

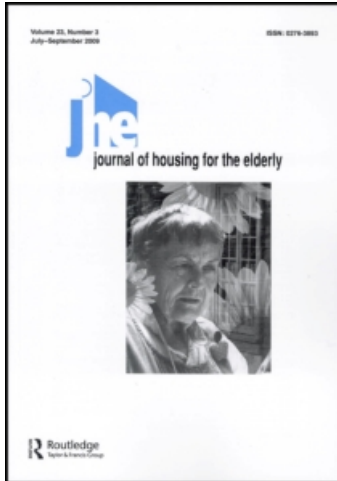
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## **Relationships Among Active Engagement in Life Activities and Quality of Life for Assisted-Living Residents**

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*This cross-sectional research explored the relationships between active engagement in life activities (leisure, social, and instrumental activities of daily living) and quality of life for seniors aged 65 and older residing in assisted living facilities. It is increasingly recognized that active participation in diverse physical, cognitive, and social activities can promote older adults' quality of life, including physical and mental health, but there is limited information about this in the population of residents in assisted living facilities. It is estimated that there are one million older adults residing in assisted living facilities, making assisted living facilities a rapidly growing segment of senior housing. Older adults who relocate to assisted living facilities commonly experience lifestyle changes, often related to their altered physical and social environment, reduced demands regarding household chores and meal preparation, and new opportunities for recreation and socialization. In this study, interviews were conducted with 131 ambulatory residents from assisted living facilities in the New York City metropolitan area using the 55-Item Activity Checklist, SF-36v2, Life Satisfaction Index-Z, and demographic questions. Results found significant low to moderate correlations between retained engagement in life activities (leisure, social, and instrumental activities of daily living) and life satisfaction, and several quality of life domains, including physical functioning, mental health, general health, and vitality. Older adults continued to engage in a greater percentage of everyday*

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*life activities they identified as important. This data supports exploration of client-centered activity programs to promote participation of residents in assisted living facilities in diverse activities to both maintain resident functional abilities and manage functional decline.*

*KEYWORDS* assisted living, older adults, quality of life, life satisfaction, leisure, social, instrumental activities of daily living

## INTRODUCTION

It is increasingly recognized that older adults' lifestyle choices and level of engagement in diverse physical, cognitive, and social occupations or activities can impact physical and mental health, functional performance, cognition, life satisfaction, perceived quality of life, and survival itself (Carlson et al., 2008; Everard, Lach, Fisher, & Baum, 2000; Glass, Mendes de Leon, Marottoli, & Berkman, 1999; Menec, 2003; O'Sullivan, 2005). The landmark MacArthur Foundation Study of Successful Aging refuted myths about inevitable illness and declines with aging, highlighting the importance of how illness impacts function, not the "number or type of diseases one has" (Rowe & Kahn, 1998, p. 14). Similarly, its research provided evidence that lifestyle changes can modify health and aging risks, including the benefits of regular physical activity for health, the benefits of cognitive training and compensatory problem-oriented strategies to maximize cognitive function, and the role of self-efficacy to empower and encourage older adults to manage the challenges of aging.

The Well Elderly Study (Clark et al., 1997) provided evidence for the benefit of preventive occupational therapy health programs that promote engagement in meaningful life activities to promote health, quality of life, and functional abilities for community-living seniors. More recent research finds relationships between participation in "everyday activities" and indicators of successful aging. "Productive" activities, identified as either work, volunteer activities, housework or gardening, or yard work have been found to be positively associated with happiness, functional ability, and mortality, whereas social activities and more solitary activities were associated with happiness (Menec, 2003). Maintaining participation in instrumental activities of daily living (IADL), social, and physically demanding leisure activities, such as swimming, walking, and gardening is associated with higher levels of physical health, maintaining participation in less demanding leisure activities such as reading, sewing, watching television, and listening to music as associated with increased mental health (Everard et al., 2000). In addition, there is evidence that participation in complex activities that tax cognitive capabilities can positively influence memory and executive function, and there

is also evidence that participation in physical exercise can benefit cognition (Carlson et al., 2008; Studenski et al., 2006).

### Engagement in Diverse Life Activities for Healthy Aging

Physical activity and exercise within older adults' capabilities and limitations are now understood to be key factors that promote and maintain muscle strength and endurance, functional capabilities necessary for self care and care of home and support emotional well-being (Lampinen, Heikkinen, Kauppinen, & Heikkinen, 2006; Lord et al., 2003; Spirduso & Cronin, 2001; Taylor et al., 2003). Even at the most advanced age (those 90 and older) research finds associations between levels of physical activity and functional capabilities (both activities of daily living [ADL] and IADL) and relationships between physical activity and life satisfaction, often identified with emotional well-being (Hilleras, Jorm, Herlitz, & Winblad, 1999). Moderate exercise programs can provide health benefits by increasing physical capabilities and vitality and have been associated with higher quality of life and decreased hospitalizations (Kerse, Elley, Robinson, & Arroll, 2005). In contrast, sedentary lifestyles coupled with self-imposed physical inactivity among older adults can contribute to functional impairments secondary to musculoskeletal weakness and joint stiffness with reduced joint range of motion, resulting in impaired posture and balance and risks for falls. Individuals experiencing these physical limitations are also at increased risk for fear of falling, now recognized to be a significant health problem among community living older adults. Fear of falling, whether one has or has not experienced a fall, is associated with reduced functional independence, social engagement, and negative quality of life. Depression has also been found to be a consequence of fear of falling (Scheffer, Schurmans, Van Dijk, & Van Der Hooft, 2008).

The benefits of physical activity are widely reported in the media and recognized by the medical community, but among the lay public it is not widely appreciated that older adults and individuals with chronic illness and physical limitations also benefit from exercise and physical activity as recommended by health care providers. Beneficial physical activity and exercise embrace many forms outside of traditional exercise and fitness regimes, including high energy home maintenance activities (such as gardening and housecleaning), walking, recreational activities (such as dancing), and solitary home exercise using prescribed protocols, home videos, or light weights and resistive exercise bands.

Similarly, cognitive plasticity is understood as an adaptive response such that cognitive improvement can occur among older adults who learn memory strategies or who participate in cognitive tasks in complex environments where they can maximize their cognitive reserves (Studenski et al., 2006;

Willis, Schaie, & Martin, 2009). Positive relationships have also been found between active engagement in challenging cognitive tasks and older adults' cognitive capabilities, and participation in mental activity has been associated with reduced cognitive decline and reduced incidence of Alzheimer's disease (Wang, Karp, Winblad, & Fratiglioni, 2002; Wilson et al., 2002). These activities may include learning a new language, learning to play a new musical instrument, engagement in challenging recreational games such as "Bridge", mathematical puzzles, computer games, performing computer searches, or other kinds of challenging cognitive tasks. The experience of learning a new task, learning and recalling new procedural information, or utilizing information to creatively solve everyday problems positively impacts brain function. Research indicates that our cognitive experiences, environmental and lifestyle demands, and mental stimulation can strengthen cortical networks (Willis et al., 2009). Research findings from the Experience Corps program finds older adults demonstrated improved executive function and memory following participation in a high-intensity, cognitively demanding intergenerational volunteer program (Carlson et al., 2008). Participation in mentally challenging endeavors that tax mental processes are also associated with emotional benefits and a positive self-concept (Wang et al., 2002). However, cognitive plasticity is more limited in advanced age and is constrained when there is neurologic disease (Willis et al., 2009).

Participation in social activities and productive activities, such as gardening, shopping, and paid and unpaid community work, are also recognized as beneficial for older adults. Associations are noted between social support, reduced mortality, and positive physical capabilities (Everard et al., 2000; Glass et al., 1999; Levasseur, Desrosiers, & Noreau, 2004; Menec, 2003). There is evidence that older adults with strong social networks—be they friends, families or communities—have resources that enable them to cope with adversity with fewer health incidents than individuals without these resources (Hendricks & Hatch, 2009). Social engagement in diverse leisure and community activities, including cultural and fitness activities, game playing, and volunteer work, has been associated with increased quality of life and with physical, psychosocial, and cognitive health. A positive relationship has also been found between social engagement and disability, with less disability noted among socially active older adults, highlighting the protective benefits of social engagement (Mendes de Leon, Glass, & Berkman, 2003). Programs and environments that afford opportunities for socialization can motivate individuals to participate in activities that would be less enjoyable without a social component and can be a key factor in client participation in wellness and exercise programs (McDermott & Mernitz, 2006). Structured or informal activities that promote reflection on past experiences can promote life satisfaction, improve perceived well-being, and pride in life's accomplishments (Mehlsen, Kirkegaard Thomsen, Viidik, Olesen, & Zachariae, 2005).

Social support has been found to positively influence physical and mental health and well-being, particularly when intimate relationships develop that encourage individuals to confide personal thoughts, disclose emotions, and feel acceptance (Everard et al., 2000). The support/efficacy model originally described by Antonucci and Jackson addresses the role of social relations and social support in promoting mastery and self-efficacy (Antonucci, Birditt, & Akiyama, 2009). Higher degrees of self-efficacy and perceived control can encourage involvement in health promoting behaviors to positively influence health and perceived well-being (Antonucci, Birditt, & Akiyama, 2009; Mehlsen, Kirkegaard, Viidik, Olesen, & Zachariae, 2005). Health promotion and disease self-management group programs use self-efficacy theory to promote self-confidence and support older adults to recognize that lifestyle modifications and individual strategies that are targeted to their needs can improve management of chronic medical conditions and improve the quality of their lives (Gitlin et al., 2008; Zarit, 2009). Socially engaged individuals increase their opportunities to develop new friendships, particularly important for the oldest-old, who are more likely to experience the loss of a spouse, significant other, or friends, and loneliness, increasing the risk of isolation and depression. The benefits of social support and social relationships in regard to quality of life are also noted for residents in assisted living who are socially active and have positive attitudes toward staff (Street, Burge, Quadagno, & Barrett, 2007).

### Assisted Living Facilities and Long-Term Care

Assisted living promotes a philosophy of aging in place and a non-institutional approach in providing senior housing and individualized care services to older adults. Increased life expectancy, gains in the number of people living to advanced ages with chronic illness, impairment, and disability, coupled with changes in family structure, employment patterns for women, and perspectives regarding independence have resulted in increasing numbers of older adults seeking housing alternatives and personalized long-term care environments. Assisted living has become a choice selected by increasing numbers of older adults and families seeking supportive housing environments as a means to preserve independence and obtain residential services, including personal care, and limited health care services within a safe, home-like environment (Stone & Reinhard, 2007; Taylor et al., 2003; Williams, 2008). It is increasingly becoming a care option for individuals with dementia, particularly for individuals with declining health and abilities who need supportive environments that can provide personal care and services with the goal of postponing nursing home placement (Stone & Reinhard, 2007; Tighe et al., 2008). It is estimated that the prevalence rate of dementia is between 40% and 67% for individuals residing in assisted living facilities; 21% to 70% are estimated to have early stage Alzheimer's disease (Hyde, Perez, & Forester, 2007; Tighe et al., 2008).

Current estimates are that 1 million older adults reside in assisted living facilities and are of varying ages, socioeconomic status, and functional status, with most residents requiring assistance in one or more ADLs or IADLs (Williams, 2008). Assisted living facilities are being created faster than any other type of senior housing and represent a growing segment within the continuum of care, including long-term care. There is no federal regulation regarding assisted living facilities and, consequently, tremendous variability within the assisted living industry. However, assisted living facility services commonly include personal services, including 24-hour assistance, mealtime and home maintenance services, medication services, supportive environments, recreation, and limited transportation (Ball et al., 2004; Hawes & Phillips, 2007; Tighe et al., 2008). The usual residents in assisted living facilities are generally well educated, ambulatory, often unmarried or widowed, and are typically frail Caucasian women in their mid 80s with long-term care needs, but fewer needs than the usual nursing home resident. The average resident in an assisted lived facility commonly needs assistance with self care and one or more IADLs, such as meal preparation, housework, taking medications, shopping, or transportation (Hernandez & Newcomer, 2007; Kraditor, 2001; Murtagh & Hubert, 2004; Street, Burge, & Quadagno, 2009; Taylor et al., 2003).

Although some older adult residents in assisted living facilities are independent in basic ADLs, most require assistance with one or more ADLs, 50% require physical assistance or supervision with three or more ADLs, and it is not uncommon for residents to have significant disabilities and require assistance with mobility, continence, or have cognitive impairments across a broad continuum. Those with significant cognitive impairments and disability sometimes reside in specialized dementia care units (Hernandez & Newcomer, 2007; Kane, Chan, & Kane, 2007; Kraditor, 2001; Stone & Reinhard, 2007). Although aging in place is the goal for many older adults and their families, declining function and health often result in transfer to another setting, often a nursing home (Ball et al., 2004; Tighe et al., 2008). The National Center for Assisted Living (2008) reported that the average length of stay in an assisted living facility is approximately 27 months. Recognition that moving from a home to an assisted living facility is often temporary focuses attention on effective strategies that may be able to support the functional capabilities and health of residents in assisted living facilities and better manage their decline to reduce need for transfers to nursing homes or other settings and enable more residents to age in place (Ball et al., 2004; Taylor et al., 2003; Tighe et al., 2008; Williams, 2008).

Given the increasing popularity of assisted living as a long-term care option, the number of people using assisted living, and the increasing number of people seeking to age in place within assisted living facilities, one challenge is to understand the everyday activity choices of residents in assisted living facilities. As discussed, lifestyle patterns and active engagement

in physical, cognitive, social, and leisure activities commonly impact older adults' functional abilities, which are particularly critical for older adults with already compromised strength, balance, endurance, and decreased memory and for individuals coping with emotional stress and loss. Assisted living facilities represent a broad, diverse range of alternative housing environments combined with services and care options designed to assist older adults who are often struggling with physical and cognitive impairments and disability. Since the beginning of assisted living in 1985, assisted living residences and philosophies have evolved, and there is increased public appreciation of the role of assisted living within the care continuum to support non-institutional community living for older adults (Wilson, 2007). The successes of diverse assisted living models has resulted in increasing numbers of assisted living residents coping with increasing physical and cognitive decline such that effective individualized strategies geared toward managing declining abilities, maximizing functional abilities, and targeting client goals needs to be addressed (Ball et al., 2004).

Lifestyle choices related to individuals' selective retained engagement in physical, cognitive, social, and recreational activities are recognized as being an influence on functional ability and mental and physical health. This is particularly relevant for older adults residing in assisted living facilities who are often at risk for declines in health as well as functionality and commonly relocate to assisted living communities to benefit from congregate living, residential services, social and recreational activities, and supervised environments. This exploratory, cross-sectional research sought to increase knowledge regarding the relationship between the percentage of activity (leisure, social, and instrumental activities) retained, physical and mental quality of life, and life satisfaction. It also sought to learn whether assisted living residents' engagement in diverse life activities was influenced by the value these activities held for assisted living residents, specifically activities considered of greatest importance. Our primary hypothesis was that there would be positive relationships among the percentage of activity retained in the broad range of everyday life activities, including leisure, social, and instrumental activities, and both physical and mental quality of life and life satisfaction. The secondary hypothesis was that residents in assisted living facilities would report greater percentages of activities (leisure, social, and instrumental) retained that were deemed of greatest importance.

## METHODOLOGY

This cross-sectional study was conducted between 2004 and 2007 and sought to understand the types of social, instrumental, and leisure activities engaged in by residents in assisted living facilities, relationships between perceived importance of the activity and continuance of participation, and



relationships between retained participation in life activities and quality of life and life satisfaction. The study includes interviews with 131 residents residing in one of 12 assisted living facilities in Long Island and New York City after review and approval of the Stony Brook University Committee on Human Subject Research. Facilities were not selected at random but represent a convenience sample of assisted living facilities. All assisted living facilities, with one exception, were operated by for-profit corporate organizations. In addition to residential and housekeeping services all assisted living facilities provided scheduled social and recreational programs, many had group fitness, creative, and spiritual activities as well as scheduled trips.

## Participants

A total of 131 participants were recruited from 12 assisted living facilities. Eligible participants were English-speaking residents in assisted living facilities who were at least 65, ambulatory, and able to participate in a 45-minute to 1-hour individual interview. Individuals residing in dementia care units or those who could not independently schedule interview appointments were not eligible for participation in the study. Participants were required to be able to ambulate independently with or without a device since the inability to ambulate could theoretically limit abilities to engage in life activities and influence life satisfaction and quality of life, and therefore inclusion of non-ambulatory participants might confound the results. A summary of demographic information is found in Table 1.

## Instruments

The 55-item Activity Checklist is a self-report instrument that measures retained participation in instrumental, social, and leisure activities in the past and the present. It has been used to assess occupational performance in community living older adults and retained participation in everyday instrumental, social, and leisure activities (Everard et al., 2000). The Activity Checklist is a modification of the Activity Card Sort, designed for occupational therapy practice to assess engagement in everyday life activities (Everard et al., 2000). The Activity Card Sort has established content and construct validity and test-retest reliability of 0.89 for adults 65 and older (Baum & Edwards, 2008). Concurrent validity between the Activity Card Sort and the Activity Checklist for IADL, social, and low-demand and high-demand leisure activity subscales is reported to be 0.90, 0.78, 0.82 and 0.72, respectively (Everard et al., 2000). Questions posed by the Activity Checklist ask individuals to rate their current activity level on 55 activities, scored as "have never done," "do now," "do less," "no longer do," or "do with other person," and to identify up to five activities that are most important to them. To measure retained activity participation a Current Level of Activity score was calculated for

**TABLE 1** Participants' Demographic Characteristics ( $N = 131$ )

Characteristic	<i>n</i>	%
Age		
Mean	83.10	
Standard deviation	7.237	
Minimum	65	
Maximum	99	
Gender and age		
Women	77	58.8
65–74 (y)	8	6.1
75+ (y)	69	52.7
Men	52	39.7
65–74 (y)	7	5.3
75+ (y)	45	34.4
Marital status		
Married	13	9.9
Widow/er	96	73.3
Unmarried	12	9.2
Other	8	6.1
Highest level education		
Less than high school	23	17.6
High school	64	48.9
Some college	22	16.8
College graduate	18	13.7
Religion		
Catholic	72	55.0
Protestant	7	5.3
Jewish	37	28.2
Other	13	9.9

each individual to determine the percent of retained engagement with identified activities on the Activity Checklist. Activities for which the individual indicated “have never done,” “no longer do,” and “do with other person” were scored a 0.0, “do less” was scored 0.5, and “do now” was scored 1.0. Scores were summed for all 55 activities and divided by the total number of items that the individual indicated that he or she had ever done as per the Checklist protocol. Therefore, the possible range for the Current Level of Activity was between 0.0 and 1.0 (Baum, Everard, Fisher, & Lach, 2000). Analogously, a Current Level of Important Activity score was calculated for the up to five activities that each individual indicated were most important, and a Current Level of Less Important Activity score was calculated for the remaining activities, each of which also had a possible range between 0.0 and 1.0. Lower scores indicate an individual has retained a lower percent retained of general activities, important (favorite) activities, or less important (least favorite activities), respectively, whereas higher scores indicate a greater percent retained.

The SF-36v2 health survey is a well recognized, reliable, and valid quality of life assessment tool that provides overall physical health quality of

life summary scores (PCS) and mental health quality of life summary scores (MCS), as well as individual scores for eight health domains (QualityMetric Health Outcomes Solution, 2005; Ware, Kosinski, & Dewey, 2000). Reliability of its eight subscale domains range from .70-.80 and reliability for physical and mental health summary scores is estimated at 0.90 (Ware, n.d). It consists of 36 questions that measure quality of life on eight health domains consisting of physical functioning, role-physical, bodily pain, general health, vitality, social functioning, mental health, and role-emotional. Normative and comparative data are available for males and females, with data for men, women, and men and women combined for individuals 65 to 74 years and 75 years and older. Norm based scoring for SF-36 summary scores and each of the eight SF-36v2 domains scales have a population mean of 50, based on the 1998 general U.S. population and a standard deviation of 10 (Ware et al., 2000). For this study, scoring used SF-36 on-line computer software using norm-based algorithms, which determined 8 norm-based profile scores and summary physical health and mental health scores (Table 2). For this sample, age and gender-specific means ranged from 8.91 points below the norm (for Mental Health scores in women aged 65 to 74) to 6.55 points above the norm (for Role Emotional scores in women aged 75 and older).

The Life Satisfaction Index-Z Scale (LSI-Z) is a well recognized standardized assessment tool that measures psychological health, well-being, and perceptions of life satisfaction for older adults. The LSI-Z is a modification of the original instrument with test reliability of 0.79 (Wood, Wylie, & Sheafor, 1969). Life satisfaction is also commonly associated with how older adults reflect on their life as a whole (Fagerstrom, Balducci, Wenger, & Weber, 2007). The scale includes 13 items scaled in a Likert-type format ranging from agree to disagree to unsure about their level of agreement with each statement. Items are coded with participants receiving 2 points for positive answers, 0 points for negative answers, and 1 point when stating they are uncertain of the answer. Scores range from 0 (lowest level of satisfaction) to 26 (highest level of satisfaction) (Wood et al., 1969). This assessment is commonly used in studies of older adults to assess perceptions of emotional well-being and morale (Borg, Hallberg, & Blomqvist, 2006; Clark et al., 1997; Fagerstrom et al., 2007; Horowitz & Chang, 2004). LSI-Z scores are available only for participants interviewed in 2007 ( $n = 40$ ) and 2008 ( $n = 32$ ). A summary of the assisted living resident participants' scores on the SF-36v2 and LSI-Z is reported in Table 3.

## Procedures

Researchers contacted assisted living facilities across Long Island and within New York City and requested an opportunity to speak with residents in a group setting to provide information about this study. Individuals who

**TABLE 2** Normative SF-36v2 Data vs. Sample Data by Age and Gender for the Eight SF-36v2 Subcomponents Physical Component Summary (PCS), and Mental Component Summary (MCS)

	Eight Subcomponents' Means								Summary Means	
	PF	RP	BP	GH	VT	SF	RE	MH	PCS	MCS
Population males aged 65 to 74	45.48	46.04	48.41	48.16	51.94	50.28	48.80	53.98	45.13	53.66
Sample males aged 65 to 74 ( $n = 7$ )	45.30	46.39	41.79	43.14	53.43	44.36	44.80	50.90	43.43	49.57
Mean Difference	<b>(0.18)</b>	0.34	<b>(6.63)</b>	<b>(5.02)</b>	1.49	<b>(5.92)</b>	<b>(4.00)</b>	<b>(3.08)</b>	<b>(1.70)</b>	<b>(4.09)</b>
Population males aged 75+	39.62	39.67	46.28	44.28	47.85	45.56	43.59	50.84	40.38	50.04
Sample males aged 75+ ( $n = 45$ )	35.68	42.96	46.08	45.34	49.87	47.48	48.94	45.35	40.11	51.56
Mean Difference	<b>(3.95)*</b>	3.29	<b>(0.20)</b>	1.06	2.02	1.92	5.35*	<b>(5.49)***</b>	<b>(0.27)</b>	1.52
Pop. females aged 65 to 74	43.63	45.09	47.33	48.60	51.28	49.92	48.48	51.66	44.34	52.78
Sample females aged 65 to 74 ( $n = 8$ )	42.30	39.73	47.28	42.74	56.76	47.99	48.95	42.75	42.38	50.88
Mean Difference	<b>(1.33)</b>	<b>(5.37)</b>	<b>(0.05)</b>	<b>(5.86)</b>	5.48	<b>(1.93)</b>	0.47	<b>(8.91)**</b>	<b>(1.97)</b>	<b>(1.91)</b>
Pop. females aged 75+	37.22	40.44	44.87	46.32	47.89	46.15	43.61	50.41	39.78	50.57
Sample females aged 75+ ( $n = 69$ )	36.23	41.79	47.02	46.03	50.28	47.03	50.16	45.13	40.41	51.06
Mean Difference	<b>(0.99)</b>	1.35	2.15	<b>(0.29)</b>	2.39	0.88	6.55***	<b>(5.28)***</b>	0.63	0.49

PF = physical functioning; RP = role-physical; BP = bodily pain; GH = general health; VT = vitality; SF = social functioning; RE = role-emotional; MH = mental health.

z-test: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

**TABLE 3** Summary of Participant's Scores and Spearman Correlations of Life Satisfaction and Quality of Life with Current Level of Activity scores ( $N = 131$ )

Evaluation Tools	M	SD	$r_s$
Life Satisfaction Index-Z Scale (LSI-Z)	15.26	6.185	0.355**
SF-36v2 Quality of Life Scores			
Physical health summary	40.55	10.371	0.324***
Mental health summary	51.12	12.352	0.250**
Physical functioning	36.82	11.238	0.354***
Role-physical	42.34	11.287	0.345***
Bodily pain	46.36	13.039	0.212*
General health	45.32	10.973	0.261**
Vitality	50.77	11.893	0.286**
Social functioning	47.17	11.646	0.243**
Mental health	45.39	13.840	0.357***
Role-emotional	49.18	12.331	0.253**

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

volunteered to participate in the study were screened to determine eligibility. Individual appointments were scheduled with eligible residents for individual interviews. Informed consent was obtained from all participants prior to interviews. All interviews were conducted individually in a quiet, private setting. Interview questions were read to each research participant to ensure that visual limitations did not influence responses. Interviews used standardized, valid, and reliable measures. They include the 55 Item Activity Checklist, a modification of the Activity Card Sort, to assess involvement and participation in instrumental, social, and leisure activities in the past and present (Baum, Everard, Fisher, & Lach, 2000), the SF-36v2 to assess quality of life (QualityMetric Health Outcomes Solution, 2005; Ware et al., 2000), and the Life Satisfaction Index-Z Scale to measure psychological health and individual perceptions of psychological well-being (Wood et al., 1969). Demographic questions concluded the interview and included items on gender, age, marital status, living arrangement, religion, race/ethnicity, and years of schooling.

### Data Analysis

Data analyses for quantitative data were conducted using the Statistical Package for Social Sciences version 16 (SPSS, Inc., Chicago, IL). Prior to any inferential statistical tests, one-sample Kolmogorov-Smirnov tests were run for all variables to determine whether data were normally distributed. Based on the results normal distributions could not be assumed; therefore, non-parametric statistics were used to analyze these data. Spearman rank-order correlation coefficients were calculated to test the principal hypothesis, regarding the relationships between percent of activity (leisure, social, and

instrumental) retained and quality of life (including 8 subcomponent SF-36v2 domain scales) and life satisfaction. The Wilcoxon signed-ranks test was used to assess whether or not ALF residents indicated greater percent of activity retained for the (up to) five activities that they indicated as most important compared to the remaining 50 activities.

## RESULTS

Assisted living resident study participants had a mean age of 83, ranging from 65 to 99; 75% were widows or widowers. Approximately 59% were women and 40% men. They were well educated; more than 30% reported at least some college education. Only 18% reported having less than a high school education (Table 1). They are similar to demographic data for average residents in assisted living facilities in age, gender, marital status, ambulatory status, and educational level (Hernandez & Newcomer, 2007, Murtagh & Hubert, 2004; Kraditor, 2001). However, they represent residents in assisted living facilities with no or minimal cognitive deficits given inclusion criteria requiring the ability to independently schedule an interview with a researcher and participate in a 45-minute to 1-hour interview.

Their scores on the SF-36v2 in Table 2 provide Physical and Mental Health summary scores and separate scores by age and gender for each of the eight SF-36v2 quality of life domains, which are physical functioning, role-physical, bodily pain, general health, vitality, social functioning, role-emotional, and mental health. Mean differences are highlighted between general U.S. population norms and mean scores for study participants. SF-36v2 quality of life domain scores for male residents in assisted living facilities that were below population means (greater than 4.00) were found for Bodily Pain, General Health, Social Functioning, Role Emotional, and Mental Health, with mean differences more common among men aged 65 to 74 as opposed to men aged 75 and older. Among women SF-36v2 quality of life domain scores below population means (greater than 4.00) were found for role physical, general health, and mental health domains. Significant differences were noted between population and subject mean scores for the three domains of physical functioning, role-emotional, and mental health among men aged 75 and older, for the role-emotional domain for women 75 years and older, and for the mental health domain for women 65 years through 75 years and above. The research hypothesis anticipated positive relationships among the percentage of activity retained in everyday life activities (including leisure, social, and instrumental activities) and physical and mental quality of life, and life satisfaction. The secondary hypothesis was that residents in assisted living facilities would report greater percentages of retained activity participation in activities identified of greatest importance. Correlations between subjects' scores for the Current Level of Activity score (assessed using the 55-Item

Activity Checklist), life satisfaction (measured by LSI-Z scores), and quality of life (measured by SF-36v2 scores) found statistically significant but only low to moderate Spearman correlations between retained activity participation and life satisfaction ( $r = 0.355$ ) and Physical Health Summary Scores ( $r = 0.324$ ), and for retained activity participation and the SF-36v2 quality of life domains of physical functioning ( $r = 0.354$ ), role-physical ( $r = 0.345$ ), and mental health ( $r = 0.357$ ). Significant correlations were noted for the remaining five quality of life domains and the Mental Health Summary Score but these had weak correlations with assisted living residents' percentage of retained activity (Table 3). In addition, the Wilcoxon signed-ranks test was used to determine whether participants reported Current Level of Important Activity score differed from Current Level of Less Important Activity score. Analysis found significant differences between groups ( $T = 48$ ,  $Z = -3.315$ ,  $p = 0.001$ ). Seventy-three participants had greater continued participation in the activities which they identified as most important. In contrast, 48 participants had greater continued participation in the activities, which they considered less important, indicating significantly more subjects continued participating in activities they indicated to be most important.

## DISCUSSION

Older adults overwhelmingly report a preference for aging within their homes and familiar communities; however, in advanced age some older adults need assistance with instrumental activities of daily living or self care, or seek a supportive environment that provides opportunities for social engagement and participation in recreation. Assisted living facilities provide older adults with accessible, residential environments where a range of long-term care needs can be met and are the fastest growing type of alternative senior housing communities. Increasingly, assisted living facilities provide limited health and supportive services to residents with chronic illness, physical and cognitive impairment, disability, and declining health and functional abilities. "Well" independent elders who choose to relocate from home to assisted living residences to benefit from housekeeping and transportation services, congregate dining, and social support find themselves residing in new environments that do not have the physical and cognitive demands required for independent living. Managing resident functional decline is an increasing challenge as assisted living facilities increasingly fulfill a significant role as a component of long-term care and provide care and services to growing numbers of impaired older adults (Ball et al., 2004). For many residents in assisted living facilities, preventive physical activity, cognitive, and productive activities programs can support physical and mental health, quality of life, and their goals to age in place (Taylor et al., 2003; Tighe et al., 2008; Williams, 2008). Maintaining resident functional abilities and reducing

excess disability through use of assistive devices and adaptations to affect a therapeutic “fit” between resident needs and abilities and environmental demands can also influence the slope of functional decline. When functional abilities can be preserved, these strategies also offer residents and families a way to postpone need for additional out-of-pocket assisted living facility expenses for additional personal care, thereby reducing financial pressures and reducing the economic need to move from assisted living and seek other housing and long-term care options (Williams, 2008).

The primary hypothesis of this study was that there would be a positive relationship between residents’ percentage of retained every day life activities (leisure, social, and instrumental activities), quality of life, and life satisfaction. Secondly, it was hypothesized that there would be a greater percentage of retained engagement in everyday activities (leisure, social, and instrumental) for activities deemed of greatest importance. Positive, statistically significant relationships between the percent of retained activity, life satisfaction, and multiple quality of life domain scores on the SF-36v2 supports the primary hypothesis, although the Spearman correlations were within low moderate ranges.

The mean quality of life scores for residents on the SF-36v2 are in keeping with the assisted living literature findings. The literature reports that older adults who choose to relocate to assisted living facilities are frequently frail, often needing assistance in self care and IADL tasks, with estimates that more than 20% have early stage Alzheimer’s disease. Thus, it is not surprising that in comparison with SF-36v2 population mean scores, there were significant differences between population and subject mean scores for physical functioning, role-emotional, and mental health among men 75 and older, and significant differences noted for role-emotional for women aged 75 and older and for mental health for women aged 65 to 75 and older. There were also meaningful lower mean subject scores for the domains of bodily pain, general health, social functioning, role-emotional, and mental component summary scores for men aged 65 to 74. Lower mean subject scores for women aged 65 to 74 for the domains of role physical and general health, compared to population mean scores is also not unexpected. Differences in mean SF-36v2 scores for participants between 65 and 74 and 75 and older may be understood in the context of the needs of “younger” older adults who relocate to assisted living facilities for supportive housing, homemaking, and care services.

A taxonomy of SF-36v2 items underlies each of the eight SF-36v2 quality of life domains. The items are reconfigured to form the physical and mental health summary measure scores. Physical Health Summary scores comprise the four domains of physical functioning, role-physical, bodily pain, and general health. Mental Health Summary scores comprise the four domains of vitality, social functioning, role-emotional, and mental health. Appreciating the separate items within the constructs helps explain subjects’ lower



than mean population scores and significant differences for specific SF-36v2 domain subcomponents as compared to physical health and mental health summary scores (Ware et al., 2000).

Life satisfaction in old age is associated with multiple variables, including social relationships. The low moderate yet statistically significant relationship between life satisfaction and the percentage of retained activity ( $r = 0.355$ ) validates a positive association between emotional well-being and continuance of participation in activity, but not surprisingly indicates that there are other influencing variables. Well-being among residents is associated with having social relationships in the assisted living facility environment, facility size, privacy or having a private room, meal quality, and possibly mealtime experiences (Street, Burge, Quadagno, & Barrett, 2007). Significant, positive correlations of moderate strength ( $<.30$ ) were also found between the percentage of retained activity and quality of life scores for SF-36v2 physical health summary scores ( $r = 0.324$ ), physical functioning scores ( $r = 0.354$ ), role-physical scores ( $r = 0.345$ ), and mental health scores ( $r = 0.357$ ). Although these correlations may also reflect positive associations between physical and mental health, physical capabilities, and the functional ability necessary to retain engagement in activities, the 55-Item Activity Checklist includes a range of social, leisure, and IADLs, including high and low physical demand activities (Baum & Edwards, 2008).

Results from the Wilcoxon signed-ranks test support the secondary hypothesis (ALF residents would report greater percentages of retained activity in activities deemed of greatest importance) by identifying significant differences between residents' Current Level of Important Activity scores compared with residents' Current Level of Less Important Activity scores ( $T = 48$ ,  $Z = -3.315$ ,  $p = 0.001$ ). Residents were more likely to continue to engage in activities that they identified as important or meaningful to them. Activities identified by participants as "important" may hold greater emotional attachment than activities considered less important and may be associated with valued social roles, providing motivation for continued participation in identified activities.

## Limitations

The limitations of this exploratory cross-sectional study include its non-random design. Study participants were a convenience sample limiting the generalizability of its findings even within the New York metropolitan area, and participating assisted living facilities were, for the most part, for-profit residences that did not accept Medicaid to pay for assisted living housing or service expenses. The research design also did not include repeated interviews to assess whether continued engagement in everyday leisure, social, and instrumental activities would positively influence quality of life and

life satisfaction over time, particularly relevant for individuals with declines in health or functional ability (Fagerstrom et al., 2007).

## CONCLUSIONS

Assisted living congregate communities are a relatively recent phenomenon and provide an alternative long-term care option for increasing numbers of older adults. The results of this study add to an understanding of relationships between life satisfaction, the multiple dimensions of quality of life, and residents' retained engagement in everyday leisure, social, and instrumental activities. Active engagement in physical, social, and cognitive activities is positively associated with greater life satisfaction and physical and mental health and supports functional capabilities. Adults among the oldest-old are commonly at risk for health and functional decline secondary to chronic illness or frailty associated with age related decline. Relocation to an assisted living facility alters old familiar routines and habits and requires adjustment to a new physical and social environment. Supportive services, such as house-keeping and meals, reduce demands on older adults, but also reduce the physical activity inherent in everyday household tasks and the cognitive demands that are part of grocery shopping, meal preparation, laundry tasks, and paying household bills. Thus, supporting continued participation in everyday activities is important as a preventive strategy to preserve capabilities, maximize self-efficacy and personal control and mastery, and prevent "excess disability" associated with limited environmental demands that foster functional limitations.

Many assisted living facilities today offer more than supportive housing and are part of the long-term care continuum with high percentages of physically frail and disabled aged residents. The demographics of residents highlight them as high risk for declines in health and function who choose to pay privately to reside in assisted living facilities to preserve their autonomy and independence in safe, supportive environments. Older adults and their families evaluate AL services, environments, and costs, and seek the optimal residential community for their loved one that is within their budget, often with the goal of postponing or preventing the need for nursing home care. Rehabilitation, nursing, or other professional consultants can individualize the full range of physical activity, cognitive, and creative arts programs within existing recreation and health programs to provide client-centered activity programs that promote resident function and well-being to reduce risks associated with discharge from an assisted living facility because of functional decline.

This study supports the hypotheses that there is a positive relationship between the percentage of residents who retained life activities, quality of life, and life satisfaction, and that residents are more likely to continue to

engage in those activities they identify as important to themselves. Further research is needed to confirm these findings in other geographic locations, using a randomized design with diverse residents. However, despite its limitations, these data encourage assisted living facilities to build on existing activity, recreation, and health programs to encourage their residents to continue engagement in diverse activities they identify as important and to develop individualized preventive programs to maximize or maintain the functional capabilities of residents to support the goal of aging in place where possible. Innovative preventive services may also be economically beneficial to assisted living facilities by potentially postponing or reducing resident turnover and by demonstrating to older adults and families their commitment to providing evidence-based practices for aged adults.

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