An investigation of factors associated with depression in older adults

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An investigation of factors associated with depression in older adults

Mayhew, Katherine Mary, M.A.
University of Nevada, Las Vegas, 1990
AN INVESTIGATION OF FACTORS ASSOCIATED WITH DEPRESSION IN OLDER ADULTS

by

Katherine Mary Mayhew

A thesis submitted in partial fulfillment of the requirements for the degree of

Master of Arts in Psychology

Department of Psychology
University of Nevada, Las Vegas
May, 1990
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Abstract

As the population ages, there is a need for continued research into the etiology of geriatric depression and improved ways to detect individuals at risk for developing this disorder. The current study explores relationships between depression, health perception, life satisfaction, and loneliness for 44 older (51-79) subjects. Relationships between the four variables and marital status, bereavement, monthly income, satisfaction with income, residence, occupation, education, size of household, and the number of living children and siblings are also examined. Two depression measures, the Geriatric Depression Scale and the Beck Depression Inventory are utilized along with the Life Satisfaction Index-Z, the Revised UCLA Loneliness Scale, the Health Perception Questionnaire, and a demographic survey. Descriptive statistics for the depression measures and their correlates are presented, followed by a breakdown of the measures by demographic characteristics. Furthermore, the results of correlational analyses with the major variables of interest are followed by the results of multiple regression analyses conducted for each of the depression measures. The findings supported
the hypotheses that persons who were more depressed would perceive themselves to be less healthy, less satisfied with life, and more lonely than those who were less depressed. As expected, depression was best predicted by a combination of factors, specifically, life satisfaction and loneliness. A breakdown of scores on the measures according to demographic variables found married persons to be the least depressed, persons with higher incomes to be the most satisfied with life, and that professionals perceived themselves to be healthier than laborers. Similar studies were conducted utilizing subjects who resided in retirement centers and psychiatric patients hospitalized for depression on a geriatric unit. In these studies health perception played a more significant role in predicting depression. In all cases, the Geriatric Depression Scale was found to correlate more strongly with the other variables compared to the Beck Depression Inventory. Suggestions for utilizing the Geriatric Depression Scale, the Life Satisfaction Index-Z, and the Revised UCLA Loneliness Scale to detect those older persons at risk for depression are provided. Implications for further research and the difficulties encountered in this type of study are also discussed.
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Katherine Mayhew
Introduction

In 1900, only about 3% of the population was over 65. By the late 1970's those over 65 comprised nearly 11% of the population (Gelfand, 1984). Projections indicate that by the year 2030, 18% of the population will be over the age of 65 (Decker, 1980). Furthermore, the number of Americans over 75, particularly women, is expected to grow at an even faster rate (Kaas, 1984). Additionally, this trend is also taking place in every other major industrialized country (Gelfand, 1984).

As society ages there will be an increased demand for services and programs geared toward the older individual. The mental health field will not be excluded. Fifteen to 25% of the elderly have significant mental health problems (Garcia, Schonfeld, & Streuber, 1985). Yet, many older individuals who could benefit from professional intervention go untreated. A significant number of those untreated are likely to be suffering from a depressive disorder (Zarit, 1980). These disorders may go undetected due to: their unique presentation in the elderly; ageism; economic issues; and the victim's failure to seek treatment. The misdiagnosis of and failure to treat depressive symptoms in older persons is particularly tragic since it may lead to suicide or unnecessary placement in a long term care facility. When properly diagnosed and treated, geriatric
depression often has a favorable prognosis (Blazer, 1986; Burvill, Stampfer, & Hall, 1986).

The present study will explore relationships between depressive illness and various factors that may influence its development in the older adult. These factors include: perception of health; general satisfaction with life; and perceived loneliness. Relationships between depression and other factors will also be investigated including: marital status; bereavement; living situation; income; and other demographic variables. The following major predictions are put forth: 1) depression will be negatively correlated with perceived good health; 2) depression will be negatively correlated with life satisfaction; 3) depression will be positively correlated with loneliness.
Research on the prevalence of depression in people over 65 will be examined along with assessment methods and the problems associated with measuring depressive symptoms. Depressive symptomatology and its presentation in the elderly and the confounding influence of medical conditions and medications on the diagnosis of depression will also be reviewed. Additionally, previous findings from research concerning the factors believed to be related to depression in the elderly will be presented.

**Prevalence of Depressive Disorders in Older Adults**

It is generally agreed that the primary mental health problem of those over 65 is depression (Finlayson & Martin, 1982; Fry, 1986; Gallagher, Thompson, Gong, & Haskins, 1987; Zarit, 1980). Numerous epidemiologic studies of geriatric depression have indicated that prevalence rates vary depending on the operational definition of depression and the method of assessment used. Nonetheless, it is estimated that 15 to 20% of the elderly suffer from symptoms of depression significant enough to require intervention (Georgotas & McCue, 1988).

Data from two basic sources have been employed to estimate prevalence rates: the number of hospital admissions; and surveys of institutional and clinical populations (Blazer, 1983; Zarit, 1980).

Estimates of prevalence based on data from hospital
admissions provide valuable information but do not account for individuals who are not hospitalized. The same is true for estimates from those studies that utilize institutional data and surveys of clinical populations. These sources neglect the substantial portion of the community who do not seek treatment.

General population surveys also have limitations as methods of estimating prevalence. These surveys are based on symptom reports, not diagnostic criteria, and may lead to inflated prevalence rates. Symptom reports, or self-report inventories, utilized in these studies tend to focus on the somatic symptoms of depressive illness. The elderly are more likely to respond positively to these questions due to chronic health conditions or the aches and pains of aging. While many of these individuals would be considered depressed based on their score on the self-report scale, they would be less likely to meet diagnostic criteria for major depression (Gallagher et al., 1987). Just as estimating prevalence rates is a difficult task for researchers, measuring depressive symptomatology in an older person is a challenge for the diagnostician.

Assessing Depression in the Elderly

Assessment of depression in the elderly is a difficult task. The problems that arise when trying to make accurate assessments are described along with the types of assessment devices most frequently used with an elderly population.
The Problem of Assessment. Accurate assessment of depressive symptomatology is crucial to proper diagnosis and treatment. This is particularly true when the individual is over 65. Any type of psychological assessment of an older adult can be a difficult task. Test-taking attitudes, fatigue, response biases, and sensory deficits all may influence the outcome of a psychological evaluation (Chaisson-Stewart, 1985; Hamilton, 1988).

Due to the stigma associated with mental illness, older adults are often reluctant to attribute their difficulties to psychological problems. Older subjects may attempt to portray themselves in a positive manner and may provide socially desirable responses to questionnaires assessing depression (Chaisson-Stewart, 1985).

Older adults tend to be more cautious and less likely to take risks than younger adults (Georgotas & McCue, 1988). This tendency makes them more prone to systematic response bias, that is, answering in a pattern rather than giving a response reflective of their actual feelings (Hamilton, 1988).

Declines in vision, hearing, motor, and cognitive functioning must also be considered when testing the elderly. Items may need to be read to the subject or printed in large type. Multiple or brief testing sessions may be necessary to prevent fatigue (Hamilton, 1988).

In summary, assessment of depressive symptomatology is influenced by the individual's response style, attitude,
abilities, as well as level of functioning. These factors should play a role in the selection of assessment devices for use with an elderly subject.

**Types of Assessment Devices.** There are three primary ways to detect and quantify depression: observer rating scales or clinical interviews; self-report scales; and instruments that measure general psychiatric condition. Because each method of assessment used alone has its limitations, the ideal evaluation would consist of a combination of these techniques and instruments.

Observer rating scales or clinical interviews are advantageous in that they are not dependent on the individual's ability to read or write. Also, social desirability is less likely to affect the outcome as is a lack of insight on the part of the subject. Correlations between these types of ratings tend to be high (Hamilton, 1988). However, observer rating scales and clinical interviews require direct professional contact, are time consuming, and not very economical.

Self-report scales are useful for detecting symptoms quickly and economically. They can be utilized to monitor treatment progress as well. The drawbacks include reliance on the patient's insight, cognitive ability, and willingness to cooperate with the testing procedure. Self-report measures do not correlate with each other as strongly as observer rating scales, and are vulnerable to social desirability and response bias (Chaisson-Stewart, 1985;
Depression may also be detected by scales that measure general psychiatric conditions such as the Minnesota Multiphasic Personality Inventory (MMPI). These scales are used as diagnostic tools and contain items that discriminate between depression and other mental disorders. They can be lengthy, difficult to evaluate, and have disadvantages similar to self-report scales (Chaisson-Stewart, 1985). However, the scales include items that evaluate the validity of an individual's profile thus reducing the problem of social desirability (Hamilton, 1988).

Regardless of the difficulty in estimating prevalence accurately or measuring depression in the individual, it is likely that many older adults who may be experiencing depressive symptoms go undetected or receive inadequate treatment. Even though 25% of the persons over age 65 have psychiatric problems worthy of professional attention, relatively few of these individuals ever receive treatment (Blixen, 1988). There are numerous reasons why the mental health needs of the elderly are not met. Depression and other disorders often present differently in the elderly. Furthermore, the older person's clinical picture is often confounded by physical illness and the effects of medication use, abuse, and drug interactions.
Clinical Presentation and Symptomatology

Frequently the depressed elderly present with a different symptom constellation than their younger counterparts. In the general population, symptoms of depressive disorders include: dysphoric mood; anhedonia; changes in appetite, weight, or sleep patterns; restlessness or lethargy; guilt; and low self-worth. Poor concentration, indecisiveness, suicidal ideation, and death wishes are also common features (American Psychiatric Association, 1987; Dreyfus, 1988).

The older person may exhibit the aforementioned symptoms as well as the following: helplessness; envy; irritability; and a feeling that life has been empty and without any accomplishments. Withdrawal, pessimism, rumination, and being critical of others may also be present (Dreyfus, 1988). The older individual is likely to experience constipation and numerous other somatic symptoms when depressed (Breslau & Haug, 1983). Unlike younger depressives, the elderly usually do not complain of psychological symptoms such as sadness, or feeling blue. They may not be tearful, but often appear depressed, withdrawn, and apathetic (Shadden, 1988).

The individual may also complain of deficits in memory and other cognitive abilities. Cognitive impairment occurs in varying degrees in approximately 15% of all depressed elderly persons (Breslau & Haug, 1983). The individual may actually have an organic brain syndrome or these symptoms
may be due to pseudodementia, a syndrome in which reduced cognitive functioning appears to indicate dementia but is actually due to another psychiatric disorder (American Psychiatric Association, 1987).

The presence of pseudodementia contributes to the tendency for individuals who are actually depressed to be diagnosed as "senile". It is estimated that 30% of the patients diagnosed with dementia are actually depressed (Breslau & Haug, 1983). For many of these individuals, if their depressive symptoms were properly treated, the cognitive deficits would subside (Breslau & Haug, 1983). The untreated depressed individual may become more despondent and give up hope, producing circumstances that could ultimately lead to long term care placement.

The older person suffering from depression often presents a complicated clinical picture that, if not accurately assessed, may have tragic consequences. The correct and timely detection of depression among the elderly is also made more difficult by the prevalence of physical illness and illness-related use of medication.

Medical Conditions and Medications

By the time they reach their seventies most individuals suffer from at least one physical health problem (Shadden, 1988). The elderly often develop physical disorders or illnesses that initially present with depression as a primary symptom. Examples include: pneumonia; diabetes;
gout; congestive heart failure; anemia; and disorders of the thyroid (Breslau & Haug, 1983; Dreyfus, 1988). Malignancies, metabolic abnormalities, and endocrine disturbances may also present with depressive symptoms (Hindmarch & Wattis, 1988). Due to the difficulty in distinguishing physical illness from depression, the elderly person could easily be misdiagnosed without a thorough physical and laboratory examination. Misdiagnosis could, in turn, lead to unnecessary delays in potentially lifesaving medical treatment (Georgotas & McCue, 1988).

Conversely, depression may mimic a medical illness, a state known as "masked depression" (Georgotas & McCue, 1988). The older person may express somatic complaints rather than psychological symptoms when seeking treatment. Consequently, an internist or family practitioner is more likely to be consulted than a psychiatrist or psychologist. Exposing the psychological symptoms that accompany the somatic complaints requires a careful clinical examination to rule out physical illness (Blixen, 1988).

Due to the high incidence of at least one significant, possibly chronic, physical health problem by the age of 70, most elderly persons are regularly taking at least one medication (Shadden, 1988). In fact, older adults consume more over-the-counter and prescription drugs than any other age group (Blixen, 1988). In addition to the adverse side effects of these compounds, older individuals metabolize drugs more slowly, thereby increasing the likelihood of drug
interactions (Blixen, 1988). Medication side effects and drug interactions are often responsible for the development of depression, worsening a pre-existing depression, or, producing depression-like symptoms (Breslau & Haug, 1983). Some of the categories of drugs that have these qualities include: hormones; anti-inflammatory agents; tranquilizers; and antihypertensive medications (Breslau & Haug, 1983; Dreyfus, 1988; Lum, 1988). These drugs are commonly used by the elderly to treat such frequently occurring illnesses as high blood pressure and arthritis (Blixen, 1988).

In summary, medical conditions common in the elderly and the preparations utilized to treat them can affect mental health and complicate diagnosis. An awareness of the medical conditions and the medications that may mimic depressive symptoms is necessary for proper diagnosis. Physicians and mental health professionals need to be made aware of the many factors that may lead to or be related to the presentation of depressive symptoms.

Factors Related to Depression

Depression in the elderly is seen as a disorder with multiple etiological factors that interact to produce an entire complement of symptoms. Much research has been done in an attempt to isolate these factors. Although relationships have been shown to exist between depression and certain variables, causality has not yet been established (Fopma-Loy, 1988). Some of the factors that have been studied include: biochemical changes that
accompany aging; physical illness; life events such as bereavement and retirement; and other psychosocial factors.

**Biochemical Factors.** As individuals age, their bodily functions slow down. These decreases in metabolism, hormone production, and slower organ functioning are believed to increase vulnerability to depression. These conclusions are based on the biochemical model of depression that links changes in levels of neurotransmitter production to depressive disorders. The neurotransmitters that regulate the flow of impulses to the brain include: norepinephrine; dopamine; epinephrine; serotonin; and acetylcholine (Lum, 1988). Changes in the amounts of these chemicals in the brain are believed to be responsible for depression and other mood disorders.

Kicey (1974) proposed that the supply of norepinephrine in the brain is lowered during depressive states. Antidepressant medications that function by increasing amounts of norepinephrine lend support to this proposal (Forrester, 1987; Laraia, 1987; Physicians' Desk Reference, 1983). Neurotransmitter function is also affected by electrolytes such as sodium and potassium. Research indicates that electrolyte distribution is altered during depression (Frazier, 1977). Older persons are prone to electrolyte imbalance due to illness, changes in diet, and changes in motor activity.

The role of the endocrine system in depression has been considered by researchers for many years. Depressed
individuals have been noted to have hormone abnormalities (Winokur, 1981). As previously noted, mood changes have also been observed in patients suffering from endocrine disorders. In females, depression often occurs during events associated with the reproductive cycle. Hormone levels change drastically during the postpartum period and menopause (Kerr, 1987; Lum, 1988). Hormone production is also diminished in the elderly making them more susceptible to depression (Lum, 1988).

In summary, the biochemical aspects of depression and the role of the endocrine system continue to be studied by researchers in hopes of developing better diagnostic tests and drug therapies.

Physical Illness and Disability. There is a strong association between physical health and mental health at any age (Andrews, Tennant, Hawson & Schonell, 1978; Aneshensel, Frerichs & Huba, 1984; Berkman, 1971; Blazer & Williams, 1980; Murrell & Norris, 1984). Since the elderly are more likely to suffer from one or more chronic, often disabling medical conditions, physical health is an important etiological factor in late life depression (Bergmann & Kay, 1966; Post, 1969; Zung, 1980). In related studies, Bliksen (1988) estimated that 50% of those over 65 with physical illness are depressed. Phifer and Murrell (1986) found that physical health had a significant effect on the level of depressive symptoms for those suffering from late life depression.
Medical conditions that are particularly disabling and lead to dependence are significantly related to depressive symptomatology (Harris, Hunter, & Linn, 1980; Krause, 1986). Disability that restricts one's activities and the ability to function independently lessens the individual's sense of control. Perceived control over one's life appears to be an important factor in the development of depression (Seligman, 1975).

Illness may also impact sensory perception, mobility and functioning, and may lead to isolation, low self-esteem and poor self-image (Aneshensel et al., 1984; Lipowski, 1975; Moos & Tsu, 1977; Phifer & Murrell, 1986; Turk, Kerns & Rudy, 1984).

In summary, because age appears to be related to health status, older individuals with physical illness should be considered at risk for depression.

Loss and Life Events. Old age is a period of numerous losses for the individual. These losses occur in many areas of life, are often sudden and beyond the person's control. Types of loss experienced during old age include: loss of spouse or a significant relationship; loss of stamina, health, or status; loss of role; loss of income; and loss of memory (Billig, 1987; Breslau & Haug, 1983).

The literature is inconsistent regarding the significance of loss in the development of depression. Several investigators claim that when the elderly person fails to adapt to multiple losses and feels hopeless,
helpless, and isolated, depressive symptoms appear (Lum, 1988; Goldstein, 1979; Seligman, 1975; Zung, 1980). Numerous studies have focused on the relationship between loss and depression.

Post (1962) studied 100 persons with affective symptoms and found a precipitating loss in 65% of the cases. Murphy (1982) also found that depression was closely associated with adversity. The actual loss, or threatened loss, of a relationship seems to be positively correlated with depressive symptomatology (Harris, Hunter, & Linn, 1980). Ayuso-Gutierrez (1983), studying the impact of life events and loss on depression, found death of a spouse to be the most frequent precipitant of depression. These findings were supported by Krause (1986) who also found bereavement to be a highly significant correlate of depression.

Other studies report that stressful life events and loss are of minimal importance in the development of depression (Cross & Hirschfeld, 1982; Paykel, 1974, 1979). Blazer (1989) noted that even though losses frequently occur in old age, these losses are tolerated by most older persons because they are expected to occur and are considered inevitable. Being prepared for a loss gives an individual a sense of control that is believed to lessen its impact (Seligman, 1975). Other variables such as available social support are believed to moderate the effect losses have on the individual.
Psychosocial Factors. Several psychosocial factors have also been identified as correlates of depression. They include: life satisfaction; and loneliness.

Life satisfaction, morale, adjustment, and subjective well-being, have frequently been studied by researchers interested in the older person's quality of life. There has been much disagreement over whether these terms should be used interchangeably and whether or not they represent identical concepts (Lohmann, 1989). Larson (1978), reviewing thirty years of the literature, concluded that regardless of the conceptualizations or terminology utilized, the results of the studies were comparable.

Depression is negatively correlated with life satisfaction. Much of the research concerning life satisfaction focuses on variables believed to be related to satisfaction in old age (Lohmann, 1989). Of these variables health is most strongly related to life satisfaction (Cutler, 1973; Edwards & Klemmack, 1973; Spreitzer & Snyder, 1974).

Research indicates that individuals who perceive their health to be good express more satisfaction with life than those who perceive themselves to be ill or disabled. This relationship is also evident in studies based on physician's ratings of health (Jeffers & Nichols, 1961; Maddox & Eisdorfer, 1962; Palmore & Luikart, 1972).

In addition to physical health, marital status also appears to be related to life satisfaction. In general, married older people appear to be more satisfied with life
than those who are not married (Lohmann, 1989). Factors such as health, socioeconomic status, perceived support, and the length of time since the death of one's spouse mediate the degree of relationship between marital status and satisfaction (Larson, 1978).

Middle and upper income levels, occupational status, and education have also been associated with greater subjective well-being. The relationships between these socioeconomic factors and life satisfaction are believed to be due to access to transportation, adequate housing, and other positive life sustaining amenities (Larson, 1978).

Furthermore, social activity and life satisfaction are positively correlated (Larson, 1978). However, there has been disagreement concerning levels of social activity and the quality of interactions with other individuals. Investigators speculated that the quality of relationships may be more important to well-being than the frequency of contacts (Larson, 1978). Other variables such as sex and race do not appear to influence life satisfaction when income is statistically controlled (Larson, 1978). Loneliness has also been considered as a precipitant of depression in older adults.

Peplau and Perlman (1982) describe loneliness as a discrepancy between the desired level of social interaction and the level actually achieved. Loneliness has been found to be significantly correlated with depression (Young, 1982). Although the same event may precede both loneliness
and depression, the two are believed to be distinct experiences (Young, 1982). Depression is characterized by a more pervasive negativity and can result from a variety of factors that are unrelated to loneliness (Peplau & Rook, 1982). Media and popular opinion suggest that loneliness naturally accompanies the aging process. Older people are often portrayed as isolated from friends and neglected by their families.

Despite the elderly's perceived vulnerability to being lonely, research indicates that the majority of individuals over 65 do not experience severe or prolonged loneliness (Peplau, Bikson, Rook & Goodchilds, 1982). More specifically Parlee (1979), surveying loneliness in different age groups, found that of those subjects under 18, 79% experienced feeling lonely, whereas only 37% of the older sample, aged 55 or above, reported feeling lonely.

If older adults are assumed to have fewer opportunities for social interaction than younger persons, why do they report being less lonely? Researchers have postulated that older adults have more realistic expectations about their social relationships and thus are disappointed less often than younger adults (Peplau, Bikson, Rook & Goodchilds, 1982). Also, older persons may under report loneliness as compared to younger individuals who may be more willing to disclose feelings of loneliness (Rubin, Hill, Peplau & Dunkel-Schetter, 1980). However, when older adults report being lonely they are also likely to indicate the lack of
availability of a confidant, lack of personal control, and ineffectual social comparisons (Peplau, Bikson, Rook & Goodchilds, 1982). Additionally, hearing impairment in the elderly has also been shown to be related to loneliness (Christian, Dluhy, & O'Neil, 1989; Perlman, Gerson, & Spinner, 1978).

Contact with a peer or confidant has been found to influence loneliness. The relationship may be with a spouse or a friend and may be based on mutual support and assistance (Peplau, Bikson, Rook & Goodchilds, 1982). These relationships may be perceived as more satisfying than those with children or other relatives who may interact with the older person because of a sense of obligation rather than by choice (Peplau, Bikson, Rook & Goodchilds, 1982).

Personal control over a situation, as previously stated, influences the impact an event has on the individual (Seligman, 1975). As individuals age, the losses they experience become less voluntary. Irreversible events such as long term care placement, forced retirement, and death of a spouse or confidant, are out of the individual's control and may force isolation that, in turn, may precipitate feelings of loneliness. Thus, the more individuals perceive themselves as having control over relationships and situations, the less helpless and lonely they may feel (Lowenthal & Robinson, 1976).

Social comparison, that is comparing one's past experiences to present situations or to the situations of
others, may also contribute to feelings of loneliness in older adults (Peplau, Bikson, Rook & Goodchilds, 1982). Older individuals who were socially active in their youth may be more likely to experience loneliness than their introverted and reclusive peers (Peplau, Bikson, Rook & Goodchilds, 1982). Additionally, individuals widowed earlier in life than their peers may feel out of place at gatherings and may withdraw from former friends. Such isolation may lead to increased feelings of loneliness.

Another factor thought to influence loneliness among the elderly is hearing loss (Perlman et al., 1978). Hearing impairment may result in communication deficits that lead to withdrawal and a sense of isolation. Christian and others (1989) studying hearing loss and loneliness in 67 individuals ages 65 and older, found that subjects with greater hearing loss were more lonely.

In conclusion, feelings of loneliness are clearly not the norm for older adults; however, for those forced into isolation due to poor health or disability, widowed, or hearing impaired, it may be a significant problem.

Some of the factors that have been studied as correlates of depressive illness in older adults were presented in the previous section. It has been shown that biochemistry, physical health, losses and other life events as well as satisfaction with life in general, and feelings of loneliness, may play a role in the development of depression in the elderly. It is likely that these factors
interact to produce depressive illness.

Summary

This review has examined geriatric depression and its correlates. Several major points were discussed. It was found that the prevalence of geriatric depression is difficult to estimate due to problems associated with measurement, failure of older persons to seek treatment, and misdiagnosis of depressive symptomatology. Assessment of depression in the elderly is complicated by social desirability, systematic response bias, sensory decline, and the tendency to report somatic complaints. Also noted were the unique presentation of geriatric depression, and the confounding influence of medications and physical illness. Finally, it was found that depression in the elderly has been associated with biochemical imbalances, health, loss, and other psychosocial factors such as life satisfaction and loneliness. Additional studies concerning depression in the elderly, its correlates, and methods of predicting those who are at risk for developing a depressive disorder, are necessary as the population ages.

The current study focuses on depression in older adults and the factors that may influence its development. Relationships between depression and perceived health, life satisfaction, and loneliness are explored. The relationships between depression and other variables such as sex, marital status, age at retirement, living situation, and income level are also examined. The following
hypotheses are put forth:

1) Depression will be negatively correlated with perceived good health.

2) Depression will also be negatively correlated with general life satisfaction.

3) Depression will be positively correlated with feelings of loneliness.

4) Depression will be best predicted by a combination of the above factors.
Method

Subjects

Forty-four volunteers were recruited from a group of older participants involved in a study concerning the influence of perception and cognition on driving ability being conducted at the University of Nevada, Las Vegas (UNLV). All subjects were paid $50.00 for their participation in the driving study. The subjects (25 female, 19 male) ranged in age from 51 to 79 years with an average age of 67.73 years (sd = 5.64).

Materials

Two self-report measures were utilized to assess the presence and degree of depression. Loneliness, satisfaction with life, and health perception were also measured by self-report. A demographic survey was used to obtain information pertaining to income, living situation, bereavement, age, and gender.

Geriatric Depression Scale. The Geriatric Depression Scale (GDS; Brink, Yesavage, Rose, Lum, Huang, Adey & Leirer, 1983) is a 30-item scale that may be easily self-administered or read aloud by an examiner (Brink, Yesavage, Lum, Heersema, Adey & Rose, 1982). The GDS was specifically designed to detect depression in the elderly. Each item is a brief question that may be answered "yes" or "no" and evaluates the respondent's mood quality, level of energy and
motivation, hopelessness, and social initiative (Lurie & Zlotogorski, 1986). Subjects' own perceptions of their functioning and cognitive abilities are also evaluated by the GDS. The scale is scored by totaling the number of responses that indicate depression (Corcoran & Fischer, 1987). A score of 0-10 indicates no depression, 11-20 mild depression, and 21-30 indicates moderate to severe depression (Lurie & Zlotogorski, 1986).

The GDS was validated on an elderly population and correlated well with the Zung Self-rating Depression Scale (Zung, 1965) and the Hamilton Rating Scale for Depression (Hamilton, 1960). Each of these instruments has been widely used to detect depression, but were not developed to consider the unique characteristics of geriatric depression. The GDS has performed well in other studies and is able to distinguish among patients classified as normal, mildly depressed, and severely depressed (Brink et al., 1983). The GDS has excellent reliability with both the Chronbach alpha and the split-half reliability coefficients being .94 (Corcoran & Fischer, 1987). The test-retest reliability coefficient has been reported to be .85 (Brink et al., 1983). The GDS correlates highly with the Beck Depression Inventory (BDI) and is superior to the BDI in discriminant validity (Blount & Hyer, 1984). The GDS is quick, simple to use and does not contain items that may disturb some subjects (e.g., questions about suicide or sex; Lurie & Zlotogorski, 1986). Questions about somatic symptoms that
could lead to false positives are also avoided. The GDS has at least one drawback in that it loses validity when used to assess individuals with significant cognitive impairment (Brink, 1984). However, it is considered to be adequate for use with mildly demented individuals (Sheikh & Yesavage, 1986).

**Beck Depression Inventory.** The Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; Beck, 1967) is the most widely used self-report scale for measuring presence and degree of depression. This multiple choice questionnaire may be self-administered or read aloud and consists of 21 items each having rank ordered and weighted statements concerning symptomatology. A total score consists of the sum of the values assigned to each of the subject's responses. A score of 0-9 is considered normal, 10-15 mild depression, 16-19 mild to moderate, 20-29 moderate to severe, and scores over 30 represent severe depression (Chaisson-Stewart, 1985).

The BDI appears to have good psychometric properties. BDI scores correlate fairly well with clinicians' ratings (Beck, 1970; Bumberry, Oliver & McClure, 1978). Concurrent validity has also been demonstrated with the BDI and other measures of depression such as the MMPI and the Hamilton Rating Scale (Stehouwer, 1985). Test-retest reliability is reported to be above .90, Spearman-Brown .93, internal consistency .86 (Beck, 1970).
Although not specifically designed for use with elderly persons, the BDI is reported to be an adequate tool for measuring depression in those over 60 (Gallagher, 1986). Gallagher, Nies, and Thompson (1982) reported a test-retest correlation of .90 and a split-half index of reliability of .84 in older subjects. The BDI also has concurrent validity with Research Diagnostic Criteria for Major Depressive Disorder when utilized in older subjects (Gallagher, Breckenridge, Steinmetz & Thompson, 1983).

Issues to consider when using the BDI with elders include the presence of items that deal with somatic symptoms and the individual's reading and comprehension ability. As previously mentioned, instruments that include somatic items may be less accurate measures of depression due to the high incidence of physical health problems in the elderly. The format and reading level of the BDI may be too difficult for individuals who are less educated or cognitively impaired.

The Revised UCLA Loneliness Scale. The Revised UCLA Loneliness Scale is a 20-item, self-report scale designed to measure loneliness in a variety of populations (Corcoran & Fischer, 1987). The original scale was developed as an easily administered global measure of loneliness (Russell, Peplau & Cutrona, 1980). While found to be psychometrically adequate, it had some potential problems that its creators hoped to eliminate during revision. The original items were worded in the same direction prompting concern that the
measure was prone to systematic response bias. Social desirability was also a concern. Due to the stigma attached to loneliness, it was felt that subjects might try to appear less lonely and admit to less loneliness than they were actually experiencing (Peplau & Perlman, 1982).

The revised scale consists of 20 items that reflect both satisfaction and dissatisfaction with social relationships (Russell et al., 1980). The revised scale is internally consistent with a coefficient alpha of .94. Its correlation with self-reported loneliness is .71 (Russell, 1982). It correlates positively with other measures of affective states such as the Beck Depression Inventory \((r= .62)\) and with reports of social isolation and time spent alone \((r= .41)\) (Russell, 1982). The revised scale has good discriminant validity and measures a construct that is distinct from depression, anxiety, or low self-esteem (Russell, 1982). The scale is valid with college students but has not been widely used with older adults (Christian et al., 1989). Although, Schultz (1984) found it to be a reliable instrument for use with older adults.

**Life Satisfaction Index-Z.** The LSI-Z is a shorter version of the Life Satisfaction Index-A (Wood, Wylie, & Sheafor, 1969; Neugarten, Havighurst, & Tobin, 1961). Each instrument was designed to measure the concept of life satisfaction. Both were specifically developed for use with older adults and reflect an individual's mood tone, zest for life, and congruence between achieved and desired goals.
(Adams, 1969). Neugarten and others (1961) believed positive self-concept was also a factor in the scale; however, Adams (1969) was able to identify only the previously mentioned dimensions. The scales consist of statements with which the subject agree, disagree, or remain noncommitted. They may be scored in several ways with the most popular method being that of Wood and her colleagues (1969). In this method responses that indicate satisfaction are assigned two points. Neutral and dissatisfied responses are assigned one and zero points respectively. Higher scores indicate higher levels of general satisfaction (Wood et al., 1969).

The original scale was standardized on a sample of 92 community-dwelling individuals aged 50-90 (Neugarten et al., 1961). After eliminating items that did not correlate highly with the entire scale the LSI-Z was developed and then standardized on 100 elderly persons resulting in a reported split-half reliability of .79 (Wood et al., 1969). A correlation of .79 is reported between the LSI-Z and the Philadelphia Geriatric Morale Scale (Lawton, 1972) and the LSI-Z appears to be sensitive to changes in an individual's satisfaction with life (Wylie, 1970).

The LSI-Z has been used in many studies of well-being and is seen as a valid, reliable, easily administered instrument for use with the elderly (Bearon & George, 1980; Dobson, Goudy, Keith, & Powers, 1979; Haight, 1988).
Health Perception Questionnaire II. The Health Perception Questionnaire II (HPQ Form II) was designed to assess individuals' perceptions of their health status (Ware, 1976). The survey is a revision of the Health Perception Questionnaire and consists of 32 items that measure prior health, current health, health outlook, resistance or susceptibility to illness, concern or worry about health, sickness orientation, rejection of a sick role, and attitudes toward going to the doctor (Ware, Wright, & Snyder, 1974). Each statement is followed by 5 choices (i.e., definitely true, mostly true, don't know, mostly false, and definitely false). The scale may be read aloud or self-administered.

The questionnaire was found to have good construct validity with each dimension of health being measured as intended (Ware, 1976). The HPQ II was also found to be internally consistent with reliability coefficients ranging from .45 to .92. Additionally, the scale was found to be suitable for use with diverse populations (Ware, 1976). In conclusion, the HPQ II appears to be a useful tool for measuring an individual's general health perception. It has been found to be valid, reliable, stable over time, and appropriate for use with diverse groups of individuals including the elderly.
Procedures

Data collection took place at the Psychology Laboratory on the UNLV campus. Each subject was given a packet of materials containing an instruction sheet, the demographic questionnaire, and the five previously described scales in the order they were described. A consent form describing the study and its purpose was included. The participants were told that the study was examining factors related to depression and that the experimenter was interested in learning what contributes to an older person's sense of well-being. The entire procedure took approximately 50 minutes to complete. The examiner was available in person or by telephone during and after the testing to answer questions. When the packet was returned, subjects were thanked for their participation. Data generated from the procedures were not discussed with the subjects and all data was stored by subject number to ensure confidentiality.
Results

The Analyses

A presentation of the overall descriptive statistics for the depression measures and their possible correlates is followed by a breakdown of the measures by demographic characteristics. Furthermore, the results of the correlational analyses with the four major variables of interest (i.e., depression, health, life satisfaction, loneliness) are followed by the results of multiple regression analyses conducted for each of the measures of depression.

Descriptive Statistics

Means and standard deviations for each measure utilized are reported in Table 1.

Table 1

Means and standard deviations for measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean</th>
<th>sd</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Perception Questionnaire</td>
<td>117.45</td>
<td>17.02</td>
<td>44</td>
</tr>
<tr>
<td>Life Satisfaction Index-Z</td>
<td>12.81</td>
<td>4.76</td>
<td>43</td>
</tr>
<tr>
<td>Revised UCLA Loneliness Scale</td>
<td>35.68</td>
<td>10.99</td>
<td>44</td>
</tr>
<tr>
<td>Beck Depression Inventory</td>
<td>6.51</td>
<td>5.14</td>
<td>43</td>
</tr>
<tr>
<td>Geriatric Depression Scale</td>
<td>4.07</td>
<td>5.70</td>
<td>44</td>
</tr>
</tbody>
</table>

* All measures are self-report, in each case higher numbers reflect higher levels of the construct being measured.
Demographic Variables

A breakdown of the measures by demographic characteristics are presented in Tables 2, 3, 4, and 5.

Table 2 shows the results of a breakdown by marital status. Only scores on the Geriatric Depression Scale differed significantly for subjects from differing marital status categories. Subjects who were never married were the most depressed followed by those who were divorced ( $F(3,40) = 3.83, p<.01$ ). The result is most likely due to the small sample size for the single and widowed categories.

**Table 2**

<table>
<thead>
<tr>
<th>Geriatric Depression Scale scores by marital status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Geriatric Depression Scores</strong></td>
</tr>
<tr>
<td><strong>Category</strong></td>
</tr>
<tr>
<td>------------</td>
</tr>
<tr>
<td>Married</td>
</tr>
<tr>
<td>Divorced</td>
</tr>
<tr>
<td>Single</td>
</tr>
<tr>
<td>Widowed</td>
</tr>
</tbody>
</table>

A breakdown by occupation is presented in Table 3. The only measure with significant differences in scores according to occupation was the Health Perception Questionnaire ( $t(1,41) = 2.64, p<.01$ ). Those individuals who had been employed in clerical or laborer positions rated themselves as less healthy than those who worked as professionals.
Table 3

<table>
<thead>
<tr>
<th>Occupation</th>
<th>n</th>
<th>mean</th>
<th>sd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional</td>
<td>18</td>
<td>125.50</td>
<td>15.56</td>
</tr>
<tr>
<td>Nonprofessional</td>
<td>25</td>
<td>112.84</td>
<td>15.51</td>
</tr>
</tbody>
</table>

Table 4 shows the breakdown by monthly income level. There were significant differences in life satisfaction scores according to income level (t(3,37) = 3.57, p < .05). Individuals with monthly incomes over $1000 rated themselves the most satisfied.

Table 4

<table>
<thead>
<tr>
<th>Monthly income</th>
<th>n</th>
<th>mean</th>
<th>sd</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-$500</td>
<td>3</td>
<td>11.33</td>
<td>5.03</td>
</tr>
<tr>
<td>$500-$800</td>
<td>5</td>
<td>13.00</td>
<td>4.64</td>
</tr>
<tr>
<td>$800-$1000</td>
<td>6</td>
<td>8.50</td>
<td>4.88</td>
</tr>
<tr>
<td>$1000 +</td>
<td>27</td>
<td>14.30</td>
<td>3.66</td>
</tr>
</tbody>
</table>

The breakdown according to satisfaction with income is presented in Table 5. Subjects who were not satisfied with their income were less satisfied with life in general as measured by the Life Satisfaction Index (t(1,41) = 2.01, p < .05). There were no significant differences in
satisfaction level for any of the other demographic variables.

Table 5

Life satisfaction by satisfaction with income

<table>
<thead>
<tr>
<th>Category</th>
<th>n</th>
<th>mean</th>
<th>sd</th>
</tr>
</thead>
<tbody>
<tr>
<td>satisfied</td>
<td>35</td>
<td>13.49</td>
<td>4.48</td>
</tr>
<tr>
<td>dissatisfied</td>
<td>8</td>
<td>9.86</td>
<td>5.14</td>
</tr>
</tbody>
</table>

Scores on the five measures did not differ significantly when broken down by other demographic variables including: age, sex, bereavement, education, residence, size of household, and number of living children or siblings.

Correlational Analyses

Correlations between the five measures are shown in Table 6. The two depression measures were, as expected, positively correlated with each other. Furthermore, the Geriatric Depression Scale was more strongly correlated with all the other measures than was the Beck Depression Inventory. People who were more depressed were less healthy, less satisfied with life, and more lonely than people who were less depressed. Furthermore, perceived good health was positively correlated with life satisfaction and negatively correlated with loneliness. Finally, Life satisfaction was found to be negatively correlated with loneliness.
Table 6

Correlations Between Measures

<table>
<thead>
<tr>
<th></th>
<th>HPQ</th>
<th>LSIZ</th>
<th>RULS</th>
<th>BDI</th>
<th>GDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Perception</td>
<td>---</td>
<td>.4731**</td>
<td>-.4047**</td>
<td>-.3149*</td>
<td>-.4390**</td>
</tr>
<tr>
<td>Life Satisfaction Index-Z</td>
<td>---</td>
<td>-.7466**</td>
<td>-.5767**</td>
<td>-.8112**</td>
<td></td>
</tr>
<tr>
<td>Revised UCLA Loneliness Scale</td>
<td>---</td>
<td>---</td>
<td>.4512**</td>
<td>.7355**</td>
<td></td>
</tr>
<tr>
<td>Beck Depression Inventory</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>.6533**</td>
<td></td>
</tr>
<tr>
<td>Geriatric Depression Scale</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
</tbody>
</table>

p<.05 *     p<.01 **

Regression Analyses

These analyses were done utilizing a stepwise method with listwise deletion of missing data. Table 7 shows the results of the regression analyses for predicting depression scores on the Beck Depression Inventory. Scores on the Life Satisfaction Index significantly predicted scores on the Beck Depression Inventory, accounting for 33 percent of the variance. Age, health perception, and loneliness did not contribute to the prediction of Beck Depression Inventory scores.
Table 7

Multiple Regression Summary Table for Prediction of Scores on the Beck Depression Inventory

<table>
<thead>
<tr>
<th>Beta</th>
<th>t</th>
<th>p</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the Equation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life Satisfaction Index -0.577 4.46 .001 .333</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not in the Equation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age -0.222 1.72 .094</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Perception -0.083 0.56 .577</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UCLA Loneliness Scale .102 0.52 .607</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The regression analyses for predicting scores on the Geriatric Depression Scale are presented in Table 8. Scores from both the Life Satisfaction Index and the Loneliness Scale combined to predict 70.4 percent of the variability on the Geriatric Depression Scale. Neither of the other variables contributed significantly to the prediction of depression scores as measured by the Geriatric Depression Scale.
Table 8

Multiple Regression Summary Table for Prediction of Scores on the Geriatric Depression Scale

<table>
<thead>
<tr>
<th></th>
<th>Beta</th>
<th>t</th>
<th>p</th>
<th>(R^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In the Equation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life Satisfaction Index</td>
<td>-0.558</td>
<td>4.25</td>
<td>0.001</td>
<td>0.654</td>
</tr>
<tr>
<td>UCLA Loneliness Scale</td>
<td>0.335</td>
<td>2.55</td>
<td>0.015</td>
<td>0.704</td>
</tr>
<tr>
<td><strong>Not in the Equation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.091</td>
<td>0.984</td>
<td>0.332</td>
<td></td>
</tr>
<tr>
<td>Health Perception</td>
<td>-0.064</td>
<td>0.640</td>
<td>0.526</td>
<td></td>
</tr>
</tbody>
</table>
Discussion

The purpose of this study was to explore depression in older adults and to investigate the factors that may influence its development. The variables examined included: perception of health; general satisfaction with life; and perceived loneliness. Relationships between depression and demographic variables were also investigated. These variables included: marital status; bereavement; monthly income level; satisfaction with income; occupation; education; number of living children or siblings; residence; and size of household. It was predicted that:

1) Depression would be negatively correlated with perceived good health.
2) Depression would be negatively correlated with general life satisfaction.
3) Depression would be positively correlated with feelings of loneliness.
4) A combination of the above factors would best predict depression.

Health Perception

As predicted, depression was negatively correlated with perceived good health. Subjects who were more depressed perceived themselves to be less healthy than those who were less depressed. Perceived good health was positively correlated with general life satisfaction and negatively
correlated with feelings of loneliness.

Overall, subjects rated themselves as healthy. However, subjects who had worked in professional fields viewed themselves to be healthier than blue collar or clerical workers. Work-related injuries and health conditions, or fewer opportunities for adequate health care due to income restrictions are offered as explanations for this finding.

Contrary to expectations, health perception did not significantly predict depression when submitted to a regression analysis. The correlations with other strong predictors of depression (i.e., life satisfaction and loneliness) may have contributed to the lack of predictability.

Life Satisfaction

As predicted, depression and general satisfaction with life were negatively correlated. Subjects who were more satisfied with their lives were less depressed, viewed themselves as healthier, and reported less loneliness compared to subjects who were less satisfied.

Individuals with higher monthly incomes that were considered to be adequate, reported more satisfaction with life. This is consistent with results of studies reviewed by Larson (1978) who noted that subjective well-being is likely to be influenced by factors such as accessibility to transportation and adequate housing.
Additionally, life satisfaction scores were found to significantly predict depression. When combined with a measure of loneliness, life satisfaction scores account for 70 percent of the variance of scores on the Geriatric Depression Scale.

Loneliness

As predicted, loneliness and depression were positively correlated. Individuals who reported more feelings of loneliness were more depressed, and rated themselves as less healthy and less satisfied with life. Unlike the other variables, there were no significant differences in reported loneliness between subjects when broken down by demographic characteristics. However, when combined with life satisfaction, loneliness scores significantly predicted depression as measured by the Geriatric Depression Scale.

Demographic Variables

There were no significant differences in scores on the depression measures when broken down by gender; age; bereavement; education; residence; size of household; and number of living children or siblings. Differences in scores on the Geriatric Depression Scale were significant when broken down by marital status. Subjects who were divorced and those who had never been married reported more depression than married or widowed subjects. These results need to be interpreted with caution given that more than half of the subjects were currently married.
To summarize, all the predictions put forth in this study were supported by the results. Subjects who were more depressed rated themselves as less healthy, less satisfied with life, and more lonely. Healthier subjects were more satisfied with their lives and reported less loneliness. Analysis of demographic variables yielded the following results: professionals viewed themselves as healthier than laborers; higher income levels were associated with higher levels of life satisfaction; and married persons reported less depression. Additional research was conducted utilizing the same measures with two different samples of elderly persons: those from retirement centers, and psychiatric patients hospitalized on a geriatric unit.

Additional Studies

Similar studies were also carried out with subjects from two local retirement centers and with inpatients being treated for depression at an acute psychiatric hospital's geriatric unit. Due to recruiting difficulties the numbers of subjects were relatively small; however, the results were noteworthy.

Individuals residing in retirement centers. Twelve subjects (3 males, 9 females) from two retirement centers completed the materials. Subjects ranged in age from 75 to 82 years with an average age of 78.67 years (sd = 2.35).

Means and standard deviations for the five measures are presented in Table 9. These subjects were older and less healthy than those in the initial study.
Table 9

Means and standard deviations for depression measures and the correlates

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean</th>
<th>sd</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Perception Questionnaire</td>
<td>100.50</td>
<td>20.59</td>
<td>12</td>
</tr>
<tr>
<td>Life Satisfaction Index</td>
<td>12.55</td>
<td>2.58</td>
<td>11</td>
</tr>
<tr>
<td>UCLA Loneliness Scale</td>
<td>40.64</td>
<td>4.13</td>
<td>11</td>
</tr>
<tr>
<td>Beck Depression Inventory</td>
<td>9.58</td>
<td>8.14</td>
<td>12</td>
</tr>
<tr>
<td>Geriatric Depression Scale</td>
<td>8.25</td>
<td>3.74</td>
<td>12</td>
</tr>
</tbody>
</table>

*All measures are self-report, higher scores reflect higher levels of the construct being measured.*

Correlations between the five measures are shown in Table 10. Again, those subjects who were more depressed rated themselves as less healthy, less satisfied and more lonely. In this instance, positive health perception was positively correlated with both loneliness and life satisfaction. Subjects who were more satisfied with their lives again reported less loneliness.
Table 10

**Correlations between measures**

<table>
<thead>
<tr>
<th></th>
<th>HPQ</th>
<th>LSIZ</th>
<th>RULS</th>
<th>BDI</th>
<th>GDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Perception</td>
<td>---</td>
<td>.2873</td>
<td>.1715</td>
<td>-.3886</td>
<td>-.7173**</td>
</tr>
<tr>
<td>Life Satisfaction Index</td>
<td>---</td>
<td>---</td>
<td>-.2889</td>
<td>-.2081</td>
<td>-.2330</td>
</tr>
<tr>
<td>Revised UCLA Loneliness Scale</td>
<td>---</td>
<td>---</td>
<td>.3426</td>
<td>.2041</td>
<td></td>
</tr>
<tr>
<td>Beck Depression Inventory</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>.2960</td>
<td></td>
</tr>
<tr>
<td>Geriatric Depression Scale</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
</tbody>
</table>

\( p < .01^{**} \)

Multiple regression analyses for predicting scores on the Beck Depression Inventory were conducted. None of the measures accounted for the variability in scores on the Beck Depression Inventory.

Table 11 shows the results of multiple regression analyses for predicting scores on the Geriatric Depression Scale. Only health perception scores significantly predicted variability on the Geriatric Depression Scale (\( R^2 = .563 \)).
Table 11

Multiple Regression Summary Table for Geriatric Depression Scale

<table>
<thead>
<tr>
<th></th>
<th>Beta</th>
<th>t</th>
<th>p</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the equation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Perception</td>
<td>-.750</td>
<td>3.41</td>
<td>.007</td>
<td>.563</td>
</tr>
<tr>
<td>Not in the equation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.196</td>
<td>.739</td>
<td>.481</td>
<td></td>
</tr>
<tr>
<td>Life Satisfaction</td>
<td>-.019</td>
<td>.078</td>
<td>.940</td>
<td></td>
</tr>
<tr>
<td>Loneliness</td>
<td>.343</td>
<td>1.68</td>
<td>.131</td>
<td></td>
</tr>
</tbody>
</table>

Given the small sample size, it is difficult to generalize the above findings to the population of older adults who reside in retirement centers. Recruiting subjects at the retirement centers was a difficult task. Reasons cited for this include: the possibility that the questionnaires appeared too lengthy due to the large print utilized that required many pages; the lack of compensation for participating; and the elderly's hesitancy to reveal personal information to a stranger. Additionally, since health perception was an important factor for this group of individuals, perhaps the residents did not feel well enough to participate. The five measures were also incorporated as part of program evaluation at a local psychiatric hospital's geriatric unit.

Inpatients diagnosed as depressed. Eight inpatients being treated for depression at an acute psychiatric
hospital agreed to complete the measures. Subjects (2 males, 6 females) ranged in age from 61 to 74 years with an average age of 68.25 years (sd = 4.68).

Means and standard deviations for the five measures are reported in Table 12. These subjects were the least healthy, the least satisfied with life, the most lonely, and much more depressed than the other two groups.

Table 12

<table>
<thead>
<tr>
<th>Measure</th>
<th>mean</th>
<th>sd</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Perception Questionnaire</td>
<td>88.63</td>
<td>22.43</td>
<td>8</td>
</tr>
<tr>
<td>Life Satisfaction Index-Z</td>
<td>6.13</td>
<td>5.28</td>
<td>8</td>
</tr>
<tr>
<td>Revised UCLA Loneliness Scale</td>
<td>45.00</td>
<td>6.44</td>
<td>8</td>
</tr>
<tr>
<td>Beck Depression Inventory</td>
<td>22.75</td>
<td>15.04</td>
<td>8</td>
</tr>
<tr>
<td>Geriatric Depression Scale</td>
<td>15.13</td>
<td>11.12</td>
<td>8</td>
</tr>
</tbody>
</table>

a All measures are self-report, in each case higher scores reflect higher levels of the construct being measured.

Correlations between the five measures are shown in Table 13. As in the initial study, all correlations were significant and subjects who were more depressed perceived themselves to be less healthy, less satisfied and more lonely. In this case a positive health perception was negatively correlated with increased loneliness. Again, life satisfaction and loneliness were negatively correlated.
Table 13

Correlations Between Measures

<table>
<thead>
<tr>
<th>HPQ</th>
<th>LSIZ</th>
<th>RULS</th>
<th>BDI</th>
<th>GDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>---</td>
<td>.8901**</td>
<td>-.7975**</td>
<td>-.9522**</td>
</tr>
<tr>
<td>Perception</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life Satisfaction Index-Z</td>
<td>---</td>
<td>-.8413**</td>
<td>-.7808**</td>
<td>-.6361*</td>
</tr>
<tr>
<td>Revised UCLA Loneliness Scale</td>
<td>---</td>
<td></td>
<td>.6877*</td>
<td>.7228*</td>
</tr>
<tr>
<td>Beck Depression Inventory</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>.9291**</td>
</tr>
<tr>
<td>Geriatric Depression Scale</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

*p<.05*  
**p<.01**

Regression analyses for predicting scores on the Beck Depression Inventory are presented in Table 14. Health predicted 91 percent of the variability of scores on the Beck Depression Inventory. None of the other measures accounted for any variability in the depression.

Table 14

Multiple Regression Summary Table for Beck Depression Inventory

<table>
<thead>
<tr>
<th>Beta</th>
<th>t</th>
<th>p</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the Equation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Perception</td>
<td>-.952</td>
<td>7.64</td>
<td>.001</td>
</tr>
<tr>
<td>Not in the Equation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.023</td>
<td>.157</td>
<td>.882</td>
</tr>
<tr>
<td>Life Satisfaction</td>
<td>.321</td>
<td>1.22</td>
<td>.276</td>
</tr>
<tr>
<td>Loneliness</td>
<td>-.197</td>
<td>.946</td>
<td>.387</td>
</tr>
</tbody>
</table>
Table 15 shows the regression analyses for predicting scores on the Geriatric Depression Scale. Health perception and life satisfaction accounted for 91.7 percent of the variability of depression scores.

Table 15

Multiple Regression Summary Table for Geriatric Depression Scale

<table>
<thead>
<tr>
<th></th>
<th>Beta</th>
<th>t</th>
<th>p</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the Equation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Perception</td>
<td>-1.571</td>
<td>5.56</td>
<td>.003</td>
<td>.80</td>
</tr>
<tr>
<td>Life Satisfaction</td>
<td>.762</td>
<td>2.70</td>
<td>.043</td>
<td>.917</td>
</tr>
<tr>
<td>Not in the Equation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.133</td>
<td>.835</td>
<td>.451</td>
<td></td>
</tr>
<tr>
<td>Loneliness</td>
<td>.396</td>
<td>2.130</td>
<td>.100</td>
<td></td>
</tr>
</tbody>
</table>

Given the small numbers of subjects in these studies it is difficult to generalize the results. However, health perception played a much more significant role in predicting depression for both of these groups than it did for the "nondepressed" elderly. For those subjects diagnosed as depressed, health perception accounted for nearly all the variance of scores on both depression measures. This finding may be due to the subjects being hospitalized and to the tendency for older persons to focus on the somatic symptoms of depression.

Implications for Treatment and Assessment

The results of the reported studies suggest that older persons who are depressed should be treated using an active
biopsychosocial approach. A focus on evaluation and treatment of the whole person is particularly essential when dealing with the elderly since physiological, psychological, and social factors may interact to produce a debilitating, life-threatening depression. The individual needs to be carefully screened for medical conditions and, medication abuse or interactions. Identifying and treating physical conditions may improve the individual's health perception. When physical etiology is ruled out, psychological symptoms may be treated through the use of antidepressant medications or psychotherapy.

A thorough psychosocial assessment is necessary to identify factors and stressors that may affect the individual's sense of well-being and contribute to depression. Inadequate finances, for example, affects an elderly person's ability to seek medical and psychological treatment, nutrition, transportation, housing, and opportunities for social interaction. This study has demonstrated the impact of socioeconomic factors such as adequate income on an individual's sense of well-being and satisfaction with life. Knowledge of such factors as well as the individual's current level of social functioning, particularly as compared to past social activity, is vital to determining if isolation and loneliness are contributing to psychological problems. As previously noted, disabling illness and sensory decline are often precipitants of loneliness and depression in older adults. Social service
intervention may prevent further decline in an elderly person with symptoms of depression by improving quality of life through resources or by encouraging involvement in volunteer work or other activities to alleviate loneliness.

The results of this study support the importance of a prophylactic approach toward mental health care for the elderly. As previously noted, depression is easily misdiagnosed in an older person and often is overlooked or untreated. Failure to treat psychological problems may lead to long term care placement or possibly suicide. However, no treatment approach may be implemented if depression is not detected.

As previously discussed, the elderly person is more likely to present with somatic complaints and seek treatment from an internist or family practitioner. The results of the current study indicate that the Geriatric Depression Scale or the Life Satisfaction Index could be easily utilized in the physician's office to assist in diagnosis and ensure that depression is not being overlooked. If deemed appropriate, the physician could then refer to a social service agency or case manager for assessment of psychosocial needs and to a mental health professional for psychological treatment.

These scales are quick, simple to use, nonthreatening, and are not confounded by somatic items. The results of the current study strongly suggest that they are valid and reliable assessment devices useful for screening for
Implications for Further Research

Results of the current study suggest the need for further investigation into factors that may influence the development of depression in the elderly. Larger sample sizes of community dwelling elderly should be studied to determine if the results are reliable across samples. Perhaps other variables such as health perception would play a more important role in predicting depression in larger sample sizes. Given that the subjects for this study were volunteers recruited for a driving study, they are probably not representative of the general population of older persons. A more representative sample might be gleaned using less restrictive recruiting criteria. Furthermore, the sample sizes from the residential and inpatient groups were too small to allow generalization of the results to other similar populations.

Continued research is needed with subjects from retirement centers, inpatients diagnosed depressed, and residents of long term care facilities. The results of such research should provide the evidence needed to differentiate depression from other presenting disorders. Furthermore, the findings should be used to guide the difficult task of designing treatment programs targeted for the needs of a growing, diverse elderly population.
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