This is to certify that the
dissertation entitled

THE ROLE OF SOCIAL SUPPORT IN COGNITIVE AND EMOTIONAL FUNCTIONING AMONG OLDER ADULTS

presented by

CAMILLA RUTH WILLIAMS

has been accepted towards fulfillment
of the requirements for the

Ph. D. degree in Psychology

Major Professor's Signature

Dec 2 2004

Date

THE ROLE OF SOCIAL SUPPORT IN COGNITIVE AND EMOTIONAL FUNCTIONING AMONG OLDER ADULTS

By

Camilla Ruth Williams

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Psychology

2004

ABSTRACT

THE ROLE OF SOCIAL SUPPORT IN COGNITIVE AND EMOTIONAL FUNCTIONING AMONG OLDER ADULTS

By

Camilla Ruth Williams

The percentage of individuals over the age of 65 in this country is projected to increase between now and the year 2025. As the country ages, the concerns of older adults will become more salient to health care providers. The current study examined the role of social support in cognitive and emotional functioning in the lives of community-dwelling older adults. Individuals with higher levels of social support were shown to have greater well-being scores, as measured by fewer reported symptoms of anxiety and depression. Social support was also shown to impact perceived memory difficulties, but not objective memory performance. The lack of relationship between social support and objective memory was surprising given previous findings, as was the lack of relationship between well-being and objective memory performance. A hypothesized gender difference in objective memory performance was found, as well as a finding that social support from friends and family members differentially impacted memory complaints for men and women.

ACKNOWLEDGEMENTS

Graduate school is a journey that never occurs in isolation, although it sometimes feels as though it has. I would like to thank Dr. Norman Abeles, who served not only as the chair of my dissertation committee but also as an instructor, supervisor, and mentor over the course of my professional development. I would also like to thank Dr. Lee Winder, who encouraged me to trust my clinical instincts and my investigative skills. Dr. Bert Karon provided both instrumental support and practical wisdom for surviving the graduate school process. Finally, Dr. Larry Schiamberg agreed to step in to the committee at a crucial point and provided hope that I could actually complete the process.

As I look back upon my personal and professional developmental process while at Michigan State University, I am reminded of the many people and experiences that have influenced me. First and foremost, I want to acknowledge my "therapy parents," Dr. Ellie Bossi and Dr. Gershen Kaufman. They each modeled being genuine in all relationships and challenged me to use myself within the therapy relationship. I also learned an amazing amount about therapy and about myself from the faculty members, counseling center psychologists, and pre-doctoral interns who served as clinical supervisors across the years. Of course, I can't forget to mention my cohort of graduate students, who provided laughter, support, and the occasional much-needed reality check. Finally, but not least important, I learned about life through my clients as they shared their stories with me and allowed me to witness their pain, happiness, and growth.

I also know that my graduate school experience was enriched by the opportunities I had to be involved with "the other half" of my identity – the Deaf and interpreter

communities at MSU and LCC. Through these experiences I was able to learn and grow in my understanding of my cultural identity and to give back to the community that has been such a major part of my life. I cherish the friendships I've made with fellow interpreters and instructors, and I look forward with great pride to the accomplishments of my students.

The constant throughout the uncertain and often chaotic years of graduate school has been my husband Carrick. Without his love and support, I am not sure I would have chosen to stay on the path I have chosen. He has provided a wide variety of instrumental, emotional, and knowledge resources across the years too numerous to list. Thank you, Love.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

In the United States, the number of adults over the age of 65 has tripled during the 20th century, and these older adults comprised approximately 14% of the country's population in 1995 (Oriol, 1999). This figure represents a substantial percentage of the American population, and projections indicate that this percentage is increasing. By the year 2025, older adults are expected to represent 18.7% of the total population in the United States (Michigan Department of Community Health, 2000). As the country ages, the physical, cognitive, and psychological well-being of older adults becomes of greater concern. Health and human service organizations serving the aging community can expect a greater demand on resources as these adults continue to enjoy greater life expectancy.

Although individuals are living longer, they are not necessarily experiencing a better quality of life. Census data reveal that the percentage of individuals living in group quarters (defined as nursing homes, mental hospitals, group homes, shelters, and prisons) increases from 1% for persons between the ages of 60 and 64 to 10% for persons age 75 and older (Michigan Department of Community Health, 2000). Older adults in these group settings often experience more health concerns and less control over their lives than their counterparts living alone or in family households. It is important to understand the physical, cognitive, and psychological concerns of older adults, including changes in physical health, memory complaints, and psychological functioning.

The purpose of the current study was to examine the effect of perceived social support on older adults' cognitive and emotional functioning. Perceived support was expected to lead to increased memory performance and greater emotional well-being.

Furthermore, it was hypothesized that women would function at a higher level than men, both in terms of memory functioning and emotional well-being, based on findings of previous research that women are better at creating relationships and have greater access to support across the life span than men. In this study, memory functioning was examined in terms of both perceived memory difficulties and objective memory performance because previous research indicates that these may represent different aspects of memory and may respond differently to social support.

The following sections address the factors impacting the aging process. First, several leading theories of aging and cognitive decline are discussed. Next, the factors that influence healthy aging are discussed, including gender, psychological well-being, and social support. A final section integrates the elements of healthy aging and addresses the guiding principles of the current study.

Theories of Aging and Cognition

The consensus in the field of cognitive psychology is that humans have a limited capacity for information processing, meaning that we cannot take in all of the information that is presented to our senses. Furthermore, our memory system is susceptible to overload and subsequent loss of information from memory (Lovelace, 1990b). Given this fact, anything that has the potential to decrease cognitive capacity or resources will negatively impact cognitive performance. According to Lovelace, working memory declines with age, and therefore is increasingly vulnerable to divided attention tasks and intrusion of other stimuli. In addition, Eysenck (1979) points out that cognitive activities related to anxiety, such as worrying, compete with task-relevant information for attention in the processing system. Therefore, he suggests that anxiety always decreases

performance, and suggests that working memory is especially vulnerable to task overload. Cunningham and Tomer (1990) also argue that increases in depression may precede decreased efficiency in cognitive functioning. When these affective factors are combined with the age-related cognitive changes referred to by Lovelace (1990b), older adults can be seen to be at even higher risk of processing overload. This risk has been borne out by the literature in cognitive aging.

One of the most common findings in cognitive aging research is that elderly participants perform more poorly on memory tasks than younger participants (e.g., Lovelace, 1990a; Park, O'Connell, & Thomson, 2003). There have been several theories proposed to explain this and other age related differences. Some theories focus on diminished cognitive resources and increased difficulties with specific cognitive processes, whereas others focus on the physical changes that occur as one ages (Craik & Anderson, 1999).

Researchers who point to declines in cognitive processing as leading to poor memory functioning for older adults theorize several different mechanisms for the declines. For example, one prominent theory (Salthouse, 1996) claims that as people age, the speed of certain cognitive processes begins to slow down to the point that they cannot be accomplished within the allotted time (known as a "limited time mechanism"), leading to a difficulty in coordinating complex mental processes such as memory that require several streams of input (known as the "simultaneity mechanism"). Salthouse argues that without this coordination, older adults have more difficulty performing difficult cognitive tasks. A second theory (Craik, 1986) claims that cognitive difficulties result from a relative deficit in the ability to initiate memory processes as one ages. He showed that

older adults had greater difficulty in memory tests when there were few external cues to aid memory. A third explanation for some of the difficulties associated with aging has been theorized by Hasher and colleagues (Hasher & Zacks, 1988; Hasher, Zacks, & May, 1999). These authors claim that decreased efficiency of working memory may be due to inefficient inhibitory mechanisms, which make it difficult for older adults to ignore irrelevant stimuli. It is this excess of information and the inability to coherently process relevant data, they suggest, that leads to deficits across many domains of functioning for older adults. All of these theories suggest that older adults are less systematic than their younger counterparts in their use of existing memory, indicating difficulties in memory retrieval and integration.

In contrast to cognitive processing explanations of memory decline in aging, other researchers have attributed declines to the physical changes that accompany aging. For example, Lindenberger & Baltes (1994) found that age-related differences in cognitive functioning were highly correlated with sensory functioning for individuals ranging from 70-103 years old. They propose that the age-related deficits in cognitive functioning are the result of general biological changes in underlying neural and sensory structures (referred to as the "common cause" theory). On the other hand, West (1996) looked beyond generalized decline and focused instead on changes in the frontal lobes that occur with aging, stating that losses in frontal lobe volume account for difficulty integrating information and remembering efficiently.

Age-Related Cognitive Decline

Regardless of the theorized mechanism involved in the decline of cognitive performance for older adults, each of the cognitive aging theories described above claims

that as one ages, cognitive functioning becomes more difficult. An increasing number of healthy older adults are seeking advice and treatment for perceived cognitive difficulties, especially decreases in memory abilities. Memory decline with age has become such a common concern for older adults that an additional diagnostic category has been included in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). This category, Age-Related Cognitive Decline (ARCD), includes both objective measures of memory dysfunction and subjective complaints of memory difficulties (American Psychiatric Association, 1994; Levy-Cushman & Abeles, 1998). The creation of the ARCD diagnosis followed the above-mentioned cognitive research coupled with clinical observations of memory and general cognitive decline in older adults that was non-pathological in terms of comparisons with the general older population (as opposed to dementias) but reflected a decline in comparison to younger adults (American Psychological Association, 1998; Foldi, Brickman, Schaefer, & Knutelska, 2003; Levy-Cushman & Abeles, 1998).

The majority of diagnosis and treatment decisions for Age-Related Cognitive Decline rely on reported memory complaints. However, it is not clear that older adults' concerns accurately reflect objective memory difficulties. Lovelace (1990a) highlights the fact that a subjective loss of functioning is a well-documented age effect. In particular, older adults believe that they have a reduced memory capacity, less control over their memory, and are more susceptible to long-term memory decline than they had been previously. Rabbitt, Donlan, Watson, McInnes, and Bent (1995) reported no significant correlations between perceived cognitive abilities and objective cognitive performance. Furthermore, research by Zarit (1982) has suggested that memory complaints may be more correlated with mood than with actual memory performance. In

particular, Zarit (1982) found that individuals who reported memory difficulties generally described those difficulties as affecting all areas of memory (e.g., memory for names, faces, visual input, and auditory input) when actual performance did not reflect global memory deficits. According to this research, self-reported memory problems were related to memory performance, but after controlling for actual performance, a significant relationship remained between memory complaints and affect, a finding that was replicated with older adults (Levy-Cushman & Abeles, 1998).

Other Factors Affecting Cognitive Decline in Older Adults

Although developmental aging theories and the Age Related Cognitive Decline diagnosis seem to point to the inevitability of decline in cognitive functioning as one ages, there are other factors that can influence the rate of cognitive decline during aging. For example, Schaie (1984) pointed to individual differences that interact with environmental and general aging findings. He found that cognitive and social stimulation and complexity led to greater preservation of cognitive functioning into old age. In order to buffer against cognitive decline, maintenance of complex and stimulating environments and interactions across the lifespan is recommended (Schaie, 1984; Schooler, 1984) Cognitive plasticity, or the ability to learn new material and improve through training, has been shown to continue into old age, although the range of improvement is restricted for older adults as compared to younger adults (Baltes & Lindenberger, 1988; Singer, Lindenberger, & Baltes, 2003; Verhaeghen & Marcoen, 1996). In another line of research, Craik (1986) demonstrated that aging is associated with a decreased ability to allocate resources and effectively engage in controlled processes. He suggested that for older adults, the ability to remember involves

augmenting the failing self-initiated memory processes with environmental support, including personal habits and increased structure in the stimuli to be remembered. Both approaches work to limit the adverse affects of aging on cognition and compensate for potential memory difficulties faced by older adults.

Non-Cognitive Factors Affecting Healthy Aging

There are several factors that affect the process of aging and impact the ability of older adults to cope with the changes that accompany it. Harris and Miller (1989) point to research suggesting that the aging process is spread over a longer period of time as a greater proportion of adults live into and beyond their eighties. Therefore, they suggest that a larger cohort of people will experience the physical declines inherent in advanced age. The extent to which older adults are able to cope with these changes in their lives is affected by factors such as gender, psychological well-being, and social support resources. As a general rule, the more resources a person has, the better able he or she is to cope with losses and life changes. For example, Nieboer (1997) states that individuals with more income, better physical functioning, more social support, and more "productive activities" before the illness and death of a spouse are more likely to cope successfully with that death, regardless of their gender.

Gender

In cultures where gender roles are highly traditional and therefore especially rigid for women, aging is particularly difficult for women (Harris and Miller, 1989). For women who are experiencing transitions and losses of roles, strict role definition often leads to depression and anxiety. Estes (1995) cites research showing that women are twice as likely as men to suffer from depression and are also more likely to experience

anxiety than men. Links have been made between these disorders and caring for an ill or dying spouse, as well as widowhood (Nieboer, 1997). Because women tend to live longer than men, they tend to provide more care for spouses and are more likely to be widowed than are men (Michigan Department of Community Health, 2000). Nieboer (1997) suggests that as women care for a chronically ill or dying spouse, they lose the emotional support from their spouse and also have restricted access to outside support sources. Therefore, at a time when they are trying to cope with increased energy demands, the anticipated loss of spousal relationship, and increased financial burdens, they are doing so with fewer support resources. Perry and Johnson (1994) add that older women are at greater risk for physical and psychological ailments as a result of their multiplied burdens.

Although these findings would suggest that women could not live independent and fulfilling lives as they age, other research contradicts this conclusion. Biegel, Shore, and Gordon (1984) suggest that women are the initiators of social support and are more likely to be able to maintain relationships with confidantes beyond their spouse as they age. Men tend to have a wider range of social contacts (from working outside the home and having more roles outside of the home), but they are more likely to report that they have never had an intimate friend (Hess and Soldo, 1985). They are also less likely to replace a lost friend in old age. For women, friendships tend to be more long-term, stable, and emotionally involved (Nelson, 1993). These differences may partially reflect the fact that men at older ages are more likely than women are to still have a spouse, so they have the luxury of depending solely on them. There is also a difference in sex-role socialization because women are more likely at any age to have intimate friends than are

men (Perry & Johnson, 1994). Women's training as the "relationship experts" gives them the tools and the flexibility to create support networks and to maintain and alter them throughout the life span (Peters & Kaiser, 1985).

Psychological Well-being

Another important factor in healthy aging is psychological or emotional well-being. Well-being is affected by normal transitions in aging as well as by psychological distress and by psychological disorders such as anxiety and depression.

Transitions in Aging

Aging is seen as being accompanied by a series of role transitions, such as moving into group living situations or retiring from one's job, that can be very stressful on the individual and on significant others in the person's life. These types of stressors are risk factors for physical illness and are thought to directly affect the onset, course, and outcome of disease (Bisconti & Bergeman, 1999). In addition to changes in role, aging adults are more likely to experience declines in physical health and in strength, a loss of financial independence, and the death of a spouse or other family members (Oriol, 1999). The cumulative effect of these transitions, role losses, and other life events is a negative effect on people's health as they grow older (Levy-Cushman, McBride, & Abeles, 1999). The Michigan Department of Community Health (2000) reports that older adults tend to require more health care services than younger adults, and that as a person ages, he or she will likely increase the amount of health care needed. It is commonly assumed that older adults are more likely to seek services to address physical ailments than psychological ones and that psychological distress may manifest in physical complaints. For example, depressed individuals have been found to report losses in cognitive functioning

(Williams, Little, Scates, & Blockman, 1987). Therefore, it is important for health care providers to screen for possible mental health issues during medical exams in order to connect older adults to appropriate psychological resources.

Psychological Distress

Another important factor affecting cognitive functioning is psychological distress. It is commonly believed that affect influences our cognitive abilities, and affective disorders can lead to marked cognitive impairment (Burt, Zembar, & Niederehe, 1995; Cunningham & Tomer, 1990; Rabbit, et al., 1995; Sweeney, Wetzler, Stokes, & Kocsis, 1989). Depressed individuals have been found to report losses in cognitive functioning (Williams, Little, Scates, & Blockman, 1987). In particular, they often describe losses in attention, concentration, and memory as causes of concern (Williams et al., 1987). These concerns are often validated by depression-associated cognitive impairment in performance on neuropsychological tests (Rosavage, 1990) and on measures of learning and fluid intelligence (Rabbitt, et al., 1995). Furthermore, many older adults report experiencing dysphoric symptoms (less severe than clinical depression), and researchers (Pincus, Davis, & McQueen, 1999; Rabbitt et al., 1995) report a significant effect of this level of emotional disturbance on speed of processing, efficiency of verbal learning strategies, and access to overlearned verbal material. Cunningham and Tomer (1990) also argue that increases in depression may precede decreased efficiency in cognitive functioning. When these affective factors are combined with the age-related cognitive changes referred to by Lovelace (1990a), older adults can be seen to be at even higher risk of processing overload. Depression and anxiety limit an individual's processing resources (Foldi, Brickman, Schaefer, & Knutelska, 2003). It is possible that at the same

time, they restrict the goals and motivation of the individuals. These two factors in combination should lead to decreased memory performance. Finally, the relationship between available cognitive resources and goals are more tightly related for older adults, such that motivation to engage in a particular behavior is tightly linked likelihood to succeed at the task, and thus to performance (Adams, Smith, Pasupathi, & Vitolo, 2002; Hess, Rosenberg, & Waters, 2001).

Current estimates of mental disorder rates in older adults range from 18% to 25% of the population (Estes, 1995). Although it is widely believed that prevalence rates for most disorders are lower in the elderly than in younger adults, Oriol (1999) cautions that this may be a result of older adults' tendencies to underreport symptoms and to avoid using mental health resources. However, research shows that the "baby boom" cohort has already shown relatively high rates of problems such as depression, anxiety, and substance abuse (Gatz, 1995). If one assumes that this high prevalence rate continues into older age, then a dramatic rise in the reporting of psychological distress among older adults can be anticipated. Therefore, it is crucial for mental health practitioners to identify strengths as well as weaknesses in strategies for coping with life stressors in order to more effectively prevent mental disorders and intervene in the lives of older adults. By taking a proactive rather than reactive stance to changing mental health needs of our society, we can provide increased quality of life to a greater proportion of people over a greater proportion of their lives (Gatz, 1995).

Depression. Depression is generally associated with feelings of sadness, disappointment, and discouragement accompanied by a loss of interest and pleasure in activities. Other symptoms of depression include guilt, loneliness, anger, insomnia,

despair, and somatic complaints (American Psychiatric Association, 1994). Many older adults report experiencing dysphoric symptoms (less severe than clinical depression), and Rabbitt and colleagues (1995) report a significant effect of this level of emotional disturbance on speed of processing, efficiency of verbal learning strategies, and access to overlearned verbal material. Although research suggests that women are more likely than men to be depressed, it has been suggested that the gender discrepancy may result from the fact that women are more likely to report unhappiness than men, so that scores on measures of depression are not equivalent for men and women (Rabbitt et al., 1995). Furthermore, research has not addressed the concern of gender-related selection bias, namely that the proportion of men decreases as age increases, leading to a restriction in range of mental and physical health functioning among surviving men and possible differences between older male and female populations.

Anxiety. Anxiety exists on a continuum, and low-to-moderate levels have been theorized to be beneficial in motivating change (Salzman, 1991). In fact, Lovelace (1990b) points out that the Yerkes-Dodson principle of performance shows that optimal performance for most tasks requires intermediate levels of arousal or motivation. However, moderate to severe anxiety can express itself in cognitive, emotional, and physical symptoms, and extreme anxiety can be immobilizing and can lead to difficulties carrying out tasks of daily living. In addition, cognitive symptoms of anxiety, such as decreased concentration, memory, and attentional capabilities, may lead an older adult to fear the onset of dementia while emotional symptoms, characterized by dread, extreme worry, and anticipation of threat, may decrease a person's ability and motivation to solve problems. Therefore, health professionals must recognize the role of anxiety in other

health-related concerns in order to more effectively optimize treatment outcomes (Salzman, 1991).

Differential diagnosis and comorbidity of depression and anxiety. Although the reported incidence of depression and anxiety are lower among older adults than among younger adults, these conditions are considered to be the most common psychological complaints of older adults and do affect a significant portion of the aging population (Bazergan, 1996). Approximately 15% of community-dwelling older adults exhibit signs of depression (Blazer, 1989), and 10% suffer from anxiety (Gurin, Veroff, & Feld, 1983). Furthermore, Himmelfarb and Murell (1984) reported that more than 17% of men and 21% of women over the age of 60 experience subclinical levels of anxiety that would benefit from therapeutic intervention. Although anxiety and depression are often experienced together, Clarkin and Kendall (1992) report that anxiety is more likely to be diagnosed in isolation, whereas a primary diagnosis of depression generally includes an accompanying anxiety diagnosis. Furthermore, not only are anxiety and depression seen to occur together in older adults, it has been suggested that anxiety, which often precedes depression, may be a causal factor in older adults becoming depressed (Wetherell, Gatz, & Pedersen, 2001). When these two conditions are combined, their impact on physical health and ability to perform acts of daily living can be dramatic (Bazergan, 1996). Given the findings of a meta-analytic evaluation that anxiety in isolation did not lead to impairment, while depression did (Burt et al., 1995), this comorbidity of depression and anxiety in older adults is a further concern for medical and human service professionals.

Gold and Arbuckle (1990) cite several studies using different measures of anxiety or neuroticism that show a relationship between increased levels of anxiety and a

decrease in performance on cognitive tasks across the lifespan. Although some work has focused on the effects of depression and anxiety on cognitive performance in the elderly (Gold & Arbuckle, 1990; Levy-Cushman & Abeles, 1998; Sweeney, et al., 1989), most of the research linking cognition and affect in older adults has been generalized from research employing younger adults (Rankin, Gilner, Gfeller, & Katz, 1994). In particular, Burt and her colleagues (1995) caution against generalizing results to older adult populations because their meta-analysis revealed few studies of this population in the literature.

Social Support

Another factor affecting healthy aging is the social support that an individual perceives from important others. In particular, the impact of psychological variables, such as transitions, distress, and psychological disorders, on healthy aging is thought to be altered by the social support resources that older adults maintain. Social support has been defined in many different ways by several authors in various fields (Antonucci, 2001; Biegel, Shore, & Gordon, 1984; Cornman, Goldman, Glei, Weinstein, & Chang, 2003; Maguire, 1980; Tardy, 1985; Walker, McBride, & Vachon, 1977), but most definitions include the idea that social support involves interactions with others that lead to exchanges of affective, instrumental, and/or knowledge resources. Support can be provided by formal systems, such as human service organizations, or by informal systems, which can include members of one's community such as family, friends, neighbors, teachers, clergy or religious helpers, coworkers, and/or self-help groups (Biegel, Shore, & Gordon, 1984). Informal social networks can provide information and access to resources that help to maintain a sense of identity within the community

(Walker, et al., 1977). Maguire (1980) defines informal social support networks as buffers that help a person cope with transitions, stress, physical problems, and social or emotional problems without resorting to the formal social service system with its attending stigma. Although these definitions explain how social support networks function, they do not offer insight into how the networks are established and maintained over the course of a person's life.

Theories of Social Support

Disengagement

An early finding in the study of social support resources is that social involvement tends to decrease in older age. In order to address this finding, the theory of disengagement was proposed (Cumming & Henry, 1961). These authors suggest that disengagement is a normal part of the aging process and that it is a voluntary withdrawal from the support network rather than one caused by decreased resources, role loss, or other transitions. Furthermore, they suggest that disengagement is mutually beneficial for both the older adult and for society in general.

According to Harris and Miller (1989), as individuals age, this disengagement and alienation from the larger society is accompanied by an increase in self-reflection. However, it is primarily through social interactions that the view of the self is maintained. Thus, they cite research showing that the presence of a confidant during aging decreases the impact of stressors and further suggest that social support influences a person's sense of control, including self-control. This sense of self-efficacy and ability to participate in the broader society in a meaningful way is key to maintaining physical health and psychological well-being (Cornman et al, 2003).

Social Exchange Theory

Other researchers in the field of social support have also been disenchanted with the idea that social support decreases because of disengagement and physical activity/inactivity. One of the primary economics-based alternative theories in regard to the foundation and maintenance of social support networks is social exchange theory (Dowd, 1980; Harris & Miller, 1989; Lawler & Thye, 1999; Lee, 1985; Uehara, 1990). According to social exchange theory, all relationships have costs and benefits associated with them. When laying the foundation for a relationship, the parties involved invest time, emotion, and energy resources to creating a mutually beneficial experience. Thus, cooperation, trust, and a sense of obligation to one another are key elements of a successful network (Lawler & Thye, 1999). Over time, one or another of the members of a support network may invest more or receive more, but the ultimate goal is that the benefits be reciprocated. Reciprocity begins in the past, where someone first helped someone else, is maintained in the present, and provides hope for the future, where favors can be called upon in times of need (Longino & Lipman, 1985). Within informal support networks, people exchange instrumental services and material goods, and also exchange love, admiration, respect, power, and influence. Thus, support networks offer instrumental, emotional, and informational support and also offer connections to further sources of support (Longino & Lipman, 1985).

Because of the heavy investment required to build and maintain a support network, and because an individual is likely to be involved in more than one support network at any given time, support networks may or may not provide actual assistance during a crisis (Uehara, 1990). In fact, during times of stress, an individual (and the

larger support network) must make difficult decisions about when to provide support, how much support to provide, and when to "cut one's losses," either by withdrawing from the network or by eliminating the "needy" person from the support circle. Therefore, each member of the support network is responsible to the larger group as well as to the individual who is currently receiving support (Uehara, 1990). Support networks may also be fragmented, so that one's minister may not be aware of the self-help group down the street or the other sources of informal support in the neighborhood. Therefore, people sometimes receive isolated pockets of support, whereas if all of the informal support resources were aware of each other and could work together, they could provide more complete and effective support (Beigel, Shore, & Gordon, 1984).

Although Uehara (1990) suggested that the social exchange theory of social support appears to generalize across life circumstances, she specifically studied an individual's ability to call upon the resources provided by his or her support network after losing a job. She points out that support exchange norms and network mobilization patterns may vary depending on the specific crisis. Other researchers have highlighted that factors such as gender, socioeconomic status, race or ethnicity, and age influence the structure and interaction patterns of one's social support network (Biegel, Shore, & Gordon, 1984; Dowd, 1981; Longino & Lipman, 1985; Perry & Johnson, 1994; Peters & Kaiser, 1985). For example, Jackson and Antonucci (1992) emphasize that support networks are dynamic and shift from close parent-child relationships to close interpersonal relationships with others outside the family. The authors also remind us that as a person experiences life transitions, the density of her or his network will shift as certain members become more or less important or fall out of the support network

entirely. Peters and Kaiser (1985) suggest that friendship patterns of young, middle aged, and older adults differ in regard to the extent to which friendships are fused with other life roles or complement other roles as well as whether or how they substitute for or compete with the demands of other roles.

Social exchange theory provides an explanation for the decrease in the number and quality of informal support sources as one ages. Sauer and Coward (1985) highlight the fact that aging is viewed negatively, so an individual may perceive himself or herself as losing prestige and status within the network as she or he ages. This perception may also be borne out by the reactions of members of the support system, who may come to see the contributions of the older adult as less valuable than those of younger members of the system. The support network may then decide that the cost of maintaining the relationship outweighs the benefits received from the relationship, and they may eliminate the older person from the network (Lee, 1985). The transition to retirement is especially problematic in this regard because of the loss of status and the loss of the natural network of coworkers.

Even in instances where the support network does not withdraw its resources, an older adult may choose not to call upon the network when they feel that they are no longer providing productive input into the system (Perry & Johnson, 1994). Because the network is created and maintained by reciprocal exchanges of resources, older individuals may come to feel guilty, dependent, and/or powerless if they need to ask for more assistance than they can provide (Lee, 1985). Instead, older adults maintain relationships with same-age peers, who are of similar status, or they may withdraw from relationships that make them feel dependent. Thus, long-term friendships are extremely important, and

the loss of a friend is a greater disruption during old age than at earlier points in one's life. (Peters & Kaiser, 1985).

Social Cognition

Social Cognition is an approach to understanding the basic cognitive underpinnings of social competency in terms of individual and situational factors that determine the nature of knowledge about the social environment. According to this view of the self in relationships, cognitive processes, such as the acquisition and use of social knowledge, directly influence socially competent behavior. At the same time, social competence, including the level of sophistication in an individual's interpretive rules, affects which social cues are attended to and processed (Blanchard-Fields & Abeles, 1996). According to this theory, to the extent that aging affects cognitive resources, it will impact an individual's ability to process complex social interactions. It has been suggested that limitations in cognitive functioning may also alter an older adult's capacity to organize social stimuli and maintain memory for social interactions. Thus, Hess (1999) suggests that motivation for maintaining social information becomes more important to older adults' performance in social situations. Charles and Carstenson (1999) emphasize that older adults are not less happy in their social relationships than are younger adults in spite of the decrease in social interaction as one ages. They put forth the idea that socioemotional selectivity accounts for differences in amount of interactions, meaning that older adults eliminate interactions and relationships that are less rewarding to them and focus instead on relationships that will provide needed support and positive interactions.

Perceived Social Support Measure

Arbuckle, Gold, Andres, Schwartzman, and Chaikelson (1992) reported that satisfaction with social support influenced memory ability in older males, and they highlighted the importance of this information given that social support has not been studied as a mediator of memory functioning. However, not all measures of support are equivalent. Stevens (1992) reported that attempts to create a general measure of support given and received by an individual were hampered when support from family and friends were combined. According to Gupta and Korte (1994), the types of social support provided by family members differ from those provided by friends for older adults, and support from these two sources do not have the same influence on well-being. These researchers suggest that the main predictor of well-being in older adults is the strength of friendship ties rather than of family ties. Benjamin, Leventhal, and Leventhal (1999) further state that it is the perceived adequacy of social interaction, rather than contact frequency, that is important in positive mental health functioning. The presence of a network doesn't guarantee appropriate support, and some responses by a support network may actually interfere with an individual's healthy coping responses (Cornman et al, 2003).

Role of Social Support in Healthy Aging

Although research into the importance of social support is not new, its role in the lives of the elderly has only been studied relatively recently (Arbuckle, et al., 1992). As Jackson and Antonucci (1992) have pointed out, most of the research relating to social support and older adults has emphasized the number of individuals in a support network rather than the quality of the relationships and the type of support given and received.

Other research has focused on the ability of family members or human service agencies to act as providers of support (Sauer & Coward, 1985).

It has been shown that older adults who receive more emotional support report fewer depressive symptoms than their peers, and that people who are not satisfied with their current level of emotional support report more psychological and physical problems (Krause, 1987). In fact, Lowenthal and Haven (1968) have shown that the existence of even one intimate friend or confidante may allow older adults to maintain positive self-images and high levels of emotional well-being regardless of the occurrence of life-changing role transitions and losses. Given the importance of social relationships in well-being, the finding that informal support networks tend to decline with age, and that older adults experience a reduction in the amount and variety of interactions with others (Sauer & Coward, 1985) would seem to be alarming. However, the theory of socioemotional selectivity (Charles & Christenson, 1999) suggests that this is an insufficient measure of happiness.

Even when one disregards the decline in the number of interactions that older adults have with others, the quality of those interactions also varies. Some research has found that involvement with social networks increases well-being, while other studies suggest that networks, especially kin networks, can decrease one's sense of personal control over life circumstances (Zautra, 1996). For older adults, this contradiction may reflect the fact that healthy older adults often maintain strong supports while older adults with chronic health problems may witness a decrease in the quality of their social network, with a decrease in positive social interactions and an increase in discord among family members who care for them (Zautra, 1996). A more ominous outcome is that

after controlling for factors such as age, number of health problems, and family income, older African-American women who were extremely socially isolated were three times more likely than their less isolated peers to die within 5 years (LaVeist, Sellars, Elliot Brown, & Nickerson, 1997).

It is believed that maintaining social roles and relationships increases a sense of personal control over one's life, which is linked to increased well-being (Cornman et al, 2003). Both the perceived and actual control over one's life cannot occur if a person is isolated from necessary resources. The dilemma in working to promote well-being in clients is learning how to optimize both interdependence and self-determination (Fawcett, Paine-Andrews, Francisco, Schultz, Richter, Lewis, Williams, Harris, Berkley, Fisher, & Lopez, 1995). It is through the use of informal as well as formal supports that older adults retain the most control over their physical and psychological health. Therefore, by enhancing the informal supports that older adults already possess, our society can realize a greater return on formal health system investment in care for older adults and can come to recognize the strengths and resources that older adults provide to their communities.

Interaction Between Social Support and Well-being

Depression and social support have been shown to have an inverse relationship with one another (Holahan & Holahan, 1987; Ross & Mirowsky, 2003). Social support is correlated with better overall feelings of one's own health and psychological well-being. Depression, on the other hand, is linked to a negative view of the self and others and cognitive losses in functioning, sometimes referred to as pseudodementia because it mimics the declines found in dementia patients (American Psychological Association, 1998; Levy-Cushman, McBride, & Abeles, 1999). One study found a relationship

between social support deficits and depression such that any of the hypothesized deficits was linked to depression and that as the number of social support deficits increased, so did the severity of depression (Prince, Harwood, Blizard, Thomas, & Mann, 1997). Arbuckle, Gold, Andres, Schwartzman, and Chaikelson (1992) reported that satisfaction with social support influenced memory ability in older males, and they highlighted the importance of this information given that social support has not been studied as a mediator of memory functioning (see also Seeman, Lusignolo, Albert, & Berkman, 2001). According to social cognitive theory, cognitive processes and social competence are linked (Blanchard-Fields & Abeles, 1996). In particular, individuals require cognitive resources to attend to social cues in the environment.

Social support and social interaction may improve cognitive functioning in a two-fold manner: use may increase the plasticity and flexibility of the memory system (Baltes & Lindenberger, 1988) and at the same time, individuals with support may be further motivated to perform well due to socially-motivated goals (Blanchard-Fields & Abeles, 1996). If the finding of a relationship between general cognitive ability and maintenance of social contacts in men with HIV (Honn & Bornstein, 2002), generalizes to aging populations, it would suggest that more intact older adults are better able to maintain relationships with others and to benefit from their social contacts. On the one hand, it has been found that most people solve fundamental life problems by consulting others, and on the other hand, it has been found that an individual is more likely to be alert and persistent in cognitive tasks in the presence of others (Schaie & Willis, 2000).

The tendency in the literature is to assume that the causal arrow in the relationship between social support and depression is that lower levels of social support lead to

depression. However, little research has examined the possibility that the causal arrow may be reversed, meaning that depression leads to losses in social support. Clinically, one key symptom in diagnosing depression is the loss of interest in previously enjoyable events, accompanied by withdrawal from social situations (American Psychiatric Association, 1994). Thus, the individual who is depressed is seen to actively detach from potential support resources. One study (Prince, et al., 1997) cautioned that depression is likely to lead to social support deficits, which they found to be especially likely in the case of two of their measured social support deficits (problems in relationship with a child and dissatisfaction with support received from friends). Chi and Chou (2000) also suggest withdrawal and subsequent loss of cognitive stimulation as possibly leading to cognitive decline in older adults living in Hong Kong and recommend that future research examine this possibility.

The current study explores the possible relationships between psychological well-being (defined as lower levels of depression and anxiety) and social support in order to determine the relative contributions of these factors to cognitive functioning. Specifically, the relationship that I am interested in is whether or not social support acts as a mediator for the relationship between psychological well-being and cognitive functioning. In other words, I am interested in the possibility that decreases in psychological well-being lead to losses in social support. Given that old age is a time of numerous changes in both psychological well-being and social interactions along with changes in overall cognitive functioning, this study will focus on the interactions of these factors in an elderly populations.

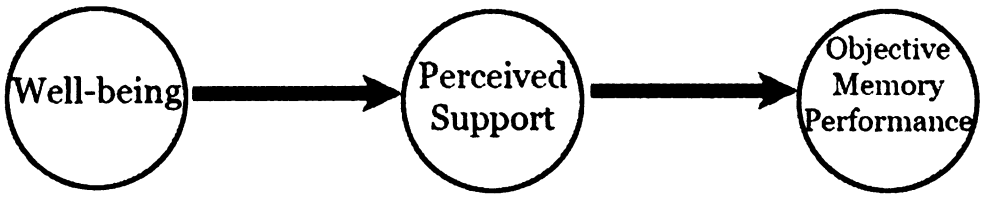
Overall, as one ages, cognitive functioning declines. Previous research has indicated that social support is correlated with cognitive functioning in that the more social support one has the better memory tends to be. However, depression can lead to decreases involvement in social networks, therefore limiting opportunities for interaction and cognitive stimulation. Thus, in addition to the direct relationship between depression and cognitive functioning via intrusive thought, I would expect depression to impact cognitive functioning through it's the path of decreased social support opportunities. I suspect that the cognitive demands of maintaining a social support network optimize the plasticity of cognitive processing in a "use it or lose it" way (Bassuk, Glass, & Berkman, 1999) to act as a buffer against age-related declines in memory functioning. In general, depressed individuals, especially older adults, seek out fewer social interactions and support resources. This leads to this possible chain of events: a depressed individual will not actively engage cognitive resources in order to maintain social interactions. Without the "cognitive exercise" that maintaining these complex relationships requires, the individual's overall cognitive capacity is more susceptible to age-related declines.

CURRENT STUDY

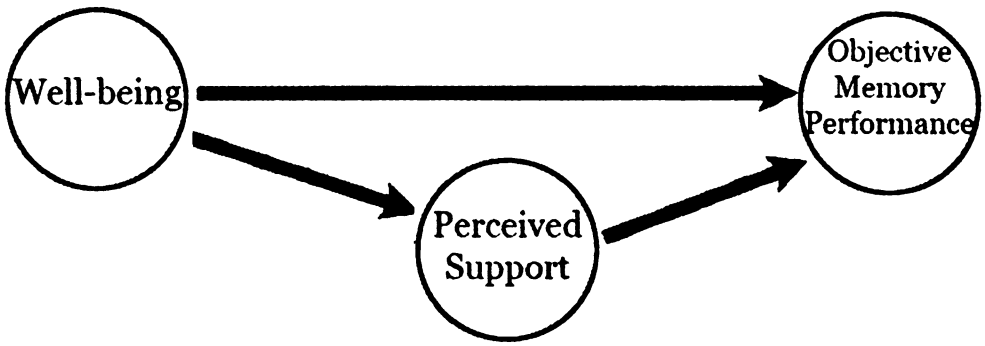
The goal of the current study was to understand the role of social support in explaining the complex relationship between psychological well-being, memory complaints, and cognitive performance for older adults. Given the findings that social support buffers individuals from emotional and physical complaints (Krause, 1987), it was expected that individuals with greater support would perform better on tests of memory and well-being. In addition, gender differences in development and maintenance of social support (Biegel et al., 1984; Nelson, 1993) were expected to lead to differences in the maintenance of psychological health as well as differences in perceived and measured cognitive functioning. In particular, the following five hypotheses were examined:

1. It was expected that individuals with higher levels of social support would experience greater levels of emotional well-being than would those with low support, as evidenced by fewer anxiety- and depression- related symptoms.
2. Individuals with higher levels of social support were expected to maintain greater levels of memory functioning than would those with low support, as evidenced by better performance on the California Verbal Learning Test. Additionally, friendship ties are more likely to be based in mutual interests and to involve shared power, while family relationships often involve a sense of duty and a history of power imbalances. Therefore, it was expected that support from friends would be a stronger predictor of memory functioning than support from family members.

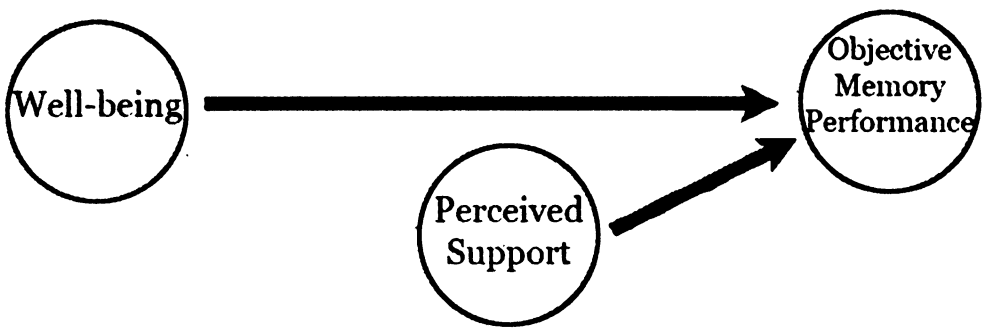
3. It was hypothesized that perceived support from social networks acts as a mediator between well-being and performance. This hypothesis was tested by comparing the relative explanatory power of four alternate models of the relationship between well-being, support, and performance through path analysis (see Figure 1). Model A suggests that well-being only affects memory performance indirectly through the effect of perceived social support. In model B, perceived support again mediates the relationship between well-being and performance, but here there are both direct and indirect effects of well-being on performance. The third model, model C, would best describe the findings if well-being and social support each directly affect performance but are not directly related to each other. The fourth and final model, model D, represents the traditional assumption that perceived support affects performance indirectly through its effect on well-being.
4. Individuals with high levels of support were expected to report fewer memory complaints than those with low levels of support, as evidenced by higher scores on the Memory Assessment Clinics Self-Rating Scale.
5. Because social support is thought to serve as a buffer to memory difficulties across the life span, and women have been shown to have better access to social support resources, it was expected that women should evidence higher levels of memory performance than men.



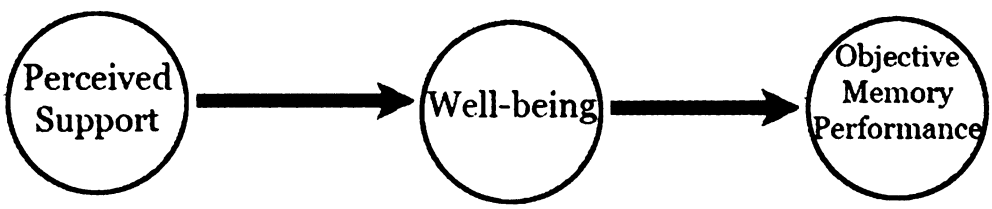
(A) Indirect Effect of Well-being on Performance through Perceived Support



(B) Direct and Indirect Effects of Well-being on Performance



(C) Direct Effects Of Well-being and Perceived Support on Performance



(D) Indirect Effect of Perceived Support on Performance through Well-being

Figure 1. Four Alternate Path Models of The Relationship Between Social Support, Well-being, and Objective Memory Performance.

Method

Participants

This study involved relatively healthy, community-dwelling older adults in the Lansing, Michigan area. Ninety-eight (54 female and 44 male) participants were recruited through newspaper advertisements and letters sent to retired faculty and staff of Michigan State University (MSU) as part of the MSU Psychological Clinic Mood and Memory Aging Research Project (see Table 1 for demographic information). Each participant was offered a seven-session memory enhancement workshop designed to teach cognitive strategies and relaxation techniques. Individuals received two assessments of their mood and memory, one prior to participation in workshops (pre-test) and one upon completion of workshops (post-test). For the purposes of this research, only pre-test assessment data were used.

	Women	Men	Total
Age Mean (SD)	68.59 (8.20)	70.48 (8.46)	69.44 (8.33)
Range	54-83	55-87	54-87
Education Mean (SD)	14.81 (2.60)	15.84 (3.31)	15.28 (2.97)
Range	8-20	8-21	8-21
Marital Status			
Never Married	0	1	1
Married	25	37	62
Divorced	14	1	15
Widowed	15	5	20

Table 1. Demographic Characteristics of Men and Women.

Procedure

Participants were tested in individual sessions approximately two hours in length. The experimenter first obtained informed consent and then administered a series of measures including the State-Trait Anxiety Inventory State and Trait subscales (STAI, Spielberger, Gorsuch, & Lushene, 1970). Participants then completed the first portion of the California Verbal Learning Test (CVLT, Delis, Kramer, Kaplan, & Ober, 1987) including list learning, short-delay free recall, and short-delay cued recall. There followed a twenty-minute delay, during which time, non-interfering tasks were performed. After the delay, the second portion of the CVLT was administered, including long-delay free recall, long-delay cued recall, and the recognition trial.

Upon completion of the testing session, participants were asked to complete a packet of self-report measures that were to be returned to the experimenter within one week. Measures in the packet included demographic information, the Beck Depression Inventory (BDI, Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), the Geriatric Depression Scale (GDS, Yesavage, Brink, Rose, Lum, Adey, & Leirer, 1983), the Penn State Worry Questionnaire (PSWQ, Meyer, Miller, Metzgerm, & Borkovec, 1990), the Memory Assessment Clinics Self-Rating Scale (MAC-S Revised, Winterling, Crook, Salama, & Grobert, 1986) and the Perceived Social Support-Family and -Friend scales (PSS-Fa and PSS-Fr, Procidano & Heller, 1983).

Measures

Beck Depression Inventory

(Beck et al., 1961)

This instrument contains 21 items designed to measure the severity of depressive symptoms. Items are rated on a 4-point (0-3) Likert-type scale, and scores can range from 0-63, with higher scores indicating more severe depression. The BDI has been shown to have high internal consistency of .93 (Beck et al., 1961) and test-retest reliability of r = .74 across a three-month time span (Miller &Seligman, 1973). Additionally, use of the BDI in research with older adults has been supported by concurrent validity with accepted diagnostic criteria for major and minor depressive disorders (Spitzer, Endicott, & Robins, 1978) and by good internal consistency and stability in testing with older adults (Beck, Steer, & Garbin, 1988).

Geriatric Depression Scale, Revised

(Yesavage et al., 1983)

The GDS was designed specifically for use with older adults, and it assesses mood, cognitive complaints, and social behavior. The measure contains 30 yes-no items that are scored 0 for absence of depression and 1 for presence of depression. Scores can therefore range from 0-30, with higher scores indicating more depressive symptomatology. Yesavage and colleagues (1983) found the GDS to have an internal consistency of .94, and test-retest reliability over one week revealed a correlation of .85. Additionally, the GDS was highly correlated with two other accepted measures of depression, namely the Zung Self-Rating Scale of Depression (r = .86) and the Hamilton Rating Scale for Depression (r = .83). Furthermore, the authors highlight the ability of the GDS to differentiate poor physical health from depression.

State-Trait Anxiety Inventory

(Spielberger et al., 1970)

This measure contains two 20-item subscales: the state anxiety scale, measuring transient anxious affect, and the trait anxiety scale, measuring more enduring anxiety levels. Items are rated on a 4-point (1-4) Likert-type scale, and scores can range from 20-80 for each subscale. Higher scores on each subscale indicate increased anxiety levels. Stanley, Beck, and Zebb (1996) found the state subscale to have an internal consistency of .85 with a test-retest reliability of .62; the trait scale was shown to have an internal consistency of .79 with a test-retest reliability of .84. The use of the STAI with an older adult population has also been shown to be appropriate (Himmelfarb & Murrell, 1983; Patternson, Sullivan, & Spielberger, 1980).

Penn State Worry Questionnaire

(Meyer et al, 1990)

The PSWQ consists of 16 items intended to measure the participant's tendency to worry, the level of worry experienced, and the tendency to worry about general rather than specific topics of concern. Items are rated on a 5-point (1-5) Likert-type scale, and scores can range from 16-80, with higher scores indicating a greater tendency to experience persistent and unfocused worry. Meyer and colleagues (1990) report high levels of test-retest reliability (r = .92), good internal consistency of .95, and convergent validity with the STAI-Trait (r = .64). Further research by Beck, Stanley, and Zebb (1995) suggests that the PSWQ is appropriate for use with older adults.

Memory Assessment Clinics Self-Rating Scale

(Winterling et al., 1986)

The MAC-S was created to assess subjective memory complaints. It contains 49 items measuring three memory components: 22 items assess memory ability, 24 items assess frequency of memory difficulties, and 3 items assess global memory. All items are rated on a 5-point (1-5) Likert-type scale, and scores can range from 49-245 with higher scores indicating fewer memory concerns. Test-retest reliability across three-week intervals was reported as ranging between .88 and .94 for the ability scale and between .89 and .92 for the frequency of difficulties scale (Crook & Larrabee, 1991).

California Verbal Learning Test

(Delis et al., 1987)

The CVLT was designed to assess verbal learning and memory abilities, including such variables as semantic and serial learning strategies, learning rates, serial position

effects, total and cued recall, proactive and retroactive interference, consistency of item recall, retention during short and long delays, perseverations, intrusions, and recognition abilities (Delis et al., 1987). Participants are presented with a list of 16 items that is repeated in five successive trials and provide immediate recall after each list presentation. After this study phase, an alternate list is presented, after which a short-delay free recall of the original list is given. Next, participants are provided with cues for a short-delay cued recall measure. After a 20-minute delay, participants are asked to recall the original list, first with a long-delay free recall, and then a long-delay cued-recall. Finally, participants are asked to recognize list items from a larger set of items. For the purposes of this study, the five memory measures (free and cued recall after a short delay, free and cued recall after a long delay, and recognition) were combined to form the composite variable of memory performance.

Delis and colleagues (1987) found an internal consistency of .74 for the various memory measures. Additionally, they found a test-retest reliability correlation of .59, and .63 for split-half reliability.

Perceived Social Support-Family and -Friend scales

(Procidano & Heller, 1983)

The PSS scales were created to assess a participant's perceived amount and quality of social support. The authors created separate scales to measure support from family members (PSS-Fa) and from friends (PSS-Fr). Each scale contains 20 items. The original scoring called for "Yes," "No," and "Don't Know" responses, with dichotomous scoring ("don't know" scores were not counted). In order to enhance discriminability in this study, the scales were recalibrated to a 4-point (1-4) Likert-type scale with scores

ranging from 20-80 on each scale and higher scores indicating greater perceived support. Procidano and Heller (1983) report high internal consistency for both scales (.90 for PSS-Fa and .88 for PSS-Fr), and Procidano (1992) reports average one-month test-retest reliabilities of r = .82 for PSS-Fa and r = .79 for PSS-Fr. Further meta-analysis of the role of age in the PSS scales validated the use of both scales with older adults (Procidano, 1992).

RESULTS

The current study investigated the role of social support in well-being and memory for older adults. In order to accomplish this, three composite measures were created for the variables of well-being, social support, and memory functioning.

For the purposes of this study, well-being was originally hypothesized to be composed of five scores: the Beck Depression Inventory (BDI) and Geriatric Depression Scale (GDS) to represent depression, the state and trait scores on the State-Trait Anxiety Inventory (STAI) as well as the Penn State Worry Questionnaire (PSWQ) score to represent anxiety. The well-being score was created by adding z-scores for each scale, with a higher score indicating greater distress. However, a reliability analysis of the well-being scale created by these scores revealed a higher reliability alpha without (.81) than with (.79) the state scale of the STAI. Therefore, in all hypotheses evaluating well-being, a composite of the four remaining scores was used. A separate analysis utilizing only the STAI-State scale was conducted in each case as well in order to examine the role of this variable on performance.

The second variable of interest throughout this study was social support. A composite Social Support measure was created by the combining the score of the Perceived Social Support-Friends (PSS-Fr) and the Perceived Social Support-Family (PSS-Fa) scales. However, the Friends and the Family scales were analyzed separately in those analyses intending to discriminate between support from friends and family.

Memory functioning was originally composed of the following five scores from the California Verbal Learning Test (CVLT): short-delay free recall, short-delay cued

recall, long-delay free recall, long-delay cued recall, and recognition. However, a reliability analysis of the memory functioning scale created by these measures revealed a higher reliability alpha without (.97) than with (.92) the recognition score. Therefore, in all hypotheses evaluating objective memory functioning, a composite of the four remaining scores was used. However, a separate analysis utilizing only the recognition score was conducted in each case as well in order to examine the role of this variable.

For all regression analyses conducted in this study, variables were entered at a significance level of $p = .05$ and removed at $p = .10$. Significance levels for all ANOVAs were $p = .05$.

The first hypothesis examined the relationship between social support and well-being through the use of a regression analysis. It was expected that higher levels of social support would lead to greater well-being. Scores on the well-being scale (comprised of the BDI, GDS, STAI-T, and PSWQ) were expected to be negatively correlated with scores on the support measure because high scores on the well-being scale represent more anxiety and depression symptoms. In this study, individuals with higher levels of support reported fewer depressive- and anxiety-related symptoms than those with low levels of support ($\beta = -.27$, $t(97) = -2.713$, $p < .01$). A regression was conducted using the state anxiety measure of the STAI, and no relationship was found to support the hypothesis that social support decreased state anxiety ($\beta = -.19$, $t(97) = -1.865$, $p > .05$).

The second hypothesis predicted that higher levels of social support would lead to better memory performance and was tested using a regression analysis. However, there was no significant relationship found between the two measures ($\beta = -.02$, $t(97) = -0.189$, $p > .05$). Further analysis of the ancillary hypothesis that support from friends would

have more impact on memory performance than support from family revealed that neither support from friends (β = .08, $t(97)$= .791, $p > .05$) nor support from family (β = -.07, $t(97)$= -0.691, $p > .05$) impacted performance. Additionally there was no effect of either support from friends (β = .038, $t(97)$= .356, $p > .05$) or support from family members (β = -.082, $t(97)$= -.805, $p > .05$) on recognition scores from the CVLT.

The finding that social support did not affect memory performance runs counter to the findings in the literature. In order to further understand the relationship between social support and memory functioning in this study and to address concerns of possible gender-related selection bias, men and women were analyzed in separate ANOVA analyses. Social support was not significantly related to memory functioning for either men [$F(1,42) = 1.50, p > .10$] or women ($F < 1$).

The relationship between perceived support, well-being, and memory performance was further examined in the third hypothesis. It was hypothesized that satisfaction with perceived support from social networks would act as a mediator between well-being and memory performance. Originally, four alternate models of the relationship between well-being, support, and performance were intended to be compared (see Figure 1). However, as seen in Table 2, neither the correlation between social support and memory performance nor the correlation between well-being and memory performance was significant. This means that none of the proposed models would be able to adequately explain the data. Specifically, because there was no relationship between well-being and memory, it would be impossible for social support to mediate the relationship. Therefore, none of the models were tested.

Variable	1	2	3	4	5
1. Gender	--	.10	.22*	-.08	.27**
2. Social Support		--	-.27**	.23*	-.02
3. Well-being			--	-.35*	.06
4. Perceived Memory				--	-.01
5. Memory Performance					--

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

Table 2. Intercorrelations Between Gender, Social Support, Well-being, Memory Complaints, and Memory Performance.

The previous hypotheses examined the relationship between objective memory performance and social support. The fourth hypothesis examined the relationship between perceived memory performance (as measured on the MAC-S) and social support in order to determine if feelings of support can buffer the perception of memory difficulties. The distinction between objective and perceived memory performance is important for these analyses because, replicating previous research (Rabbit, et al., 1995), these two measures were not correlated (r = -.01), indicating that these measures tap into different aspects of memory. The regression analysis revealed that individuals with higher levels of social support had greater perceived memory ability (β = 0.23, $t(97)$ =

2.357, $p < .05$). Thus, although support did not affect older adults' actual memory performance, it did appear to decrease their perceived level of memory difficulty.

Social support appears to be related to perceived memory but not to objective memory in this study. In order to understand the differences between these two aspects of memory, similar analyses were conducted for perceived memory as for objective memory. Although gender was not significantly related to perceived memory ($F < 1, p > .10$), men and women were again analyzed separately in order to look for possible differences in the relationship pattern. In men, social support was related to perceived memory (F (1,42)= 5.37, $p < .05$), with men who reported higher levels of support also reporting fewer perceived memory difficulties. However, this relationship did not hold for women (F (1,52) = 1.88, $p > .10$). Similar means and standard deviations were found for men and women on all measures of interest in this study (see Table 3), indicating that differences were not due to restriction in range for either group.

Measure	Women (n = 54)	Men (n = 44)	Total (n = 98)
Perceived Support	119.67 (13.23)	116.95 (13.71)	118.45 (13.45)
Well-being	0.62 (2.98)	-0.75 (3.30)	0.00 (3.19)
Perceived Memory	43.04 (8.84)	44.32 (6.91)	43.61 (8.02)
Memory Performance	0.93 (3.69)	-1.13 (3.71)	0.00 (3.82)

Table 3. Mean Scores (Standard Deviation) on Measures of Support, Perceived and Objective Functioning, and Well-being for Men and Women.

The finding that social support affects perceived memory differently for men and women appears to be supported in the literature. However, it was important to answer the question of what was different about support for men and women. Therefore, the components of support from friends and support from family members was again analyzed separately in order to assess whether the source of support affects perceptions. For women, social support from family members had a negative but non-significant impact on perceived memory (β = - 0.02, $t(53)$ = - 0.175, $p > .05$) while support from friends has a significant positive impact on perceived memory (β = 0.280, $t(53)$ = 2.039, $p < .05$). On the other hand, for men support from family members was significantly and positively correlated with perceived memory (β = 0.64, $t(43)$ = 4.564, $p < .01$) while support from friends was significantly negatively related to perceived memory (β = -0.33, $t(43)$ = -2.331, $p < .05$). It appears that family members and friends play different roles in the lives of women than they do in the lives of men.

The final hypothesis examined possible gender differences in memory performance using an ANOVA. As predicted, women performed better on measures of memory functioning than did men ($F(1,96)$ = 7.46, $p < .01$). In order to understand the extent to which social support accounted for this difference, an additional ANOVA was conducted with social support as a covariate. However, as seen above in hypothesis four, social support was not a significant factor in the relationship ($F < 1$). The relationship between social support and cognitive performance was further assessed by again separating support from friends and support from family. In this case, neither support from friends (β = 0.08, $t(97)$ = 0.791, $p > .05$) nor support from family members (β = - 0.10, $t(97)$ = - 0.892, $p > .05$) impacted cognitive performance. In order to assess possible

gender-related differences in impact from friends and family members, regressions were conducted separately for men and women. In this case, no significant differences were found between sources of support in either men (Pss-Fr: β = - 0.05, $t(43)$ = - 0.341, p > .05; PSS-Fa: β = - 0.25, $t(43)$ = - 1.482, p > .05) or women (Pss-Fr: β = 0.10, $t(53)$ = 0.690, p > .05; PSS-Fa: β = 0.00, $t(53)$ = - 0.028, p > .05).

DISCUSSION

Historically, research linking well-being and cognitive performance for older adults has been generalized from work with younger adults (Rankin, Gilner, Gfeller, & Katz, 1994). However, given the projected increase in the proportion of older adults in this country (Michigan Department of Community Health, 2000) and the trend that baby boomers access services at a greater rate than their predecessors (Gatz, 1995), interest in physical and emotional well-being in the elderly is becoming a priority in the United States and around the world. The United Nations declared the year 2000 as the year of the elderly person, and since that time, research has explored a variety of issues relating to healthy aging. The goal of this study was to explore the role of social support in healthy aging. In particular, the impact of perceived support from family and friends on perceived memory difficulties, objective memory performance, and psychological well-being was examined.

It is generally assumed that emotional well-being impacts cognitive performance (Burt et al., 1995). Previous research has found that depression can lead to decreased cognitive performance (Cunningham & Tomer, 1990; Rabbit et al., 1995). For the purposes of this study, it was hypothesized that social support would affect both psychological well-being and cognitive functioning and would, in fact, serve as a mediator between the two elements of healthy aging. In looking at the relationship between perceived social support and well-being, it was expected that individuals with higher levels of social support would express fewer symptoms of depression and anxiety. This hypothesis was supported by the findings, and this result is consistent with earlier

research (Cunningham & Tomer, 1990; Rabbit et al., 1995) suggesting that social support affects the psychological well-being of older adults.

Although social support was shown to impact well-being in this study, the extension that social support directly affects objective memory performance for older adults was not supported in this study. It was expected that individuals with higher levels of perceived social support would perform better on a measure of objective memory performance (the California Verbal Learning Test or CVLT) than those with lower levels of support. Furthermore, given the findings that support from family members and from friends differentially impacts functioning (Gupta & Korte, 1994; Stevens, 1992), it was expected that perceived support from friends would be a stronger predictor of memory performance than support from families. However, within this study, no relationship was found between perceived support and objective performance, and thus the differential impact of support from friends and family members could not be examined.

Counter to the hypothesized model of the relationship between social support, well-being, and memory performance, social support did not appear to mediate the relationship between the other two variables in this study. Given the lack of relationship between social support and memory performance, this is not surprising. However, previous research (Seeman, Lusignolo, Albert, & Berkman, 2001) has found a relationship between well-being and memory performance, a finding that was not supported in this study, either. Further research into the nature of the relationship between these variables is warranted.

Although social support was not related to objective memory performance in this study, it was possible that it would decrease perceived memory difficulties. Previous

research has suggested that older adults' perception of their memory difficulties is not always borne out by their objective memory performance (Rabbit et al, 1995). Instead, perceived memory has been significantly correlated with personality measures and measures of well-being (Pearman & Storandt, 2004; Zarit, 1982). This study was able to address both perceived and objective memory. Hypothesis two focused on objective memory performance, while hypothesis four focused on subjective memory performance. Although they ostensibly measure similar things, objective and subjective memory have been previously demonstrated to be poorly correlated (Levy-Cushman & Abeles, 1998; Rabbit et al, 1995), and this is precisely what was found in this study -- objective memory as measured by the CVLT and perceived memory as measured by the Memory Assessment Clinics Self-Rating Scale (MAC-S) were completely uncorrelated (r = -.01). This finding suggests that self-report measures of memory difficulties should not be used to diagnose actual memory decline.

With respect to the role that social support plays in memory functioning, it is clear that the two types of indices of memory functioning yield different results. Although level of support did not predict objective memory performance in this study, it did predict subjective memory performance. This difference indicates that the role of social support in memory functioning is not to improve the individual's memory for details of past events, but to alleviate some of the complaints that surround memory failures. This suggests that social support does not influence the actual functioning of cognitive mechanisms but can influence the way that the individual perceives the functioning. As discussed below, it appears that these perceptions of memory functioning differ for men and women based on the source of support.

It is reasonable to assume that social support could act on the perception of memory difficulties in at least one of three ways. First of all, it has been reported that being more involved in a social community leads older adults to engage in more healthy behaviors and fewer negative behaviors (Cornman et al, 2003). Thus, a social support network may serve to reinforce healthy habits and discourage less healthy ones. This may lead older adults to view themselves as healthier and decrease memory complaints. Secondly, greater social support could allow the individual to respond more positively overall to cognitive difficulties. Thus, the benefit of a support network may be a generalized sense of contentment and competence in cognitive performance. Individuals with high social support may have better overall opinions about themselves and their abilities, and this could lead to a decrease in the complaints that they have about their memories and cognitive functioning in general (Pearman & Storandt, 2004).

A third possibility is that sources of support may provide the individual additional resources to place the cognitive difficulties in perspective. This points to the beneficial effect of having a group of individuals that can provide perspective on the cognitive difficulties that can be encountered. Interactions with members of a social support network who may have had similar difficulties or know strategies to compensate for them can provide the individual both comfort and instrumental aid when memory problems are encountered. In general, this would provide the individual with a greater sense of control over memory performance and limit the negative perceptions of ability. Additionally, this notion is consistent with the Social Exchange theory of social support in that the individuals in the network provide reciprocal instances of comfort and support for individuals within the group. Members of the social group will benefit from an

individual's description of various difficulties that he or she has encountered and any possible strategies that he or she came up with to deal with that difficulty. Group members would then be able to comfort each other with personal instances of overcoming cognitive difficulties.

Although each of these possible functions of social support could operate by themselves, it is also possible that they act in concert to provide an individual with a perception of his or her memory that is less critical than those individuals without high levels of social support. By combining healthier behaviors, a general feeling of well-being, and support from individuals who have experienced similar issues, individuals may have a better opinion of themselves and can feel that they are not alone in their difficulties.

These possibilities do not address the gender differences found in this study. Women were found to perform better than men on objective memory measures, but social support was not a significant factor in this difference. In contrast, social support was found to have a significant impact on perceived memory difficulties for men (but not women) when separate analyses were conducted, although an overall gender effect on perceived memory was not found. It appears that men with greater levels of perceived support report fewer memory complaints than their counterparts, but this pattern did not hold for women. In particular, support from family members was significantly positively related to perceived memory abilities in men while support from friends was significantly negatively related to perceived memory abilities. The opposite trend was found for women, with support from friends being significantly positively related to perceived

memory abilities while support from family members appeared to be negatively related (although not at statistically significant levels) to perceived memory abilities.

The finding that perceived support from family members differentially impacts perceived memory for men and women is not surprising given findings in the social support literature. As pointed out by Zautra (1996), relationships with family members entail expectations and conflicting emotions, especially for women. The differential effects of gender on the relationship between perceived support from friends and perceived memory abilities are more difficult to explain. Perhaps the difference is a result of differing sources of identity and competence in men and women. For men, whose identity has been based on competence at work, interactions with friends provide reminders of lost ability to contribute in a key area of their lives. On the other hand, women's interactions with friends are congruent with their identity as being competent in relationships. However, this study was not designed to explore the relationship between sources of support and perceived memory in depth, and the current measures are not adequate to determine directionality of the relationship between support and memory complaints. Previous research indicates that support may serve to buffer men from negative opinions of their memory ability, but this needs to be further explored with gender relationship patterns in mind.

The current study explored the relation of social support, well-being and cognitive functioning. As expected, there was a relationship between the perception of social support and psychological well-being with individuals with high social support reporting few depressive and anxiety symptoms. This replicates previous findings and demonstrates that social support can play an important role in the way that individuals

including older adults can feel about their life situations. In contrast, there was no relationship of social support and objective memory measures. This was somewhat of a surprise as previous research has demonstrated a relationship between these factors. However, a relationship was found between perceived social support and perceived memory difficulties, indicating social support impacts on the way that memory is viewed even though there may be no effect on the objective performance. Overall, the results of the current study demonstrate the importance of social support on cognitive functioning, and particularly of incorporating friends as sources of support for women while focusing on family support sources for men. Extending these results to the area of elderly care, the results indicate that for those caring for older adults, improving social support can increase older adults' sense of well-being and can decrease memory concerns.

Limits of the Current Study

The current study did not find significant effects of social support on objective memory performance. Although it is possible that no such effects exist, previous research would suggest a relationship between the two measures (Seeman et al, 2001). It is possible that demographic characteristics of our sample influenced our findings. Our sample consisted of highly educated (M =15.28 years, SD =2.97), community dwelling adults who may have access to more resources than the average older adult. Additionally, the cognitive functioning measures used in this study measured current performance with no reference to previous functioning. It is possible that perceived difficulties reflected a decrease from previous functioning, a possibility for which we could not account.

Another possible limitation of this study stems from the type of measure used. Participants completed several measures, including the Beck Depression Inventory

(BDI), Geriatric Depression Scale (GDS), and Perceived Social Support (PSS) measures, at home without assistance from experimenters. Any questions they may have had could not be answered readily. Furthermore, the objective memory performance measure, the California Verbal Learning Test (CVLT), may not reflect real-world memory tasks and difficulties. Other studies of objective memory performance among older adults have used measures such as story recall and figure copying (Seeman et al, 2001) and the Logical Memory subtest of the Wechsler Memory Scale III (Pearman & Storandt, 2004). These measures, as well as measures more closely resembling everyday memory tasks, such as prospective memory, may more accurately assess current objective memory performance.

Finally, it is possible that the support measure used in this study did not accurately reflect the construct of social support. Tardy (1985) describes five components or dimensions of social support and points out that the Perceived Social Support measure does not differentiate between the direction, disposition, and content of support. In particular, the combination of directions of support, meaning including perceptions of both support provided and support received, may provide conflicting results. Furthermore, it is possible that the link between perceived support and perceived performance may have more to do with an individual's overall perception style than accurately measuring their current performance state.

Future Directions

Future research should examine the effectiveness of social support interventions to improve perceived memory functioning. Pearman and Storandt (2004) suggest that interventions to improve objective memory through skills training may not be sufficient

for healthy aging. Instead, they point to the lack of relationship between objective memory performance and perceived memory difficulties, stating that more work needs to be aimed at improving perceived ability. Given the relationship between social support and perceived memory functioning found in the current study, social support seems a likely target for intervention. It would be especially beneficial to further explore differential impacts of support on perceived memory for men and women in order to tailor interventions to individual needs.

Additional research should also be conducted to tease apart various aspects of social support. This study focused on perceived social support, which has been shown to have a greater impact on well-being and health than received support measures (Cornman et al, 2003). However, the intricacies of the relationships between measures of support such as perceived support, satisfaction with support, sources of support, and network size are not well understood. These various measures of support may be tapping into different constructs, which may help account for apparent contradictions in findings about social support in the literature. Further work is needed to understand the various components of social support, as well as the differential impact of support resources on men and women.

REFERENCES

Adams, C., Smith, M.C., Pasupathi, M., & Vitolo, L. (2002). Social context effects on story recall in older and younger women: Does the listener make a difference? *Journal of Gerontology: Psychological Sciences, 57B*, P28-P40.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC:Author.

American Psychological Association Presidential Task Force on the Assessment of Age-Consistent Memory Decline and Dementia, (1998). Guidelines for the evaluation of dementia and age-related cognitive decline American Psychologist, 53, 1298-1303.

Antonucci, T. M. (2001). Social relations: An examination of social networks, social support, and sense of control. In J. E. Birren & K. W. Schaie (Eds.), *Handbook of the psychology of aging* (5th ed., pp. 427-453). San Diego, CA: Academic Press.

Arbuckle, T. Y., Gold, D. P., Andres, D., Schwartzman, A., & Chaikelson, J. (1992). The role of psychosocial context, age, and intelligence in memory performance of older men. *Psychology and Aging, 1*, 25-36.

Baltes, P. B., & Lindenberger, U. (1987). Emergence of a powerful connection between sensory and cognitive functions across the adult life span: A new window to the study of cognitive aging? *Psychology and Aging, 12*, 12-21.

Bassuk, S. S., Glass, T. A., & Berkman, L. F. (1999). Social disengagement and incident cognitive decline in community-dwelling elderly persons. *Annals of Medicine, 131*, 165-173.

Bazergan, M. (1996). Self-reported sleep disturbances among African-American elderly: The effects of depression, health status, exercise, and social support. *International Journal of Aging and Human Development, 42*, 143-160.

Beck, A. T., Steer, R. A., & Garbin, M. G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review, 8*, 77-100.

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

Beck, J. G., Stanley, M. A., & Zebb, B. J. (1995). Psychometric properties of the Penn State Worry Questionnaire in older adults. *Journal of Clinical Geropsychology, 1*, 33-42.

Benjamin, Y., Leventhal, E. A., & Leventhal, H. (1999). Self-assessment of health: What do people know that predicts their mortality? *Research on Aging, 21*, 477-500.

Biegel, D. E., Shore, B. K. & Gordon, E. (1984). *Building support networks for the elderly.* Beverly Hills, CA: Sage Publications.

Bisconti, T. l., & Bergeman, C. S. (1999). Perceived social control as a mediator of the relationship among social support, psychological well-being, and perceived health. *The Gerontologist, 39*, 94-103.

Blanchard-Fields, F., & Abeles, R. P. (1996). Social cognition and aging. In J. E. Birren & K. W. Schaie (Eds.), *Handbook of the psychology of aging* (4th ed., pp. 150-161). San Diego, CA: Academic Press.

Blazer, D. (1989). The epidemiology of depression in late life. *Journal of Geriatric Psychiatry, 22*, 35-52.

Burt, D. B., Zembar, M. J., & Niederehe, G. (1995). Depression and memory impairment: A meta-analysis of the association, its pattern, and specificity. *Psychological Bulletin, 2*, 285-305.

Charles, S. T. & Carstensen, L. L. (1999). The role of time in the setting of social goals across the life span. In T. M. Hess & F. Blanchard-Fields (Eds.), *Social cognition and aging* (pp.319-342). San Diego, CA: Academic Press.

Chi, I., & Chou, K.-L. (2000). Depression predicts cognitive decline in Hong Kong Chinese older adults. *Aging & Mental Health, 4*, 148-157.

Clarkin, J. F., & Kendall, P. C. (1992). Comorbidity and treatment planning. *Journal of Clinical and Consulting Psychology, 60*, 904-908.

Cornman, J. C., Goldman, N., Glei, D. A., Weinstein, M., & Chang, M. (2003). Social ties and perceived support: Two dimensions of social relationships and health among the elderly in Taiwan. *Journal of Aging and Health, 15*, 616-644.

Craik, F. I. M. (1986). A functional account of age differences in memory. In F. Klix & H. Hagendorf (Eds.), Human memory and cognitive capabilities, mechanisms, and performances (pp 409-422). Amsterdam: Elsevier.

Craik, F. I. M. & Anderson, N. D. (1999). Applying cognitive research to problems of aging. In D. Gopher and A. Koriat (Eds.) *Attention and Performance XVII: Cognitive regulation of performance: Interaction of theory and application* (pp. 583-615). Cambridge, MA: MIT Press.

Crook, T., & Larrabee, G. J. (1991). A self-rating scale for evaluating memory in everyday life. *Psychology and Aging, 5*, 48-57.

Cumming, E., & Henry, W. E. (1961). *Growing old: The process of disengagement.* New York: Basic Books.

Cunningham, W. R., & Tomer, A. (1990). Intellectual abilities and age: Concepts, theories, and analyses. In E. A. Lovelace (Ed.), *Aging and cognition: Mental processes, self-awareness, and interventions* (pp. 379-406). Amsterdam, Netherlands: North-Holland.

Delis, D., Kramer, J., Kaplan, J. & Ober, B. (1987). *The California Verbal Learning Test.* New York: Psychological Corporation.

Dowd, J. J. (1980). Exchange rates and old people. *Journal of Gerontology, 35*, 596-602.

Estes, C. L. (1995). Mental health services for the elderly: Key policy elements. In M. Gatz, (Ed.), *Emerging issues in mental health and aging* (pp. 303-327). Washington, D.C.: American Psychological Association.

Eysenck, M. W. (1979). Anxiety, learning, and memory: A reconceptualization. *Journal of research in personality, 13*, 363-385.

Fawcett, S. B., Paine-Andrews, A., Francisco, V. T., Schultz, J. A., Richter, K. P., Lewis, R. K., Williams, E. L., Harris, K. J., Berkley, J. Y., Fisher, J. L. & Lopez, C. M. (1995). Using empowerment theory in collaborative partnerships for community health and development. *American Journal of Community Psychology, 23* (5), 677-697.

Foldi, N. S., Brickman, A. M., Schaefer, L. A., & Knutelska, M. E. (2003). Distinct serial position profiles and neuropsychological measures differentiate late life depression from normal aging and Alzheimer's disease. *Psychiatry Research, 120*, 71-84.

Gatz, M. (1995). *Emerging issues in mental health and aging.* Washington, D. C.: American Psychological Association.

Gold, D.P., & Arbuckle, T. Y. (1990). Interactions between personality and cognition and their implications for theories of aging. In E. A. Lovelace (Ed.), *Aging and cognition: Mental processes, self-awareness, and interventions* (pp. 351-377). Amsterdam, Netherlands: North-Holland.

Gupta, V., & Korte, C. (1994). The effects of a confidant and a peer group on the well-being of single elders. *International Journal of Aging and Human Development, 39*, 293-302.

Gurin, G., Veroff, J., & Feld, S. (1983). *Americans' view of their mental health.* New York: Basic Books.

Harris, A., & Miller, N. (1989). The implications of gender and speech for the experience of control in aging. In P. S. Fry (Ed.), *Psychological perspectives of helplessness and control in the elderly* (pp. 291-316). Amsterdam, Netherlands: North-Holland.

Hasher, L., & Zacks, R. T. (1988). Working memory, comprehension, and aging: A review and a new view. In G. H. Bower (Ed.), *The psychology of learning and motivation* (pp.193-225). San Diego, CA: Academic Press.

Hasher, L., Zacks, R. T., & May, C. P. (1999). Inhibitory control, circadian arousal, and age. In D. Gopher & A. Koriat (Eds.), *Attention and performance XVII, Cognitive regulation of performance: Interaction of theory and application* (pp. 653-675). Cambridge, MA: MIT Press.

Hess, T. M. (1999). Cognitive and knowledge-based influences on social representations. In T. M. Hess & F. Blanchard-Fields (Eds.), *Social cognition and aging* (pp. 237-263). San Diego, CA: Academic Press.

Hess, T. M., Rosenberg, D. C., & Waters, S. J. (2001). Motivation and representational processes in adulthood: The effects of social accountability and information relevance. *Psychology and Aging, 16*, 629-642.

Hess, B. B. & Soldo, B. J. (1985). Husband and wife networks. In W. J. Sauer & R.T. Coward (Eds.), *Social support networks and the care of the elderly* (pp.67-92). New York: Springer.

Himmelfarb, S., & Murell, S. (1983). Reliability and validity of five mental health sclaes in older persons. *Journal of Gerontology, 38*, 619-640.

Holahan, C. K., & Holahan, C. J. (1987). Self-efficacy, social support, and depression in aging: A longitudinal analysis. *Journal of Gerontology, 42*, 65-68.

Honn, V. J., & Bornstein, R. A. (2001). Social support, neuropsychological performance, and depression in HIV Infection. *Journal of the International Neuropsychological Society, 8*, 436-447.

Jackson, J. S., & Antonucci, T. C. (1992). Social support processes in health and effective functioning of the elderly. In M. L. Wykle, E. Kahana, & J. Kowal, (Eds.), *Stress and health among the elderly* (pp. 72-95). New York: Springer.

Krause, N. (1987). Satisfaction with social support and self-rated health in older adults. *Gerontologist, 27*, 301-308.

LaVeist, T. A., Sellars, R. M., Elliot Brown, K. A., & Nickerson K. J. (1997). Extreme social isolation, use of community-based senior support services, and mortality among African-American elderly women. *American Journal of Community Psychology, 25* (5), 721-732.

Lawler, E. J. & Thye, S. R. (1999). Bringing emotions into social exchange theory. *Annual Review of Sociology, 25*, 217-244.

Lee, G. R. (1985). Theoretical perspectives on social networks. In W. J. Sauer & R.T. Coward (Eds.), *Social support networks and the care of the elderly* (pp. 21 -37). New York: Springer.

Levy-Cushman, J., & Abeles, N. (1998). Memory complaints in the able elderly. *Clinical Gerontologist, 19*, 3-24.

Levy-Cushman, J., McBride, A., & Abeles, N. (1999). Anxiety and depression: Implications for older adults. *Journal of Social Distress and the Homeless*, 8, 139-156.

Lindenberger, L., & Baltes, P. B. (1994). Sensory functioning and intelligence in old age: A strong connection. *Psychology and Aging, 9*, 339-355.

Longino, C. F., & Lipman, A. (1985). The support systems of women. In W. J. Sauer & R.T. Coward (Eds.), *Social support networks and the care of the elderly* (pp.219-233). New York: Springer.

Lovelace, E. A. (1990a). Aging and metacognition concerning memory function. In E. A. Lovelace (Ed.), *Aging and cognition: Mental processes, self-awareness, and interventions* (pp. 157-188). Amsterdam, Netherlands: North-Holland.

Lovelace, E. A. (1990b). Basic concepts in cognition and aging. In E. A. Lovelace (Ed.), *Aging and cognition: Mental processes, self-awareness, and interventions* (pp. 1-28). Amsterdam, Netherlands: North-Holland.

Lowenthal, M. F., & Haven, C. (1968). Interaction and adaptation: Intimacy as a critical variable. *American Sociological Review, 33*, 20-30.

Maguire, L. (1980). The interface of social workers with personal networks. *Social Work with Groups, 3*, 39-49.

Meyer, T., Miller, M. Metzgerm, R. & Borkovec, T. (1990). Development and validation of the Penn State Worry Questionnaire. *Behavior Research and Therapy, 28*, 487-495.

Michigan Department of Community Health (2000). *Michigan Aging Services System (MASS): Distribution of Aging in Michigan.* http://www.mdch.state.mi.us/mass/DAIM.

Miller, W. R., & Seligman, M. E. P. (1973). Depression and the perceptions of reinforcement. *Journal of Abnormal Psychology, 82*, 62-73.

Nelson, M. A. (1993). Race, gender, and the effect of social supports on the use of health services by elderly individuals. *International Journal of Aging and Human Development, 37*, 227-246.

Nieboer, A. P. (1997). *Life events and well-being: A prospective study on changes in well-being of elderly people due to a serious illness event or death of the spouse.* Amsterdam: Thesis Publishers.

Oriol, W. (1999). *Psychosocial issues for older adults in disasters.* Center for Mental Health Services: Washington, D.C.

Park, H. L., O'Connell, J. E., & Thomson, R. G. (2003). A systematic review of cognitive decline in the general elderly population. *International Journal of Geriatric Psychiatry, 18*, 1121-1134.

Patternson, R., Sullivan, M., & Spielberger, C. (1980). Measurement of state and trait anxiety in elderly mental health clients. *Journal of Behavioral Assessment, 2*, 89-97.

Pearman, A., & Storandt, M. (2004). Predictors of subjective memory in older adults. *Journals of Gerontology, Psychological Sciences, 59B*, P4-P7.

Perry, C. M., & Johnson, C. L. (1994). Families and support networks among African-American oldest-old. *International Journal of Aging and Human Development, 38*, 41-50.

Peters, G. R. & Kaiser, M. A. (1985). The role of friends and neighbors in providing social support. In W. J. Sauer & R.T. Coward (Eds.), *Social support networks and the care of the elderly* (pp.123-158). New York: Springer.

Pincus, H. A., Davis, W. W., and McQueen, L. E. (1999). "Subthreshold" mental disorders: A review and synthesis of studies on minor depression and other "brand names." British Journal of Psychiatry, 174, 288-296.

Prince, M. J., Harwood, R. H., Blizard, R. A., Thomas, A., & Mann, A. H. (1997). Social support deficits, loneliness and life events as risk factors for depression in old age: The Gospel Oak Project VI. *Psychological Medicine, 27*, 323-332.

Procidano, M. E. (1992). The nature of perceived social support: Findings of meta-analytic studies. In C. D. Spielberger & J. N. Butcher (Eds.), *Advances in personality assessment: Volume 9* (pp. 1-26). Hillsdale, NJ: Erlbaum.

Procidano, M. E., & Heller, K. (1983). Measures of perceived social support from friends and from family: Three validation studies. *American Journal of Community Psychology, 11*, 1-24.

Rabbit, P., Donlan, C., Watson, P., McInnes, L., & Bent, N. (1995). Unique and interactive effects of depression, age, socioeconomic advantage, and gender on cognitive performance of normal healthy older people. *Psychology and Aging, 10*, 307-313.

Rankin, E. J., Gilner, F., Gfeller, J. D., & Katz, B. M. (1994). Anxiety states and sustained attention in a cognitively intact elderly sample: Preliminary results. *Psychological Reports, 75*, 1176-1178.

Rosavage, A. M. (1990). *The able elderly: Memory, health, social support, and psychological well-being*. Unpublished doctoral dissertation, Michigan State University.

Ross, C. E., & Mirowsky, J. (2003). Social structure and psychological functioning: Dostress, perceived control, and trust. In J. Delamater (Ed.), *Handbook of social psychology* (pp. 411-447). New York: Kluwer Academic/Plenum Publishers.

Salthouse, T. A. (1996). The processing-speed theory of adult age differences in cognition. *Psychological Review, 103*, 403-428.

Salzman, C. (1991). *Treatment of Anxiety in Clinical Geriatric Psychopharmacology.* New York: Mc-Graw Hill.

Sauer, W. J., & Coward, R. T. (1985). The role of social support networks in the care of the elderly. In W. J. Sauer & R.T. Coward (Eds.), *Social support networks and the care of the elderly* (pp.3-20). New York: Springer.

Schaie, K. W. (1984). The course of adult intellectual development. American Psychologist, 49, 304-313.

Schaie, K. W., & Willis, S. L. (2000). A stage theory model of adult cognitive development revisited. In R. L. Rubenstein, M. Moss, & M. H. Kleban (Eds.), *The many dimensions of aging* (pp. 175-193). New York, NY: Springer Publishing.

Schooler, C. (1984). Psychological effects of complex environments during the lifespan: A review and theory. *Intelligence, 8*, 259-281.

Seeman, T. E., Lusignolo, T. M., Albert, M., & Berkman, L. (2001). Social relationships, social support, and patterns of cognitive aging in healthy, high-functioning older adults: MacArthur studies of successful aging. *Health Psychology, 20*, 243-255.

Singer, T., Lindenberger, U., & Baltes, P. B. (2003). Plasticity of memory for new learning in very old age: A story of major loss? *Psychology and Aging, 18*, 306-317.

Spielberger, C., Gorush, R., & Lushene, R. (1970). *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press.

Spitzer, R. L., Endicott, J., & Robbins, E. (1978). Research diagnostic criteria: Rationale and reliability. *Archives of General Psychiatry, 35*, 773-782.

Stanley, M. A., Beck, J. G., & Zebb, B. J. (1996). Psychometric properties of four anxiety measures in older adults. Behaviour Research and Therapy, 34, 827-838.

Stevens, E. S. (1992). Reciprocity in social support: An advantage for the aging family. *Families in Society, 73*, 533-541.

Sweeney, J. A., Wetzler, S., Stokes, P., & Kocsis, J. (1989). Cognitive functioning in depression. *Journal of Clinical Psychology, 45*, 836-842.

Tardy, C. H. (1985). Social support measurement. *American Journal of Community Psychology*, 13, 187-202.

Uehara, E. (1990). Dual exchange theory, social networks, and informal social support. Additional info: Focus on networks. *The American Journal of Sociology, 96*(3), 521-557.

Verhaeghen, P., & Marcoen, A. (1996). On the mechanisms of plasticity in young and older adults after instruction in the method of loci: Evidence for an amplification model. *Psychology and Aging, 11*, 164-178.

Walker, K. N., McBride, A., & Vachon, M. L. S. (1977). Social support networks and the crisis of bereavement. *Social Science and Medicine, 11*, 35-41.

West, R. L. (1996). An application of prefrontal cortex functioning theory to cognitive aging. *Psychological Bulletin, 120* (2), 272-292.

Wetherell, J. L., Gatz, M., & Pedersen, N. L. (2001). A longitudinal analysis of anxiety and depressive symptoms. *Psychology and Aging, 16*, 187-195.

Williams, J. M., Little, M. M., Scates, S., & Blockman, N. (1987). Memory complaints and abilities among depressed older adults. *Journal of Counseling and Clinical Psychology, 55*, 595-598.

Winterling, D., Crook, T., Salama, M., & Grobert, J. (1986). A self-rating scale for assessing memory loss. In A. Bes, J. Cahn, S. Hoyer, J. P. Marc-Vergnes, & H. M. Wisniewski, (Eds.), *Senile Dementias: Early Detection* (pp. 482-486). London: John Libbey Eurotext.

Yesavage, J., Brink, T., Rose, T., Lum, O., Adey, V., & Leirer, V. (1983). Development and validation of the Geriatric Depression Screening Scale: A preliminary report. *Journal of Psychiatric Research, 17,* 37-49.

Zarit, S. H. (1980). *Aging and mental disorders: Psychological approaches to assessment and treatment.* New York: Free Press.

Zautra, A. J. (1996). Investigations of ongoing stressful situations among those with chronic illness. *American Journal of Community Psychology, 24* (6), 697-717.