., neurological or cerebrovascular disease) and involve more cognitive impairment than others developing depression earlier. As far as disability and mortality are concerned, older persons with depression (clinical or subclinical) suffer more physically and socially than those persons who are ill and do not suffer from depression. Depressive symptoms can exacerbate physical illnesses and cognitive impairment, thus leading to a greater likelihood that an individual will be institutionalized. However, depression related to medical illness is often amenable to antidepressant pharmacotherapy. In addition, if depression is related to medication for a separate medical condition, then onset occurs in the weeks and months following initiation of the

specific drug. This implies that medication should be considered by health care professionals if symptoms occur following the administration of new medication.

Lasser, Siegel, Dukoff, and Sunderland (1998) discussed the treatment of geriatric depression through pharmacological options, electroconvulsive therapy, and nonsomatic therapy. First, with pharmacological options, polypharmacy or the mixing of many drugs must be considered. The study suggests that there is limited treatment standardization research in elderly persons, and physiological changes that happen as a person ages have the result of making standard drug dosages more potent than they would be in younger adults. Therefore lower doses for older adults may be something to consider. Secondly, electroconvulsive therapy (ECT) is available. While there is not much known about it, "ECT represents a well tolerated and effective option for depression complicated by treatment-resistance, psychosis, refusal of oral intake or active suicidality" (p. 24). There is a higher risk for confusion after treatment, and maintenance of ECT does not obtain substantial empirical support due to lack of research on the topic. Third, nonsomatic therapy which includes both individual and group therapies has shown positive results. Forms of psychotherapy include psychodynamic, cognitive, and behavioral therapy. Nonsomatic therapy in combination with biological treatments (i.e., medication) may be particularly effective. Older persons often have complex profiles including medication and illness that coincide with the depression so it is necessary to treat the person on several levels.

Lasser, Siegel, Dukoff, and Sunderland (1998) suggested that special considerations should be made for situations such as bereavement and suicide. Many of the grief related symptoms (i.e., recurrent thoughts of the deceased) experienced during

bereavement may not respond to drug therapy. When considering the consequences of untreated depression, suicide rates for older adults increase past those of younger adults, with increased completion of suicide and fewer attempts. It should be kept in mind that Caucasian males age 65 and older are most likely to have successful suicide attempts (Kanowski, 1994) and that older persons also use more lethal methods (Conwell, Rotenberg, & Caine, 1990). Consequently, among an inpatient population, suicide and late onset depression are related.

In summary, depression in older adults may often be missed by health care providers due to the fact that symptomology may be more subtle. The prevalence of depression is about three percent in a community-dwelling elderly population, and many variables may impact mood disturbance in elderly adults. Depressive-spectrum disorders have been found more often in older persons than major depression. In addition, rates of depressive-spectrum disorders have extended up to twenty percent in community-dwelling older adults. Age-related losses may lead to a higher incidence of depressive symptoms. Medication, specifically SSRIs, are the most common form of medication prescribed for depression, while other forms of treatment include electroconvulsive therapy and psychosocial and nonsomatic treatments.

Depression and Mobility

A study conducted by Fonda, Wallace, and Herzog (2001) examined changes in driving patterns and worsening depressive symptoms among older adults. The study focused on whether changes in driving patterns, driving cessation, and reduction had negative consequences for depressive symptoms of older Americans and whether these consequences were lessened for individuals who had a driving spouse. Three sets of data

from the Asset and Health Dynamics Among the Oldest Old study (collected in 1993, 1995, and 1998) were used for the project. Depressive symptoms were measured using an abbreviated CES-D scale and the project consisted of two models. These models assessed how driving cessation and reduction that occurred between sets one and two contributed to increases in depressive symptoms between sets two and three. The first model was made up of all participants, and the second model focused on participants that were drivers. The third model included interaction terms in the analysis to determine whether respondents who stopped driving, but had a spouse who drove, were at less of a risk of worsening depressive symptoms. Results indicated an increased risk of worsening depressive symptoms for participants who stopped driving as well as drivers who restricted their driving distances before the study began. However, the risk for drivers who restricted their driving was less so than the participants who had completely stopped driving. Interestingly, having a spouse available to drive did not lessen the risk of worsening symptoms for the individuals who had stopped driving. The study concluded that the depressive symptoms of older adults can be negatively impacted by changes in driving. The authors suggested that future interventions designed to assist older adults should include strategies that focus on maintaining driving ability and preparing older drivers for the possibility of not driving anymore. Strategies also included obtaining mental health therapies for individuals facing the possibility of driving cessation.

Another study focused on the factors associated with driving cessation and the consequences of such cessation. Marottoli et al., (1997) set out to determine the association between driving cessation and depressive symptoms among older drivers. The authors administered a driving survey in an urban community to 1,989 surviving non-

institutionalized members of the New Haven Established Populations for Epidemiologic Studies of the Elderly (EPESE) cohort. Out of a total 1,316 participants, 502 were active drivers as of 1988, 92 had stopped driving between 1982 and 1987, and the rest of the participants had either never driven or had stopped driving before 1982. Information other than driving status came from in-person interviews that were conducted in 1982, 1985, and 1988. Medical information was updated yearly. The CES-D was used to measure depressive symptoms. Variations in depressive symptoms, before and after driving cessation, were analyzed. After sociodemographic and heath-related factors were co-varied, results indicated that an increase in depressive symptoms occurred during the six-year interval for older adults who had stopped driving. One of the strongest predictors of increased depressive symptoms was found to be driving cessation, even after accounting for sociodemographic and health-related factors.

In addition to how depression and driving are related, other studies suggest that health is an important aspect to consider. In a recent study, O'Neill, Bruce, Kirby, and Lawler (2000) examined older drivers, specifically their driving practices and health issues. The authors explained that little research has been conducted concerning the factors which impair transportation in later life. Their study attempted to assess the impact of health on driver cessation and mobility among a cohort of community-dwelling older adults. They recruited 218 participants over the age of 65 who were assessed with psychometric and mental state testing, a medical and drug history, as well as a transportation history. Out of their sample, 112 individuals had never driven, 38 had stopped driving, and 68 were considered current drivers. Health and expense were found to be the most substantial reasons for giving up driving. Aside from hypertension, there

was a low prevalence of self-reported target illnesses in the driving population; however, 14 of the 68 current drivers reported being on psychoactive medications. When compared to those who drove, participants who had quit driving were more likely to use a bus at least three times a week; however, these participants used it significantly less daily than participants who had never driven. The authors concluded that health issues significantly impact continued driving in community-dwelling older adults. While participants who quit driving did not appear to use public transportation as much as those who have never driven, one in five of the older drivers were found to use psychoactive medications. The authors suggested that these findings may represent the independence older adults associate with having a car for transportation and may demonstrate a higher degree of morbidity in those individuals who are no longer driving. This article fits the purpose of the current study in that access to and/or preferred methods of transportation may be related to depression.

Last but not least, the way in which mobility is defined may contribute to whether or not depression influences the population of community-dwelling older adults. The previously cited articles examined a form of extreme mobility restriction and driving cessation. The impact of depression on mobility may be more clearly evaluated if a less dramatic measure of mobility were used. Stalvey, Owsley, Sloane, and Ball (1999) developed a measure of the extent of mobility of older adults. The authors addressed that mobility in older adults is most commonly described in terms of "component maneuvers including analysis of gait and postural instability; activities that depend on mobility such as bathing, dressing, or shopping; or adverse events during mobility such as falls or motor vehicle crashes" (p. 460). However, the authors felt that these common approaches did

not represent the extent of movement within a person's environment or life space, as it is referred to in the gerontological literature. The authors felt that this is in fact the main aspect of mobility. The authors defined this concept in relation to mobility and measured life space in community-dwelling older adults using a questionnaire. Participants were first asked to identify whether or not they currently live with others, and if so, with whom. Participants were then required to answer nine questions in an hierarchical order about where they had traveled during a particular period of time ranging from being confined to one's bedroom to beyond one's region of the country. If the participants indicated that their life space extended beyond their immediate surroundings of their home, whether or not the participants personally drove to these destinations was assessed. These questions were asked based on the past seven days (i.e., short-term mobility) and based on the past two months (i.e., long-term mobility). This set of questions yielded two total scores, one referred to as Life Space which ranges from a score of zero to a sore of nine and one referred to as Drive Space which ranges from a score of zero to a score of six. These scores are further described in the methods section.

Next, falls were assessed through a series of questions regarding the number of falls the participant had experienced within the past year, internal/external factors that contributed to the fall(s), and whether or not injuries resulted from the fall(s). Driving exposure was then assessed using a series of questions referencing preferred method of transportation and frequency and distance of driving on a weekly basis. Participants were asked the number of days per week they typically drive and the number of miles per week they normally drive. Participants were then asked if they had completed specific driving behavior within the past three months and rated the amount of difficulty they experienced

using a four-point, Likert-type scale ranging from *no difficulty* to *extreme difficulty.*

Next, participants were asked whether or not anyone had suggested over the past two

years that they limit their driving or stop driving. Participants were also asked how many

accidents they had been involved in and how many tickets they had received over the past

two years.

Results indicated that the Life Space Questionnaire (LSQ) was found to be

reliable in a sample of older adults and obtained both construct and criterion validity.

Stalvey, Owsley, Sloane, and Ball (1999) described the LSQ as being a useful tool in

establishing the spatial extent of elderly individuals' mobility. The authors concluded

that the LSQ may also be useful for studies evaluating interventions designed to improve

mobility and independence in community-dwelling older adults. Thus, the LSQ

represents a method for assessing changes in mobility that are less severe than driving

cessation.

Summary and Research Questions

So far, a variety of factors related to depression in older adults have been

observed. Depression in older adults may often be missed by health care providers due to

the fact that symptomology may be more subtle and displayed as insomnia, loss of

appetite, and fatigue rather than more obvious factors like depressed mood and sadness.

The prevalence of depression is about three percent in a community-dwelling elderly

population, and many variables may impact mood disturbance in elderly adults including:

age, education, gender, ethnicity, marital status, apolipoprotein genotype, memory

complaints, and health issues. Depressive-spectrum disorders, which are made up of

bereavement, minor depression, dysthymia, and anxiety and depression together, have

been found more often in older persons than major depression. In addition, rates of depressive-spectrum disorders have extended up to twenty percent in community-dwelling older adults. Depressive-spectrum disorders may appear to be subclinical due to the higher prevalence of somatic symptoms, and older persons may be unfamiliar with affective signs; therefore, they may not express them to health care providers and may go undetected and undiagnosed. Age-related losses such as loss of professional identity, physical mobility, and the inevitable loss of family and friends are among the many variables that can affect a person's ability to maintain relationships and independence, which in turn may lead to a higher incidence of depressive symptoms. The symptoms presented by geriatric patients may manifest as increased irritability and anxiety rather than depressed mood or sadness. Medication, specifically SSRIs, are the most common form of medication prescribed for depression due to the fact that the dosage does not have to be adjusted as much as with other forms of medication, and there seem to be fewer deleterious side effects. Other forms of treatment include electroconvulsive therapy, which is often used for those who have been resistant to medication treatment and for those with severe or psychotic depression, and psychosocial and nonsomatic treatments which include cognitive behavioral therapy, supportive psychotherapy, problem-solving therapy, and interpersonal therapy.

As far as mobility is concerned, depressive symptoms of older adults can be negatively impacted by changes in driving, even when sociodemographic and health-related factors are taken into consideration. However, to date, the measure of mobility used in studies of driving and depression has been driving cessation, an extreme form of mobility limitation. A more general method for measuring mobility, the LSQ was

described.

While depression and mobility have been studied individually amongst the elderly, very little research has been conducted to examine the relationships between depression and mobility in treated and untreated older adults. The relationships between these two factors raise several important questions about community-dwelling older adults and how they function. The aim of the current study was to determine the relationships that exist between level of depression, medication treatment, and life-space mobility, in community-dwelling older adults. The specific questions this study was designed to answer are the following:

1. Do older adults who meet criteria for depression and are *not* medically treated show restricted mobility compared to older adults who do *not* meet criteria for depression and are *not* medically treated? (3 vs. 4)

2. Do older adults who meet criteria for depression and are medically treated show restricted mobility compared to older adults who do *not* meet criteria for depression and are medically treated? (1 vs. 2)

3. Do older adults who meet criteria for depression and are *not* medically treated show restricted mobility compared to older adults who meet criteria for depression and are medically treated? (3 vs. 1)

4. Do older adults who do *not* meet criteria for depression and are medically treated show restricted mobility compared to older adults who do *not* meet criteria for depression and are *not* medically treated? (2 vs. 4)

	Depressed	Not Depressed
Treated	1	2
Not Treated	3	4

Chapter 2

Methods

Participants

Data were obtained from an archival data set known as the Staying Keen In Later Life (SKILL) project. Participants age 65 and over were recruited from the Warren County, Kentucky, area from a list previously obtained by the Center for Research on Aging at Western Kentucky University and from a list recruited from the Birmingham, Alabama, area and obtained by the University of Alabama, Birmingham.

Materials and Procedure

Participants underwent a screening battery to make sure each individual met the proper far vision requirement of 20/80 or better and could read at a fifth-grade level in order to continue with the study. The test battery included the Life-Space/Mobility Questionnaire (LSQ; Stalvey, Owsley, Sloane, and Ball, 1999), the Center for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977), and a health questionnaire including medication usage.

Center for Epidemiologic Studies Depression Scale

The Center for Epidemiologic Studies Depression Scale (CES-D) is a brief 20-item scale that was created by Radloff (1977) to measure depression symptomology in individuals through a self-report method. The symptoms commonly associated with depression make up the items on the scale and have been used in previously validated longer scales. Participants responded to how often they had experienced symptoms represented by each item during the past week using a Likert-type scale ranging from *rarely or none of the time (less than one day)* to *most or all of the time (five to seven days*

per week). These responses were then combined to create one total score for each

participant. The CES-D has an internal consistency (coefficient alpha) >0.85 and test-

retest correlation of *r* >0.5.

Life-Space/Mobility Questionnaire

Participants then completed the Life-Space/Mobility Questionnaire (LSQ; Stalvey,

Owsley, Sloane, and Ball, 1999) by verbally responding to questions asked by an

examiner. The questionnaire is designed to assess an individual's range of life space, the

extent to which he/she has difficulty with falls, and individual driving habits. Participants

were first asked to identify whether or not they currently reside with others, and if so,

with whom. Participants were then required to answer nine questions in an hierarchical

order about where they had traveled during a particular period of time, ranging from

being confined to one's bedroom to beyond one's region of the country. If the participant

indicated that his/her life space extended beyond the immediate surroundings of his/her

home, whether or not the participant personally drove to these destinations was assessed

(see Drive Space below). These questions were asked based on the past seven days (i.e.,

short-term mobility) and based on the past two months (i.e. long-term mobility).

Responses for short-term mobility ranged anywhere from a score of zero, indicating that

the individual had not traveled out of his/her bedroom in the past seven days, to a score of

six, indicating that the individual traveled out of his/her town in the past seven days.

Responses for long-term mobility ranged up to nine, indicating that the individual

traveled out of their region of the country in the past two months. Reliability (α) of the

LSQ for all items collectively is 0.80.

Drive Space was assessed using the same questions (once the level of mobility

was beyond the home) with the addition that participants were queried if they drove to these locations. Thus, the Drive Space was measured on a scale of 0 (never left the home) to six (out of the region of the country). Again, Drive Space was measured over the last seven days and over the last two months.

Next, falls were assessed through a series of questions regarding the number of falls participants had experienced within the past year, internal/external factors that contributed to the fall(s), and whether or not injuries resulted from the fall(s). Following this section, additional driving habits questions were asked. Driving exposure was assessed using a series of questions referencing preferred method of transportation and frequency and distance of driving on a weekly basis. Participants were asked the number of days per week they normally drive. Participants were then asked if they had completed specific driving behaviors within the past three months and rated the amount of difficulty they experienced using a four-point, Likert-type scale ranging from *no difficulty* to *extreme difficulty*. Next, participants were asked whether or not anyone had suggested over the past two years that they limit their driving or stop driving. Participants were also asked how many accidents they had been involved in and how many tickets they had received over the past two years.

Health Questionnaire

Participants then completed a health questionnaire assessing general physical health. Participants were asked to report diagnosis and/or treatment of medical conditions. Lastly, participants were asked to list any prescription medications that they were currently taking and their reason(s) for taking each prescription. The full battery of self-report measures can be found in Appendix A.

Chapter 3

Results

The recruitment procedure produced a pool of 1,131 participants who consented to participate in the study. The participants were screened for adequate vision, hearing, and literacy to complete the elements of the protocol. Thus, the final sample consisted of 894 participants who qualified for inclusion in the study. Of these 894 participants 68 were classified as not depressed (CES-D < 16) and currently taking antidepressant medication, 30 were classified as depressed (CES-D ≥ 16) and not taking antidepressant medication, and 30 were classified as depressed (CES-D ≥ 16) and currently taking antidepressant medication. This left 766 participants who were not classified as depressed and not currently taking medication. To avoid overpowering the experimental conditions, 68 participants were randomly selected from the remaining 766 to act as a comparison group. In order to establish the representativeness of the characteristics of the 68 participants in the control sample (participants), these individuals were compared to the 698 people not selected (nonparticpants).

Comparison of Participants and Nonparticipants

In order to examine whether or not the random sample of those not depressed and not currently taking medication (n = 68) differed from those not selected (n = 698), an Analysis of Variance (ANOVA) on age and Chi Square (χ^2) tests of race and gender were performed (see Table 1). Participants did not differ on age (M = 72.92) from nonparticipants (M = 73.61), F (1, 766) = .900, p = .343. The percentage of females in the participant group (57.5%) did not differ from the percentage of females in the nonparticipant group (54.9%), χ^2 (1, N = 768) = .190, p = .663. However, the percentage

of Caucasians in the nonparticipant group (89.1%) differed from the participant group (86.1%), and the percentage of African Americans in the nonparticipant group (10.5%) also differed from participant group (11.4%), χ^2 (5, N = 766) = 12.460, p = .029. While these differences are statistically significant, the magnitude of the differences was relatively small; hence, the sample selected for the control group was viewed as representative of individuals who are not currently depressed and not on medication for depression.

Table 1

Demographic Comparisons of Those Chosen and Those Not Chosen for Control Group

	Participants	Nonparticipants	p
Age in years	72.92	73.61	.343
	(5.92)	(6.15)	
Gender			
% female	57.5	54.9	.663
Race			
% Caucasian	86.1	89.1	.029
% Black	11.4	10.5	
% Other	2.5	0.4	
N	80	688	

Note. SD in parentheses

Comparison of Participants Who Reported Taking Antidepressants for Depression and Those Who Reported Taking Antidepressants for Other Reasons

The reasons reported by participants for taking antidepressant medication were varied. Some participants clearly stated that they were taking antidepressant medication specifically for depression while others reported taking antidepressant medication for

other reasons (i.e., sleep, concentration, headaches). Due to the fact that reasons for taking antidepressant medication may be unknown by some participants, the two groups were compared on the outcome measures with the intent to combine the groups, if possible.

In order to examine whether or not individuals reporting taking antidepressants for depression differed from those reporting taking antidepressants for other reasons, Analysis of Variance (ANOVA) was used to compare these two groups across the four dependent variables. These dependent variables were (1) Life-Space 7-Day, (2) Life-Space 2-Months, (3) Drive-Space 7-Day, and (4) Drive-Space 2-Months. See Table 2 for descriptive statistics on these measures. No significant differences were found between the two groups across these measures except for Life-Space 7-Day, $F(1, 79) = 4.174, p = .044$. Due to the nature of these results, all individuals who reported taking antidepressant medications were combined into a single group regardless of the reported reason for taking the medication.

Table 2

Comparison of Participants Who Reported Taking Antidepressants for Depression and
Those Who Reported Taking Antidepressants for Other Reasons

| | For Depression | | | | | | For Other Reasons | | | | | |
| | Depressed | | | Not Depressed | | | Depressed | | | Not Depressed | | |
	M	SD	N	M	SD	N	M	SD	N	M	SD	N
Life Space 7 Day	6.00	0.00	8	5.65	0.48	43	5.29	0.49	7	5.52	0.59	25
Life Space 2 Month	7.00	0.76	8	7.09	1.21	43	6.14	1.06	7	7.00	1.38	25
Drive Space 7 Day	3.00	0.00	8	2.37	0.81	43	2.28	0.49	7	2.28	0.74	25
Drive Space 2 Month	3.75	0.71	8	3.28	1.42	42	2.86	1.21	7	3.00	1.38	25

Description of Final Study Sample

The forgoing analyses established that the random selection of the control individuals (i.e., no depression, no antidepressant drugs) was effective and that, regardless of the reported reason for taking antidepressant medication, mobility was similar. Thus, this final sample of 196 individuals was submitted for analysis of their mobility. However, this sample was further reduced by 5 individuals due to missing data, resulting in a final sample of 191 participants.

The remaining 191 participants were classified into one of four groups depending on depression measured by the CES-D and reported medication usage. Results on the CES-D were divided into two different groups based on previously determined cut-off

scores. Participants receiving a score of equal to or less than 15 were placed in a group labeled *not depressed*. Those receiving a score of equal to or greater than 16 were placed in a group labeled *depressed* (Radloff, 1977).

Medication usage classified individuals into one of two groups based on the internet drug index (www.rxlist.com). The internet drug index supplies in-depth and detailed information on drugs to health professionals and consumers around the world. Each drug entry contains information which includes a description, drug classification, actions/clinical pharmacology, indications and usage, contradictions, warnings, precautions, patient instructions, drug interactions, adverse reactions, dosage and administration. Individuals not taking any medications classified by the internet drug index (www.rxlist.com) as antidepressants were placed in a group labeled *no medication*. Participants taking one or more medications classified as anti-depressants were placed in a group labeled *medication(s)*. The above classification system was used to produce a two by two factorial model consisting of four groups. Table 3 presents the demographic data for the final sample as a whole, as well as for each of the four groups.

Table 3

Demographic Comparisons Across the Total Sample

	No Medication				Medication				Total	
	Not Depressed		Depressed		Not Depressed		Depressed			
	M	SD	M	SD	M	SD	M	SD	M	SD
Age (yrs)	72.8	5.87	73.2	5.70	73.6	5.12	72.1	4.62	73.0	5.40

	No Medication				Medication				Total	
	Not Depressed		Depressed		Not Depressed		Depressed			
	N	%	*N*	%	*N*	%	*N*	%	*N*	%
Gender % female	35	51.5	20	66.7	43	67	26	89.7	124	64.9
Race % Caucasian	58	85.3	27	90.0	60	93.75	26	89.7	171	90.0
% Black	7	10.3	3	10.0	7	6.75	3	10.3	17	8.9
% Other	3	3.4							2	1.0

Analyses of Mobility Data

Analyses of covariance (ANCOVA) were used to assess group differences and to

determine main effects and interactions of depression and medication usage, when

applied to each of the life-space measures (see Table 4 for descriptive statistics) and each

of the drive-space measures (see Table 5 for descriptive statistics). Factors that were co-

varied were age, health/eye health, falls, preferred method of getting around (i.e., driving

yourself, having someone drive you, public transportation), whether or not participants

lived alone or with others, and length of time taking antidepressant medication. The only

effects to obtain significance were a medication by depression interactions for Drive

Space 7 Day and Drive Space 2 Month, $F(1, 180) = 4.59$, $p = .033$, and $F(1, 180) = 4.38$,

$p = .038$, respectively. The interactions were dissected using confidence intervals (.05)

about their means. Each cell mean for the Drive Space 7 Day measure (Table 6) and

Drive Space 2 Month (Table 7), along with their respective 95% confidence intervals

were calculated.

Table 4
Analyses of Life Space Data

	Life Space 7 Day				Life Space 2 Month			
	Not Depressed		Depressed		Not Depressed		Depressed	
	M	SD	M	SD	M	SD	M	SD
No Medication	5.77	0.54	5.65	0.51	7.46	1.26	6.93	1.19
Medication	5.59	0.53	5.66	0.55	7.02	1.22	6.85	1.28

Table 5
Analyses of Drive Space Data

	Drive Space 7 Day				Drive Space 2 Month			
	Not Depressed		Depressed		Not Depressed		Depressed	
	M	SD	M	SD	M	SD	M	SD
No Medication	2.64	0.84	2.14	0.79	3.88	1.47	2.74	1.39
Medication	2.36	0.81	2.39	0.85	3.20	1.42	2.97	1.50

Table 6
Drive Space 7 Day

	Not Depressed		95% CI		Depressed		95% CI	
			Lower	Upper			Lower	Upper
	M	SD			M	SD		
No Medication	2.64	0.84	2.44	2.84	2.14	0.79	1.86	2.43
On Medication	2.36	0.81	2.16	2.56	2.39	0.85	2.08	2.70

Note. CI = Confidence Interval

Table 7

Drive Space 2 Month

	Not Depressed		95% CI		Depressed		95% CI	
			Lower	Upper			Lower	Upper
	M	SD			M	SD		
No Medication	3.88	1.47	3.52	4.23	2.74	1.39	2.24	3.24
On Medication	3.20	1.42	2.85	3.55	2.97	1.50	2.43	3.52

Note. CI = Confidence Interval

Significant differences exist when one mean falls outside the 95% confidence interval for

a comparison mean. These analyses will be reported with respect to the original four

hypotheses.

Research Question 1

Hypothesis number one asked, in the absence of antidepressant medication, are

older adults who are depressed less mobile than those who are not depressed? The data

partially support this hypothesis. In the absence of medication, the mean Drive Space 7

Day score for depressed older adults ($M = 2.14$) was significantly less than for those who

were not depressed ($M = 2.64$). Recall that a score of two indicates that individuals have

traveled out of their neighborhood/in their town in the past seven days, while a score of three indicates that individuals have traveled out of their town in the past seven days. A similar pattern was found for Drive Space 2 Month for depressed older adults (M = 2.74) and for those who were not depressed (M = 3.88). Recall that a score of four indicates that individuals have traveled out of their county, in the past two months. No differences between the two groups were noted on any other mobility measure.

Research Question 2

Hypothesis number two asked, given treatment for depression in the form of antidepressants, are older adults who are still depressed less mobile than those not currently depressed? No significant differences were observed between these two groups on any of the four mobility measures.

Research Question 3

Hypothesis number three asked, given that an older adult is depressed, is mobility lessened by the presence of antidepressant medication? No significant differences were observed between these two groups on any of the four mobility measures.

Research Question 4

Hypothesis number four asked, given the absence of depression symptoms are older adults who are currently on antidepressant medication less mobile than those not currently medicated? The data partially support this hypothesis. The mean Drive Space 7 Day score for older adults who are not depressed and on medication (M = 2.36) was significantly less than for those who were not depressed and not on medication (M = 2.64). A similar pattern was found for Drive Space 2 Month for older adults who are not depressed and on medication (M = 3.20) and for those who were not depressed and not on

medication ($M = 3.88$). No differences between the two groups were noted on any other

mobility measure.

Chapter 4

Discussion

This study sought to investigate the role of antidepressant medication and depression on mobility in older adults. Mobility was measured using the Life-Space/Mobility Questionnaire. The major finding from this study is that either the presence of depression or the taking of antidepressant medication reduces driving mobility but not life space mobility. Participants who were depressed and untreated were found to be significantly less mobile than the general population (not depressed and untreated) with respect to their driving habits. However, there was not a significant difference between these individuals and those who were depressed and treated. In addition, participants who were not depressed and currently treated were significantly less mobile than the general population. Although one might expect that an individual that appears to be successfully treated for depression should be as mobile as an individual who is neither depressed nor being treated, this was not the case. One explanation for this finding may be that many antidepressant labels warn users against operating machinery or engaging in activities that require alertness such as driving. These warnings are usually due to side effects that may cause dizziness or drowsiness. In addition, many antidepressant labels warn that elderly individuals may be more sensitive to these side effects than other age groups. Whether older adults are actually experiencing these side effects or are simply being cautious about driving due to the warnings may have an impact on their mobility. Therefore, although an individual may no longer be experiencing symptoms of depression, simply taking antidepressant medication appears to still limit their mobility. This may also explain why there were no significant differences

in mobility between depressed individuals who were treated and those who were not treated.

Although drive space mobility was decreased by the presence of depression or by taking antidepressant medication, life space (or the distance one travels regardless of method of transportation) was unaffected. This finding may be explained by older adults becoming more dependent on alternate forms of transportation. Older adults may no longer feel comfortable driving themselves as a result of being depressed or taking antidepressant medication, but they may travel the same distance from their home with a spouse, a friend or family member, or by using public transportation. Although an individual's personal driving mobility may be limited due to the presence of depression or antidepressant medication, these individuals are still traveling distances from home that are comparable to the general population.

These results support previous literature in that depression is associated with the aging process and that depression in older adults is treatable (Birrer & Vemuri, 2004). However, the current study examined the effects of depression on mobility at a deeper level than previous studies. While past studies determined the relationships that exist between depressive symptoms of older adults and extreme changes in driving such as driving cessation (Fonda, Wallace, and Herzog, 2001; Marottoli et al.,1997), the current study took a different approach and examined how general mobility in community-dwelling older adults may be impacted by depression. The results of the current study differ from previous studies in that depression may lead to changes in mobility rather than changes in mobility may lead to depression. Finally, the current study took a more in depth look than previous studies and also considered the role medications play on

mobility.

Strengths of the Study

The current study included several strengths, first of which was a large sample size. The sample contained close to 200 participants which was comparable to other published studies on depression and mobility. The large sample size increased power, increasing the possibility that this study truly represents the elderly population.

The study also used the LSQ which is a more diverse measure of mobility. To date, the measure of mobility used in most studies of driving and depression has been driving cessation, an extreme form of mobility limitation. Also, the measures used in the current study were well validated and were reliable.

Last but not least, the information gathered about participants was extensive. Thorough health questionnaires provided a more reliable record of health conditions and medications participants were currently taking. Therefore, it was possible to further evaluate participants who were taking antidepressant medication for ambiguous reasons. The information gathered included extensive information about participant diagnosis and treatment.

Limitations of the Study

Although the study included several strengths, there were also some limitations. One limitation was that all of the data gathered were self-reported. There was no way to be certain that the information gathered was completely accurate when measuring for depression, mobility, and/or treatment. This concern is enhanced given the cognitive decline that accompanies normal aging.

Future Directions

Future directions for research might focus on using participants from more diverse regional areas as this study focused on older adults living in the southern United States. Differences may exist between more rural and urban areas that may have not been captured in this study due to the localized sample. It would also be beneficial to use more sensitive measures of each construct to gain a more accurate diagnoses of depression as well as more accurate health records about treatment. The current study also did not account for whether participants were currently receiving other forms of treatment for depression such as psychotherapy. Future research may consider what effects other treatments for depression have on mobility. Last but not least, drug interactions were not considered in the current study. Additional research may focus on differences in mobility based on the effects of taking multiple medications.

In summary, this thesis did show that there were differences in the general mobility of older adults based on late-life depression and its treatment. Although differences were not found in Life Space, as hypothesized, driving mobility was reduced by depression or its chemical treatment. These results are a first step in understanding the factors that affect older adult mobility. However, by capturing the factors that do influence the mobility of older adults, we may be better prepared to help older adults maintain their mobility throughout the aging process.

References

Alexopoulos, G. S. (2005, June 5). Depression in the elderly. *Lancet, 365*, 1961-1970.

Alpass, F. M., Neville, S. (2003, May). Loneliness, health and depression in older males. *Aging & Mental Health, 7,* 212-216.

American Psychiatric Association. (2000). Diagnostic and statistical manual of mental disorders (4th ed. text revision). Washington, DC: DSM-IV-TR.

Anstey, K. J. L. (2002). Mortality risk varies according to gender and change in depressive status in very old adults. *Psychosomatic Medicine, 64*, 880-888.

Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry, 4*, 561-571.

Birrer, R. B., & Vemuri, S. P. (2004). Depression in later life: A diagnostic and therapeutic challenge. *American Family Physician, 69,* 2375-2382.

Boswell, E. B., & Stoudemire, A. (1996). Major depression in the primary care setting. *American Journal of Medicine, 101,* 3S-9S.

Conwell, Y., Rotenberg, M., & Caine, E. D. (1990). Completed suicide at age 50 and over. *Journal of the American Geriatrics Society, 38*, 640-644.

Fonda, S. J., Wallace, R. B., & Herzog, A. R. (2001). Changes in driving patterns and worsening depressive symptoms among older adults. *Journal of Gerontology: Social Sciences, 56B*, S343-S351.

Hamilton, M. (1960). A rating scale for depression. *Journal of Neurology, Neurosurgery & Psychiatry, 23,* 56-62.

Harwood, D. G., Barker, W. W., Ownby, R. L., Mullan, M., & Duara, R. (1999).

Factors associated with depressive symptoms in non-demented community-dwelling elderly. *International Journal of Geriatric Psychiatry, 14,* 331-337.

Kanowski, S. (1994). Age-dependent epidemiology of depression. *Gerontology, 40,* 1-4.

Kennedy G. J. (1995, January). The geriatric syndrome of late-life depression. *Psychiatric Services, 46,* 43-48.

Krishnan, K. R. R., Tupler, L. A., Ritchi, J. C., McDonald, W. M., Knight, D. L., Nemeroff, C. B., & Carroll, B. J. (1996). Apolipoprotein frequency in geriatric depression. *Biological Psychiatry, 40,* 69-71.

Lasser, R., Siegel, R. D., Dukoff, R., & Sunderland, T. (1998). Diagnosis and treatment of geriatric depression. *CNS Drugs, 9,* 17-30.

Marottoli, R. A., Mendes de Leon, C.F., Glass, T.A., Williams, C.S., Cooney, L.M., Berkman, L.F., & Tinetti, M. E. (1997). Driving cessation and increased depressive symptoms: Prospective evidence from the New Haven EPESE. *Journal of the American Geriatrics Society, 45,* 202-206.

O'Neill, D., Bruce, I., Kirby, M., & Lawlor, B. (2000). Older drivers, driving practices and health issues. *Clinical Gerontologist, 22,* 47-54.

Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1,* 385-401.

Reynolds, C. F. III, & Kupfer, D. J. (1999). Depression and aging: A look to the future. *Psychiatric Services, 50,* 1167-1172.

Stalvey, B. T., Owsley, C., Sloane, M. E., & Ball, K. (1999). The Life Space Questionnaire: A measure of the extent of mobility of older adults. *The Journal of Applied Gerontology, 18,* 460-478.

Yesavage, J. A. (1982-83). Development and validation of a geriatric depression

screening scale: a preliminary report. *Journal of Psychiatric Research, 17,* 37-49.

APPENDIX A

CES-D

How often during the PAST WEEK would you have made the following statement about yourself? Circle the appropriate number to the right of each statement.

Frequency Code: **(1) Rarely or none of the time (less than one day)**
(2) Some or little of the time (1 - 2 days)
(3) Occasionally or a moderate amount of time (3 – 4 days)
(4) Most or all of the time (5 -7 days)

DURING THE PAST WEEK:

(A) I was bothered by things that usually don't bother me   (A) 1 2 3 4

(B) I did not feel like eating: My appetite was poor   (B) 1 2 3 4

(C) I felt that I could not shake off the blues even with help from my family

or friends   (C) 1 2 3 4

(D) I felt that I was just as good as other people   (D) 1 2 3 4

(E) I had trouble keeping my mind on what I was doing   (E) 1 2 3 4

(F) I felt depressed   (F) 1 2 3 4

(G) I felt that everything I did was an effort   (G) 1 2 3 4

(H) I felt hopeful about the future   (H) 1 2 3 4

(I) I thought my life has been a failure   (I) 1 2 3 4

(J) I felt fearful	(J)	1	2	3	4
(K) My sleep was restless	(K)	1	2	3	4
(L) I was happy	(L)	1	2	3	4
(M) I talked less than usual	(M)	1	2	3	4
(N) I felt lonely	(N)	1	2	3	4
(O) People were unfriendly	(O)	1	2	3	4
(P) I enjoyed life	(P)	1	2	3	4
(Q) I had crying spells	(Q)	1	2	3	4
(R) I felt sad	(R)	1	2	3	4
(S) I felt that people disliked me	(S)	1	2	3	4
(T) I could not get "going"	(T)	1	2	3	4

MOBILITY/LIFE SPACE

The next few sections ask questions about mobility. There is a section on general mobility, a brief section on falls, and a section on your driving habits. As we go through the sections, please feel free to ask me any questions about a particular item that may not be clear to you. I will read the questions and you should just select the answer most appropriate to you. Remember, if you have a question about how to interpret the question, just ask me about it.

F1. First, please tell me if you live alone or with others?

     1. LIVES ALONE.........1 **(F2)**   2. LIVES WITH OTHERS..........2 **(F1a)**

    F1a. How many people live with you? Please include all people living in your home even if they are not blood relatives or only expect to live there temporarily.

             RECORD NUMBER: _____

    F1b. IF ONE: How is s/he related to you?

          IF > 1: How are they related to you?

          PROBE AT END: Anyone else?

          RECORD NUMBER ON EACH LINE:

               SPOUSE/PARTNER   _____

               PARENTS/IN-LAW   _____

               CHILDREN/IN-LAW   _____

               OTHER RELATIVES   _____

F2. Now I am interested in finding out about the places you have been recently, <u>not counting today</u>. The next six questions ask about your activities <u>in the last 7 days</u>. Today is _____ so we are interested in the period of time beginning with last _____ up to, and including, yesterday. Do you understand the time period I am asking about?

    During the <u>last seven days</u>, but not counting today, have you been to other rooms of your house besides the room where you sleep?

> Yes...1
>
> No...2

F3. During the <u>last seven days</u>, but not counting today, have you been to an area immediately outside your home such as your porch, deck or patio, garage, or hallway of your apartment building? This includes going through these places on your way to somewhere else.

> YES..1
>
> NO..2

F4. During the <u>last seven days</u>, but not counting today, have you been to an area outside your home such as your yard, driveway, courtyard, or parking lot? Again, if you went through these places you would answer 'Yes.'

> YES..1
>
> NO..2

F5. During the <u>last seven days</u>, but not counting today, have you been to places in your immediate neighborhood beyond your own property or apartment building? It doesn't matter how you got there, whether you walked or got a ride.

FOR HOMEOWNERS, THIS REFERS TO PLACES BEYOND THE PROPERTY LINE. FOR CITY APARTMENT DWELLERS, THIS REFERS TO PLACES BEYOND THE IMMEDIATE BLOCK. FOR RURAL AREAS, THIS INCLUDES LEAVING THE PROPERTY LINES.

> YES..1
>
> NO..2**(F6)**

F5a. Did you personally drive there? If you actually drove there yourself then you should answer "YES." If you were just a passenger in a car, then you should answer "NO." [BEING A PASSENGER IN A CAR, TAXI, OR PUBLIC TRANSPORTATION DOESN'T QUALIFY FOR A 'YES' ANSWER.]

> YES..1
>
> NO..2

F6.   During the last seven days, but not counting today, have you been to places outside your immediate neighborhood but within your town or community?

IN A CITY, THIS WOULD BE PLACES BEYOND THE SURROUNDING 5 BLOCKS. IN A SUBURBAN AREA THIS REFERS TO PLACES ABOUT 3 STREETS FROM THE HOME. FOR SPARSELY POPULATED RURAL AREAS, THIS INCLUDES GOING TO PLACES ON THE OTHER SIDE OF THE CLOSEST NEIGHBORS.

YES......................1

NO.......................2**(F7)**

F6a.   Did you personally drive there? Again, we are asking whether you drove there yourself.

YES......................1

NO.......................2

F7.   During the last seven days, but not counting today, have you been to places outside your   immediate town or community?

Remember, that for this part of the question it doesn't matter how you got there.

THIS REFERS TO PLACES OUTSIDE A PARTICULAR SUB-REGION OF THE CITY. THIS COULD BE AREAS WITH A DISTINCT NAME, OR CITY AREAS SUCH AS EAST, WEST, NORTH, OR SOUTH. FOR RURAL AREAS, THIS INCLUDES GOING TO PLACES ON THE OTHER SIDE OF THE NEAREST TOWN.

YES............1

NO..............2**(F8)**

F7a.   Did you personally drive there?

YES.............1

NO..............2

F8.   Please note the change in time frame for the next 3 questions. The next three questions ask about activities over the last two months. Today is ___ so we are asking about the period of time from ___ up to, and including, yesterday.

During the last two months, but not counting today, have you been to places outside of your county (or city)?

THIS INCLUDES GOING TO, OR THROUGH, PLACES ON THE OTHER SIDE OF THE COUNTY LINE (WHERE SUBSTANTIAL TRAVEL IS INVOLVED) OR TO PLACES ON THE OTHER SIDE OF A LARGE CITY. SUBJECTS LIVING NEAR A COUNTY LINE WHERE CROSSING INTO ANOTHER COUNTY DOES NOT CONSTITUTE A SIGNIFICANT DISTANCE SHOULD NOT RESPOND "YES" HERE. IN RURAL AREAS ONE COULD USE A 20-MILE RADIUS AS A GUIDELINE TO ANSWERING QUESTIONS OF CLARIFICATION.

YES.................1

NO....................2**(F9)**

F8a.   Did you personally drive there?

YES....................1

NO....................2

F9.   During the last two months, have you been to places outside your state?
(20 MI RADIUS. SEE F8)

YES....................1

NO....................2**(F10)**

F9a.   Did you personally drive there?

YES..........1

NO............2

F10.   During the last two months, have you been to places outside this region of the United States? By this region, I meant the states of _____. (SEE QxQS).

YES......................1   **(CODE YES IF THEY DROVE MORE THAN HALF OF THE TRIP)**

NO........................2   **(GO TO SECTION G)**

F10a. Did you personally drive there?

YES............1

NO..............2

MOBILITY/FALLS

In the next few questions I am interested in finding out about any falls you might have had <u>in the last 2 months</u>. Let me explain to you what I mean by falling. Falling includes accidentally losing your balance and falling on the ground or falling against something such as furniture.

G1.   Have you had any falls in the <u>last 2 months</u>? Today is _____ so we are asking about the period of time from _____ up to, and including, yesterday.

        YES.............................1

        NO..............................2 **(GO TO SECTION Kc)**

G2.   How many times have you fallen in the last <u>2 months</u>?

So, since _____ how many falls have you had?

        RECORD: _____ _____
        NUMBER OF TIMES

HAVE THE SUBJECT MAKE THE BEST GUESS THEY CAN. PROMPT IF NECESSARY.

G3.   Did any of your falls in the last <u>2 months</u> ....
    (SEE G3: INSTRUCTIONS FOR TERMS)

		YES	NO
1)	Result in injury?	1	2
2)	Require medical attention?	1	2
3)	Result in hospitalization?	1	2
4)	Involve a loss of consciousness?	1	2

Now the next three questions are about your most recent fall. Try to remember your most recent fall in the <u>last two months</u>.

G4.   Did something such as a rug, stairs, curb, or a wet or icy surface contribute to your <u>most recent</u> fall?

YES...............................1
NO...............................2

G5.　Did anything else contribute to your <u>most recent</u> fall?

YES...............................1
NO...............................2 **(GO TO SECTION Kc)**

G6.　What else contributed to the fall?

_____

_____

_____

_____

MOBILITY/DRIVING HABITS

In the following sections we are interested in finding out about your driving habits.

H1.   For the purposes of our project, by current driver we mean someone who has driven a car within the last 12 months and <u>someone who would drive a car today if they needed to</u>. Using that definition, do you consider yourself a current driver?

YES...1

NO...2 **(GO TO NEXT SECTION)**

H2.   Let me check this again. Do you currently drive?
(THIS IS A VERIFICATION QUESTION.)

YES...1

NO...2 **(GO TO NEXT SECTION)**

H3.   Which way do you prefer to get around? Do you prefer to.....

Drive by yourself.............................1

Have someone drive you....................2

Use public transportation....................3

H4.   How fast do you usually drive <u>compared to the general flow of traffic</u>? Would you say...

Much faster..................................1

Somewhat faster.............................2

About the same...............................3

Somewhat slower.............................4

Much slower.................................5

H5.   How would you rate the quality of your own driving? Would you say it is ...

Excellent..1

Good..2

Average...3

Fair...4

Poor..5

H6.   In an average week, how many days out of seven do you normally drive?

≤ 1 2   3   4   5   6   7

H7.   How many miles do you drive in an average seven-day week?

Record Number: _____ _____ _____

MAY NEED TO PROMPT WITH RANGES, EG., "LESS THAN 50?; MORE THAN 100? LESS THAN 500?," ETC.

Please note that the next series of questions asks about your driving during the last two months. Today is ____. The next set of questions ask about the period of time from _____ up to, and including yesterday. I will be asking you some questions for which there are several alternative answers. To make it easy for you to pick the best response, you can use this card.

GIVE THE SUBJECT THE RESPONSE CARD.

H8.   During the last two months, have you driven when it is raining?

YES...1

NO...2 **(H8b)**

H8a.   Would you say that you drive in the rain with...

No difficulty at all......................1   **(H9)**

A little difficulty.......................2   **(H9)**

Moderate difficulty....................3   **(H9)**

Extreme difficulty.....................4   **(H9)**

H8b.   Have you <u>not</u> driven in the rain because you avoid driving in the rain?

YES....................................1

NO.....................................2

H9.   During the <u>last two months</u>, have you driven alone?

YES...................................1

NO..................................2 **(H9b)**

H9a.   Would you say that you drive alone with...

No difficulty at all.............1 **(H10)**

A little difficulty ....2 **(H10)**

Moderate difficulty............3 **(H10)**

Extreme difficulty.............4 **(H10)**

H9b.   Have you <u>not</u> driven alone because you avoid driving alone?

YES............................1

NO.............................2

H10.   During the <u>last two months</u>, have you made left-hand turns across oncoming traffic? This is where you are waiting for traffic to clear before making a left-hand turn.

YES...1

NO..2 **(H10b)**

H10a. Would you say that you make left-handed turns across oncoming traffic with...

No difficulty at all...............................1 **(H11)**

A little difficulty................................2 **(H11)**

Moderate difficulty............................3 **(H11)**

Extreme difficulty.............................4 **(H11)**

H10b. Have you <u>not</u> made left-hand turns across oncoming traffic because you avoid doing that?

YES...1

NO..2

H11. During the <u>last two months</u>, have you merged into traffic while entering a highway or expressway?

YES.................................1

NO................................2 **(H11b)**

H11a. Would you say that you merge into traffic while entering a highway or expressway with...

No difficulty at all......................1 **(H12)**

A little difficulty........................2 **(H12)**

Moderate difficulty......................3 **(H12)**

Extreme difficulty.......................4 **(H12)**

H11b. Have you <u>not</u> merged into traffic while entering a highway or expressway because you avoid doing that?

YES....................................1

NO.....................................2

H12. During the <u>last two months</u>, have you driven on high-traffic roads?

YES....................................1

NO.....................................2 **(H12b)**

H12a. Would you say that you drive on high-traffic roads with...

        No difficulty at all.........................1 **(H13)**

        A little difficulty...........................2 **(H13)**

        Moderate difficulty........................3 **(H13)**

        Extreme difficulty.........................4 **(H13)**

H12b. Have you <u>not</u> driven on high-traffic roads because you avoid doing that?

        YES...1

        NO..2

H13. During the last two months, have you driven in rush-hour traffic?
(7 TO 9 AM / 4 TO 6 PM)
        YES.................................1

        NO.................................2 **(H13b)**

H13a. Would you say that you drive in rush-hour traffic with...

        No difficulty at all.........................1 **(H14)**

        A little difficulty...........................2 **(H14)**

        Moderate difficulty........................3 **(H14)**

        Extreme difficulty.........................4 **(H14)**

H13b. Have you not driven in rush-hour traffic because you avoid it?

        YES...1

        NO...2

H14. During the last two months, have you driven at night?

        YES...............................1

        NO...............................2 **(H14b)**

H14a. Would you say that you drive at night with…

No difficulty at all……………………1 **(H15)**

A little difficulty………………….…2 **(H15)**

Moderate difficulty…………………..3 **(H15)**

Extreme difficulty……………………4 **(H15)**

H14b. Have you <u>not</u> driven at night because you avoid doing that?

YES……………………….1

NO……………………….…2

H15. During the <u>last two months,</u> have you made lane changes while driving?
(TRAFFIC MUST BE PRESENT FOR A YES ANSWER)
YES……………………….1

NO……………………….…2 **(H15b)**

H15a. Would you say that you make lane changes while driving with…

No difficulty at all……………………1 **(H16)**

A little difficulty………………….…2 **(H16)**

Moderate difficulty…………………..3 **(H16)**

Extreme difficulty……………………4 **(H16)**

H15b. Have you <u>not</u> made lane changes because you avoid doing that?

YES……………………….1

NO……………………….…2

The remaining questions ask about things that might have happened over the last two years. Since today is ___(MONTH)_____, ___(YEAR)_____, the following questions are asking about the period of time from _____(MONTH)_____, ___(YEAR)____, up to and including yesterday.

H16. Has anyone suggested over the last two years that you limit your driving or suggested that you stop driving? (PROMPT: Has anyone like your spouse, children, doctor, or a friend suggested that you not drive anymore or drive less?)

     YES..1

     NO..2 **(H17)**

H16a. Who made the suggestion to limit or stop your driving?

		YES	NO
1)	SPOUSE......................................1		2
2)	SON OR DAUGHTER......................1		2
3)	FRIEND......................................1		2
4)	YOUR DOCTOR, OR OTHER MEDICAL PERSON......................................1		2
5)	EYE DOCTOR (OPTOMETRIST OR OPTHALMOLOGIST)......................1		2
6)	OTHER......................................1 SPECIFY_____		2

H17. How many accidents have you been involved in over the last two years when you were the driver? Please indicate the number of accidents, whether or not you were at fault.

    INCLUDE ALL MINOR OR MAJOR ACCIDENTS REGARDLESS OF FAULT. SUBJECT MUST HAVE BEEN THE DRIVER.

             RECORD NUMBER: ___ ___ ___
             IF NONE, GO TO H18.

H17a. How many of these were the police called to the scene?
     RECORD NUMBER: ___ ___ ___

H18. How many times in the last two years have you been pulled over by the police, regardless of whether you received a ticket? (PROMPT: Stopped for speeding or some other violation?)

RECORD NUMBER: ___ ___ ___
IF NONE, GO TO NEXT SECTION

H18a. On how many of these occasions have you received a traffic ticket (other than a parking ticket, whether or not you think you were at fault?

RECORD NUMBER: ___ ___ ___
GO TO NEXT SECTION

MOBILITY/DRIVING HABITS FOR NON-DRIVERS

I1.   Let me check this again. Do you currently drive?
        (THIS IS A VERIFICATION QUESTION)

                YES.............................1 **(GO BACK TO H3)**
                NO..............................2

I2.   Which way do you prefer to get around? Do you prefer . . .

                Drive yourself.................................1
                Have someone drive you......................2
                Use public transportation of taxi cab.........3

I3.   Have you ever driven a car?

                YES.............................1
                NO..............................2 **(GO TO NEXT SECTION)**

I4.   Explain why you stopped driving. (WRITE IN SUBJECT'S RESPONSE)

        _____

        _____

        _____

        PROMPTS: Was it a particular event that happened? Was it due to a medical
        condition? Was it due to poor vision? Was it a choice? Was it required? Was it
        due to stress and anxiety? What was the reason?

I5.   How long has it been since you last drove? (PROMPTING MAY BE
        NECESSARY)

                RECORD: ____ ____   ____ ____
                                  # YEARS   #MONTHS

IF >2 YEARS, GO TO NEXT SECTION

I6.   Has anyone suggested over the <u>last two years</u> that you limit your driving or suggested that you stop driving? (PROMPT: Has anyone like your spouse, children, doctor, or a friend suggested that you not drive anymore or drive less?)

        YES…………………………………1

        NO……………………………….2 **(I7)**

I6a. Who made the suggestion to limit or stop your driving?

		YES	NO
1)	SPOUSE…………………………………….	1	2
2)	SON OR DAUGHTER………………………….	1	2
3)	FRIEND…………………………………….	1	2
4)	YOUR DOCTOR, OR OTHER MEDICAL PERSON…………………………………….	1	2
5)	EYE DOCTOR (OPTOMETRIST OR OPTHALMOLOGIST)………………………….	1	2
6)	OTHER……………………………………... SPECIFY: _____	1	2

I7.   How many accidents have you been involved in <u>over the last two years</u> when you were the driver? Please indicate the number of accidents, whether or not you were at fault.

    INCLUDE ALL MINOR OR MAJOR ACCIDENTS REGARDLESS OF FAULT. SUBJECT MUST HAVE BEEN THE DRIVER.

        RECORD NUMBER: ___ ___ ___

        IF NONE , GO TO I8

I7a. To how many of these were the police called to the scene?

        RECORD NUMBER: ___ ___ ___

I8.   How many times in the <u>last two years</u> have you been pulled over by the police, regardless of whether you received a ticket?

STOPPED FOR SPEEDING OR SOME OTHER VIOLATION.

RECORD NUMBER: ___ ___ ___

IF NONE, GO TO NEXT SECTION

I8a.   On how many of these occasions have you received a traffic ticket (other than a parking ticket) regardless of whether or not you think you were at fault?

RECORD NUMBER: ___ ___ ___