

# ART CART: SAVING THE LEGACY: A Feasibility Study for a National Model of Health Promotion and Wellness among Older Adults

Research Center for Arts and Culture at the National Center for Creative Aging

by Joan Jeffri, Director and Founder, Research Center for Arts and Culture/National Center for Creative Aging; Victoria M. Rizzo, Chair, Department of Social Work, Binghamton University and Patricia A. Miller, Special Research Scientist, Programs in Occupational Therapy, Columbia University with contributions by Suk Young Kang, Department of Social Work, Binghamton University and William Penrose, consultant<sup>1</sup>

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“The person who creates doesn’t go to the hospital.” — *Italian aphorism*

“The ultimate expression of potential is creativity.” — *Dr. Gene Cohen*

## EXECUTIVE SUMMARY

The Research Center for Arts and Culture (RCAC) at the National Center for Creative Aging (NCCA) has analyzed data from research that took place from ART CART: SAVING THE LEGACY (ART CART) from fall, 2012 to fall, 2013 for use as a feasibility study for a national rollout of ART CART with accompanying research to additional US urban, suburban, and rural locations. ART CART is an interdisciplinary, intergenerational project that matches advanced students in the arts, aging and health care with professional visual artists age 62+ to learn how to document their work and create a legacy. This nine-month, service-learning program completed its second iteration in 2012-13<sup>2</sup> as a collaboration among 19 professional artists and 38 students (fellows) and related faculty from different disciplines in the arts, health and aging, from several universities in the New York City and Washington DC Metro areas. During the project, 2,568 works were documented with a range of 40-257 and an average of 135 works per artist. Each artist was interviewed for an oral history, and the documented records and

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<sup>1</sup> Special thanks to Dr. Jane Bear-Lehman for her ART CART Evaluation Report.

<sup>2</sup> The initial iteration was in 2010-11.

images, and the oral histories, live at Columbia University's open source digital archive, Academic Commons, as THE ART CART COLLECTION.

In this second iteration of ART CART, an experimental research component was added. Artists, 63-100 years of age, (19 participating in ART CART and 16 in a randomized control group) were assessed, using the following outcome variables: morale/depression (positive aging), social isolation (social inclusion or social engagement), productivity/activity levels (productivity), and safe functioning in the studio environment (health promotion). The purpose of this feasibility study was to evaluate the effectiveness of ART CART on the psychosocial well-being and safe functioning of older adult professional artists. Three methods of gathering data included: Quantitative data on the variables stated above, Program Evaluation data from written communications from artists and fellows, and, Reports regarding the secondary prevention interventions provided to three artists. The latter two data collecting methods provided more insights to the researchers than the quantitative research data, regarding the extent to which artists' morale and sense of well-being was enhanced by participating in ART CART: SAVING THE LEGACY.

The primary research question is whether participating in ART CART improves the well-being of older artists as compared to those who do not participate in the program and to what extent can the ART CART program affect older adults on the following variables: morale/depression, social isolation/engagement, productivity/activity, safe functioning?

Secondary questions are:

- 1) To what extent is it feasible for the very much younger students (in art and non-art fields) to learn strategies for positive aging, health promotion and the arts?
- 2) To what extent can we generalize to other older adults across the arts (e.g., writers, performers) and—in future iterations—influence populations outside the arts?

We hypothesized that artists participating in ART CART would have: (1) increased morale and decreased symptoms of depression; (2) decreased social isolation; (3) increased safe functioning and levels of activity/productivity; and, (4) decreased risk of falling as compared to similar artists who were not participating in ART CART.

Assessment measures served as a screening and potential intervention opportunity for secondary prevention. In the quantitative research findings, the only area that showed a significant decrease in outcomes in the participating artist group as compared to the control group was in the area of social isolation vs. social engagement. The outcome measure used was the Activity Cart Sort (ACS) (Baum and Edwards, 2001). The social activities subscale score and current activity level of the ACS decreased more than the control group, which decreased very slightly. The findings suggest that the artists' current activity level decreased after the student fellows no longer came weekly to work with the artists, at the completion of the ART CART program. This decrease in engagement did not affect the results on the other measurements: The Geriatric Depression Scale, The Philadelphia Geriatric Morale Scale and the UCLA Loneliness Scale.

We found both the ART CART artists and the control group to be extremely high functioning, often more than the general population. We recommend caution here since the art world is very ageist and older artists may have self-reported as more fit and without impediments.

ART CART: SAVING THE LEGACY is designed to assist older professional artists to experience positive aging, while maintaining productivity in what the artists describe as their most meaningful roles and activities: making and preserving their art. The multi-component interventions of ART CART are designed to be a catalyst for promoting physical, psychological and social/environmental well-being.

## BACKGROUND

### IDENTIFICATION OF NEED

A relatively recent research focus of the National Endowment for the Arts has fostered cross-disciplinary investigation in which several fields can heighten the impact of research initiated in the arts, while simultaneously enabling non-art fields to learn more about the arts. The white paper, "The Arts and Human Development: Framing a National Research Agenda for the Arts, Lifelong Learning, and Individual Well-being" attests to the need for research to help "policy makers and practitioners...understand the pathways and processes by which the arts affect human development" (NEA, November 2011).

Jeffri's study, *Above Ground* (Jeffri, 2007) was the impetus for ART CART and this subsequent research study. Results in *Above Ground* revealed: 61% of professional visual artists age 62+ in the NYC Metro area have made no preparation for their work after their death; 95% have not archived their work; 97% have no estate plan; 3 out of every 4 artists have no will and 1 in 5 have no documentation of their work at all. Almost 94% of the artists reported they were in good, very good or excellent health. Yet 33.8% said their health status had changed in the last year and over half said they had moderate health problems; 21.8% said they had chronic problems. A quarter said their vision affected work on their art and almost 39% said their current physical and mental health problems placed limitations on them in relation to their artwork of time (34.4%), of productivity (34.4%), physical limitations (42.6%) and emotional/mental difficulties in relation to making work (8.2%). Artists expressed disappointment and frustration when they have an illness and cannot rely on their strength as they did before. Perhaps as importantly, these older adults lack opportunities to fully experience "the summing up" phase of life that gives artists the choice to share the lessons of their lives with younger generations and to celebrate their own contributions to culture (Cohen, 2000). Placing students with these older artists in their studios to assist with documentation of artists' life work, was designed to be a catalyst for this developmental phase of later life.

Despite contributions to our understanding of factors related to "successful" aging from the health and social science professions, there is a paucity of research on the ways in which older adults cope, make choices, and adjust to age-related changes or morbidities in order to continue engagement in the activities and roles most meaningful to them. Additionally, there is very little research on older professional artists, especially important with the explosion of the 65+ populations and the advent of "creative aging" in promoting health.

The approach taken in ART CART was based on a public health model of primary and secondary prevention. The concept of preventive health care is understood to be a logical way of reducing the incidence of disease and disability, improving one's quality of life, and preventing institutionalization (Miller, 1988, 2003; Miller and Cook, 2008). These programs support the U.S. Department of Health and Human Services comprehensive health promotion and disease prevention objectives set forth in *Healthy People 2010* (2000).

## PREVENTION/HEALTH PROMOTION

In the 2010 pilot, problems were identified that interfered with the artists' ability to function at their maximum in producing their art that could not be addressed by the fellows because they were not licensed clinicians, nor were they in the artists' studios in the role of therapist. Examples of the issues identified in the 2010 pilot included: one artist struggling to paint because she had a contracture of one finger that hurt, as it caught on her canvas while working. One pair of fellows recommended a referral to an MD who it was thought would refer the artist to an occupational therapist who might be able to adapt her paintbrush and/or canvas to reduce the problem, but the artist did not follow-through on the recommendation. On another occasion, one artist's wife was quite anxious about her husband's advanced age and eventual mortality, which she felt was imminent, and this anxiety upset the artist and the working alliance of artist, artist's working partner (his wife) and the two fellows when they were together organizing the studio and attempting to document his art work. Another situation of potential elder abuse of the artist by the artist's working partner seemed plausible from the student fellows' observations, but they did not feel comfortable sharing this information with the faculty of ART CART until very late in the project.

The value of health promotion and secondary prevention were lessons learned for this second (2012–2013) iteration of ART CART. A research/screening and intervention (secondary prevention component) was developed and implemented. Occupational therapy (OT) clinicians conducted the assessments, and were able to provide secondary prevention, when risk factors were identified. The occupational therapists introduced therapeutic interventions that maximized productivity of the artist while increasing safety and ease of working (e.g., the artist's realistic worry about falling while walking carrying canvases because of poor balance; strategies to reduce fatigue and conserve energy while working). This additional secondary prevention component of ART CART can be a catalyst to maximize engagement in instrumental activities of daily living, such as producing art work; forestalling or eliminating the possibility of an injurious fall or other illness; and, through appropriate referrals, early intervention is expected to prevent premature morbidity or mortality. Careful and complete documentation of interventions by the OTs were included in the evaluation of ART CART. (Tertiary prevention is treatment applied after acute illnesses occur that impede health and function, such as hip placement surgery or a stroke (Miller, 2008). Tertiary prevention is beyond the scope of ART CART.)

Assessment measures for morale/depression (positive aging), social isolation (social inclusion or social engagement), productivity/activity levels (productivity), and safe functioning in the studio environment (health promotion) served as a screening and potential intervention opportunity for secondary prevention. The dependent variables were selected for study because of the belief that overall health and well-being can be enhanced in older adult artists residing in the community, if a multi-factorial approach to positive aging is addressed in the interventions and in the outcomes.

## CONCEPTUAL FRAMEWORKS WITH DEFINITION OF TERMS

### COHEN AND CREATIVE AGING

It is useful to review Cohen's contribution to creative aging in understanding the written comments of the artists and the outcome variables that were chosen to measure (Cohen, 2000). He describes four psychological transitions or developmental phases for older adults to use their creative energies in order to age with a sense of well-being. The last three phases apply to many of the older artists in the 2012-2013 ART CART program, whose ages ranged from 63 to 100. The artists' comments evidence ways in which ART CART was a catalyst in enhancing these phases. The second phase after "Mid-Life Reevaluation Phase" is the "Liberation Phase": a time when one feels one can try something new; this applies to people in their 60s or early 70s. Cohen states that people tend to feel comfortable about themselves in this phase and feel ready for experimentation, ready to try something new. Perhaps, the artists who volunteered to be in ART CART to document their work (those who participated and those in the control group) felt their creative expression led to the following thought, "If not now, when?" Cohen describes these feelings as liberating and additive. The third "Summing Up Phase" typifies those in their 70s-80s. It is a time when there is a desire for people to find larger meaning in their lives and it involves feelings related to wanting to be "keepers of the culture." For those in their 80s or older, phase four, the "Encore Phase," is one in which creative expression is "shaped by the desire to make strong, lasting contributions on a personal or community level, to affirm life, take care of unfinished business, and celebrate one's own contribution" (Cohen, 2000, pp. 78-79). In reading the artists' comments in the Program Evaluation section of the report, one can recognize these phases of development, which seem to reflect increased morale/self-esteem and increased productivity/activity levels.

## REDUCING RISKS OF INJURY AND PROMOTING ARTISTS' HEALTH

**Primary prevention** consists of the elimination of factors that cause illness, such as stress, pollution, poor nutrition, and lack of services. It is largely the provision of consultation, education and advocacy in a variety of human services, and often occurs before a person is symptomatic (Albert, 2004; Miller, 2003; Miller and Cook, 2008). On several occasions, our student fellows discussed their observation of the artists' work habits and work environment with the artists with whom they visited weekly in their studios to assist with documenting their art work. These brief interventions occurred so spontaneously and naturally that the artists did not even identify them as "services". For example, a student fellow suggested to one artist that her back would be less painful at the end of the day, if she placed a low back support on her chair while she worked at documentation at the computer, and she did. Another fellow suggested to the artist to take rest and stretch breaks to avoid stiffness from working long hours. Another fellow reinforced the advice of the artist's physical therapist to use a walker in the apartment/studio, rather than a cane, to reduce the risk of falls. The artist had fallen twice in the past year, and eventually agreed. Many fellows discussed with the artists better ways to organize and maintain their art to increase safety and reduce frustration in the inherent difficulty of locating their numerous works of art. Other artists, through education from the fellows, began to recognize the value of asking for help in carrying and/or storing their heavy art work, to avoid/reduce possibility of injury. More than one artist asked the Director of ART CART for assistance in applying to art foundations for financial support to continue pursuing art with fewer financial constraints. One artist received a much needed \$50,000 Lifetime Achievement Award; and another artist, upon receiving support, was inspired to pursue other media when making her art. The goal of increased morale/self-esteem seemed quite obvious in these instances, as the artists and their work were clearly validated.

**Secondary prevention** involves making referrals for needed services, providing screening for early detection of mental or physical conditions/diseases and injury potential, such as fall risks in the artist's environment (specifically art studios, which may or may not be in artists' homes). It involves beginning treatment after risk factors have been identified through screening to prevent or forestall illness, injury or disability (Albert, 2004; Cook and Miller, 1996; Miller, 2003; Miller and Cook, 2008). In the secondary prevention medical model, e.g., colonoscopies, mammograms, and blood pressure screenings are conducted to identify any problems at the

earliest possible stage to avoid or forestall illness, disease, or mortality. In the home/community environment, secondary prevention often includes the person's ability to function (with or without support) safely and with a sense of psychological and social well-being in all the activities of everyday living.

## METHODOLOGY

### RESEARCH QUESTIONS

The primary research question is whether participating in ART CART improves the well-being of older artists as compared to those who do not participate in the program and to what extent can the program, ART CART: SAVING THE LEGACY affect older adults on the following variables: morale/depression, social isolation/engagement, productivity/activity, safe functioning?

Secondary questions are:

- 1) To what extent is it feasible for the very much younger students (in art and non-art fields) to learn strategies for positive aging, health promotion and the arts?
- 2) To what extent can we generalize to other older adults across the arts (e.g., writers, performers) and—in future iterations—influence populations outside the arts?

### HYPOTHESES

We hypothesized that artists participating in ART CART would have: (1) increased morale and decreased symptoms of depression; (2) decreased social isolation; (3) increased safe functioning and levels of activity/productivity; and, (4) decreased risk of falling as compared to similar artists who were not participating in ART CART.

### RECRUITMENT of SUBJECTS

Subjects included in this study were aging artists who applied to participate in ART CART. Artists were recruited for participation in ART CART by disseminating a Call for Artists in e-newsletters in NYC and DC, through professional organizations that represent and/or serve professional artists in one or both cities (Asian American Arts Alliance, Arts for the Aging, Society of Washington Artists, Anacostia Community Museum, etc.) and by disseminating to

individuals through agencies that fund and support professional artists in one or both cities (New York Foundation for the Arts, Pollock-Krasner Foundation, The Creative Center). An information session was also held in DC at IONA Senior Services, since DC artists were encountering the project for the first time. Artists were required to complete an eligibility survey to submit with a one-page resume by a stated deadline date. Artists were required to name a working partner (a friend, relative, studio assistant, etc.) to work with them and the fellows for the project's duration. Artists' partners were required to sign the applications along with the artists. In NYC, 90 artists applied and in DC 40 artists applied. The surveys were reviewed and artists were eliminated for logistical reasons only (i.e., they lived too far from Metro area; they did not have a computer; they had no working partner). The remaining eligible artists were 50 in NYC and 30 in DC.

A visit was made to the studios of each eligible artist who applied (50 in NYC; 30 in DC) to participate in the ART CART program in NYC by the Project Director of ART CART and/or the NYC Project Administrator; in DC by the Coordinator of Artist Services and/or the DC Project Coordinator. The inclusion criteria for selection of the artists during these visits included:

- a. Confirmation that the individual applying was a professional artist (has spent a lifetime making art), and was 62 years old or older;
- b. The artist lived in the Metro Area;
- c. The artist had a partner willing to work with the artist throughout the ART CART program (the partner had to be present during the studio visit);

Additional considerations were:

- d. The neighborhood was safe enough to have student fellows make regular studio visits to the artists;
- e. The artist was willing to be part of a team in which fellows came to their studios 1x/week for 15 weeks to assist in the process of organizing their studio to prepare to learn the process of documentation; and an openness to learning and practicing documentation;
- f. The studio environment was safe for all parties involved;
- g. The artist was alert or no more than mildly cognitively impaired and in good enough health to participate as determined by ability to follow conversation, answer questions appropriately, and access the computer;
- h. Notes were also taken as to whether the artist had pets, so as not to be placed with a fellow who had animal allergies.

In each city, application materials for all eligible artists in that city were reviewed, and a jury panel made final selections for participation based on the artists' work following the review. Ten artists in each city were selected to participate in the ART CART program (n = 19; one artist withdrew in DC). They, as well as a random sample of artists eligible, but not selected, to participate in ART CART were invited to participate in this research study in each city. The random sample control group matched the participating ART CART artists in age cohort and profession of art. A total of 35 artists (19 in NYC (9 ART CART; 10 control) and 16 in Washington D.C. (9 ART CART; 7 control group) agreed, and were consented, to participate in the study.<sup>3</sup>

## DATA GATHERING

The 2012–13 research project was administered and supervised by Project Director Joan Jeffri; the clinicians and graduate students were trained and supervised by Patricia Miller, EdD, OTR, FAOTA, Special Research Scientist, Programs in Occupational Therapy, Columbia University Medical Center, and Felecia Banks, PhD, OT/L, Chair of Occupational Therapy, Howard University. Victoria Rizzo, PhD, Chair of the Department of Social Work at Binghamton University, then Assistant Professor in Columbia School of Social Work, was the Principal Investigator on the research and wrote the statistical analysis report and Jane Bear-Lehman, PhD, Associate Professor of Occupational Therapy at New York University, wrote the ART CART Program Evaluation. Barry Gurland, MD, Director and Sidney Katz Professor of Psychiatry, Columbia University's Morris W. III Stroud Center for Study of Quality of Life, and Ada Mui, PhD, Professor of Social Work and a gerontologist at Columbia School of Social Work acted as outside experts and reviewed and helped to interpret the outcomes.

In this study of the intervention group of artists and the matched control group of older professional artists, assessment measures were administered at three intervals: (1) a pre-test prior to the ART CART documentation; (2) a post-test at completion of the ART CART project (six months later); and (3) five months post-intervention to determine sustainability of any positive results.

## SAMPLE CHARACTERISTICS

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<sup>3</sup> IRB approvals for the study were obtained at Columbia University, Howard University and Binghamton University.

*Total Sample:* Table 1 provides the sample demographic characteristics for the participants in each city as well as the entire sample. Of the total sample, 19 participants (54.3%) were in the NYC group and 16 participants (45.7%) were in the DC group. By treatment group, 48.6% (n = 17) of the participants were in the control group and 51.4% (n = 18) were in the ART CART group. The average age of participants was 78 years. The majority of participants were female (77.1%), born in the United States (91.4%) and native English speakers (88.6%). Approximately 63% of artists' identified as white followed by Black/African American (20%), other (17.1%), and Hispanic/Latino (2.9%). The vast majority of the artists (82.8%) had earned a college degree: bachelor's degree (17.1%); master's degree (60%); or Ph.D./professional degree (5.7%).

All of the participants considered themselves to be artists. More than 75% of the artists agreed with the following statements: (1) I have a demonstrated record of exhibition, performances, installations, publications, or other evidence of my art (97.1%); (2) The main body of my activity is some form of art (91.4%); (3) I have been formally trained/educated as an artist (85.7%); and (4) My main priority is to make art (82.9%). Only 25.7% of the artists agreed with the statement, "I make a living as an artist."

## OUTCOME AND ASSESSMENT MEASURES

A certified occupational therapist conducted eight pre- and post-test assessments of the 19 older participating adult artists in both cities. Two advanced graduate students (health/aging specialties) conducted pre- and post-test assessments of a matched control group of 16 artists in both cities, who were not jury selected for the project. Pre- and post-test measures and assessments include: **Geriatric Depression Scale** (Yesavage and Brink, 1983); **Philadelphia Morale Scale** (Lawton, 1975); Revised **UCLA Loneliness Scale** (Russell, Peplau and Cutrona, 1980); **Activity Card Sort (ACS)** (Baum and Edwards, 2001); **Timed Up and Go** (Podsiadlo and Richardson, 1991); **GEM: Gerontological Environment Modifications** (Bakker, 2005), **Activities Specific Balance Confidence Scale (ABC Scale)** (Powell and Myers, 1995); and **The Falls Interview Schedule (FIS)** (Berkman and Miller, 1986, 2004–2005). These are described in detail below:

- a) The *Geriatric Depression Scale* (Yesavage and Brink, 1983) is designed specifically to measure degrees of depression in older adults. Known for its reliability and validity, this widely used measure consists of 15 questions, using a "yes/no" answer format. Scores

range from 0 to 15 with scores greater than 5 suggestive of depression and scores greater than 10 indicating depression.

- b) The *Philadelphia Morale Scale* (Lawton, 1975) measures three domains: agitation (6 questions), attitude toward one's own aging (5 questions), and lonely dissatisfaction (6 questions). The latter speaks to subjects' dissatisfaction with the amount and quality of their social interactions. With the exception of questions 10 and 15, the instrument uses a "yes/no" answer format. Scores on this measure range from 0 to 17 with higher scores indicating better quality of life (decreased social isolation and increased overall morale).
- c) The *Revised UCLA Loneliness Scale* (Russell, Peplau, and Cutrona, 1980) measures satisfaction with social relationships. The instrument consists of 20 questions. Ten of the questions ask subjects about their satisfaction with social relationships and the other 10 questions ask them about their dissatisfaction with social relationships. Subjects answer questions using a 4 point Likert scale: 1 (never); 2 (rarely); 3 (sometimes); and, 4 (often). Scores range from 20 to 80 with higher scores indicating more loneliness (social isolation).
- d) The *Activity Card Sort, Community Living Version (Form C)*, 1st Ed. (Baum and Edwards, 2001) is a self-report assessment of subjects' level of instrumental, leisure, and social activities. Subjects' rate their level of activity in six major areas (instrumental activities of daily living, major life activities, low demand leisure activities, high demand leisure activities, social activities, and religious/spiritual activities) using the following anchors: do presently, do less frequently than 1 year ago, used to do as an adult, and never done as an adult. Several artist specific questions were added to the areas with permission of the authors. For example, "signing and dating my art" and "selling or bartering my art" were added to the major life activities area. In this study, subscale scores were calculated for each area for current level of activity. Global scores were also calculated for current level of activity, total doing less than a year ago, and percent of activities done less than a year ago.
- e) The *Activities Specific Balance Confidence Scale* (ABC Scale) (Powell and Myers, 1995) is a measure of the extent to which older adults worry about falling when carrying out particular activities of everyday living. The instrument consists of 17 questions that ask subjects how confident they are that they can complete certain activities (i.e., get in and out of a car, climb up stairs) without falling or losing their balance. Subjects use a Likert scale that ranges from 0 % (no confidence) to 100% (completely confident) to answer

each question. Total scores range from 0% to 100% with higher scores indicating higher levels of confidence.

- f) The *Timed Up and Go* (TUG) (Podsiadlo and Richardson, 1991) is a standardized, valid and reliable measure of risk of falls in older adults. The purpose of TUG is to detect fallers or individuals at-risk for falls, in order to identify those who need further evaluation and possible intervention to reduce fall risk. The test measures, in seconds, the time it takes the participant to stand up from a standard arm chair, walk a distance of three meters (approximately 10 feet), turn, walk back to the chair, and sit down again. The number of seconds is then used to determine a risk category: 1 = low risk < 10 seconds; 2 = moderate risk 11 – 20 seconds; 3 = severe risk > 20 seconds.

*Assessments:* As with all the measurements, the following assessments were specifically used to identify participants, who would benefit from an occupational therapy (OT) intervention in keeping with the objective to have ART CART play a part in assisting artists to function more safely in their studio environments. Artists in the ART CART group who were assessed as needing an OT intervention were asked if they would like to participate in the intervention. If they agreed to participate, the occupational therapist who interviewed them provided the OT intervention (with physician referral). Three NYC artists in the ART CART group were assessed as needing OT. Two of them participated in the OT intervention. One received separate assistance from a physical therapist. None of the DC artists in the ART CART group was assessed as needing OT. None of the artists in the NYC or DC control groups received OT.

- g) The *Falls Interview Schedule* (Berkman and Miller, 1986, 2004–2005) assesses an individual's history of falls and risk for falling. Subjects are asked if they have fallen, or have almost fallen, in the last year. They are also asked how many times they have fallen or almost fallen, the after effects of falling, where and how the fall(s) occurred, and what they would do to prevent this kind of fall from happening again.
- h) The *Gerontological Environment Modifications* (GEM) (Bakker, 2005) assessment examines the home of an older individual to identify possible problem areas where injury, such as falls, could occur. Examples of areas assessed include accessibility, flooring, lighting, and storage. As part of the assessment, solutions to the problems can be suggested by the interviewer to make the environment safer and more functional. For use in ART CART, this tool was adapted, with permission of the author, to assess aging

artists' studios by asking questions about the documentation and storage of their work as well as toxic materials.

## RESULTS

Results from three different components of our work are included below:

- I. Quantitative results
- II. Program Evaluation Results
- III. Prevention and Health Promotion

### I. QUANTITATIVE RESULTS<sup>4</sup>

The results of the quantitative research, using the above-mentioned assessments and outcome measures, at three intervals, are described below.

Below are the baseline scores for participants' on the outcome measures by city and total sample. Overall, none of the participants was depressed. The mean score for the *Geriatric Depression Scale* was 1.26, meaning none of the participants was depressed since a score of 5 or higher is needed to indicate symptoms of depression. The mean score for the *Philadelphia Morale Scale* was 13.85 out of a possible score of 17, which suggests that participants reported decreased social isolation and increased overall morale. Participants also experienced low levels of loneliness and high levels of social satisfaction as evidenced by scores on the *Revised UCLA Loneliness Scale* ( $M = 32.71$ ). Scores range from 20 to 80, with lower scores indicating less loneliness and social isolation. Participants also reported a high level of confidence (85.96%) in their ability to carry out their day-to-day activities without falling.

For all of the subscales of the Activity Card Sort (ACS), participants reported they were currently doing more than half of the activities in each category. Overall, the mean percentage of activities that participants reported they were doing less than a year ago was 4%. On average, artists took 9.16 seconds to complete the *Timed Up and Go*.

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<sup>4</sup>More detailed statistical analysis of each variable is located in the Appendices.

At baseline, 50% (n = 9) of the ART CART artists reported that they had fallen in the last year while 47% (n = 8) of the control group artists reported that they had fallen. The reported number of times ART CART artists fell ranged from 1 to 4 while the number of falls ranged from 1 to 2 in the control group. At post-test, the percentage of ART CART artists who reported they fell decreased to 33% (n = 5) and the percentage decreased to 46.2% (n = 6) in the control group. The range of the reported number of times ART CART artists fell was one while the number of falls ranged from 1 to 3 in the control group. At follow-up, the percentage of those reporting that they fell increased to 42.8% (n = 6) in the ART CART group while the number of those reporting they fell decreased to 15.4% (n = 2) in the control group. In both groups, the number of falls reported ranged from 1 to 2.<sup>5</sup>

For all of the subscales of the Activity Card Sort (ACS), participants reported they were currently doing more than half of the activities in each category. Overall, the mean percentage of activities that participants reported they were doing less than a year ago was 4%. On average, artists took 9.16 seconds to complete the *Timed Up and Go*.

No significant differences were found at baseline for any of the demographic variables by city (NYC vs. DC) or treatment group (ART CART vs. Control). No significant differences were found on any of the outcome measures by group (ART CART vs. Control). No significant differences were found on any of the outcome measures by city with the exception of the social activities subscale of the Activity Card Sort, Community Living Version. There was a significant difference for the DC condition (M = 10.8; SD = 1.315) and NYC condition (M = 9.26; SD = 1.678);  $t = (2.997)$ ,  $p = .005$ . In other words, artists in DC had higher social activities subscale scores than artists in NYC.

#### NYC SAMPLE

Of the NYC sample, 10 participants (52.6%) were in the Control group and 9 participants (47.4%) were in the ART CART group. The average age of participants was 78 years. The majority of participants were female (78.9%), born in the United States (89.5%) and native English speakers (89.5%). Approximately 68% of artists identified as white followed by other (26.3%), Black/African American (10.5%), and Hispanic/Latino (0%). The vast majority of the

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<sup>5</sup> We have reservations about our data on falls, since we are unsure whether subjects double-counted in post-tests.

artists (79%) had earned a college degree: bachelor's degree (15.8%); master's degree (57.9%); or PhD/professional degree (5.3%).

All of the participants considered themselves to be artists. More than 75% of the artists agreed with the following statements: (1) The main body of my activity is some form of art (94.7%); (2) I have a demonstrated record of exhibition, performances, installations, publications, or other evidence of my art (94.7%); (3) I have been formally trained/educated as an artist (84.2%); and (4) My main priority is to make art (78.9%). Only 15.8% of the artists agreed with the statement, "I make a living as an artist."

Overall, none of the participants was depressed. The mean score for the *Geriatric Depression Scale* was 1.47, meaning none of the participants was depressed since a score of 5 or higher is needed to indicate symptoms of depression. The mean score for the *Philadelphia Morale Scale* was 13.21 out of a possible score of 17, which suggests that participants reported decreased social isolation and increased overall morale. Participants also experienced low levels of loneliness and high levels of social satisfaction as evidenced by scores on the *Revised UCLA Loneliness Scale* ( $M = 33.26$ ). Scores range from 20 to 80, with lower scores indicating less loneliness and social isolation. Participants also reported a high level of confidence (85.96%) in their ability to carry out their day-to-day activities without falling.

At baseline, 55.6% ( $n =$  of the NYC ART CART artists reported that they had fallen in the last year while 60% ( $n = 6$ ) of the control group artists reported that they had fallen. The reported number of times NYC ART CART artists fell ranged from 1 to 4 while the number of falls ranged from 1 to 2 in the control group. At post-test, the percentage of NYC ART CART artists who reported they fell decreased to 44.4% ( $n = 4$ ) and the percentage decreased to 37.5% ( $n = 3$ ) in the control group. The range of the reported number of times NYC ART CART artists fell was one while the number of falls ranged from 1 to 2 in the control group. At follow-up, the percentage of those reporting that they fell stayed the same (42.8%;  $n = 6$ ) in the NYC ART CART group while the number of those reporting they fell decreased to 12.5% ( $n = 1$ ) in the control group. In both groups, the number of falls reported was 1.

For all of the subscales of the Activity Card Sort (ACS), participants reported they were currently doing more than half of the activities in each category. Overall, the mean percentage of

activities that participants reported they were doing less than a year ago was 5%. On average, artists took 9.59 seconds to complete the *Timed Up and Go*.

No significant differences were found at baseline for any of the demographic variables or outcome variables by treatment group (ART CART vs. Control).

#### DC SAMPLE

Of the DC sample, 7 participants (43.8%) were in the control group and 9 participants (56.3%) were in the ART CART group. The average age of participants was 77 years. The majority of participants were female (75%), born in the United States (93.8%) and native English speakers (87.5%). Approximately 56% of artists identified as white followed by Black/African American (31.3%), Hispanic/Latino (6.3%), other (6.3%). The vast majority of the artists (87.6%) had earned a college degree: bachelor's degree (18.8%); master's degree (62.5%); or PhD/professional degree (6.3%).

All of the participants considered themselves to be artists. Also, 100% of them agreed with the statement, "I have a demonstrated record of exhibition, performances, installations, publications, or other evidence of my art." Approximately 88% of the artists agreed with the following statements: (1) The main body of my activity is some form of art; (2) My main priority is to make art; (3) I spend the majority of my time making art; and (4) I have been formally trained/educated as an artist. Approximately 38% of the artists agreed with the statement, "I make a living as an artist."

Overall, none of the participants was depressed. The mean score for the *Geriatric Depression Scale* was 1.00, meaning none of the participants was depressed since a score of 5 or higher is needed to indicate symptoms of depression. The mean score for the *Philadelphia Morale Scale* was 14.67 out of a possible score of 17, which suggests that participants reported decreased social isolation and increased overall morale. Participants also experienced low levels of loneliness and high levels of social satisfaction as evidenced by scores on the *Revised UCLA Loneliness Scale* ( $M = 32.06$ ). Scores range from 20 to 80, with lower scores indicating less loneliness and social isolation. Participants also reported a high level of confidence (85.96%) in their ability to carry out their day-to-day activities without falling. For all of the subscales of the Activity Card Sort (ACS), participants reported they were currently doing more than half of the

activities in each category. Overall, the mean percentage of activities that participants reported they were doing less than a year ago was 4%. On average, artists took 8.67 seconds to complete the *Timed Up and Go*.

No significant differences were found at baseline for any of the demographic variables or outcome variables by treatment group (ART CART vs. Control) or city (NYC vs. DC).

## DISCUSSION OF QUANTITATIVE RESULTS

There was a lack of significant findings on the quantitative measures between pre-tests and post-tests for most of the outcome measures between participating and control group artists. There was little significant difference in the five-month follow-up measures as well. The two significant findings revealed for the total sample and the NYC sample were measures on the Activity Card Sort (ACS) (Baum & Edwards, 2001) of the social activities subscale score and the current activity level (social isolation vs social engagement). In both analyses, the scores on each of the ACS measures decreased significantly and dramatically for the ART CART group from time 2 to time 3 while scores for the control group only decreased slightly. It should be noted that, right after time 2, the ART CART project ended and the summer began.

Social isolation is recognized as a high priority for research and intervention among older adults. Social isolation places a growing number of older adults (approximately 20%) at increased risk for health conditions that highly influence premature morbidity and mortality (Sabir et al., 2009). Fortunately, neither the participating nor the control group artists in our urban sample this past year experienced serious isolation.

These findings suggest that ART CART artists' involvement in social activities decreased after their involvement in the ART CART program ended at the second measurement time. Furthermore, the findings suggest that their global current activity also decreased after involvement in the ART CART program. For the participating artists, their decrease in ACS scores, which suggests a decrease in routine activity, may have been because the fellows no longer came to their studios once a week to document work, provide a social intervention and

give the artists their attention.<sup>6</sup> This decrease in engagement did not affect the results on the other measurements: The Geriatric Depression Scale, The Philadelphia Geriatric Morale Scale and the UCLA Loneliness Scale.<sup>7</sup>

The other significant finding for the total sample was revealed for the *Timed Up and Go*, an assessment to measure the time it takes a person to rise from a chair, walk, return and sit down again. From time 2 to time 3, artists' risk of falling decreased in both groups, but the decrease was much greater in the control group. Given the small sample size, we cannot interpret these findings in any meaningful way.

Fall prevention is one of the areas in which occupational therapists and other health disciplines assess and intervene with older adults in order to reduce/eliminate fall hazards and reduce injurious falls. Physical therapists and some other health professionals are also trained to work with older adults to prevent/reduce falls (Cook and Miller, 1996). According to the Centers for Disease Control and Prevention (CDC): One out of three older adults (those aged 65 or older) falls each year but less than half talk to their healthcare providers about it. Among older adults, falls are the leading cause of both fatal and nonfatal injuries.

- In 2010, 2.3 million nonfatal fall injuries among older adults were treated in emergency departments and more than 662,000 of these patients were hospitalized.
- In 2010, the direct medical costs of falls, adjusted for inflation, was \$30 billion.<sup>8</sup>

In three of our instruments (depression, morale, loneliness) our findings were remarkably consistent with those of Gene Cohen in his *Creativity and Aging* study on adults age 65+ who participated in a chorus in the Washington DC metro area (Cohen et al., 2007). While our subjects were all professional visual artists residing in their individual communities, his were members of the same community, participating in the arts together. Thus, one might speculate:

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<sup>6</sup> An artist alumni mentoring group formed with the New York City artists from the first 2009-2010 pilot, and this group is expanding to include the 2012-2013 artists for the next 2015 ART CART iteration as a preventive approach to isolation.

<sup>7</sup>The ART CART program did try to take this expected decrease in activity level into account after completion of the program by holding two panel discussions by the artists which many of the student fellows, faculty and artists' friends and working partners attended. An exhibition of the artists' work was also held, with an opportunity for attendees to listen to a composite of the recorded oral histories of the artists. The artists were also encouraged to share emails and/or telephone numbers with the other artists. One artist in New York City invited all the artists to her home/studio to socialize and network a couple of months after the completion of ART CART, and most of the artists attended.

<sup>8</sup><http://www.cdc.gov/HomeandRecreationalSafety/Falls/adultfalls.html> Retrieved May 9, 2014.

(1) Are the benefits similar whether you make art as a professional or participate in the arts as an amateur? and (2) Were the benefits to members of Cohen's arts group derived from participation in the arts or regular socialization that happened to use an art medium, or both?

The research team speculates that there are several likely reasons for the above ART CART findings: (1) the participating artists and the artists in the control group were self-selected (volunteered to participate in ART CART), (2) the artists were so happy and excited to participate that there were clear ceiling effects, (3) some of the measures might not have been sensitive enough for relatively high functioning artists, and (4) other measures that are strength-based, rather than deficit-based might be more revealing of the impact of ART CART on these artists at various points in time. These speculations support our plan for the follow-up study to select a control group from the general public.

## II. PROGRAM EVALUATION RESULTS

A formal program evaluation was conducted which analyzed evaluations by the artists, their working partners and the fellows. Many of these questions were open-ended and elicited rich comments.

### ARTISTS' COMMENTS

While we have documented the lack of significant findings on the quantitative measures between pre-tests and post-tests for most of the outcome measures between participating and control group artists, the written communications of the participating artists, were revealing and seemed to indicate that the research variables, (A) morale/depression (B) social isolation vs. social engagement, (C) activity/productivity, (D) safe functioning in the studio environment were being met to various degrees. Fifteen of the 19 participating artists responded to the survey questions and of the 15, some provided comments. Each of the above-mentioned variables will be included separately, although they are by no means mutually exclusive. Just as ART CART was multi-factorial with several independent variables that overlapped (interdisciplinary, intergenerational, service-learning, life review, organizing studio and documenting work, oral history), so do the artists' comments sometimes indicate more than one dependent variable simultaneously, e.g., social engagement and increased morale/self-esteem. Nevertheless, each variable will be discussed separately.

## (A) MORALE/DEPRESSION VS. INCREASED MORALE/SELF-ESTEEM

Clearly, the documentation process is not only about the physical handling of work. The ART CART process brings with it issues of self-esteem, value, confidence, affirmation, and honoring one's work:

- Documentation is a necessary component of my value as an artist.
- I also see that although I work slowly, I have done a large body of work. This is very satisfying to realize.
- I am very pleased to have a record of my work and discovered some almost forgotten things from many years ago.
- The program has helped me enormously to organize and honor myself and my work.
- Documenting is important to me because it made me feel my work was important. That the legacy of my work will be documented in a professional manner and will (after my death) be easier to place in exhibitions or collections.
- I have been producing art for much of my life. However, through ART CART, I have developed a greater sense of my own personal artistic worth and feel that others will likewise come to appreciate what I have done
- Documenting is important to me because it made me feel my work was important. That the legacy of my work will be documented in a professional manner and will (after my death) be easier to place in exhibitions or collections.
- The ART CART program has been extremely good for me in terms of boosting confidence in my work. The program helped me honor myself and my work.
- A primary benefit has been the opportunity to see the whole lifetime of work as evidence of my own convictions, development, and continuum of my very life process... steps forward, backward, plateaus and surges onward... all of which might become an example of what might trigger hope in the possibilities of others.

The project also revealed artists' perception of their own cultures—as artists, as members of ethnic or racial groups, and as members of the aging population:

- Artists of our age have had a passion to create—we need to be able to reach others. As a Latin woman successfully practicing in the arts in the U.S., it is an achievement.

- Because my studio is in the rear of my home I think my fellows were able to experience first-hand the daily life of an artist, partner, mother and an active member of our society. So many times I fear that many put us in another category and do not actually see artists as regular people with the same goals, desires, etc as the rest of the working professionals.
- In knowing that others thought enough of my efforts, focus; and continually working into my senior years, is very inspiring.
- I feel an enhanced evaluation of my work as an artist; a feeling of closure- my life work will have a kind of existence somewhere-as a “body of work” – all saying the work will not be a burden to my family.

Not all artist respondents had increased morale. To some, the process of reviewing one's life's work and starting to document it, posed a gargantuan task: “I consider myself a work in progress in this process. Much that I've not even begun yet, seems overwhelming.”

#### (B) SOCIAL ISOLATION VS. SOCIAL ENGAGEMENT

As previously mentioned, in the quantitative research findings, the only area that showed a significant decrease in outcomes in the participating artist group as compared to the control group was in the area of social isolation vs. social engagement. The outcome measure used was the Activity Cart Sort (ACS) (Baum and Edwards, 2001). The social activities subscale score and current activity level of the ACS decreased more than the control group, which decreased very slightly. Our speculations as to the reasons appear above.

The creation of the mandatory working partner as part of the team of one aging artist and two student fellows was initially to ensure that someone would be available to assist the artist in continuing to document after we left. But this has clearly also had an effect on the social engagement of the artists. Their selected comments about them reveal additional value:

- My husband is my working partner. He has helped me immensely in getting through this program and its related project. I anticipate that he will continue to be very important part of my continued success. I believe that working with the art fellows, other artists, organizers and with me that he has gained a different view/respect of those that must produce art.

- I found my working partner to be a contributing, “indispensable” member of the team.
- My working partner is someone I can trust and is dedicated to help me continue to be a success in the visual arts.
- My working partner is incredible – very caring, curious, and so hard-working.
- I had two great ART CART fellows. They were polite, helpful, and computer literate. They really made a big difference in making my documentation efforts a success. I think I had the best of all, they have become my children; the match could not have been better. The professional respect between the two of them was most refreshing in this world of “attention getters at any cost.”
- I had the pleasure of working with a friend, my working partner.

Artists expressed below that the student fellows provided welcome engagement, also supporting our goals for the students to learn about aging:

- I think the fellow I worked with on this project got a pretty good idea of what it is to be an artist and how such a person (at least me) deals with getting older and all that means.
- Throughout the experience, I’ve considered the involvement a tremendous opportunity to share broadly.
- The two women I worked with (student fellows) were wonderful. I really enjoyed their company and their expert computer skills.
- The experience with the fellows made us a great team.
- Working with the fellows was one of the highlights of the experience. I looked forward to our weekly sessions.
- The fellows’ input was great and they had more technical skills because of their age. We shared life experiences...without them I would have been lost.
- Nice to meet other related professionals and nice to work with these students.
- My graduate fellows have been great at teaching and directing me through the technical process. They have also been reassuring, encouraging, supportive, caring, ready to help in any way possible, etc., etc. It has been a privilege not only to work with them, but to come to know them. We worked really well together.
- We [the fellows and I] became friends and I hope to see more of them this summer.

#### (C) PRODUCTIVITY/ACTIVITY

We learned through our quantitative results that artists are extremely high-functioning and all the artists in our study continue to create work, many on a daily basis. Some were already well-organized.

- I was already doing much of what the ART CART program introduced. Therefore, it was a reaffirmation and encouragement to me to continue with my current media and size works. I anticipate moving to a new space in August, 2013 and hope to be able to create larger works.
- Printmakers are generally well organized as they always date and categorize their work. That aspect made it easier to document the work, so more work was documented than some of the other artists.
- We photographed more than 50 works of art, and added them to the approximately 125 additional photographs from other works of art already in my files.

For those who were new to documentation, we were clearly a catalyst:

- It is very reassuring to have developed a means of documenting my work—to have a program to accomplish this.
- Learning vividly the necessity of this work has been most critical.
- To be able to continue with the project at hand is imperative to have a partner that shares your vision. I am fortunate as it is my husband and friend—so hopefully we will have many years and entries to document together.
- I'm on a roll... But I might need my working partner's advice from time to time.

We also learned from our earlier research (Jeffri, 2007), that many artists do not sign or date their work, a prerequisite for documentation.

- Being encouraged to sign and date my work has been wonderful. Every time I see a work that needs a signature and date, I do it now!

One frustration expressed by many was the time documentation takes away from making the work itself, although most artists realize the need to put aside specific periods of time weekly and/or daily to continue documenting:

- Will continue documenting, but due to many hundreds of pieces of work covering over sixty years of history that I'd like to eventually include, there's no way to do it alone unless I completely stopped producing new work.

- The primary effect of ART CART has been my determination to be more diligent in the future in the process of documenting and recording all details of my work.
- The archiving process is beneficial since it has to be done. That is clear. But I found that it majorly interfered with my current productivity as a practicing artist. I don't see how this can be avoided...Even knowing that it may end up in the garbage is not sufficient motivation to stop current work to deal with the past.
- It would be wonderful to be able to share our life's experiences. Many of us read about the great masters – when they are gone. I am asked to talk about my experiences, my journey, by many, but I still think something else could be done to reach more. I believe the visual arts are something that chooses you to carry it through the next generation.
- I have an appreciation for the importance of documenting my art in a consistent manner; creating a database so that persons who come after can locate my work, study it, and learn from it.

#### (D) SAFE FUNCTIONING IN STUDIO ENVIRONMENT

The three artists who were identified as needing secondary prevention were happy to receive it, and they agreed to have an occupational therapist work with them. However, it is interesting that they never mentioned the interventions in comments in their program evaluations, even when they were helped by the interventions. Our research team speculated that although they recognized that they needed assistance to maximize safe function and productivity, it was not something to mention, as it might mean “frailty” or “old” or something else that has a negative connotation. And one artist reacted negatively against the idea of maximizing safe functioning in the studio, saying, “In my experience, these things do not have anything to do with the legacy program. I have felt throughout this program that there is an expectation of diminished capacity which I find disturbing and not necessary. Old does not necessarily mean impaired. In many cases it may mean improvement.”

In terms of organization of their studio spaces to maximize function, some artists felt they were well aware of these needs:

- I have always organized office space into open area for myself; partner and fellows motivated me to improve space.
- I have always maintained a clean and safe studio.

- All of the above issues [applying skills to maximize participation for continued art-making, despite possible emerging challenges, such as age-related changes or acute or chronic health] have always been aspects of my art-making, experienced differently depending on the circumstance of my life given time and the project I am involved in. So certainly if emerging challenges develop I could change size, weight and medium to fit the circumstances. I already do work of all sizes and in a variety of mediums.

## FELLOWS' COMMENTS

Through extensive written evaluations, as well as continuous commentary on a class web discussion board, ART CART seems to have succeeded to help very much younger students (in art and non-art fields) to learn strategies for positive aging, health promotion and the arts. Anecdotally, many of the students have taken the ART CART experience as well as the skills back to their own practices in social work, occupational therapy, as well as the arts and those students who were artists have also learned to document their own work at an early stage in their careers. Additionally, the life review aspect of the project supported students' learning about aging in a first person way, and offered the artists a chance to look through a lifetime of accomplishment.

A few selected comments by the student fellows serve to illustrate our meeting the objective of students very much younger than their artists (in art and non-art fields) learning strategies for positive aging, health promotion and the arts.

- NYC Fellow (Occupational Therapy): Prior to coming to ART CART, I did not realize how tech-savvy my artist would be. Often there are stereotypes that the elderly does not know how to work technology, but my artist proved me wrong. My artist is vibrant and amazing and the eternal optimist. She has taught me so much more that I could ever take from this experience. NYC fellow: We had agreed upon goals but not necessarily for adaptation of the studio
- NYC fellow (Visual Arts Administration): I'm inspired by the artist I work with. Her motif that "art is based on life" is motivational. She makes me think of the connection between daily life and art. There is no reason to separate them. Aging is just a natural process through which one can appreciate the beauty of living
- NYC fellow (Art Education): The social aspect of coordinated activity and the cooperative environment that emerged was generative. Coming from an artistic background,

professionally and personally my sense of aging has never been an inhibiting or negative factor in my life. I enjoyed together with my Fellow partner, who is of a similar age to myself, functioning as a bridge between our artist who turned 80 and her working partner who was in her mid-30s.

- NYC fellow (Social Work): My artist encouraged me to be aware of life as a whole, and age to be secondary. ART CART confirmed my understanding of how older adults can and do age well.
- DC fellow (MFA Painting): My artist is very passionate not just about her creative processes but everything she commits to. I consider the aging process to be very inspiring process. As a female/artist I continue to evolve. I hope to accomplish as many goals, live a long healthy life and evolve into a prolific established artist. I think ART CART is a great program not just for elderly artists but all ages. As an artist documentation is a very important factor in our careers.
- DC fellow (Occupational Therapy): The documentation process has proven to be an eye-opening and substantial experience. My views of the aging process have greatly expanded due to my assignments and exploration of issues related to older adults, and have become more positive as a result!

### III. PREVENTION AND HEALTH PROMOTION

In New York City, three of nine artists were identified after the first screening as needing secondary prevention. In Washington, DC, none of the nine participating artists was identified as needing secondary prevention. In both cities, an occupational therapist conducted the screenings for the participating artists. Screening was conducted of the non-participating control group artists as well, but no interventions were provided, as planned.

#### THREE CASES: NYC ARTISTS RECEIVE SECONDARY PREVENTION

Although one of our artists was very motivated to make environmental changes to promote physical and psychological well-being, and did make several major changes after just one visit from the occupational therapist, other artists, like other people in general, take longer to incorporate a change process into their lives. Even intellectually, when people know that change of a habit (e.g., using a cane to prevent falls in the house) might be life-saving, denial is a powerful force and habits do not change easily for a multitude of reasons. Therefore, if

individuals understand that they have an urgent need they may begin to make these changes more readily; if a therapist with an understanding of the underlying resistances visits more frequently, the change process may be facilitated sooner and injury and morbidity averted. Other health professionals might be needed if conditions are identified that are in the areas of other professionals' expertise, such as acute shortness of breath, or difficulty seeing even when lighting is sufficient. In such a case, the clinician doing the evaluations would need to discuss with the artist, the need to see another health or social service professional.

Following are examples of three artists who were recommended to receive occupational therapy through the ART CART project.

#### ARTIST 1

Artist 1 was identified as possibly needing an occupational therapy (OT) intervention prior to the completion of the baseline interview because she has limitations with functional mobility, standing balance and overall activity tolerance, and performance of Instrumental Activities of Daily Living (IADLs). IADLS include, but are not limited to, managing shopping, preparing meals, taking public or private transportation. However, when the OT conducted the baseline interview, she assessed that the artist's family members were attentive and meeting her needs. They were knowledgeable about adaptive equipment. The artist already had a stair glide, manual wheelchair, raised toilet seat, grab bars, Lofstrand crutches, and a tub transfer seat. The artist never travelled without her son or daughter with her, and they made themselves readily available. The artist was educated regarding safe functional transfer techniques by the occupational therapist at the time of the baseline interview. A follow-up OT intervention, beyond the baseline interview, was not recommended for this artist. However, this artist had two falls during the course of the study, each requiring brief hospitalizations. Neither fall had to do with transferring from one surface to another, such as chair to toilet, or bed to chair. Physical therapy from Visiting Nurse Services was ordered for the artist in her apartment/art studio. Because of poor balance, the ART CART student fellows re-enforced the physical therapy recommendation for the artist to use a walker in her studio/apartment at all times, when she is not in the wheel chair, which is used outdoors only. Eventually, the artist agreed, and the artist's son recognized the need to repair the parquet floor in the artist's work area to increase her safety. The student fellows did have an experience with the artist when she suddenly experienced shortness of breath and extreme fatigue. They immediately took her by taxi to a

neighborhood hospital, as neither of the artists' adult children was home at the time, and she refused to allow them to call 911. She recovered, was seen by her regular MD, medication was adjusted, and she was fine after that incident. At the 5-month follow-up visit, the artist was pleased with her walker which she used regularly in her home and studio and was proud to demonstrate how well she could transfer from the walker to a regular chair and back again to the walker. Her walking test (Timed Up and Go) with the walker indicated low risk for falls. The artist's confidence about getting around her studio to make art was greatly increased.

## ARTIST 2

After the baseline evaluation, an Occupational Therapy (OT) intervention was recommended to address environmental modifications, safety awareness, time management/organization, and communication skills. The artist agreed to participate in the OT intervention. Numerous and ongoing efforts were made to schedule an OT visit with the artist. These attempts were unsuccessful at first because the artist explained that she was very busy with many projects. The artist, however, has expressed continued interest in participating in the OT intervention per the last communication with her on May 6, 2013. She reported that she has an appointment with her MD and she will request an occupational therapy referral at the appointment. Once the referral was received, the occupational therapist scheduled an OT session before the post-test was completed. At this OT session, the artist expressed concern about the clutter in and around her apartment/art studio. The OT identified safety issues and problem-solved with the artist. Together they determined how lighting could be improved, how electrical wiring could be out of walking pathways, and discussed ways to improve location of art storage areas, enhancing organization and reducing clutter. The artist was very motivated to make these changes and excited by the recommendations made by the Occupational Therapy Researcher (OTR). At the follow-up interview, 5 months after completion of ART CART, the OT researcher found a safe, organized apartment/studio and a very satisfied artist.

## ARTIST 3

Artist 3 was referred for the OT intervention after the baseline evaluation to address the following issues: moving into a smaller studio space in her own apartment that is crowded; dealing with stress and feeling overwhelmed due to her many responsibilities as a mother and wife; and preparing her former studio for sale. In two visits, the OTR problem-solved with the

artist about the overcrowding of studio and apartment with furniture. Safety and falls prevention were emphasized with her as well as strategies (i.e., rearranging cabinets, etc.) to address decreased mobility, limitations in balance, range of motion and pain in shoulder, and reduced standing tolerance, particularly while preparing and cleaning up after meals. The OTR also discussed assertiveness skills, such as limit setting, accepting assistance, and requesting assistance to help her manage her overwhelmed feelings. Coping strategies, such as taking rest breaks, as well as improved time management and memory aid strategies were introduced. Safe functional mobility and transfer techniques were reviewed and the artist was encouraged to continue using her straight cane in her apartment. The artist was attentive to proposed suggestions and approaches. However, she was somewhat resistant to some of the changes, as her maladaptive approaches are well-established habits (Newall et al., 2009). The artist stated that the session was helpful, nevertheless and that she plans to practice new strategies and techniques.

At the five-month follow-up interview after ART CART was completed, Artist 3 talked about how much easier it was now to reach items for meal preparation, and that she felt more comfortable preparing meals and cleaning up after meals as a result of the occupational therapist's suggestions. However, the artist continued to complain about her art studio being too small and cramped compared to the separate art studio she had for many years, indicating that the smaller space continued to be a psychological and physical adjustment. However, the artist introduced a filing system for her collage materials that was usable in her smaller work space, and she was pleased about this change that made it easier for her to reach art materials and locate them readily, thereby conserving time and energy. The artist was strongly encouraged on the 5-month follow-up by an OT evaluator to use her cane in the house because upon testing (Timed Up and Go), she was at a severe risk for falls without her cane. With her cane, she was at mild risk for falls. These test results were explained to the artist, but she remains most resistant to change in this area, despite having had two falls in her home. Ideally, if ART CART had fewer financial constraints, we would have been able to offer this artist 2-3 more occupational therapy sessions to reinforce practice of new, safer strategies for functioning in her daily life, including producing her art work more easily and with greater satisfaction. Hopefully, these strategies would take the older adult artist through the stages of the "Transtheoretical Model of Change" (pre-contemplation, contemplation, preparation, action, and maintenance) (Prochaska and Velicer, 1997).

Despite the OT intervention, one of the three the artists reported changes that reduced her safety in her studio/apartment. At follow-up, her table tops were not free of clutter. Furthermore, she was not wearing shoes with backs and medium thickness. Despite being encouraged to use her cane, she denied the need for it, and she continued to have falls in the home. The other two artists improved from intervention at follow-ups described in above case reports.

Since ART CART's inception in 2009–2010, an occupational therapist/gerontologist has been an education and research consultant to the project. Three graduate schools of occupational therapy had students matriculated in the ART CART program: Columbia, New York and Howard Universities. The attraction of occupational therapy students to ART CART is a natural fit with the objectives of the ART CART program. Occupational therapists engage older adults in the day-to-day activities and roles (otherwise known as occupations) that are important to them in their physical and social environments. In order for the aging process to be meaningful, productivity and fulfillment are two main objectives of the therapist working with older adults. Occupational therapy interventions are individually tailored to identify individual strengths, while simultaneously identifying changes in body function that might require remediation or compensation to optimize performance to reach the individual's goals. The occupational therapist works with cognitive, motor, psychological and social/environmental factors in individuals to support function in the least restrictive environment possible, i.e. aging in place (Bear-Lehman and Miller, 2000).

## LESSONS LEARNED

In this study, we utilized two types of measures for quantitative data: outcome measures and assessments. Outcome measures are used to examine specific outcomes across time. Assessments are used to assess a situation, identify problems, and develop a treatment plan to address the identified problems. At the outset, we treated these two types of measurements the same, which was a mistake. We completed the assessments at all three times of measurement and tried to compare answers across all three time periods for changes. From the outset, the assessments should have been conducted only at baseline and used to assess the artists' risks of falls and safe functioning and develop a treatment plan to address any issues identified. In the end, we did utilize these assessments with only the artists who received OT. This allowed us to see any changes that occurred as a result of the OT intervention.

The original grant did not include the plan for the interventions by the licensed Occupational Therapist. This critical piece was added when two artists were identified as needing her assistance, with appropriate medical permission. This enabled the project not only to observe and research the physical, emotional and mental realities of our aging cohorts, but to assist them in improving their environments and their psycho-social functioning.

The lack of significant findings for most of the outcome measures bears further examination even though the lack of findings can be partially explained by ceiling effects and participant self-selection in both groups. First, we need to ask if we selected the right measures for this project. In other words, does the ART CART program have the potential to impact the outcomes we have chosen? Second, some of the outcome measures we chose are more deficit-based than strengths-based. Should we choose outcome measures that are more strengths-based?

## COMPARISONS WITH THE WORK OF DR. GENE COHEN

Dr. Gene Cohen's ground-breaking studies at the National Institute of Aging (1990s–2006) demonstrated that older adults' active, regular participation in the arts resulted in considerable mental, physical and social benefits for participants: increased self-esteem, decreased loneliness and depression, fewer doctor visits and less medication (Cohen, 2006), reducing their need for (and the costs of) health care. Cohen's work led to the creation of The National Center for Creative Aging in Washington, DC and influenced The RCAC's study, *Above Ground*: (Jeffri, 2007). As previously noted, the *Above Ground* research led to the creation of ART CART: SAVING THE LEGACY and our current research was created using 2012–13 ART CART artists.

Three pre- and post-test measures used by Gene Cohen were replicated in this study: Cohen's pioneering work in his *Creativity and Aging Study* measured the impact of professionally conducted community based cultural programs on the general health, mental health, and social activities of older persons, age 65 and older. Results revealed strikingly positive differences in the intervention group (those involved in participatory art programs) as compared to a control group not involved in intensive cultural programs. We have analyzed the results of the same measures on professional artists.

As with Cohen, the theoretical background for analysis builds upon three major bodies of gerontological research: (1) sense of control; (2) social engagement; and (3) participation/productivity. By using three of the instruments Cohen used with professional artists 62+, we are building on Cohen's approach, applying the valid, reliable instruments he employed to a different and equally important segment of the arts eco-system and offering comparative findings. There is growing evidence to suggest that greater social engagement is associated with lower risks of cognitive decline and dementia (Fratiglioni, Paillard-Borg, and Winblad, 2004). Studies on aging have shown positive health outcomes when older adults experience a sense of control or mastery (Rodin, 1986) over their environment and biological studies show that a protective role in sense of control and social engagement contexts can result from mind-immune systems pathways (Cohen, 2006), (Kiecolt-Glaser et al., 2002), and (Lutgendorf and Costanzo, 2003).

In Cohen's 2001 study, his research looked at amateur participants in community-based cultural programs that ranged from painting, writing, poetry, jewelry making and material culture to music in the form of singing in chorales (Cohen et al., 2007). Cohen spoke eloquently about the changes of focus in gerontology from the end of the 20<sup>th</sup> century that recognized that a person's potential continued through the lifespan "independent of and, at times, as a consequence of aging" (Cohen et al., 2007). As with our *Above Ground* research and this ART CART research, Cohen found participants reported high self-esteem. Cohen's analysis of the significance of art programs apply equally to ART CART:

The significance of art programs is that they foster sustained involvement because of their beauty and productivity. They keep the participants involved week after week, compounding the positive effects being achieved. Many general activities do not have this highly engaging and sustaining quality. Apart from the underlying mechanisms of sense of control and social participation, the amounts of exposure to these factors is critical in relation to positive health effects, again reflecting the importance of the sustaining factor of an intervention (Cohen et al., 2007).

In the three instruments used by both us and Cohen, the UCLA Loneliness Scale (Russell, 1996), and the Philadelphia Geriatric Center Morale Scale (Lawton, 1975) Part One, Interview Version, the Geriatric Depression Scale Short Form (Sheikh and Yesavage, 1986), the ART CART artists scored similarly to Cohen's Washington DC arts participants, a little better on the

loneliness scale but virtually the same in morale and depression (updated versions of the instruments were identical).

Cohen's study revealed (Cohen et al, 2007):

**TABLE 2** Mean (sd) Score for Mental Health Indicators for Intervention (N=57) and Comparison (N=55) Groups Across Time

Mood Indicator	Intervention			Comparison		
	Baseline	T1	T2	Baseline	T1	T2
Morale*	14.2 (2.6)	14.3 (2.6)	13.9 (2.7)	13.9 (2.9)	13.3 (3.3)	12.8 (3.3)
Depression*	1.4 (1.7)	1.0 (1.8)	1.4 (1.8)	1.9 (1.9)	1.9 (1.9)	2.2 (2.0)
Loneliness*	35.1 (8.1)	33.8 (7.3)	34.3 (9.4)	37.6 (9.3)	36.0 (9.7)	36.2 (9.8)

\*Significant main effect of time.

Findings from the ART CART study are below, presenting the mean values and standard deviations for three measures of mental health: morale, depression, and loneliness.

**Table ARTCART** Mean (SD) Scores for Mental Health Indicators for Intervention (N =13) and Comparison (N =12) Group Across Time.

Mood Indicator	ARTCART group (N =13)			Comparison (N=12)		
	Baseline	T1	T2	Baseline	T1	T2
Morale	13.54 (2.50)	13.61 (2.60)	13.30 (3.15)	13.92 (2.68)	13.17 (3.04)	14.67 (2.77)
Depression	1.15 (1.14)	1.08 (1.61)	2.08 (1.75)	1.54 (1.45)	1.77 (1.96)	0.77 (1.36)
Loneliness	31.54(6.07)	32.54 (6.25)	32.08 (7.05)	33.08(8.37)	32.77 (7.00)	32.15 (7.57)

\*No significant main effect of time.

Similar to Cohen's 2001 study, our findings did not reveal significant interactions for two of the three measures of mental health: morale and loneliness. There is, however, a statistically significant interaction for the depression score. However, the depression score averages were lower than 2.1, which are similar to Cohen's study. This means the participants in the ARTCART group were not depressed. For clinical purposes, if those scores are higher than 5, then it is suggestive of depression and should warrant a follow-up. There were zero respondents with a score higher than 5 in the following interview. (See Appendices for statistical analysis.)

Different from the Cohen study, our findings did not show statistically significant main effects of time or group on any of the three measures. Thus, the means for all three measures of mental health were the same at all three testing occasions. There is no indication of effectiveness of group participation.

It is difficult to assess the changes in scores from the depression and loneliness measurements from the baseline to post-tests, since no one was clinically depressed in any stage of the testing. But the depression, loneliness and morale measurements do not have clinically significant changes for the intervention and the control groups due to the time period or the size of the group.

There could be many reasons for these changes. This difference between studies, the presence and absence of statistical significance, may be caused by the sample size differences, 112 vs. 25 respondents, who participated all three times.

While Cohen's comparison groups did worse than his intervention groups, the artists in the ART CART study were virtually the same. Cohen wrote about depression, morale and loneliness influencing physical as well as mental health, morbidity, disability and service utilization and found that his intervention group's higher mental health contributed to their overall health as well. Cohen also pointed to the mean age of his intervention group (80), while the ART CART mean age was 78—the first greater than life expectancy, the second just at life expectancy (Cohen et al., 2007).

## COMPARISONS TO OTHER DATABASES/NATIONAL POPULATION

### FALLS WITH INJURY

We also compared our results to databases that measure the general population, in the areas of physical function/activity, labor force participation, volunteer work and life satisfaction and depression.

The percentage of risk of falls with injury among ART CART participants (31.4%) was similar to the national data (31.7%) from the Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, 2009–2010 (CDC, 2013b).

## DISABILITY AND PHYSICAL FUNCTIONING OR ACTIVITY

ART CART participants were more active (or less disabled or had high physical functioning) compared to the nationally representative sample in the 2004 National Long Term Care Survey (NLTCS). In terms of doing heavy chores (laundry), cooking meals, grocery shopping, managing finances, and managing medications, at baseline ART CART participants reported statistically significant better physical capacity compared to older respondents in 2004 NLTCS based on Chi-square tests (NLTCS, 2006).

In terms of **physical activities to improve health** (aerobic and muscle strengthening), 11% of the national sample participated in physical activities (Federal Interagency Forum on Aging-Related Statistics, 2012). Among ARTCART participants, 85.3% participated in aerobic activities and 94.3% participated in muscle strengthening activities. Thus, ART CART participants engaged in physical activities to improve health at a much higher rate than did the national sample and they engaged in physical activities to improve health at a much higher rate than did the national sample.

According to the CDC (2013a), 31.4% of their sample reported that they had no leisure time physical activities in the past month. Among ARTCART participants, less than 15% of sample reported that they did not participate in physical activities, such as walking, swimming, cycling or other aerobic activities or stretching or strengthening activities. Thus, ART CART participants engaged in leisure time activities at a higher rate than the general population. This finding, however, is presented with caution because the data for each sample was collected using different, but comparable, questions.

## LABOR FORCE PARTICIPATION

The percentage of employed ARTCART participants at baseline (62.9%) was much higher than the national percentage, which ranged from 24.8% to 43.2% depending on the group categorization by age group, gender, and marital status (CDC, 2013a; National Institute on Aging, 2007). This finding suggests that ART CART artists participate in the labor force at a high percentage than the general population. However, this finding is presented with caution

because the total ART CART sample was compared to various subcategories (age group, gender, and marital status) of the general population in the CDC report (2013a) and the HRS report (National Institute on Aging, 2007).

### VOLUNTEER WORK

Sixty percent of the ARTCART participants reported that they did volunteer work. This is almost twice (30%) the national average (National Institute on Aging, 2007).

### LIFE SATISFACTION AND DEPRESSION

Using similar questions (one from the Geriatric Depression Scale and the other from Philadelphia Geriatric Center Morale Scale) on life satisfaction from the ARTCART survey and the 2004 NLTCS, the proportion of respondents who were satisfied with their lives was similar (93.9% to 94.3% of ARTCART participants at baseline vs. 92% of NLTCS participants)

However, the frequency of participants in ARTCART with any suggestive depressive symptoms was zero. This figure was much lower than the 11% to 16% range of people with clinically relevant depressive symptoms reported in the 2008 Health Retirement Study (Federal Interagency Forum on Aging-Related Statistics, 2012). This finding suggests that ARTCART participants were healthy in terms of mental health indicators compared to the nationally representative samples.

### ABOVE GROUND

The original research that resulted in the ART CART (AC) project gave us insights into the older adult population of professional visual artists. Many of the findings in *Above Ground* (AG) (Jeffri, 2007) resonate with the findings in the ART CART research. Viewing the complete sample from ART CART (AC) research, 95% of AG and 89% of AC artists consider themselves to be artists.

Like Cohen's studies, *Above Ground* results revealed that professional visual artists (n=146) age 62+ in NYC are in many respects a model for society, maintaining strong social networks and an astonishing resilience as they age. Demographically, the average age in AG was 73; in AC 78 (be aware that ART CART occurred exactly five years after *Above Ground* was

published, so these might be some of the same people); 60.1% of AG and 77.1% of participants are female, born in the United States (91.4%) and 75% of AG and 88.6% of AC are native English speakers (88.6%). Approximately 73% of AG and 63% of AC artists' identified as white followed by Black/African American (19.2%/20%), other (17.1%), and Hispanic/Latino (0%/2.9%). The majority of the artists (60.1%/82.8%) had earned a college degree: bachelor's degree (17.1%); master's degree (60%); or PhD/professional degree (5.7%).

In the New York City sample (since *Above Ground* was conducted only on NYC artists), the results appear in the chart below:

	ABOVE GROUND (2007)	ART CART AGGREGATE (DC and NYC) (2013)	NYC ART CART (2013)
Self-identify as artists	95%	89%	100%
Gender female	60.1	77.1	78.9
Mean Age	73	78	78
Lives alone	50%	50%	50%
Identifies white	73.3%	63%	68%
Identifies black	19.2%	20%	10.5%
Identifies Hispanic/Latino	0%	2.9%	0%
Identifies other	0.7%	17.1%	26.3%
Born in US	75.9%	91.4%	89.5%
Native language English	89.5%	88.6%	89.5%
College degree	28.4%	17.1%	15.8%
Master's degree	29.1%	60%	57.9%
Doctorate or professional. Degree	2.1%	5.7%	5.3%

Artists' definitions (the same rubric used in both studies) appear below:

	ABOVE GROUND (2007)	ART CART AGGREGATE (2013)	ART CART NYC (2013)
I consider myself an artist	95.1%	100%	100%
The main body of my activity is some Form of art	67.8%	91.4%	94.7%
I have a demonstrated record of exhibitions, Performances, installations, publications or Other evidence of my art	83.3%	97.1%	94.7%
My main priority is to make art	70.8%	82.9%	78.9%
I have been formally trained/educated as An artist	79%	85.7%	84.2%
I make a living as an artist	35.5%	25.7%	15.8%

They also reported that the aging process has affected their creative process in the following ways: using different materials (22.6%), having more (30.4%) or less (17.1%) time to make art,

taking more (37%) or fewer (3%) risks with their artwork. Only 4% reported that they have studio assistants and 61% had made NO preparation for their work after their deaths. Only 3% had an estate plan and 1 in 5 had not documented their work.

While 85% self-reported good, very good or excellent quality of life in the previous 12 months, 47.1% reported anxiety, 16.5% confusion, 26.9% depression, 28.2% isolation and indecisiveness, 15.5% helplessness, 26.9% loneliness and 29.1% vulnerability.

Also, over 60% reported regularly experiencing the following in relation to their artwork or being an artist: flexibility (59.9%), gratification (71.5%), happiness (62.8%), humor (60.6%), introspection(63%), joy (67.7%), passion (69.3%)satisfaction (64.2%), self-awareness (69.3%) and self-esteem (67.2%). These high percentages of positive feelings might have served as a predictor to us that the ART CART artists would produce results in almost all measurements and assessments that created a ceiling effect – they were so high there was almost no room to improve.

Yet, of the 57.1% who said they had anxiety about growing older, almost two-thirds (62.1%) said their anxiety was about health, the highest percentage among choices that included finances and not being able to make art.

There were also expressions of a loss of control with a third (33.6%) saying that in the last month, they felt unable to control the important things in their lives.

## SECONDARY QUESTIONS

One of our secondary questions was *“To what extent is it feasible for the very much younger students (in art and non-art fields) to learn strategies for positive aging, health promotion and the arts?”*

While some of the fellows' comments appear earlier, the 38 Fellows of ART CART were asked to complete two surveys in December, 2012 and April/May 2013. One of these surveys provided questions about the course content for the Fall in-class experience and the other asked for insight into the overall program experience. Fellows completed the first survey after participating in a semester long course in December. This course explored the process of aging, human

development, and creative aging, and prepared fellows for the spring semester documentation process with artists and artists' working partners. At the completion of the full-year ART CART experience, the fellows completed a survey addressing their experience working during the Spring term with their artist, the artist's working partner and completed questions addressing the overall ART CART experience. All surveys were confidential, and fellows had the option of omitting their names.

The surveys called on the use of a 5-level Likert scale where 0=Not Applicable, 1= "Not at all" and 5= "extremely well" for questions pertaining to the main objective of ART CART: documentation of artwork. The survey items speak to the soft skills and hard skills needed to document successfully. Often the soft skills that relate to those that may be influenced by the aging process or how work is completed in the artist's studio (context and process) were not as highly regarded by the raters in the rating system as questions that were directly seen or perceived as the hard skill goal: to document. This factor seems to account for the lower than expected overall average score about the experience and the disparity between numerical score value outcome with the robustly strong favorable and appreciative commentary. It is clear from the numerical values and the comments that the integration of soft and hard skills through the well-selected cross disciplinary influence of art, gerontology and health related therapies (occupational therapy and social work) is the true essence of the success of ART CART in terms of meeting its primary objective: to save artistic legacy.

Overall, the fellows rated the course on average at 3.47. The fellows in NYC had a slightly higher rating of 3.51 compared to those in Washington DC, 3.44; and those fellows whose area of study is in health and aging rated the overall course content at 3.50 compared to the fellows whose area of study is in the arts, 3.41.

At the conclusion of the Fall 2012 semester, the fellows completed a survey that addressed 9 learning objectives as shown in Table 3. There was a consistent and highly rated response to 8 of the 9 objectives averaging 4.01, and this high average rate was consistently above 3.5 for the fellows in both cities whether they were studying in the health, aging or art related fields. The appreciation of lifelong learning was consistently rated the highest with an average score of 4.77 among 32 fellows who responded while documenting electronically was rated the last with an average of 3.33.

In Spring 2013, the fellows completed a comprehensive survey containing 22 questions to reflect upon their spring in-studio experience with the artist, the artist's working partner and another fellow. As shown in Table 4, appreciation for life-long learning ranked the highest consistently across both semesters among the fellows with an overall average of 4.77 in Fall and 4.69 in Spring, and it is followed by 15 highly ranked overall survey responses: appreciation for continuity of successful aging (4.53), learning of interdisciplinary strategies for goals (4.5), analysis of the effects of ART CART (4.38), sharing insights through course of the project (4.37), applying life review (4.31), viewing aging as positive (4.29), assisting in gaining organizational skills (4.28), developmental tasks for successful aging (4.23), applying oral history (4.22), reviewing facets of life story (4.21), achieved goals of older artist (4.19), developing habits to continue documentation (4.16), apply electronic methods (4.13), practice computer skills (3.91), organize artwork/studio (3.88), organize studio (3.71), documenting electronically (3.67), applying agreed upon techniques (3.66), and creating their art (3.66). As shown in Table 4, organizing the studio and documenting art electronically were not rated as highly by the fellows who were studying art and art-related subjects; and apply agreed upon techniques, and creating their art were not as highly rated in NYC and among those fellows who were studying art and art related subjects.

Our other secondary question is more difficult to answer in a definitive way, *“To what extent can we generalize to other older adults across the arts (e.g., writers, performers) and—in future iterations—influence populations outside the arts?”*

The Research Center's past research on older performing artists in Los Angeles and New York City (*Still Kicking*<sup>9</sup>), helps us understand how different the needs and realities of documentation AND of aging are for performers. The solo nature of visual art making compared to the communal nature of performing results in different lifestyles, career trajectories and needs. And careers like classical dance that have severe physical requirements are radically different from the highly self-motivated, sometimes self-contained careers that have no age limit of painters or photographers. We learned in our study on career transition for dancers that former dancers in the U.S. who expected to stop dancing in their forties, were forced (often because of injury) to end their active dance careers in their early thirties. And we saw actors (especially unionized

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<sup>9</sup> Jeffri. J. (2011) *Still Kicking: Aging Performing Artists in NYC and LA Metro Areas – Information on Artists IV*. New York: Trustees of Teachers College Columbia University/Research Center for Arts and Culture.

ones) “retiring,” something that many visual artists say they will never do. And attention must be paid to those performing artists for whom there is no outlet for artistic expression as they age. As one actress said, “How many one-woman shows can I do?”

Interestingly, we found that performing artists 62+ were more attentive to making wills and arrangements for life after their passing than visual artists. Ninety-two percent of NYC and LA performers have a will; 41% in NYC and 43% in LA have an estate plan, compared to 22.9% of visual artists with a will and 2.9% with an estate plan. When visual artists often have tangible property to leave (their art) as opposed to the still photographs, digital images, video and film of the more ephemeral art performers, these percentages are surprising. It is likely that writers are more similar to visual artists, and their work can be digitized (but often for older artists, it is not, especially true for unsung ones).

The ART CART project is creating resources for all artists that will be offered on our website, including an application for estate planning developed in cooperation with Columbia Law School and Resources for Artists with the help of our ART CART alumni. A future step will be translating similar techniques to older performers.

In 2015 ART CART will be offered in three-four locations – again in New York City and Washington DC, and in one-two more locations with up to 40 artists and 80 student fellows. While this feasibility study showed us that professional artists, whether in ART CART or not, are highly functioning, resilient and adaptable, we expect they will be equally advanced compared to a sample of the general population and will secure our hypothesis that aging artists are models for society.

## VALUE AND IMPACT OF RESEARCH ON ART CART: SAVING THE LEGACY

One major area for research and intervention in aging adults is **social isolation** (Berman and Glass). The Geriatric Depression Scale, The Philadelphia Morale Scale, and The Loneliness Scale (all used by Cohen) and the Activity Card Sort (Baum and Edwards, 2001), adapted minimally (with permission) for relevance to professional artists, have given us a deeper understanding of the social isolation-engagement continuum of older artists of whom 50%, in the *Above Ground* research, and 50% in our ART CART study, lived alone. The very high

functioning of professional artists, and of the DC choristers in Gene Cohen's *Creativity and Aging* study, imply important benefits from engagement with the arts, whether as art makers or art participants. This knowledge will help inform our next steps when we will survey ART CART artists using the Respondent-driven sampling (RDS) methodology of our earlier studies, and the addition of a control group from the general population parallel to our 2015-16 research (See chapter III in *Above Ground* "SOCIAL NETWORKS OF AGING VISUAL ARTISTS" [www.creativeaging.org/rcac](http://www.creativeaging.org/rcac) ).

## OUTCOMES OF THE PROJECT

The outcomes of the ART CART project itself are centered on:

- Documentation of work
- Identity and self-esteem
- Life review
- Learning new tasks
- Artists in a better position to produce art, market, donate, sell work, and do wills and estate plans

The value of engagement and documentation provides validation of the artist's life work and his artistic worth.

The life review aspect of the project is important to both the artist and the fellows, as a review over a lifetime and as experiential learning; this supports the need to accomplish the "Summing Up" and "Encore" phases of later life, leading to increased self-esteem (Cohen, 2000).

There are translational skills for students in their professional lives (two graduates proposed a spinoff of ART CART in a Dominican Senior Center in Harlem called "Translating the Legacy"; One social work fellow was accepted to pursue her doctorate in creative aging and will take models back to her native China); students, older artists and artists' working partners have new skills to help others document their work and perhaps create an income stream.

ART CART artists have been able to face the issue identified in *Above Ground* by a large percentage of artists who are in denial about wills and estate plans and documentation.

Artists are in a better position to produce, market, sell, donate work: at least five artists secured gallery shows, several sold work at the final ART CART exhibition, and one was accepted to a new artists' studio complex, all results the artists attribute to ART CART, its exhibitions and the securing of their work at Columbia University's Academic Commons open source digital archive.

Artists benefitted from life review, empowerment and the confidence to engage more intensely in the art world, seeing patterns of work over a lifetime, recognizing that their work is valuable in the world. In addition, they have increased motivation to document. The intergenerational and interdisciplinary benefits were articulated many times in the artists' comments. In addition to the actual documentation process, the value of engagement during this process provides validation of the artist's life work and his artistic worth. The life review aspect of the project is important to both the artist and the fellows, as a review over a lifetime and as experiential learning.

Additional benefits to the ART CART artists came from the offer of free wills and estate plans from CUNY Elder Law Clinic in NYC.

#### OTHER OUTCOMES

An artist who expressed that she would "run out of money" within six months mid-project, received a Lifetime Achievement Award of \$50,000 and a Foundation grant of \$25,000; one NYC artist was included in the post-Hurricane Sandy exhibition in Brooklyn; several more in both cities had group shows.

Organizations from AARP to health insurers emphasize the issue of isolation since it hinders recovery from surgery, contributes to hunger, housing and income issues of older adults. Our findings that compare our professional artist population of artists 65–100 with a strong sense of purpose (their art), to general aging population statistics has shown that artists have statistically significant better physical capacity, are less depressed and volunteer twice as much.

Among older adults, falls are the leading cause of fatal and nonfatal injuries (CDC, 2013b). One out of three older adults fall each year, and people 75 and older are 4 to 5 times more likely than those 65-74 to be admitted to a long-term care facility for a year or longer (Scott, 1990). According to the CDC, falls are a public health problem that for the most part can be prevented (CDC, 2013b). Of the Falls Interview Schedule (Berkman and Miller, 1986, 2004–2005), The

Activity Balance Confidence Scale (Powell and Myers, 1995), The Gerontological Environmental Modifications (GEM) (Bakker, 2010) and The Timed Up and Go (Podsiadlo and Richardson, 1991), at three points in time, the most significant findings were from the Timed Up and Go: from time 2 to 3 both groups' scores decreased, meaning their risk of falling decreased. However, the decrease in the control group was much greater than in the treatment group ( $p = .005$ ). We are unable to determine whether ART CART has made a difference in making the artists safer, less fearful of falling and more functional than prior to the intervention, though we know from the literature that fear of falling and actual falls have had an impact on causing and/or exacerbating anxiety and depression in older adults (Miller and Pantel, 2003).

The literature review on social isolation interventions provided by Cornell's Institute for Translational Research on Aging (CITRA) which draws on 14 rigorously scientific studies identified by Cattan et al who categorize the most promising social isolation interventions as "group peer support, one-to-one support, and service provision" (Sabir et al., 2009) are all functions of ART CART. Effective interventions also mirror the service-learning practices in ART CART as (a) providing group interventions; (b) targeting specific groups (older visual artists); (c) using experimental samples that are representative of the larger group (this is what our next study will help to demonstrate); (d) enabling a level of participant or facilitator control/input (artists' mastery over their work, guidance on its documentation, over material for an oral history, increased safety and function in their environment); (e) developed and conducted within an existing community service organization (universities in partnership with community agencies and artists residing in their communities).

## OUTCOMES OF THE RESEARCH

The addition of measures to determine **productivity, fall risks** (a leading cause of health and human costs in older adults), **environmental safety** (safe functioning), and **mental health variables** (morale, depression, loneliness) have resulted in preventive measures in the artists' studios identified by a clinician and reinforced by student fellows, as well as interventions with three artists towards injury prevention and health promotion among older adults. Policymakers in the field of aging continue to be cognizant of the increased longevity of the aging population throughout the world and the importance of adding life to years, not just years to life. The World Health Organization (WHO) espouses that keeping people healthy and active are necessities, not luxuries. Their active aging policies in program development include several goals, two of

which are goals of ART CART: (1) more people enjoying a positive quality of life as they grow older and (2) more people participating actively as they age in the social, cultural, economic aspects of society, in paid and unpaid roles and in community life (Levy, Slade, and Kasl, 2002; Talley, 2008). Recommendations common to gerontologists and policymakers in the U.S. and other countries include: (1) strong participation of the older population in society; (2) promotion of an optimistic lifestyle for older adults; (3) increased awareness of the importance of active aging; (4) active pursuit of environmental strategies (including technology) for older adults to remain productive and healthy (Jonsson, Josephson, and Kielhofner, 2000). Our selected review of the literature on occupation-and activity-based intervention, quality of life, social isolation revealed a strong correlation with productive aging and subjective well-being and our multi-dimensional approach of dealing with the “whole person” (Coppola, 2008; Miller and Cook, 2008; Baernholdt et al., 2011; Everard, 1999). Results from these multiple studies revealed that greater participation in physical and general activities led to decreased morbidity and mortality, and less dependence on others for activities of everyday living (Arbesman and Lieberman, 2012).

The research instruments and interventions have also helped artists to face the need to exercise more caution about what one can realistically accomplish at particular stage of life re: individual strengths and/or limitations, e.g. taking rest breaks; stretching periodically while working to prevent muscle pain; getting assistance to carry heavy works; knowing when to ask for help; having a safer studio and preventing injury.

## IMPACT OF INTERVENTION

The ART CART program would not be sustainable, even with positive artist outcomes, unless ART CART itself met reciprocal needs of the people in the educational systems and the communities involved in service-learning. Therefore, the impact of ART CART on the students, the faculty, and the artists was studied in the 2010 pilot and continues to be applied using a “collaborative action research model” (Gordon, 2008). Ongoing input from all involved has led to lessons learned and positive changes in ART CART; findings indicated that all parties enthusiastically agreed that ART CART should be continued. A background document with a historical narrative and a faculty curriculum guide are products have been refined and are being used as a guide for all iterations, while individually tailoring the program to the needs of the various groups participating. Non-validated assessment measures tailored to ART CART’s

outlined objectives for student fellows, artists and artists' partners were administered in both pilots and will be administered again at future sites to all three groups at different points in time to assess the extent to which ART CART is having a positive impact on the educational system that entrusted their students to the program and to the wider community of artists that recommended their colleagues, friends, relatives to participate.

At the end of the current ART CART research, almost all artists in both cities were still documenting. As important are the core issues of identity and self-esteem, life review, the ability to learn new tasks, and the fact that the artists are now in a better position to produce their art, market it, donate or sell it, apply for grants and protect their legacies by arranging for wills and estate plans.

The independent variables of the intervention, ART CART: SAVING THE LEGACY had a translational impact on both artists and students simultaneously. The independent variables include: (1) service-learning (student fellows and community-dwelling artists); (2) intergenerational effort (young adult students and older adult artists), (3) interdisciplinary teamwork/collaboration among faculty from different colleges and universities, students, artists and artist partners; (4) cognitive and instrumental tasks in artists' studios (learning together to organize studios, photograph and document artists' work); (5) relationship building among students, artists and artists' partners; (6) life review and oral histories as a process and product of documenting artists' work; (7) environmental comfort and safety while at work/home reducing fall risks and promoting health. The collective, integrated nature of these variables enable these researchers to address the "whole person" in practice, a translational model that leads these researchers to believe that older artists are benefitting in ways that contribute to the positive outcome measures described, but go beyond the explicit measurements in this study.

Examples follow:

- Belief that despite being artists of an advanced age, they can continue to be productive in the work most meaningful to them, participating in exhibits, and selling their work;
- Artists learned new skills that create a safe, easy work environment to make art, documented their work and preserved their legacies which contribute to a sense of control/mastery, thereby reducing feelings of anxiety and/or depression, and increasing self-esteem;

- A bond was formed among the artists, artists' partners and student fellows which reduces a sense of social isolation and facilitates social engagement with the wider community;

The project promoted the “summing up” and “encore” phases of later life (Cohen, 2000) and the continuity of meaningful roles and activities.

## SUMMARY OF FINDINGS

### OUTCOME MEASURES

In both the total sample and NYC sample analyses, there were a few significant findings across the three measurement periods for the outcomes. The two significant findings revealed for the total sample and the NYC sample were measures on the Activity Card Sort (ACS): the social activities subscale score and the current activity level. In both analyses, the scores on each of the ACS measures decreased significantly and dramatically for the ART CART group from time 2 to time 3 while scores for the control group only decreased slightly. It should be noted that, right after time 2, the ART CART project ended and the summer began. These findings suggest that ART CART artists' involvement in social activities decreased after their involvement in the ART CART program ended at the second measurement time. Furthermore, the findings suggest that their global current activity also decreased after involvement in the ART CART program. For the participating artists, their decrease in ACS scores, which suggests a decrease in routine activity, may have been because the fellows no longer came to their studios once a week to document work, provide a social intervention and give the artists their attention. It is important to point out that the social activities score is included in the current activity global score, meaning that the current activity score may have been driven by the social activities score. Given the small sample size and ceiling effects, however, we cannot conclude that the ART CART program was the reason for these findings.

The other significant finding for the total sample was revealed for the *Timed Up and Go*. From time 2 to time 3, artists' risk of falling decreased in both groups, but the decrease was much greater in the control group. Given the small sample size, we cannot interpret these findings in any meaningful way.

One over-arching explanation for the lack of significant findings in this feasibility study is the ceiling effects for most of the measures for both the ART CART and control group artists. With such high scores at baseline, there was, in many areas, no room for improvement across the three measurement periods. A possible explanation was given by Dr. Mary Mittleman of New York University's Langone Medical Center at a recent Gerontological Society of America meeting regarding her study of older adults participating in a chorus who were given the "smiley face" happiness test. Dr. Mittleman reported that the artists were so happy about being selected for the project that their scores began at the top. At that point, she speculated that the "smiley face" test may not have been an appropriate measurement. A similar situation may explain the scores for our participants at baseline since the artists were chosen to participate in the ART CART program by a selection committee. Furthermore, artists' self-selection to apply for ART CART may have contributed to the ceiling effects.

It is difficult to tell if some artists were providing positive reports in order to be seen in a positive light by the interviewers. Understanding the stereotypes of aging, and being part of a business that is centered on youth and consumption, some artists may have tried to present themselves in a certain way, which minimized their reports of any distress they may be experiencing. Several people in the control group also expressed their greetings to the project's director and their hopes to be selected the next time ART CART is done. For this reason, these control group artists may have felt internal pressure to give a positive impression on assessments and measurements, so many of which are self-reported.

This may also have affected the scores on the Geriatric Depression Scale, which uniformly revealed that no artists displayed symptoms of depression. At least one artist, however, when interviewed on the final post-test, was seen by the interviewer to be depressed enough for concern about a potential intervention.

## ASSESSMENTS

An examination of the *Falls Interview Schedule* data revealed that artists in both groups had fallen or were at risk of falling during the course of the study. Nearly half of the participants in both groups had fallen in the last year and more than a third of participants in both groups reported they had almost fallen. Over the three measurement periods, the percentage of those reporting they had fallen in the control group decreased much more dramatically than in the

ART CART group. In fact, the percentage of those reporting they fell increased from measurement time 2 to 3, suggesting that the risk of falls may have increased after the fellows stopped coming to their studios. This is speculation, however, because the wording of the question asked artists if they had “fallen in the last year.” The dramatic decrease in the control group reports of falls may have occurred over the three measurement periods because they were asked the same question three times in one year. Therefore, they may have reported falls only once, while artists in the ART CART group may have reported the same fall more than one time. The findings for the Falls Interview Schedule suggest that an assessment of fall risk should be incorporated into future versions of ART CART, especially in programs that include disciplines (i.e., OT, physical therapy, and nursing) that can make suggestions to reduce the risk of falls.

The *Gerontological Environment Modifications* assessment was used to assess the safe functioning of artists in their studios as well as to identify artists in need of occupational therapy to address safety issues in their studios. Overall, the assessments revealed that for the most part artists were functioning safely in their studios. Two artists in the NYC ART group benefitted from two sessions each with an occupational therapist. Over the three measurement periods, improved safe functioning in their studios was revealed for 14 areas, including several related directly to ART CART: storage of art work; selecting art works for documentation, wearing proper foot wear while making art; and having adequate room for easels. These findings suggest that secondary prevention (in this case, OT interventions) are beneficial for at-risk artists and will help them to remain productive and safe in the creation of their art.

We can hypothesize (Merriam and Kee, 2014; Hertzog, Kramer, Wilson, and Lindenberger, 2008; Baker, Cahalin, Gerst, and Burr, 2005) that those older adults engaged in meaningful, productive roles and activities are higher functioning than those who do not have truly meaningful occupations. People tend to be interdependent, and the greater the support system of older professional artists, the more likely that they will remain productive. This idea might help us generalize to other older adults and re-enforce Gene Cohen's theory of the importance of older adults' involvements in the arts to age productively and with a greater sense of well-being. Jackson's study (Jackson, 1996) indicated that acknowledgement and celebration of current role identities were used as an adaptive strategy by older adults to demonstrate continued competence in their life roles and activities and an enhanced sense of self-worth. Adelman (Adelman, 1994) found that continuity in life roles substantially enhanced older adults' health.

These studies support ART CART as a catalyst for improved function and well-being in the older adult professional artists with whom we work. We can also question the literature (Lindauer, 2003), much of it written well before the creative aging movement, that claims that artists peak in their forties and go downhill from there.

Our conclusions lead us to plan for: 1) a review of the assessment and outcome measures with inclusion of more strength vs deficit-based instruments; 2) a control group from the general public to compare the high-functioning of artists to others and to help us understand whether we can generalize our findings to a larger population 3) decisions about if, how and when to provide secondary prevention and, 4) the creation of models for older artists outside the visual arts, especially writers and performers.

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## SELECTED LITERATURE REVIEW

In order to enrich our report in terms of support of the variables we selected to measure, we include annotated descriptions of additional selected articles.

### PARTICIPATION/PRODUCTIVITY

MetLife Foundation/Civic Ventures (2005). *New face of work survey*. San Francisco: Civic Ventures.

Half of Americans age 50 to 70 want jobs that contribute to the greater good now and in retirement, according to the 2005 *MetLife Foundation/Civic Ventures New Face of Work Survey*. In recent years, the vast majority of baby boomers have told pollsters that unlike their parents, they plan to work in retirement, they need continued income, and they want greater flexibility in retirement jobs. This survey of 1,000 Americans – conducted by Princeton Survey Research Associates International in spring 2005 – is the first to ask those in their 50s (baby boomers) and 60s (pre-boomers) what type of work they aspire to, what they want to accomplish through this work, and why they want to do it.

Survey results show that boomers and pre-boomers:

- Want to do work that helps others, now and in retirement.
- Want careers that are about people, purpose, and community.
- Have divergent attitudes about post-retirement work based on gender and race.

- Don't think it will be very easy to find second careers doing good work and strongly support public policy changes to remove obstacles.

Pritchard, E. K., Brown, G. T., Barker, A. L., and Haines, T. P. (2014, May 20). Exploring the association between volition and participation in daily life activities with older adults living in the community. *Clinical Rehabilitation 1–9*.

Objective: To explore the association between volition and participation in daily activities with older adults living in the community. Design: Cross-sectional study. Setting: Community-dwelling, residing in Victoria (Australia). Participants: A total of 244 adults, of 70 years and older, drawn from a convenience sample, living in their own homes. Main measures: Individuals' participation in daily activities was obtained via phone interviews, from the completion of the Phone-FITT survey. Levels of volition (identified under three items; personal causation, values and interests) were collected using the Volition Scale. Analyses were completed through linear regression. Results: The participants' mean age was 77.5 years (SD 5.7) with 60% being female. Higher levels of participation were associated with higher levels of volition in light housework ( $n = 225$ ,  $p = 0.008$ ), shopping ( $n = 239$ ,  $p = 0.018$ ), lifting weights to strengthen legs ( $n = 23$ ,  $p = 0.031$ ), walking for exercise ( $n = 163$ ,  $p < 0.001$ ) and gardening ( $n = 183$ ,  $p = 0.001$ ). Conclusions: Increased volition is associated with increased participation in physical activities with community-dwelling older adults.

Yam, A., Marsiske, M. (2013). Cognitive longitudinal predictors of older adults' self-reported IADL function. *Journal of Aging and Health 25(8S)*, 163S–185S.

Objective: To examine basic and everyday cognitive predictors of older adults' self-reported instrumental activities of daily living (IADL). Method: Basic and everyday cognitive predictors of self-reported IADL were examined in a sample of healthy, community-dwelling older adults ( $n = 698$ ) assessed over 5 years of measurement. Results: Multilevel longitudinal analyses revealed linear and quadratic change trends for self-reported IADL function, with steeper declines at higher ages. Within-person, when participants exhibited lower cognitive performance, they also reported more IADL impairment. Everyday cognition remained a significant unique predictor of self-reported IADL after controlling for attrition, resampling effects, temporal gradients, and baseline

levels and changes in demographic, sensory, functional, and basic cognitive measures. Discussion: By itself, everyday cognition appears to be an important predictor of self-reported IADL, and maintains a unique predictive contribution after many covariates are controlled. Future research should consider the inclusion of everyday cognitive measures in functional assessment batteries.

## PHYSICAL HEALTH

Amella, E. (2004, October). Presentation of illness in older adults. *American Journal of Nursing*, Vol. 104, No. 10, 40–52.

Although people age at different rates, changes to the human body are a hallmark of aging. As a result of such changes, disease can present differently in a person over 65 years old than it would in a younger adult or child. This article identifies the critical indicators of underlying conditions, including changes in mental status, loss of function, decrease in appetite, dehydration, falls, pain, dizziness, and incontinence. It also describes the presentation of disease common to older adults, including depression, infection, cardiac disease, gastrointestinal disorders, thyroid disease, and type 2 diabetes.

Kosma, M. (2014). An expanded framework to determine physical activity and falls risks among diverse older adults. *Research on Aging*, Vol. 36(1) 95.

Falling is a major health-related risk among older adults due to injuries, disability, and even death. Although physical activity (PA) can prevent falls, most older adults are inactive due to limited motivation. The purpose was to examine a motivational framework whereby the stages of change (SOC) and PA mediated the relations between the theory of planned behavior constructs and falls risks among 172 diverse older adults (M age 1/4 72.36). The participants were assessed using standardized scales. Based on the path analysis, the hypothesized framework fit the sample data. The SOC and perceived control had significant path coefficients for PA (.48 and .43, respectively), and PA was linked to falls risks ( $\beta$ .54). Subjective norm was mostly associated with the SOC followed by attitude and perceived control. The variance explained in the SOC, PA, and falls risks

were 28%, 59%, and 29%, respectively. Health promoters can use the proposed framework to promote PA and decrease falls risk.

Horne, M., Skelton, D. A., Speed, S., and Todd, C. (2013, June 6). Falls prevention and the value of exercise: salient beliefs among south Asian and white British older adults. *Clinical Nursing Research, Vol. 23(1)*, 94–110.

The importance of increasing exercise to prevent falls among older adults remains a key worldwide public health priority. However, older adults do not necessarily take up exercise as a preventative measure for falls. This qualitative study aimed to explore the beliefs of community-dwelling South Asian and White British older adults aged 60 to 70 about falls and exercise for fall prevention through 15 focus groups (n = 87) and 40 in-depth interviews. Data were transcribed verbatim and analyzed using a framework approach. Data analysis identified six salient beliefs that influenced older adults' intention to exercise for fall prevention. In general, older adults aged 60 to 70 did not acknowledge their risk of falling and were not motivated to exercise simply to help prevent falls. Positive beliefs were found to be an unlikely barrier to taking up exercise for fall prevention for those who had experienced a fall. The implications for health promotion and health professionals with this group of older adults are discussed.

Rush, K. L., Watts, W. E., and Stanbury, J. (2010, August 24). Mobility adaptations of older adults: A secondary analysis. *Clinical Nursing Research, 20(1)*, 81–100.

The purpose of this secondary study was to describe the mobility adaptations of community-living older adults. The primary study, designed to understand weakness and aging from the perspective of older adults, revealed that older adults viewed weakness as a progression from inability to an end point of 'giving up,' which prompted the use of adaptation strategies to preserve mobility and to counter a self-identity of being weak. A qualitative descriptive design guided the primary study of 15 community-living older adults, who participated in in-depth interviews. A systematic secondary analysis using Baltes and Baltes' theory of Selective Optimization with Compensation (SOC) showed that older adults used selection, optimization, and compensation adaptations across a range of mobility behaviors. The SOC model offered a framework

for profiling older adults' agency and motivations in meeting mobility challenges as they age and provided the basis for targeted interventions to maximize mobility with aging.

Tinetti, M. E., Allore, H., Araujo, K. L. B., and Seeman, T. (2005). Modifiable impairments predict progressive disability among older persons. *Journal on Aging and Health, Vol. 17, No. 2*, 239–256.

Objective: Our purpose was to determine the extent to which a predetermined set of modifiable impairments predicted progression of disability. Method: We conducted a 3-year follow-up of two community-based cohorts of older adults. The impairment areas included lower extremity, upper extremity, hearing, vision, and affect. Home management and social or productive activities were the domains of function investigated. Results: All five impairments were of at least borderline significance in predicting decline in both functional domains in both cohorts with the exception of hearing for home management activities. The five impairments together explained from 17% to 23% of the decline seen in the functional outcomes (partial  $R^2$ s 0.17 to 0.23). Discussion: Five prevalent and potentially modifiable impairments explained much of the progressive disability experienced. Given the priority that older patients place on function as a health outcome, these impairments should be routinely assessed and modified.

Stalvey, B. T., Owsley, C., Sloane, M. E., and Ball, K. (1999). The life space questionnaire: A measure of the extent of mobility of older adults. *Journal of Applied Gerontology, Vol. 18, No. 4*, 460–478.

Mobility in older adults is typically discussed in terms of component maneuvers including analysis of gait and postural instability; activities that depend on mobility such as bathing, dressing, or shopping; or adverse events during mobility such as falls or motor vehicle crashes. None of these approaches reflects a key aspect of mobility—the extent of movement within a person's environment, or life space in the gerontological literature. Here we describe this concept as it applies to mobility and present a questionnaire instrument designed to measure life space in community-dwelling older adults. Results indicate that the Life Space Questionnaire (LSQ) is reliable and has construct and criterion validity in a sample of older adults. The LSQ can be used to establish the spatial extent of an older person's mobility and may ultimately be useful as an outcome measure

in studies evaluating interventions designed to enhance mobility and independence in community-dwelling older populations.

Gill, T. M., Williams, C. S., and Tinetti, M. E. (2000, December). Environmental hazards and the risk of nonsyncopal falls in the homes of community-living older persons. *Medical Care*, Vol. 38, No. 12, 1174–1183.

Background: Identifying and eliminating environmental hazards in the home has high face validity but little empirical support for fall prevention. Objective: The objective of this study was to determine whether environmental hazards increase the risk of nonsyncopal falls in the homes of community-living older persons. Research Design: This was a prospective cohort study. Participants: The study included 1,088 men and women from a probability sample of 1,103 persons 272 years of age. Measures: A room-by-room assessment for 13 potential trip or slip hazards was completed at baseline and 1 year later by a trained research nurse using a standard instrument. Falls were ascertained monthly for 3 years using a fall calendar and follow-up phone calls. Results: The numbers of participants with a nonsyncopal fall (by room) were as follows: 88 (kitchen), 144 (living room), 41 (hallway), 136 (bedroom), and 59 (bathroom). The risk of a nonsyncopal fall was significantly elevated for only 1 of the 13 trip or slip hazards. For exposure to 1 hazard per room, the relative risks adjusted for age, gender, and housing type were 0.91 (95% CI, 0.58-1.43) for the kitchen, 1.30 (95% CI, 0.92-1.83) for the living room, 1.73 (95% CI, 0.93-3.22) for the hallway, 1.29 (95% CI, 0.90-1.84) for the bedroom, and 0.57 (95% CI, 0.32-1.00) for the bathroom. No consistent association was found between the 13 trip or slip hazards and nonsyncopal falls, even after participants were categorized by impairments in vision, balance/gait, and cognition. CONCLUSION. Our findings do not support an association between environmental hazards and nonsyncopal falls.

## MENTAL WELLNESS

Hertzog, C., Kramer, A. F., Wilson, R. S., and Lindenberger, U. (2008, October). Enrichment effects on adult cognitive development: Can the functional capacity of older adults be preserved and enhanced? *Psychological Science in the Public Interest*, Vol. 9, No. 1, 1–65.

In this monograph, we ask whether various kinds of intellectual, physical, and social activities produce cognitive enrichment effects—that is, whether they improve cognitive performance at different points of the adult life span, with a particular emphasis on old age.

Russell, D. (2009, December). Living arrangements, social integration, and loneliness in later life: The case of physical disability. *Journal of Health and Social Behavior*, Vol. 50, No. 4, 460–475.

Despite the theoretical linkages between household composition and social integration, relatively limited research has considered how living arrangements affect risk for loneliness in later life. Prior work has also failed to consider whether physical disability moderates this potentially important relationship. Using data from a sample of older adults with and without a physical disability (N = 868), this study aims to (1) document variations in loneliness across living arrangements, (2) assess whether any observed association varies by physical disability status, and (3) evaluate the mediating role of social integration and social support. Results reveal that those living alone or with people other than a spouse (children, extended family members) report greater loneliness than those living with a spouse. However, the magnitude of these differences is greater for older adults with a physical disability. Measures of social integration and social support attenuated, but did not fully explain, inter-household variations in loneliness. These findings point to the independent significance of living arrangements for experiences of loneliness in later life among both disabled and nondisabled adults.

Urry, H. L., and Gross, J. J. (2010, December). Emotion regulation in older age. *Current Directions in Psychological Science*, Vol. 19, No. 6, 352–357.

Older age is normatively associated with losses in physical, cognitive, and social domains. Despite these losses, older adults often report higher levels of well-being than do younger adults. How can we explain this enhancement of well-being? In this article, we consider one possible explanation, namely, that older adults show enhanced emotion regulation. Specifically, we propose that older adults achieve well-being by selecting and optimizing particular emotion regulation processes to compensate for changes in internal

and external resources. With this framework in mind, we suggest several directions for future research.

Chen, Y., & Feeley, T. H. (2013, May 31). Social support, social strain, loneliness, and well-being among older adults: An analysis of the health and retirement study. *Journal of Social and Personal Relationships, Vol. 31(2)*, 141–161.

This study proposed that, among older adults, higher support and lower strain received from each of the four relational sources (spouse/partner, children, family, and friends) were associated with reduced loneliness and improved well-being and that loneliness might mediate the relationship between support/strain and well-being. Structural equation modeling was conducted using a national sample of adults aged 50 years and older (N 1/4 7,367) from the Health and Retirement Study. Findings indicated that support from spouse/partner and friends alleviated loneliness, while strain from all the four sources intensified loneliness; higher support and lower strain from various sources directly and indirectly improved well-being, with indirect effects mediated through reduced loneliness. It was concluded that, in later life, various sources of support/strain engender distinct effects on loneliness and well-being, and loneliness serves as one of the psychological pathways linking support/strain to well-being.

Mora, P. A., Beamon, T., Preuit, L., DiBonaventura, M., Leventhal, E. A., and Leventhal, H. (2012, April 3). Heterogeneity in depression symptoms and health status among older adults. *Journal on Aging and Health, 24(5)*, 879–896.

Objectives: We assessed whether distinct classes of depression symptoms could be identified. In addition, we determined how these classes differed in terms of health status. Methods: Data were analyzed with latent profile analysis. MANOVA tests were used to compare the health status of the various classes. Results: A four-class model had the best fit. Classes were labeled according to participants' responses to the Center for Epidemiologic Studies–Depression Scale (CES-D) items and their overall score: low depression symptoms, high depression symptoms, subthreshold with anhedonia, and subthreshold with anhedonia and negative interpersonal feelings. Cross-sectional and longitudinal analyses showed that health status differed across classes. Conclusions: The results provide support for the idea that there is heterogeneity in the presentation of

depression symptoms among older adults. These data showed that about a third of our sample of older adults reported increased levels of anhedonia and that negative interpersonal feelings were uncommon.

Perrino, T., Brown, S. C., Huang, S., Brown, C. H., Gómez, G. P., Pantin, H., and Szapocznik, J. (2011, April 20). Depressive symptoms, social support, and walking among Hispanic older adults. *Journal on Aging and Health*, 23(6), 974–993.

**Objectives:** Depressive symptoms and physical inactivity are health risks among minority older adults. This study examined whether social support moderated the relationship of depressive symptoms to walking behavior among 217 community-dwelling, Hispanic older adults. **Method:** Cross-sectional analyses were used to test whether different forms of social support interacted with depressive symptoms to affect both likelihood and amount of walking. **Results:** Analyses showed a significant interaction between depressive symptoms and instrumental support related to the likelihood of walking and a marginally significant interaction between depressive symptoms and instrumental social support related to the amount of walking. Depressive symptoms were associated with a lower likelihood and lower amount of walking among participants receiving high levels of instrumental social support (e.g., help with chores) but not low instrumental support. Emotional and informational support did not moderate the depression to walking relationship. **Conclusion:** Receiving too much instrumental support was related to sedentary behavior among depressed older adults.

Prieto-Flores, M-E., Forjaz, M. J., Fernandez-Mayoralas, G., Rojo-Perez, F., and Martinez-Martin, P. (2010, September 29). Factors associated with loneliness of noninstitutionalized and institutionalized older adults. *Journal on Aging and Health*, 23(1), 177–194.

**Objectives:** First, to seek if sociodemographic and health factors contribute differentially to the explanation of loneliness in institutionalized and noninstitutionalized older adults; and second, to analyze the influence of institutionalization on loneliness. **Method:** This work was based on two surveys of older adults aged 60 years or more in Spain. A group of 234 community-dwelling people and 234 nursing homes residents were selected ( $n = 468$ ). Logistic regression models were applied using the six-item De Jong Gierveld

Loneliness Scale as dependent variable. Results: Depression was associated with loneliness in both populations. Sex and marital status contributed to explain loneliness among those living at home, whereas gathering with family, friends, and neighbors showed a significant effect in the institutionalized group. Institutionalization per se showed a strong effect on loneliness. Discussion: Findings have potential implications for targeting older adults at risk for loneliness.

Newall, N. E., Chipperfield, J. G., Clifton, R. A., Perry, R. P., Swift, A. U., and Ruthig, J. C. (2009). Causal beliefs, social participation, and loneliness among older adults: A longitudinal study. *Journal of Social and Personal Relationships, Vol. 26(2–3), 273–290.*

Loneliness can be seen as a social failure subject to causal search: Why am I lonely? Why do I lack friends? According to attribution theory, answers to these questions can influence emotions, motivation, and behaviours. This study examined the relationships between various affiliative causal beliefs (i.e., beliefs about loneliness and friendship development), social participation, and loneliness among older adults (72+ years). Cross-sectional and longitudinal (over five years) results showed that more strongly endorsing internal/controllable causal beliefs (i.e., believing that making friends depends on effort) related to greater social participation. Moreover, greater social participation related to less loneliness. External/uncontrollable causal beliefs predicted greater loneliness. In fully addressing loneliness, it may be important to focus on people's causal beliefs.

## WELL BEING

Baker, L. A., Cahalin, L. P., Gerst, K., and Burr, J. A. (2005, September). Productive activities and subjective well-being among older adults: The influence of number of activities and time commitment. *Social Indicators Research, Vol. 73, No. 3, 431–458.*

This study examines relationships among three measures of subjective well-being (life satisfaction, happiness and depressive symptoms), and two global measures of productive activity (number of activities and time commitment). We argue that participation in multiple productive activities should increase subjective well-being because these behaviors increase social integration and provide meaningful social roles.

Using the first two waves of the Americans' Changing Lives survey, we estimate a series of OLS and ordered logistic regression models to examine this issue among a sample of respondents 60 years old and older. Our multivariate regression results show that as time committed to productive activities increases, life satisfaction increases. Both increasing numbers of productive activities and increasing time commitment predict higher levels of happiness. Also, we find only modest support for a relationship between productive activities and the number of and changes in depressive symptoms. Our results provide support for the idea that engaging in productive activities is beneficial to older persons' well-being, implying confirmation of the role enhancement hypothesis and demonstrating the importance of social integration.

Baernholdt, M., Hinton, I., Yan, G., Rose, K., Mattos, M. (2011, June 25). Factors associated with quality of life in older adults in the United States. *Springer Science+Business Media B.V.*

Purpose According to the World Health Organization, quality of life (QOL) includes physical and mental health, emotional well-being, and social functioning. Using an adaptation of Andersen's behavioral model, we examined the associations between the three dimensions of QOL and needs and health behaviors in a nationally representative sample of adults 65 years and older. Methods A representative sample from the 2005-2006 National Health and Nutrition Examination Survey (NHANES) was used. NHANES over-samples persons 60 years and older, African Americans, and Hispanics. Frequencies and distribution patterns were assessed, followed by bivariate and multiple regression analyses. Results: These older adults reported high levels of QOL. However, associations between needs and health behaviors and QOL varied across dimensions. Activities of daily living (ADL) were associated with all three dimensions. Depression was associated with two dimensions and memory problems with one dimension. Physical activity was linked to social functioning, and health care utilization was linked to emotional well-being. Conclusions: The differences in associations with different dimensions of QOL confirm that this is a multidimensional concept. Since depression, memory problems, and ADL function were all associated with some dimension of QOL, future interventions to improve QOL in older adults should include screening and treatment for these problems.

Henning-Smith, C. (2014, April 28). Quality of life and psychological distress among older adults: The role of living arrangements. *Journal of Applied Gerontology*, 1–23.

This study asks (a) What are the relationships between types of living arrangements and psychological well-being for older adults? and (b) How do these relationships differ by gender? Data come from the 2010 wave of the National Health Interview Survey and include non-institutionalized adults aged 65 and older (N = 4,862). Dependent variables include self-rated quality of life and psychological distress. The study finds that older adults living alone or with others fare worse than those living with a spouse only. Yet, the outcomes of different types of living arrangements for older adults vary by gender. Women living with others are at greater risk of worse quality of life and serious psychological distress than men. Programs and policies must be responsive to the diverse needs of this population, rather than attempting a “one-size-fits-all” approach to housing and community-based services designed to promote older adults’ psychological well-being and independence.

Winstead, V., Yost, E. A., Cotton, S. R., Berkowsky, R. W., and Anderson, W. A. (2014, June 18). The impact of activity interventions on the well-being of older adults in continuing care communities. *Journal of Applied Gerontology*, 1–24.

As the U.S. population ages, interventions are needed to ensure quality of life continues as boomers enter assisted and independent living communities (AICs). These transitions can significantly affect quality of life. Activity and continuity theories maintain that participation in discretionary/informal activities is crucial for psychosocial health and well-being (aspects of quality of life). This study evaluates the impacts of participation in discretionary activities on life satisfaction, social isolation, and loneliness, using data from a longitudinal study of older adults in AICs. Older adults who participated in 8 weeks of discretionary activities reported greater life satisfaction and lower levels of social isolation compared with non-participants. Forming alliances and group identities is the key for building new relationships and maintaining relationships in the community. Determining the impact participation in activities has on residents is vital to being able to help develop a more comprehensive understanding of how quality of life can be maintained in AICs.

Kafetsios, K., and Sideridis, G. D. (2006) Attachment, social support and well-being in young and older adults. *Journal of Health Psychology, Vol. 11(6)*, 863–876.

The present study examined the link between attachment, social support and well-being in young and older adults. The results from multi-group path analyses showed significant between-group differences in the links between attachment, perceived support and well-being. Anxious attachment and well-being were inversely associated and this was stronger for the younger group than it was for the older group. Avoidant attachment was negatively related to perceived support satisfaction in the older age group only, and perceived support mediated the effects of avoidant attachment on mental health and loneliness in the older group. Generally, perceived satisfaction with support was more strongly related with well-being in older adults. The results point to differential links of insecure attachment styles with perceived support in different life-stages and to related cognitive, emotional and social processes.

Everard, K. M., (1999). The relationship between reasons for activity and older adult well-being. *Journal of Applied Gerontology, Vol. 18, No. 3*, 325–340.

The purpose of this study was to determine the relationship between activity and older adult well-being by examining the reasons for older adult activity as moderators of the relationship. A sample of 249 older adults completed a questionnaire that contained demographic, health, and activity items. Participants indicated whether they engaged in each of 44 activities, how routinely they engaged in each, and the reasons for each activity. Results from hierarchical regression analyses showed that activities engaged in for social reasons positively related to well-being, and activities engaged in to pass the time negatively related to well-being. Total number of activities and the number of routine activities did not relate to well-being. These findings suggest that engaging in more activities does not necessarily enhance well-being, and that the reasons for engaging in activities are important for older adult well-being.

Levin, J. S. (1994). Dimensions and correlates of general well-being among older adults. *Journal of Aging and Health, Vol. 6, No. 4*, 489–506.

This article examines dimensions and correlates of psychological well-being among older adults aged 55 and above using the General Well-Being (GWB) Scale with data (N=2,931) collected in Kentucky in 1982. A shortened, 11-item version of the GWB is confirmed for use among older respondents and is found to comprise three correlated dimensions termed positive affect, enervation, and negative affect. Development of this scale involved exploratory and confirmatory factor analysis, comparison of alternative model specification, and regression of its component dimensions onto known correlates of psychological well-being in older adults, including age, education, marriage, gender, race, and subjective health.

### SOCIAL ENGAGEMENT

Cornwell, B., Laumann, E. O., and Schumm, L. P. (2008, April). The social connectedness of older adults: A national profile. *American Sociological Review, Vol. 73, No. 2*, 185–203.

For decades, scholars have wrestled with the assumption that old age is characterized by social isolation. However, there has been no systematic, nationally representative evaluation of this possibility in terms of social network connectedness. In this article, we develop a profile of older adults' social integration with respect to nine dimensions of interpersonal networks and voluntary associations. We use new data from the National Social Life, Health, and Aging Project (NSHAP), a population-based study of non-institutionalized older Americans ages 57 to 85, conducted in 2005 to 2006. Results suggest that among older adults, age is negatively related to network size, closeness to network members, and number of non-primary-group ties. On the other hand, age is positively related to frequency of socializing with neighbors, religious participation, and volunteering. In addition, age has a U-shaped relationship with volume of contact with network members. These findings are inconsistent with the view that old age has a universal negative influence on social connectedness. Instead, life-course factors have divergent consequences for different forms of social connectedness. Indeed, some later life transitions, such as retirement and bereavement, may prompt greater connectedness. We conclude by urging increased dialogue between social gerontological and social research.

Cornwell, E. Y., and Waite, L. J. (2009, March). Social disconnectedness, perceived isolation, and health among older adults. *Journal of Health and Social Behavior*, Vol. 50, No. 1, 31–48.

Previous research has identified a wide range of indicators of social isolation that pose health risks, including living alone, having a small social network, infrequent participation in social activities, and feelings of loneliness. However, multiple forms of isolation are rarely studied together, making it difficult to determine which aspects of isolation are most deleterious for health. Using population-based data from the National Social Life, Health, and Aging Project, we combine multiple indicators of social isolation into scales assessing social disconnectedness (e.g., small social network, infrequent participation in social activities) and perceived isolation (e.g., loneliness, perceived lack of social support). We examine the extent to which social disconnectedness and perceived isolation have distinct associations with physical and mental health among older adults. Results indicate that social disconnectedness and perceived isolation are independently associated with lower levels of self-rated physical health. However, the association between disconnectedness and mental health may operate through the strong relationship between perceived isolation and mental health. We conclude that health researchers need to consider social disconnectedness and perceived isolation simultaneously.

DiNapoli, E. A., Wu, B., and Scog, F. (2014). Social isolation and cognitive function in Appalachian older adults. *Research on Aging*, Vol. 36(2), 161–179.

Objective: Investigating the relation between social isolation and cognitive function will allow us to identify components to incorporate into cognitive interventions. Method: Data were collected from 267 Appalachian older adults (M 1/4 78.5, range 70–94 years). Overall cognitive functioning and specific cognitive domains were assessed from data of a self-assembled neuropsychological battery of frequently used tasks. Social isolation, social disconnectedness, and perceived isolation were measured from the Lubben Social Network scale-6. Results: Results indicated a significant positive association between all predictor variables (e.g., social isolation, social disconnectedness, and perceived isolation) and outcome variables (e.g., overall cognitive function, memory, executive functioning, attention, and language abilities). Perceived isolation accounted

for nearly double the amount of variance in overall cognitive functioning than social disconnectedness (10.2% vs. 5.7%). Discussion: Findings suggest that social isolation is associated with poorer overall cognitive functioning and this remains true across varied cognitive domains.

McHugh, J. E., and Lawlor, B. A. (2011, November 22). Exercise and social support are associated with psychological distress outcomes in a population of community-dwelling older adults. *Journal of Health Psychology, 17*(6), 833–844.

Exercise reduces the likelihood of psychological distress, but this may be due to incidental socializing. We gathered information on exercise, social support and three aspects of psychological distress from 583 community-dwelling older adults. Exercise and social support from friends were both associated with lower scores of depression, anxiety and perceived stress. For infrequent exercisers, having a low level of social support indicated higher levels of depression, whereas for frequent exercisers, having a low level of social support did not affect depression levels. Both exercise and social support have roles in regulating psychological well-being in older populations and exercisers are less susceptible to effects of low social support on depression.

Forsman, A. K., Nyqvist, F., and Wahlbeck, K. (2011, September 22). Cognitive components of social capital and mental health status among older adults: A population-based cross-sectional study. *Scandinavian Journal of Public Health, 39*, 757–765.

Aims: To determine the associations between the cognitive aspects of social capital and mental health status in older adults. Methods: Data on older people (65 years of age or older, n 1/4 1,102) were retrieved from a general population mental health survey conducted in Finland in 2008. The response rate was 61%. The associations between self-reported depression (measured by the Composite International Diagnostic Interview Short Form, CIDI-SF) or psychological distress (measured by the General Health Questionnaire, GHQ-12) and perceived social support, sense of belonging, and trust were tested by logistic regression analyses. Results: For the cognitive social capital indicators, difficult access to help from neighbours showed a significant association with depression. Furthermore, not having people to count on, experiencing a lack of concern from other people, and feeling mistrust towards other people were all significantly

associated with psychological distress. Conclusions: Links between mental health and cognitive social capital indicate that social support and trust may be important factors to consider when developing interventions to promote mental health and prevent mental disorders among older adults.

## LIFELONG LEARNING

Cruce, T. M., & Hillman, N. W. (2012, September). Preparing for the silver tsunami: The demand for higher education among older adults. *Research in Higher Education, Vol. 53, No. 6*, 593–613.

Over the next decade, Baby Boomers will be reaching retirement age in large numbers and the U.S. will be undergoing one of the most significant demographic shifts in its history. This demographic shift has important implications for the role of higher education as a provider of lifelong learning and for the changing composition of postsecondary institutions. Using data from the 2005 National Household Education Survey, the results of this study informs the higher education community about this emerging student market segment as a way to help us better respond to older adults' demand for formal learning in postsecondary institutions.

Harris Interactive Inc. (2000, July 19). AARP survey on lifelong learning. Retrieved from <http://assets.aarp.org/rgcenter/general/lifelong.pdf>.

AARP commissioned Harris Interactive Inc. to conduct a survey of 1,1019 people age 50 and older to explore how and why people over 50 learn about new things. The final weighted sample included 508 interviewed by telephone and 511 surveyed online. The research explores typical learning methods, learning motivations, learning interests, and the life-event contexts in which learning takes place.

Lifelong learning experiences that would likely hold the most appeal for mature adults include subjects that are personally meaningful, taught in environments which provide a direct learning experience, allow adults control over all aspects of the learning process, and are not too expensive. Adults age 50 and older learn for the simple joy of learning, to enhance their spiritual or personal growth, and to keep up with what is going on in the

world. These reasons are rather universal—large proportions of men, women, those from different economic and educational backgrounds, and from different age groups express agreement with these reasons for learning.

Kauppinen, H. (1990). Changing Perspectives on older adults' mental abilities and educational needs: Implications for art education. *Studies in Art Education, Vol. 31, No. 2*, 99–105.

The purpose of this article is to examine the implications for art education of gerontology studies on the developmental progression of older adults' mental abilities, special mental strengths, and educational needs. Art as resource for research in art educational gerontology is explored. Special mental abilities and strengths older adults may develop in the stage of post-formal operations may be invaluable for their understanding of art. On the other hand, art studies may contribute to the developmental progression of older adults' mental abilities. Fundamental goals of their art study may include the search for meaning in their life experiences, a comprehension of their place in their cultures, and achievement of a higher, transcendent level of human understanding.

Merriam, S. B., and Kee, Y. (2014, May). Promoting community wellbeing: The case for lifelong learning for older adults. *Adult Education Quarterly, Vol. 64, 2*, 128–144.

Community wellbeing is a function of many factors working in concert to promote an optimal quality of life for all members of a community. It is argued here that the promotion of lifelong learning among older adults can significantly contribute to community wellbeing. The aging society is a worldwide phenomenon presenting both opportunities and challenges to community wellbeing. Research suggests that the more active, healthier, and educated older adults are, the less drain they are on family and community resources and services. At the same time, active and healthy elders contribute to community wellbeing through their accumulated life experience, expertise, and service. The relationship between lifelong learning and community wellbeing is argued from a social capital perspective. This framework contends that formal, nonformal, and informal learning activities of older adults promote an active and engaged lifestyle that helps create and preserve community. Issues of access and opportunity are also addressed.

## TABLES

**TABLE 1:  
Demographic Variables**

<b>TABLE 1: Demographic Variables</b>									
Variable	NYC Participants (N=19)			DC Participants (N=16)			ALL Participants (N=35)		
	<u>N</u>	<u>M</u>	<u>SD</u>	<u>n</u>	<u>M</u>	<u>SD</u>	<u>n</u>	<u>M</u>	<u>SD</u>
<b>Length of Interview</b>	16	112.50	25.458	14	120.00	35.184	30	118.00	31.168
<b>Age</b>	19	78.00	7.175	16	77.00	9.835	35	78.00	8.441
	<u>n</u>	<u>%</u>		<u>n</u>	<u>%</u>		<u>n</u>	<u>%</u>	
<b>Artists' Group</b>									
Control	10	52.6		7	43.8		17	48.6	
Art Cart	9	47.4		9	56.3		18	51.4	
<b>Interview City</b>									
New York City	19	100.0		0	0		19	54.3	
Washington, D.C.	0	0		16	100.0		16	45.7	
<b>Sex</b>									
Female	15	78.9		12	75.0		27	77.1	
Male	4	21.1		4	25.0		8	22.9	

Variable	NYC Participants (N=19)		DC Participants (N=16)		ALL Participants (N=35)	
	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>
<b>State of Birth*</b>						
California	2	10.5	1	6.3	3	8.6
Illinois	1	5.3	1	6.3	2	5.7
Maryland	1	5.3	0	0	1	2.9
Missouri	0	0	1	6.3	1	2.9
New Jersey	0	0	1	6.3	1	2.9
New York	10	52.6	3	18.8	13	37.1
Pennsylvania	3	15.8	2	12.5	5	14.3
Washington, D.C.	0	0	6	37.5	6	17.1
<b>Country of Birth</b>						
Egypt	0	0	1	6.3	1	2.9
Germany	1	5.3	0	0	1	2.9
Portugal	1	5.3	0	0	1	2.9
U.S.	17	89.5	15	93.8	32	91.4
<b>Race/Ethnicity**</b>						
Black, African American, Negro	2	10.5	5	31.3	7	20.0
	0	0	1	6.3	1	2.9

<b>TABLE 1: Demographic Variables</b>						
<b>Variable</b>	<b>NYC Participants (N=19)</b>		<b>DC Participants (N=16)</b>		<b>ALL Participants (N=35)</b>	
	<b><u>n</u></b>	<b><u>%</u></b>	<b><u>n</u></b>	<b><u>%</u></b>	<b><u>n</u></b>	<b><u>%</u></b>
Hispanic or Latino	13	68.4	9	56.3	22	62.9
White	5	26.3	1	6.3	6	17.1
Other						

Percent values will not add to 100% because individuals born outside of the U.S. did not report a state, but rather a city and a country.

\*\* Percent values will not add to 100% because individuals were allowed to select ALL categories that applied to them.

**TABLE 2:**  
**Outcome Variables (Baseline)**

Variable	DC Participants (N=16)			NYC Participants (N=19)			ALL Participants (N=35)		
	<u>n</u>	<u>M</u>	<u>SD</u>	<u>n</u>	<u>M</u>	<u>SD</u>	<u>n</u>	<u>M</u>	<u>SD</u>
<b>Geriatric Depression Scale</b>	16	1.00	1.211	19	1.47	1.837	35	1.26	1.578
<b>Philadelphia Morale Scale</b>	15	14.67	1.496	19	13.21	2.878	34	13.85	2.451
<b>Revised UCLA Loneliness Scale</b>	16	32.06	7.252	19	33.26	6.910	35	32.71	6.989
<b>Activity Card Sort (ACS)</b>									
IADLs subscale score	16	13.25	2.106	19	12.95	2.915	35	13.09	2.545
Major life activities subscale score	16	8.88	1.80	19	8.05	2.543	35	8.43	2.243
Low demand leisure activities subscale score	16	10.09	2.35	19	9.34	1.951	35	9.69	2.142
High demand leisure activities subscale score	16	8.60	1.49	19	7.29	2.377	35	7.89	2.097
Social activities subscale score	16	10.81	1.32	19	9.26	1.678	35	9.97	1.693
Religious/spiritual activities sub scale score	16	4.56	2.61	19	3.24	2.595	35	3.84	2.651
ACS Total Score (Current Activity)	16	56.19	6.82	19	50.13	10.266	35	52.90	9.258

**TABLE 2:**  
**Outcome Variables (Baseline)**

Variable	DC Participants (N=16)			NYC Participants (N=19)			ALL Participants (N=35)		
	ACS Total Score (doing less than a year ago)	16	2.06	1.57	19	2.45	2.034	35	2.27
ACS Total % doing less than a year ago	16	0.04	0.03	19	0.05	0.043	35	0.04	0.038
<b>ABC Scale</b>	16	85.96	11.055	19	85.96	19.202	35	85.96	15.783
<b>Timed Up &amp; Go</b>	16	8.67	2.409	18	9.59	3.149	34	9.16	2.823

**Table 3:**

**Descriptive results showing the number, ranges and means in descending order by the Fellows about the Fall Objectives**

Fall Objectives	Fall Term				New York City				Washington D.C.				Health and Aging Fellows				Art Related Fellows			
	N	Min.	Max.	Mean	N	Min.	Max.	Mean	N	Min.	Max.	Mean	N	Min.	Max.	Mean	N	Min.	Max.	Mean
Appreciate life long learning	31	4	5	4.77	18	4	5	4.78	13	4	5	4.77	16	4	5	4.69	12	4	5	4.83
Continuity of roles	28	2	5	4.46	18	4	5	4.78	10	2	5	3.90	15	4	5	4.87	11	2	5	3.91
Developmental tasks for successful aging	32	3	5	4.25	18	3	5	4.28	14	3	5	4.21	16	3	5	4.38	13	3	5	4.15
Interdisciplinary strategies for goals	33	1	5	4.15	18	3	5	4.28	15	1	5	4.00	16	3	5	4.06	14	1	5	4.21
Sharing insights	32	2	5	4.09	18	2	5	4.06	14	2	5	4.14	16	2	5	4.06	13	2	5	4.23
Creating art	33	0	5	3.70	18	1	5	3.72	15	0	5	3.67	16	2	5	3.69	14	0	5	3.79
Organization of the studio	33	0	5	3.67	18	2	5	3.94	15	0	5	3.33	16	3	5	3.88	14	0	5	3.50
Review life story	33	0	5	3.64	18	1	5	3.78	15	0	5	3.47	16	2	5	3.75	14	0	5	3.50
Document electronically	33	0	5	3.33	18	2	5	3.50	15	0	5	3.13	16	0	5	3.06	14	0	5	3.71
Valid N (listwise)	27				18				9				15				10			
Mean of means				4.01				4.12				3.85				4.05				3.98

**Table 4:**

**Descriptive results showing the number, ranges and means in descending order by the Fellows about Spring Objectives**

Spring Objectives	Fall Term				New York City				Washington D.C.				Health and Aging Fellows				Art Related Fellows			
	N	Min.	Max.	Mean	N	Min.	Max.	Mean	N	Min.	Max.	Mean	N	Min.	Max.	Mean	N	Min.	Max.	Mean
Appreciate life long learning	32	3	5	4.69	16	3	5	4.69	16	3	5	4.69	20	3	5	4.75	12	3	5	4.58
Appreciate continuity of successful aging	32	3	5	4.53	16	3	5	4.38	16	3	5	4.69	20	3	5	4.55	12	3	5	4.50
Interdisciplinary strategies for goals	32	3	5	4.5	16	4	5	4.50	16	3	5	4.5	20	3	5	4.55	12	4	5	4.42
Analyze effects of Art cart	32	3	5	4.38	16	3	5	4.38	16	3	5	4.38	20	4	5	4.60	12	3	5	4.00
Sharing insights through course of project	30	3	5	4.37	14	3	5	4.43	16	3	5	4.31	19	3	5	4.26	11	3	5	4.55
Apply life review	32	2	5	4.31	16	2	5	4.25	16	3	5	4.38	20	3	5	4.40	12	2	5	4.17
View of aging process as positive	31	1	5	4.29	15	3	5	4.40	16	1	5	4.19	19	3	5	4.47	12	1	5	4.00
Assist to gain organizational skills	32	3	5	4.28	16	3	5	4.38	16	3	5	4.19	20	3	5	4.25	12	4	5	4.33
Developmental tasks for successful aging	30	3	5	4.23	15	3	5	4.27	15	3	5	4.20	18	3	5	4.56	12	3	5	3.75
Apply oral history	32	2	5	4.22	16	3	5	4.19	16	2	5	4.25	20	2	5	4.10	12	3	5	4.42
Reviewing facets of life story	33	0	5	4.21	16	1	5	4.31	17	0	5	4.12	20	1	5	4.40	13	0	5	3.92
Acheived goals for older artist	32	3	5	4.19	16	3	5	4.19	16	3	5	4.19	20	3	5	4.30	12	3	5	4.00
Develop habits to continue documentation	32	3	5	4.16	16	3	5	4.13	16	3	5	4.19	20	3	5	4.35	12	3	5	3.83
Apply electronic methods	32	2	5	4.13	16	3	5	4.06	16	2	5	4.19	20	2	5	4.10	12	3	5	4.17
Practice computer skills to document	32	3	5	3.91	16	3	5	3.88	16	3	5	3.94	20	3	5	4.05	12	3	5	3.67
Organize artwork/studio	32	1	5	3.88	16	2	5	3.88	16	1	5	3.88	20	3	5	4.05	12	1	5	3.58
Organize studio	34	0	5	3.71	16	2	5	3.94	18	0	5	3.50	20	2	5	4.10	14	0	5	3.14
Documenting art electronically	33	0	5	3.67	16	1	5	3.63	17	0	5	3.71	19	1	5	3.95	14	0	5	3.29
Apply agreed upon techniques	32	0	5	3.66	16	0	5	3.44	16	0	5	3.88	20	0	5	3.95	12	0	5	3.17
Creating their art	32	0	5	3.66	15	0	5	3.40	17	0	5	3.88	20	0	5	4.05	12	0	5	3.00
Apply strategies to increase pleasure and ease	32	0	5	2.97	16	0	5	2.88	16	0	5	3.06	20	0	5	3.30	12	0	5	2.42
Explore or address research question	32	0	5	2.81	16	0	5	1.88	16	0	5	3.75	20	0	5	2.75	12	0	5	2.92
Valid N (listwise)	26				11				15				16				10			
Mean of means				4.03				3.98				4.09				4.17				3.81

## APPENDIX A. METHODOLOGY

### DATA ANALYSIS

Frequency distributions and measures of central tendency were used to clean the data and describe the sample. T-test and chi-square analyses were used to identify differences between groups (ART CART vs. CONTROL; NYC vs. Washington D. C.) at baseline for the demographic variables and outcome measures. Mixed ANOVA repeated measures analyses with Bonferroni Correction post hoc tests were used to examine the impact of ART CART on the following outcome measures: Geriatric Depression Scale, Philadelphia Morale Scale, Revised UCLA Loneliness Scale, Activity Card Sort, ABC Confidence Scale, the Activity Card Sort, and Timed Up and Go. Violations to the assumption of sphericity were tested using Mauchly's sphericity tests. Violations to the assumption of homogeneity of variance were tested using Levene's tests. Neither of these assumptions was violated in any of the analyses, meaning that there were no significant differences for the main effects of time and group. These analyses were conducted for the total sample as well as the NYC sample separately. Due to small sample size, separate analyses were not conducted for DC sample.

Data from the two assessments were examined in the following ways. For the Falls Interview Schedule (Berkman and Miller, 1986), we examined the percentage of the "number of times fallen" and the "number of times almost fallen" across the three measurement periods as well as the range of the "number of times fallen" and "number of times almost fallen" for each measurement period for the total sample and the NYC sample. For the Gerontological Environment Modifications (GEM) (Bakker, 2005), we examined the data collected across the three measurement periods from the three NYC ART CART artists who received the OT intervention.

### EVALUATIONS

Evaluations of the ART CART program from the artists, their working partners, the faculty in faculty journals, and the students in both fall and spring semesters, yielded deep comments that helped us to understand the impact and value of the program and that will help us plan for future iterations. A formal evaluation document was created by Dr. Jane Bear-Lehman of the

Occupational Therapy Department at NYU, with statistical analysis of comments which we replied on for portions of this report.

## APPENDIX B. QUANTITATIVE RESULTS

### TOTAL SAMPLE

*Outcome Measures:* Significant findings were revealed for the *Activity Card Sort (ACS)* social activities subscale and current activity global score as well as the *Timed Up and Go*.

- a) The *Geriatric Depression Scale* (Yesavage, Brink, et al., 1983): There was a non-significant main effect of group,  $F(1, 24) = .024$ ,  $p = .878$ . There was a non-significant main effect of time,  $F(2, 48) = .04$ ,  $p = .961$ . There was a significant time x group interaction,  $F(2, 48) = 5.89$ ,  $p = .005$ . This effect tells us that scores of the GDS measure differed in the control and ART CART groups. However, Bonferroni corrected post hoc tests showed that artists' scores at times 1, 2, and 3 did not differ significantly.
- b) The *Philadelphia Morale Scale* (Lawton, 1975): There was a non-significant main effect of group,  $F(1, 23) = 0.18$ ,  $p = .678$ . There was a non-significant main effect of time,  $F(2, 46) = 1.13$ ,  $p = .338$ . There was a non-significant time x group interaction,  $F(2, 46) = 2.58$ ,  $p = .087$ . Bonferroni corrected post hoc tests showed that artists' scores at times 1, 2, and 3 did not differ significantly.
- c) The *Revised UCLA Loneliness Scale* (Russell, Peplau, and Cutrona, 1980): There was a non-significant main effect of group,  $F(1, 24) = 0.06$ ,  $p = .812$ . There was a non-significant main effect of time,  $F(2, 48) = 0.16$ ,  $p = .851$ . There was a non-significant time x group interaction,  $F(2, 48) = 0.35$ ,  $p = .851$ . Bonferroni corrected post hoc tests showed that artists' scores at times 1, 2, and 3 did not differ significantly.
- d) The *Activity Card Sort, Community Living Version (Form C)*, 1st Ed. (Baum and Edwards, 2001):

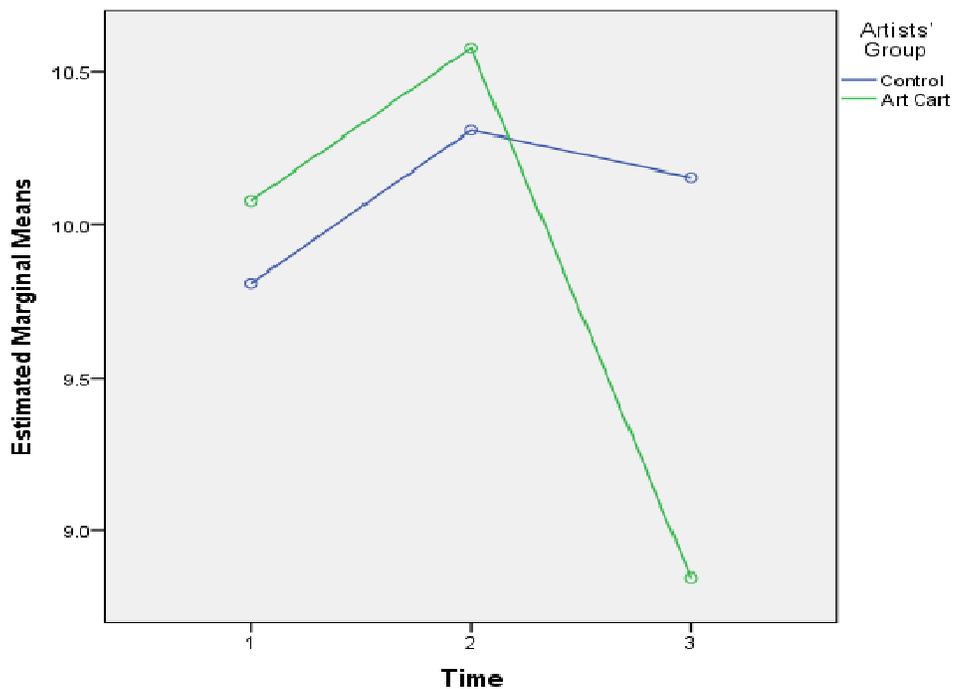
Instrumental activities of daily living subscale score – There was a non-significant main effect of group,  $F(1, 24) = 0.69$ ,  $p = .413$ . There was a non-significant main effect of time,  $F(2, 48) = 1.77$ ,  $p = .181$ . There was a non-significant time x group interaction,  $F(2, 48) = 2.24$ ,  $p = .118$ . Bonferroni corrected post hoc tests showed that artists' scores at times 1, 2, and 3 did not differ significantly.

Major life activities subscale score – There was a non-significant main effect of group,  $F(1, 24) = 0.44$ ,  $p = .515$ . There was a non-significant main effect of time,  $F(2, 48) = 0.43$ ,  $p = .654$ . There was a non-significant time x group interaction,  $F(2, 48) = 0.43$ ,  $p = .654$ . Bonferroni corrected post hoc tests showed that artists' scores at times 1, 2, and 3 did not differ significantly.

Low demand leisure activities subscale score – There was a non-significant main effect of group,  $F(1, 24) = 0.00$ ,  $p = 1.00$ . There was a non-significant main effect of time,  $F(2, 48) = 1.28$ ,  $p = .288$ . There was a non-significant time x group interaction,  $F(2, 48) = 0.43$ ,  $p = .656$ . Bonferroni corrected post hoc tests showed that artists' scores at times 1, 2, and 3 did not differ significantly.

High demand leisure activities subscale score – There was a non-significant main effect of group,  $F(1, 24) = 0.69$ ,  $p = .414$ . There was a non-significant main effect of time,  $F(2, 48) = 1.46$ ,  $p = .242$ . There was a non-significant time x group interaction,  $F(2, 48) = 1.30$ ,  $p = .281$ . Bonferroni corrected post hoc tests showed that artists' scores at times 1, 2, and 3 did not differ significantly.

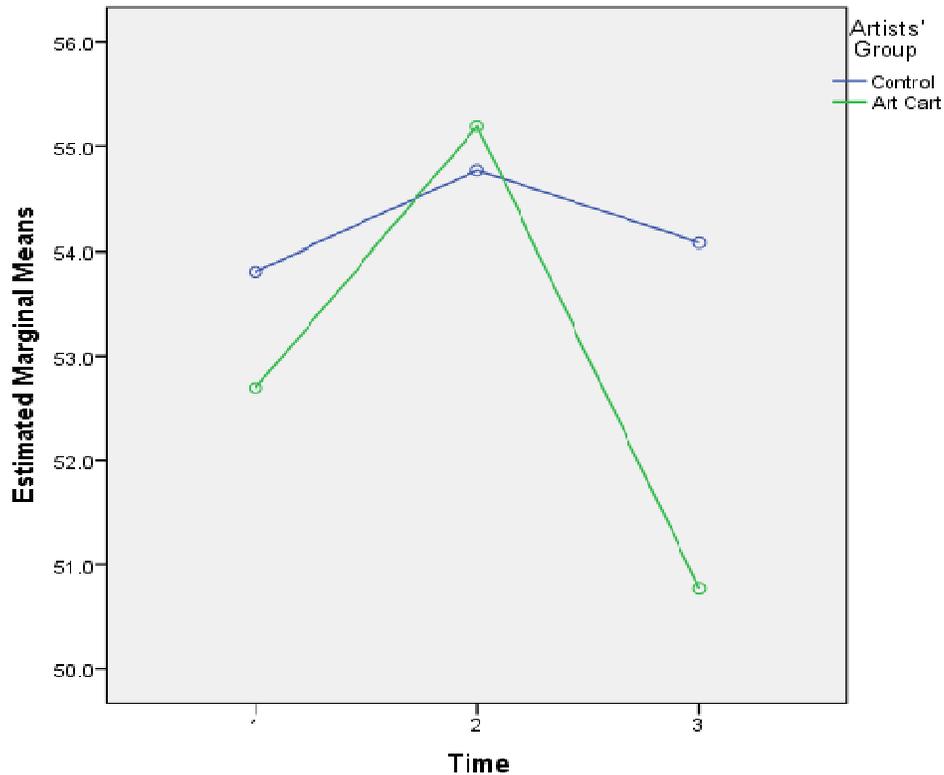
Social activities subscale score – There was a non-significant main effect of group,  $F(1, 24) = 0.17$ ,  $p = .680$ . There was a significant main effect of time,  $F(2, 48) = 4.72$ ,  $p = .014$ . The Bonferroni tests show that scores in both groups rose similarly from time 1 to 2. However, from time 2 to 3 control group scores decreased slightly while art cart scores declined dramatically ( $p = .016$ ). There was also a significant time x group interaction,  $F(2, 48) = 4.396$ ,  $p = .04$ . This difference tells us that scores differed in the ART CART and control groups.



**Figure 1** Estimated Marginal Means of ACS - Social Activities (Total Sample)

Religious/spiritual activities subscale score - There was a non-significant main effect of group,  $F(1, 24) = 0.04, p = .853$ . There was a non-significant main effect of time,  $F(2, 48) = 1.24, p = .298$ . There was a non-significant time x group interaction,  $F(2, 48) = 2.87, p = .066$ . Bonferroni corrected post hoc tests showed that artists' scores at times 1, 2, and 3 did not differ significantly.

Current activity level global score – There was a non-significant main effect of group,  $F(1, 24) = 0.17, p = .688$ . There was a significant main effect of time,  $F(2, 48) = 3.74, p = .031$ . The Bonferroni tests show that scores in both groups rose similarly from time 1 to 2. However, from time 2 to 3 control group scores decreased slightly while Art Cart scores declined dramatically ( $p = .015$ ). There was a non-significant time x group interaction,  $F(2, 48) = 1.93, p = .074$ .



**Figure 2** Estimated Marginal Means of ACS - Current Activity Level Global Score (Total Sample)

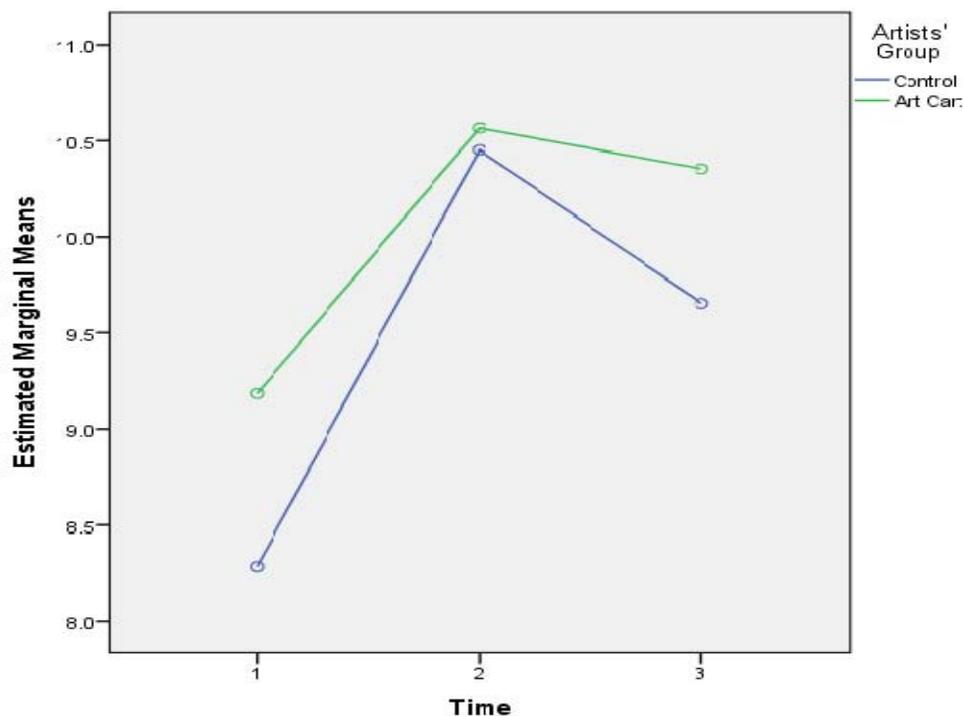
Activities doing less than a year ago global score - There was a non-significant main effect of group,  $F(1, 24) = 0.01, p = .929$ . There was a non-significant main effect of time,  $F(2, 48) = 0.51, p = .602$ . There was a non-significant time x group interaction,  $F(2, 48) = 0.80, p = .457$ . Bonferroni corrected post hoc tests showed that artists' scores at times 1, 2, and 3 did not differ significantly.

Percent of activities doing less than a year ago global score - There was a non-significant main effect of group,  $F(1, 24) = 0.07, p = .798$ . There was a non-significant main effect of time,  $F(2, 48) = 0.43, p = .656$ . There was a non-significant time x group interaction,  $F(2, 48) = 1.37, p = .265$ . Bonferroni corrected post hoc tests showed that artists' scores at times 1, 2, and 3 did not differ significantly.

- e) The *Activities Specific Balance Confidence Scale (ABC Scale)* (Powell and Myers, 1995): There was a non-significant main effect of group  $F(1, 24) = 0.00, p = .952$ . There was a non-significant main effect of time,  $F(2, 48) = 1.27, p = .291$ . There was a non-

significant time x group interaction,  $F(2, 48) = 1.79$ ,  $p = .178$ . Bonferroni corrected post hoc tests showed that artists' scores at times 1, 2, and 3 did not differ significantly.

- f) The *Timed Up and Go* (Podsiadlo and Richardson, 1991): There was a non-significant main effect of group,  $F(1, 22) = .309$ ,  $p = .585$ . There was a significant main effect of time,  $F(2, 44) = 4.373$ ,  $p = .019$ . The Bonferroni tests show that scores in both groups rose similarly from time 1 to 2, meaning that artists' risk of falling increased. From time 2 to 3 both groups' scores decreased, meaning their risk of falling decreased. However, the decrease in the control group was much greater than in the treatment group ( $p = .005$ ).



**Figure 3** Estimated Marginal Means of Timed Up and Go (Total Sample)

## ASSESSMENTS

- a) The *Falls Interview Schedule* (Berkman and Miller, 1986): At baseline, 50% (n = 9) of the ART CART artists reported that they had fallen in the last year while 47% (n = 8) of the control group artists reported that they had fallen. The reported number of times ART CART artists fell ranged from 1 to 4 while the number of falls ranged from 1 to 2 in the control group. At post-test, the percentage of ART CART artists who reported they fell decreased to 33% (n = 5) and the percentage decreased to 46.2% (n = 6) in the control group. The range of the reported number of times ART CART artists fell was one while the number of falls ranged from 1 to 3 in the control group. At follow-up, the percentage of those reporting that they fell increased to 42.8% (n = 6) in the ART CART group while the number of those reporting they fell decreased to 15.4% (n = 2) in the control group. In both groups, the number of falls reported ranged from 1 to 2.

At baseline, 33.3% (n = 6) of the ART CART artists reported that they had almost fallen in the last year while 47% (n = 8) of the control group artists reported that they had almost fallen. The reported number of times ART CART artists almost fell ranged from 1 to 8 while the number of almost falls ranged from 1 to 4 in the control group. At post-test, the percentage of ART CART artists who reported they almost fell decreased to 15.3% (n = 2) and the percentage decreased to 33% (n = 4) in the control group. The range of the reported number of times ART CART artists almost fell was 2 while the number of almost falls ranged from 2 to 9 in the control group. At follow-up, the percentage of those reporting that they almost fell increased to 23.1% (n = 3) in the ART CART group while the number of those reporting they almost fell increased to 46.24% (n = 6) in the control group. In the ART CART group, the number of almost falls reported ranged from 2 to 3 while the number of almost falls ranged from 2 to 4 in the control group.

- b) The *Gerontological Environment Modifications (GEM)* (Bakker, 2005): At baseline, two of the NYC ART CART artists were assessed as eligible for the OT intervention. An examination of these artists' assessments over the three measurement periods revealed that at least one of the artists' made a positive change in 14 of the assessment areas, including: moves in/out through room without bumping/tripping; floor is non-skid with matte finish and no holes or rips; uses furniture for support while ambulating; table tops and floor are free of excessive clutter; adequate room for 1 or more easels in workspace; artwork is in marked storage; can navigate workspace easily; can transport artwork;

walkways are covered with non-slip surface and are free of objects that could be tripped over; seating has a firm seat that doesn't sag, arm rests if needed, adequate height for making art; selected work for documentation; floor surface is clear of clutter; temperature is comfortable; artist wears footwear that has closed back and medium thickness; and radiators/pipes have covers.

Despite the OT intervention, the artists reported changes that decreased their safety in their studios. At follow-up, one artist could no longer move in and out of the room without bumping into things and table tops were not free of clutter. Furthermore, she was not wearing shoes with backs and medium thickness. Another artist had lamp, extension and telephone cords located inside of the walking path, was using furniture to support ambulation, had ottomans in the walking path, and did not have firm seating that doesn't sag, arm rests if needed, and adequate height for making art.

#### NYC SAMPLE (DC sample too small to analyze)

*Outcome Measures:* Significant findings were revealed for the *Activity Card Sort (ACS)* social activities subscale and current activity global score as well as *Timed Up and Go*.

- a) The *Geriatric Depression Scale* (Yesavage, Brink, et al., 1983): There was a non-significant main effect of group,  $F(1, 15) = .212$ ,  $p = .652$ . There was a non-significant main effect of time,  $F(2, 30) = p = .962$ . There was a significant time x group interaction,  $F(2, 30) = 5.756$ ,  $p = .008$ , which means the scores in the control and ART CART groups. However, the Bonferroni post-hoc tests revealed that these differences are not significant.
- b) The *Philadelphia Morale Scale* (Lawton, 1975): There was a non-significant main effect of group,  $F(1, 15) = 0.19$ ,  $p = .672$ . There was a non-significant main effect of time,  $F(2, 30) = 0.41$ ,  $p = .670$ . There was a non-significant time x group interaction,  $F(2, 30) = 1.46$ ,  $p = .247$ . Bonferroni corrected post hoc tests showed that artists' scores at times 1, 2, and 3 did not differ significantly.
- c) The *Revised UCLA Loneliness Scale* (Russell, Peplau, & Cutrona, 1980): There was a non-significant main effect of group,  $F(1, 15) = 0.77$ ,  $p = .394$ . There was a non-

significant main effect of time,  $F(2, 30) = 0.10$ ,  $p = .908$ . There was a non-significant time x group interaction,  $F(2, 30) = 0.70$ ,  $p = .504$ . Bonferroni corrected post hoc tests showed that artists' scores at times 1, 2, and 3 did not differ significantly.

- d) The *Activity Card Sort, Community Living Version (Form C)*, 1st Ed. (Baum and Edwards, 2001):

Instrumental activities of daily living subscale score – There was a non-significant main effect of group,  $F(1, 15) = 1.02$ ,  $p = .328$ . There was a non-significant main effect of time,  $F(2, 30) = 1.51$ ,  $p = .237$ . There was a significant time x group interaction,  $F(2, 30) = 3.75$ ,  $p = .035$ . However, Bonferroni corrected post hoc tests showed that artists' scores at times 1, 2, and 3 did not differ significantly.

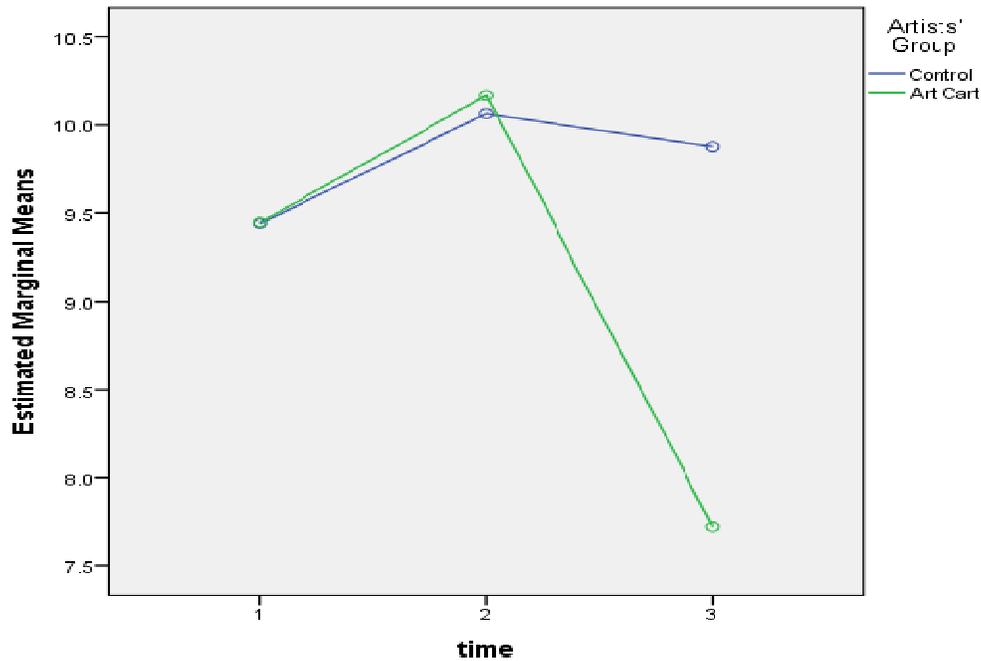
Major life activities subscale score – There was a non-significant main effect of group,  $F(1, 15) = 0.25$ ,  $p = .625$ . There was a non-significant main effect of time,  $F(2, 30) = 0.07$ ,  $p = .931$ . There was a non-significant time x group interaction,  $F(2, 30) = 1.10$ ,  $p = .346$ . Bonferroni corrected post hoc tests showed that artists' scores at times 1, 2, and 3 did not differ significantly.

Low demand leisure activities subscale score – There was a non-significant main effect of group,  $F(1, 15) = 0.63$ ,  $p = .441$ . There was a non-significant main effect of time,  $F(2, 30) = 2.81$ ,  $p = .076$ . There was a non-significant time x group interaction,  $F(2, 30) = 0.88$ ,  $p = .424$ . Bonferroni corrected post hoc tests showed that artists' scores at times 1, 2, and 3 did not differ significantly.

High demand leisure activities subscale score – There was a non-significant main effect of group,  $F(1, 15) = 0.15$ ,  $p = .708$ . There was a non-significant main effect of time,  $F(2, 30) = 0.84$ ,  $p = .443$ . There was a non-significant time x group interaction,  $F(2, 30) = 0.41$ ,  $p = .666$ . Bonferroni corrected post hoc tests showed that artists' scores at times 1, 2, and 3 did not differ significantly.

Social activities subscale score – There was a non-significant main effect of group,  $F(1, 15) = .900$ ,  $p = .358$ . There was a significant main effect of time,  $F(2, 30) = 4.841$ ,  $p = .015$ . The Bonferroni tests revealed that scores in both groups rose similarly from time 1

to 2. However, from time 2 to 3 control group scores decreased slightly while ART CART scores declined dramatically ( $p = .010$ ). There was also a significant time x group interaction,  $F(2, 30) = 4.55$ ,  $p = .019$ , which tells us that scores differed in the ART CART and control groups.

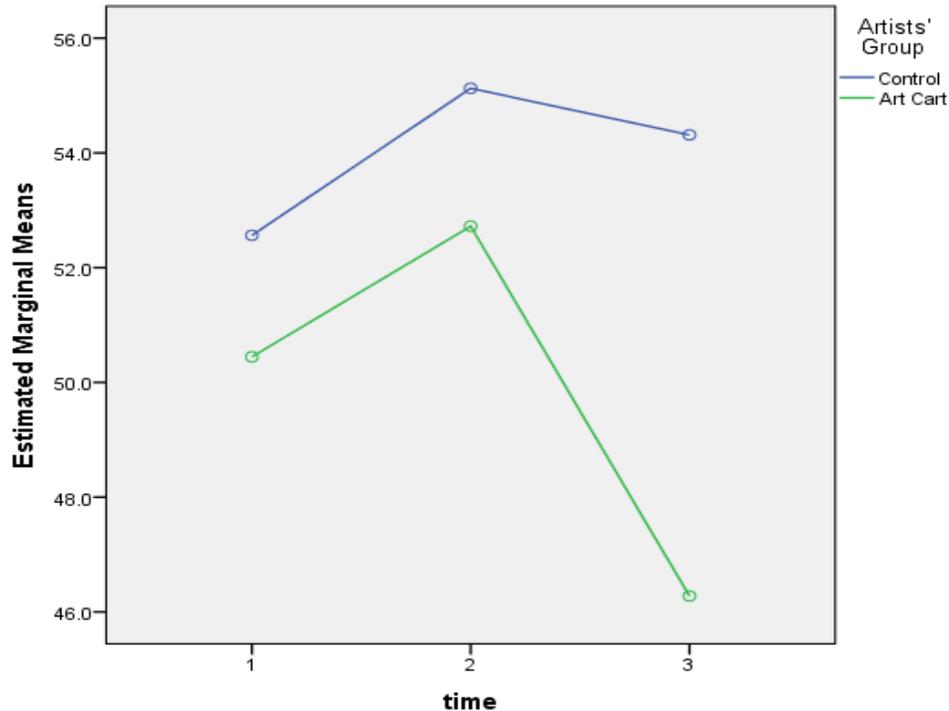


**Figure 4** Estimated Marginal Means of ACS – Social Activities (NYC only)

Religious/spiritual activities subscale score – There was a non-significant main effect of group,  $F(1, 15) = .466$ ,  $p = .505$ . There was a non-significant main effect of time,  $F(2, 30) = 2.004$ ,  $p = .152$ . There was a significant time x group interaction,  $F(2, 30) = 4.187$ ,  $p = .025$ , which tells us that scores differed in the ART CART and control groups. However, the Bonferroni post-hoc tests revealed that these differences are not significant.

Current activity level global score – There was a non-significant main effect of group,  $F(1, 15) = .982$ ,  $p = .337$ . There was a significant main effect of time,  $F(2, 30) = 5.341$ ,  $p = .010$ . There was a significant time x group interaction, which tells us that scores differed in ART CART and control groups. The Bonferroni tests revealed that scores in

both groups rose similarly from time 1 to 2. However, from time 2 to 3 control group scores decreased slightly while art cart scores declined dramatically ( $p = .003$ ).



**Figure 5** Estimated Marginal Means of ACS - Current Activity Level Global Score (NYC only)

Activities doing less than a year ago global score - There was a non-significant main effect of group,  $F(1, 15) = 0.15$ ,  $p = .704$ . There was a non-significant main effect of time,  $F(2, 30) = 0.20$ ,  $p = .062$ . There was a non-significant time x group interaction,  $F(2, 30) = 0.99$ ,  $p = .309$ . Bonferroni corrected post hoc tests showed that artists' scores at times 1, 2, and 3 did not differ significantly.

Percent of activities doing less than a year ago global score - There was a non-significant main effect of group,  $F(1, 15) = 0.33$ ,  $p = .577$ . There was a non-significant main effect of time,  $F(2, 30) = 0.10$ ,  $p = .907$ . There was a non-significant time x group interaction,  $F(2, 30) = 0.43$ ,  $p = .657$ . Bonferroni corrected post hoc tests showed that artists' scores at times 1, 2, and 3 did not differ significantly.

- e) The *Activities Specific Balance Confidence Scale (ABC Scale)* (Powell and Myers, 1995): There was a non-significant main effect of group  $F(1, 15) = 0.45$ ,  $p = .836$ . There

was a non-significant main effect of time,  $F(2, 30) = 1.68, p = .204$ . There was a non-significant time x group interaction,  $F(2, 30) = 1.66, p = .207$ . Bonferroni corrected post hoc tests showed that artists' scores at times 1, 2, and 3 did not differ significantly.

- f) The *Timed Up and Go* (Podsiadlo and Richardson, 1991): There was a non-significant main effect of group,  $F(1, 13) = 2.26, p = .157$ . There was a non-significant main effect of time,  $F(2, 26) = 1.36, p = .275$ . There was a non-significant time x group interaction,  $F(2, 26) = 1.74, p = .196$ . Bonferroni corrected post hoc tests showed that artists' scores at times 1, 2, and 3 did not differ significantly.

#### ASSESSMENTS (NYC SAMPLE)

- a) The *Falls Interview Schedule* (Berkman and Miller, 1986): At baseline, 55.6% ( $n =$  of the NYC ART CART artists reported that they had fallen in the last year while 60% ( $n = 6$ ) of the control group artists reported that they had fallen. The reported number of times NYC ART CART artists fell ranged from 1 to 4 while the number of falls ranged from 1 to 2 in the control group. At post-test, the percentage of NYC ART CART artists who reported they fell decreased to 44.4% ( $n = 4$ ) and the percentage decreased to 37.5% ( $n = 3$ ) in the control group. The range of the reported number of times NYC ART CART artists fell was one while the number of falls ranged from 1 to 2 in the control group. At follow-up, the percentage of those reporting that they fell stayed the same (42.8%;  $n = 6$ ) in the NYC ART CART group while the number of those reporting they fell decreased to 12.5% ( $n = 1$ ) in the control group. In both groups, the number of falls reported was 1.

At baseline, 33.3% ( $n = 3$ ) of the NYC ART CART artists reported that they had almost fallen in the last year while 30% ( $n = 3$ ) of the control group artists reported that they had almost fallen. The reported number of times NYC ART CART artists almost fell ranged from 1 to 5 while the number of almost falls ranged from 1 to 3 in the control group. At post-test, the percentage of NYC ART CART artists who reported they almost fell decreased to 14.3% ( $n = 1$ ) and the percentage decreased to 12.5% ( $n = 1$ ) in the control group. The range of the reported number of times NYC ART CART artists almost fell was not reported while the number of almost falls ranged was 2 in the control group. At follow-up, the percentage of those reporting that they almost fell increased to

22.2% (n = 3) in the NYC ART CART group while the number of those reporting they almost fell stayed the same (12.5%; n = 1) 6) in the control group. In the NYC ART CART group, the number of almost falls reported ranged from 2 to 3 while the number of almost falls was 3 in the control group.

- b) The *Gerontological have Environment Modifications (GEM)* (Bakker, 2005): The three artists who received the OT intervention were NYC ART CART artists. The results of the OT intervention were reported in the total sample results section on page 12.

## APPENDIX C. QUANTITATIVE ANALYSIS OF GENE COHEN DATA COMPARED TO ART CART DATA

Cohen's 2001 study:

**TABLE 2** Mean (sd) Score for Mental Health Indicators for Intervention (N=57) and Comparison (N=55) Groups Across Time

Mood Indicator	Intervention			Comparison		
	Baseline	T1	T2	Baseline	T1	T2
Morale*	14.2 (2.6)	14.3 (2.6)	13.9 (2.7)	13.9 (2.9)	13.3 (3.3)	12.8 (3.3)
Depression*	1.4 (1.7)	1.0 (1.8)	1.4 (1.8)	1.9 (1.9)	1.9 (1.9)	2.2 (2.0)
Loneliness*	35.1 (8.1)	33.8 (7.3)	34.3 (9.4)	37.6 (9.3)	36.0 (9.7)	36.2 (9.8)

\*Significant main effect of time.

Independent t-test results showed that the means for morale and loneliness are not statistically different with the 0.05 significance level. For Depression, except mean scores of Geriatric Depression Scores for T2 (follow-up) of comparison group, there is no statistical difference on the mean values.

The findings, using a repeated measure ANOVA (MIXED ANOVA synonym of Mixed Between-Within Subject ANOVA) related to morale, depression and loneliness do not show effects of time. I believe data support your statement (While Cohen's comparison groups did worse than his intervention groups, the artists in the ART CART study were virtually the same).

**Table ARTCART.** Mean (SD) Scores for Mental Health Indicators for Intervention (N =13) and Comparison (N =12) Group Across Time.

Mood Indicator	ARTCART group (N =13)			Comparison (N=12)		
	Baseline	T1	T2	Baseline	T1	T2
Morale	13.54 (2.50)	13.61 (2.60)	13.30 (3.15)	13.92 (2.68)	13.17 (3.04)	14.67 (2.77)
Depression	1.15 (1.14)	1.08 (1.61)	2.08 (1.75)	1.54 (1.45)	1.77 (1.96)	0.77 (1.36)
Loneliness	31.54(6.07)	32.54 (6.25)	32.08 (7.05)	33.08(8.37)	32.77 (7.00)	32.15 (7.57)

\*No significant main effect of time.

**Table ARTCART** presents the mean values and standard deviations for three measures of mental health: morale, depression, and loneliness.

Similar to Cohen's (Cohen et al., 2007) study, our findings did not reveal significant interactions for two of the three measures of mental health: morale and loneliness. There is, however, a statistically significant interaction for the depression score. However, the depression score averages were lower than 2.1, which are similar to Cohen's study. This means the participants in the ARTCART group were not depressed. For clinical purposes, if those scores are higher than 5, then it is suggestive of depression and should warrant a follow-up. There were zero respondents with a score higher than 5 in the following interview.

Different from the Cohen study, our findings did not show statistically significant main effects of time or group on any of the three measures. Thus, the means for all three measures of mental health were the same at all three testing occasions. There is no indication of effectiveness of group participation.

There could be many reasons for these changes. This difference between studies, the presence and absence of statistical significance, may be caused by the sample size differences, 126 vs. 25 respondents, who participated all three times.

We believe due to the floor effect of depression scores and loneliness scores from the baseline, only direction the depression scores and loneliness goes is getting worse. But, still clinically no one was depressed. Also, there would be the ceiling effect for the scores for morale.

We calculated the effect sizes to find out whether there are any clinical effects.

#### EFFECT SIZE OF TIME (THREE DIFFERENT TIME PERIODS)

With respect to morale, partial  $\eta^2 = .047$  which indicates the effect size is less than medium (according to Cohen (1988) on p. 55 of Tabachnick, B. G., and Fidell, L. S., 2007). *Using multivariate statistics* (5th ed.). New York: Harper & Row.), .01 = small effect, .09 = medium effect, and .25 = large effect. Thus, the effect of time on morale has a less than medium clinically substantive (or practically significant) effect on the level of morale changes.

With respect to loneliness, partial  $\eta^2 = .007$  which indicates the small effect size. Thus, the effect of time on loneliness is not clinically substantive.

With respect to depression, partial  $\text{Eta}^2 = .002$  which indicates the very small effect size. Thus, the effect of time on depression is not clinically substantive.

#### EFFECT SIZE OF GROUP

With respect to morale, partial  $\text{Eta}^2 = .008$ , which indicates the very small effect size Thus, the effect of group on depression is not clinically substantive.

With respect to loneliness, partial  $\text{Eta}^2 = .002$ , which indicates the small effect size. Thus, the effect of group on loneliness is not clinically substantive.

With respect to depression, partial  $\text{Eta}^2 = .001$ , which indicates the very small effect size. Thus, the effect of time on depression is not clinically substantive.

In conclusion, there is no clinically substantive finding in this study. I believe this shows the difficulty of conducting behavior intervention (very strong placebo effect). Maybe participants in comparison group are very similar to intervention group participants from the beginning and being interviewed three times or having a partner may also play a role.

## APPENDIX D. COMPARISONS TO OTHER DATABASES/NATIONAL POPULATION

<b>Falls with Injury</b>				
Question Items from ARTCART	Data from ART CART	Data from other data sources	Comparable items from OTHER DATA	SOURCE
A1 In the last year, have you fallen? B9. Did you hurt yourself?	11 out of 35 fall with injury within past year 31.4%	31.7%	Fall with injury within past year	CDC BRFSS 2009-2010 Page 15 <sup>10</sup>

<b>Disability and Physical Functioning or Activity- IADLs</b>				
Question Items from ARTCART	Data from ART CART	Data from other data sources	Comparable items from OTHER DATA	SOURCE
Doing Heavy Cleaning Chores (floors, laundry, etc.)  Yes (=Do less than a year ago OR Do now)  No (= Used to do as an adult OR Never done as an adult)	82.4% baseline Yes (n = 28) No (n=6) <sup>sig</sup>	25.1% Yes (n = 1106) No (n =3302)	(Do you/Does) [SAMPNAME] usually do heavy work around the house such as moving furniture, scrubbing floors, or washing windows?  (Do you/Does) [SAMPNAME] usually do (your/his/her) own laundry?	2004 National Long Term Care Survey, Community Survey <sup>11</sup>
		Yes (n = 2413) No (n =1995)		
Cooking Meals	91.4% baseline Yes (n = 32) No (n=3) <sup>sig</sup>	Yes (n = 2477) No (n =1932)	(Do you/Does) [SAMPNAME] usually prepare (your/his/her) own meals?	
Grocery Shopping	91.4% baseline Yes (n = 32) No (n=3) <sup>sig</sup>	Yes (n = 2285) No (n =2124)	(Do you/Does) [SAMPNAME] usually shop for groceries, that is, go to the store, select the items, and get them home?	
Managing My Finances and Investments	97.1% baseline Yes (n = 34) No (n=1) <sup>sig</sup>	Yes (n = 3127) No (n =1341)	(Do you/Does) [SAMPNAME] usually manage (your/his/her) own money by (yourself/himself/herself)	

<sup>10</sup>State of Aging and Health in America in 2003

[http://www.cdc.gov/features/agingandhealth/state\\_of\\_aging\\_and\\_health\\_in\\_america\\_2013.pdf](http://www.cdc.gov/features/agingandhealth/state_of_aging_and_health_in_america_2013.pdf)

<sup>11</sup>National Long Term Care Survey (NLTCS) Source:

[http://www.nltcs.aas.duke.edu/codebook/2004\\_Community\\_Codebook\\_Beta2.pdf](http://www.nltcs.aas.duke.edu/codebook/2004_Community_Codebook_Beta2.pdf)

			including things like keeping track of bills or handling cash?	
Managing My Prescriptions/Medications	100% baseline Yes (n = 34) No (n=0) <sup>sig</sup>	Yes (n = 1028) No (n = 3318)	Does someone usually help (you)/[SAMPNAME] take (your/his/her) medicine?	

<b>Disability and Physical Functioning or Activity - Physical activities to improve health</b>				
Question Items from ARTCART	Data from ART CART	Data from other data sources	Comparable items from OTHER DATA	SOURCE
Walking, Swimming, Cycling or other Aerobic Activities	Do now 79.4% (27 out of 34) Do less than a year ago 5.9 % (2 out of 34) Used to do as an adult OR Never done as an adult 14.7% (5 out of 34)	In 2010, <u>about 11%</u> of people age 65 and over reported participating in leisure-time <u>aerobic</u> and <u>muscle-strengthening</u> activities.	- Physical well-being (Physical Activity) (Indicator 24) on page 40 from Older Americans 2012 Key Indicators of Well Being Key Indicators of well being	Key Indicators of well being <sup>12</sup>
Stretching or Strengthening Activities	Do now 88.6% (31 out of 35) Do less than a year ago 5.7 % (2 out of 35) Used to do as an adult OR Never done as an adult 5.7% (2 out of 35)			

<b>Disability and Physical Functioning or Activity- Leisure time</b>				
Question Items from ARTCART	Data from ART CART	Data from other data sources	Comparable items from OTHER DATA	SOURCE
Walking, Swimming, Cycling or other Aerobic Activities	Do now 79.4% (27 out of 34) Do less than a year ago 5.9 % (2 out of 34) Used to do as an	31.4%	No leisure time physical activity in past month % of people in sample	CDC BRFSS <sup>13</sup>

<sup>12</sup>Older Americans 2012 Key Indicators of Well Being Key Indicators of well being

<sup>13</sup>State of Aging and Health in America in 2003

[http://www.cdc.gov/features/agingandhealth/state\\_of\\_aging\\_and\\_health\\_in\\_america\\_2013.pdf](http://www.cdc.gov/features/agingandhealth/state_of_aging_and_health_in_america_2013.pdf)

Stretching or Strengthening Activities	<p>adult OR Never done as an adult 14.7% (5 out of 34)</p> <p>Do now 88.6% (31 out of 35) Do less than a year ago 5.7 % (2 out of 35) Used to do as an adult OR Never done as an adult 5.7% (2 out of 35)</p>			
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<b>Labor Force Participation</b>				
Question Items from ARTCART	Data from ART CART	Data from other data sources	Comparable items from OTHER DATA	SOURCE
Paid Employment	<p>Do now 54.3% (19 out of 35) Do less than a year ago 8.6% (3 out of 35) 54.3 + 8.6 = 62.9%</p> <p>Used to do as an adult OR Never done as an adult 37.1% (13 out of 35)</p>	<p>37% of 65-69 men 15% of men 70 and over</p> <p>based on Bureau of Labor Economics (cited in CDC, 2013)</p>	<p>- Participation in labor force Indicator 11 on page 18 &amp; 19</p>	Key Indicators of well being <sup>14</sup>
		<p>In 2002, married HRS participants were significantly more likely to be working than were their non-married counterparts. 31.5% of not married men are working 24.8% of not married women 43.2% of married men 32.2% of married women</p>	<p>p.41 and p.42 labor force status</p>	HRS <sup>15</sup>

<sup>14</sup>Older Americans 2012 Key Indicators of Well Being Key Indicators of well being

<sup>15</sup>Health Retirement Study (HRS) <http://hrsonline.isr.umich.edu/index.php?p=dbook>

<b>Volunteer work</b>				
Question Items from ARTCART	Data from ART CART	Data from other data sources	Comparable items from OTHER DATA	SOURCE
Volunteering My Time (including mentoring younger person(s) not related to me)	Do now 54.3% (19 out of 35) Do less than a year ago 5.7 % (2 out of 35)  Used to do as an adult OR Never done as an adult 40% (14 out of 34)		In volunteer service, with one in three people in that age group (60-69) having done so. The proportion of respondents who volunteer declines as people reach advanced age	HRS <sup>16</sup>

<b>Life Satisfaction and Depression</b>				
Question Items from ARTCART	Data from ART CART	Data from other data sources	Comparable items from OTHER DATA	SOURCE
1. Are you basically satisfied with your life?	Yes (2) or No (1)  94.3 % baseline (n = 33 out of 35) <sup>n.s.</sup>  96.3% Time1 (n = 26 out of 27) <sup>n.s.</sup>  88.9% Time 2 (n = 24 out of 27) <sup>n.s.</sup>	Very Satisfied (1, n = 1572) Satisfied (2, n = 2376) Not Satisfied (3, n = 342) Yes –92 % (n = 3948) No – 8% (342)	Generally speaking, how satisfied are you with your life as a whole - would you say you are very satisfied, satisfied, or not satisfied? (p. 497) on code book	2004 National Long Term Care Survey , Community Survey <sup>17</sup>
How satisfied are you with your life today	<b>1</b> =Satisfied, <b>0</b> =Not satisfied  93.9 % baseline (n = 31 out of 33) <sup>n.s.</sup>  92.6% Time1 (n = 25 out of 27) <sup>n.s.</sup> 85.7% Time 2 (n = 24 out of 28) <sup>n.s.</sup>			

*Note.* Chi-square tests were used to test whether there are statistically significant differences between ARTCART data and 2004 NLTCs data. <sup>n.s</sup> Not significant

<sup>16</sup>*ibid.*

<sup>17</sup>National Long Term Care Survey (NLTCs)Source:  
[http://www.nltcs.aas.duke.edu/codebook/2004\\_Community\\_Codebook\\_Beta2.pdf](http://www.nltcs.aas.duke.edu/codebook/2004_Community_Codebook_Beta2.pdf)

<b>GDS</b>				
<b>Question Items from ARTCART</b>	<b>Data from ART CART</b>	<b>Data from other data sources</b>	<b>Comparable items from OTHER DATA</b>	<b>SOURCE</b>
Geriatric Depression Scale	NONE of the participants were depressed.	6.9 days	Mental distress how many days in last 30 days mental health was not good -Frequent mental distress 14 or more days	CDC BRFSS <sup>18</sup>
		16% women 11% men	- Depressed symptoms	Key Indicators of well being <sup>19</sup>
		<b>severe depression for men and women combined is approximately 15 percent</b>	- Severe depressive symptoms Data for 2002 suggest that the prevalence of <b><u>severe depression for men and women combined is approximately 15 percent within each 10-year</u></b> age category between ages 55 and 84 and approaches 20 percent for the 85 and older group. For all of the age groups, women are consistently more likely than men to report severe	HRS <sup>20</sup>

<sup>18</sup>State of Aging and Health in America in 2003

[http://www.cdc.gov/features/agingandhealth/state\\_of\\_aging\\_and\\_health\\_in\\_america\\_2013.pdf](http://www.cdc.gov/features/agingandhealth/state_of_aging_and_health_in_america_2013.pdf)

<sup>19</sup>Older Americans 2012 Key Indicators of Well Being Key Indicators of well being

<sup>20</sup>State of Aging and Health in America in 2003

[http://www.cdc.gov/features/agingandhealth/state\\_of\\_aging\\_and\\_health\\_in\\_america\\_2013.pdf](http://www.cdc.gov/features/agingandhealth/state_of_aging_and_health_in_america_2013.pdf)