

Research on Creativity and Aging: The Positive Impact of the Arts on Health and Illness

By Gene D. Cohen

Since the mid 1970s, we have witnessed two major sea changes in how we think about and understand aging (Cohen, 2005) both of which have had a significant impact on research in aging and the relationship between the arts and health and illness in later life.

*The first national
longitudinal study is
a milestone for quality
of later life.*

Initiation results in a new sense of responsibility to do something about the problem. Thinking about modifiable age-associated problems was a sea change that launched the modern federal infrastructure of programs for research on aging. In 1975, the National Institute on Aging

CHANGING VIEWS ABOUT AGING

Up until the last quarter of the twentieth century, aging was largely equated with a series of decremental changes with the passage of time. Significant decline with advancing years was seen as inevitable—our destiny. Dementing disorders were collectively *senility*, a term that connoted the natural course of growing old. But by 1975 a fundamental conceptual change was stirring in the way that negative changes with aging were being interpreted. New hypotheses emerged attempting to explain decrements that accompanied aging not as normal and inevitable concomitants of age, but instead as age-associated problems that were modifiable disorders.

For the scientist, the idea that a negative change is caused by a problem rather than by normal aging creates an opportunity to modify the problem. For the policy maker, such a recog-

appointed its first director, while the National Institute of Mental Health established a new research center on mental health and aging—the first federal research program explicitly focused on aging to be established in any country (the author of this article had the opportunity to become the new center's first chief). That same year, 1975, the Veterans Administration launched its GRECC program (for Geriatric Research, Education, and Clinical Centers). As rigorous research on aging gained speed in the fourth quarter of the twentieth century, the “problem focus” in turn led to the development of the field of geriatrics, in the 1980s.

The transition from seeing negative changes with aging as being one's destiny to a new view of modifiable age-associated problems was a huge leap in itself. The culmination of the “problem” view of aging came with the concept of “successful aging”—defined as aging that

reflected a minimum number of “usual aging” problems and a minimum degree of decline (Rowe and Kahn, 1998). The next step was another big leap: to the recognition that aging could be accompanied by potential beyond problems. This view, the focus on the potential of aging, began emerging by the end of the twentieth century and reflected a second major conceptual sea change in aging. As a new century began, *The Creative Age* (Cohen, 2000a) was published as the first book totally focused on creativity and aging. Efforts at health promotion and disease prevention among older adults can only go so far when they are restricted to targeting problems. Ultimately, promoting health with aging is perhaps best realized when potential with aging is tapped. Research directions and opportunities in this area, with a focus on creativity and aging, and the positive impact of the arts on health and illness in the second half of life, is the thrust of this article.

DEVELOPMENTAL CONSIDERATIONS

New research on psychological growth and development in the second half of life has led to a new understanding of the capacity for positive change and creative expression in the second half of life (Cohen, 2005). These qualities are particularly apparent in the realm of folk art, which is actually dominated by older artists (Cohen, 2000a). (Also see article by Zeitlin, this issue.)

Often when older people are recognized for outstanding work, they are typically regarded as exceptions to the rule—as if creativity and outstanding performance were not significant parts of aging. But when you can identify an entire field like folk art that is dominated by older people, then outstanding performance by various older individuals cannot be trivialized as atypical or an exception to the rule. Folk art makes a profoundly powerful statement about the inherent capacity for creative expression throughout the entire life cycle.

The latest research on human development is showing that we have an inner drive that fosters psychological growth throughout the life cycle. As we age, these inner drives manifest themselves in various ways. The changing characteristics and the changing developmental dynamics of the inner push reveal themselves as

a series of developmental phases in the second half of life. Each new developmental phase creates a new “inner climate” that allows us to reevaluate our lives and experiment with new strategies. This ongoing process results in new opportunities to gain access to and activate untapped strengths as well as new and creative sides of ourselves. The liberation phase, for example, is characterized by an inner voice that pushes us, asking “If not now, when?” “Why not?” and “What can they do to me?” These powerful feelings move us toward experimenting with new approaches to life. Such a sense of freedom likely contributes to the courage of folk artists who venture into the world of art at this stage of life.

Moreover, psychoanalytic research has found that people are in touch with their inner psychological life when they are older more than at any other point in the life cycle (Maduro, 1974). This awareness can be an asset in a creative and artistic sense by allowing people to draw upon new potential as they age. The four newly described developmental phases in the second half of life that set the stage for positive change and creative expression are described below.

Midlife reevaluation. This phase generally occurs during one’s early 40s to late 50s: Plans and actions are shaped by a sense of crisis or quest, though considerably more by quest. Midlife is a powerful time for the expression of human potential because it combines the capacity for insightful reflection with a powerful desire to create meaning in life. This quest is catalyzed in midlife by seriously confronting for the first time the sense of one’s own mortality; upon passing the midpoint in the life cycle, one contemplates time remaining instead of time gone by. This dynamic new inner climate becomes a catalyst for uncovering unrealized creative sides of ourselves.

Liberation. The liberation phase usually emerges sometime between a person’s mid 50s to mid 70s. Plans and actions are shaped by a mounting sense of personal freedom to speak one’s mind and to do what needs to be done. With retirement or partial retirement, common during these years, comes a new experience of external liberation and a feeling of finally having time to experiment with something different. Art is one of the major new options for many.

Summing-up. The summing-up phase comes most frequently during a person's late 60s into the 80s—or beyond. Plans and actions are shaped by the desire to find larger meaning in the story of one's life as one looks back, re-examines, and sums up what has happened. This process motivates people to give of the wisdom they have accrued throughout their lives, sharing their lessons and fortunes through autobiography and personal storytelling, philanthropy, community activism, volunteerism, and other forms of giving back. In the case of the dancer Martha Graham, for example, it was through choreography from her mid 70s to mid 90s. This phase is also a time to deal with unresolved conflicts and unfinished business, using creative new strategies.

Encore. The encore phase can develop any time from a person's late 70s to the end of life. In this phase, plans and actions are shaped by the desire to restate and reaffirm major themes in one's life but also by the desire to explore novel variations on those themes and to further attend to unfinished business or unresolved conflicts. The desire to live well to the very end has a positive impact on family and community, often influencing decisions to have family reunions and other events. The Delaney sisters, after a filled century of life, engaged in an encore—writing their story in a book, *The Delaney Sisters: The First 100 Years*, that became a bestseller.

HOW CREATIVE EXPRESSION PROMOTES HEALTH

How do the arts and creative expression promote health with aging? What are the underlying mechanisms, identified by research, that matter in the context of creativity and aging?

Sense-of-control mechanism. An important body of research on aging has associated positive health outcomes with engagement of older people in activities in which they experience a sense of mastery (Rodin, 1986; Rodin, 1989). Interestingly, the influence of sense-of-control on health is more pronounced in the second half of life. The experience of a feeling of mastery also leads to increased feelings of empowerment, which can play out in interesting ways. Empowerment often influences individuals to reflect that if they have performed well at some-

thing they had not realized they could master, then perhaps they could similarly master other activities that had previously seemed impossible. The sense of control in one area increases the level of comfort with exploring new challenges in general.

The arts provide some of the best opportunities to experience a new sense of control or mastery. In the arts, the opportunities to create something new and beautiful are endless and offer an enormous sense of satisfaction and empowerment.

Influence of the mind on the body. Why should a sense of control have a positive effect on health with aging? This question takes us to a new mechanism that matters—the influence of the mind on the body. The field of study that helps us understand brain-body relationships is called psychoneuroimmunology (PNI) and refers to the influence of the mind, as mediated through the brain or central nervous system, on the body or immune system (Kiecolt-Glaser et al., 2002).

PNI researchers are particularly interested in interactions between the nervous system and the immune system, and the relationship between behavior and health. PNI, then, helps explain the influence of sense-of-control on health. Based on their studies of the effects of positive emotion on the immune system, PNI scientists view the positive feelings associated with a sense of control as triggering a response in the brain that sends a signal to the immune system to produce more beneficial immune system cells. In effect, a sense of control triggers a boost in immune-system cells, including T cells and NK cells. T cells are small white blood cells that orchestrate or directly participate in the immune defenses. They are also known as T lymphocytes and are processed in the thymus gland. NK cells refer to “natural killer” cells—large granule-filled lymphocytes that attack tumor cells and infected body cells.

Social engagement. Social engagement as a mechanism for promoting health has been demonstrated in a growing number of studies that have shown that social engagement with aging has a positive influence on general health and reduced mortality (Avlund, Damsgaard, and Holstein, 1998; Glass et al., 1999). Several underlying features in this mechanism have been

described, ranging from cardiovascular, to endocrinological, to immunological pathways. For example, social relationships in the second half of life have been associated with reduced blood pressure. They have also been associated with reduced stress levels, while sustained stress has been associated with adverse changes in the immune system, including lower levels of T cells and NK cells. Many forms of art provide significant opportunity for social engagement, including chorales, poetry groups, bands and other instrumental groups, and groups that engage in painting, writing, drama, and dance.

Brain plasticity. The field of behavioral neuroscience has revolutionized the way we understand the brain's ability to adapt and keep itself vital, which is referred to as brain plasticity (Kolb and Whiteshaw, 1998; Kramer et al., 2004). This work has also revolutionized our understanding of what we ourselves can do to keep our brains and minds healthy through creatively challenging ourselves in a sustained manner. Basically, research in this area vividly demonstrates that when the brain is challenged through our activities and surroundings, it is altered through the formation of new synapses (contact points between cells). More synapses means better communication among brain cells and increased opportunities for new ideas connecting. When branchlike extensions (known as dendrites) from one brain cell (neuron) achieve contact with extensions of other neurons, new synapses are formed.

Challenging activities and new experiences induce the sprouting of new dendrites, thereby enhancing brain reserve. Art activities are especially good because they are more likely to be sustained, and just like the impact of physical exercise over the long term, the benefits of challenges for the brain increase when they are ongoing. Indeed, in the research on leisure activities that most contributed to the delay in the onset of Alzheimer's disease for those at risk of the disorder, dance was at the top of the list (Verghese et al., 2003).

One of the most intriguing examples of brain plasticity is referred to as the HAROLD Model, from an acronym for "Hemispheric Asymmetry Reduction in Old Adults," whereby brain imaging studies have revealed that brain activ-

ity tends to be less lateralized in older adults than in younger adults (Cabeza, 2002). The ability of the brain to redirect the use of some of its tissue to be recruited for another function may reflect an extraordinary way that the brain mobilizes reserve capacity. Many view this increased bilateralization as a compensatory response, but, regardless, it does appear to respond to the needs of the brain, reflecting a built-in mechanism to address the functional requirements of the brain. It is as if the brain moves to all-wheel drive.

Moreover, simultaneously bilateral brain involvement, which is basically a midlife and later-life phenomenon, by its very nature enables better integration of left- and right-brain involvement. It has been hypothesized that activities that benefit from better-integrated left-right brain engagement are appealing to the brain. It is hypothesized that these activities are like "chocolate to the brain" in the way the brain metaphorically savors them (Cohen, 2005). Virtually every form of art provides optimal utilization of the benefits of simultaneous brain involvement—optimally integrating left- and right-brain capacities.

THE CREATIVITY AND AGING STUDY

The Creativity and Aging Study, conducted at the George Washington University Center on Health, Aging & Humanities, with this author as principal investigator, is the first formal study, using an experimental design with a control group, examining the influence of professionally conducted, participatory art programs on the general health, mental health, and social activities of older people (Cohen, 2005). The study was designed to draw upon the above underlying mechanisms that have been shown to influence positive health outcomes in older people. Interim results reveal significant positive differences in the intervention group (those engaged in intensive participatory art programs) as compared to a control group not engaged in such programs.

The study has had a mix of federal and private-sector sponsors, the National Endowment for the Arts (NEA), the lead sponsor; the Center for Mental Health Services, of the Department of Health and Human Services; the National

Institute of Mental Health (NIMH) of the National Institutes of Health; AARP and the National Retired Teachers Association; the Stella and Charles Guttman Foundation; and the International Foundation for Music Research.

Participating sites in this national study are Elders Share the Arts of Brooklyn, New York; the Center for Elders and Youth in the Arts, Institute on Aging, San Francisco, California; and the Levine School of Music, Washington, D.C.

Objective of study. The objective of this project has been to evaluate the effects relevant to general health, mental health, overall functioning, and sense of well-being in older people caused by active participation in cultural programs provided by professional artists involved in visual and literary arts, music, and other cultural domains. These programs draw upon a range of art and cultural disciplines, such as painting, pottery, dance, music, poetry, drama, material culture, and oral histories in a creative context.

Historical context of study. Historically, we are at the second major turning point in the contemporary focus on aging—that of looking at potential beyond problems. This focus on potential has profound possibilities for advancing health-maintenance and health-promotion efforts. As societal interest in potential in later life is soaring, a project studying how cultural programs affect older people could not be more timely.

Theoretical background for the study. The theoretical background for this study builds upon several major bodies of gerontological research, reflected in the discussion above about underlying mechanisms that promote health with aging—especially those of (1) sense of control and (2) social engagement. Studies on aging show that when older people experience a sense of control—that is, a sense of mastery in what they are doing—positive health outcomes are observed. Similarly, when older individuals are in situations with meaningful social engagement with others, positive health outcomes are also observed.

Biological studies reveal the involvement of immune system pathways playing a protective role in these cases, as described in research on psychoneuroimmunology. In this study, both of these dimensions—individual sense of con-

trol and social engagement—are combined. Each time one attends an art class, he or she experiences a renewed sense of control and a high level of social engagement, since all of the art programs involve participation and interpersonal interaction.

The significance of the art programs per se is that they foster sustained involvement because of their beauty and productivity. They keep the participants involved week after week, compounding positive effects being achieved. Many other types of activities and physical exercises do not have this highly engaging, and thereby sustaining, quality.

Study design in brief. The study was initiated in the fall of 2001. To be eligible for the intervention (art) and control groups, one needed to be 65 years of age or older and generally living independently at the start of the study. The intervention-group participants were all involved in intensive community-based art programs that were conducted by professional artists and that met weekly for a period of approximately nine months a year for two years, with additional time for concerts, exhibitions, and the like. Intervention participants also spent time between sessions on practicing and ongoing artistic work. The control group was actively involved in a range of community activities, but not in intensive art programs conducted by professional artists. Racial and ethnic minorities constituted 30 percent of the participants.

Both the intervention and control groups, at all three sites, had an average age of approximately 80 at the start of the study. The age range was 65 to 100 years. Participants in the study numbered 300, with half in the intervention group and half in the control group. Baseline measures obtained via questionnaires administered face-to-face to both groups were very similar at the start of the study. Measures were then repeated yearly for two years.

The total of five questionnaires garnered measures in three domains of functioning: (1) general assessment of health and problems across the systems of the body, medication usage, and health utilization data; (2) mental health assessment, utilizing the Geriatric Depression Scale (Short Form), the UCLA Loneliness Scale, and the Philadelphia Geriatric Center Morale Scale;

and (3) social activities assessment, utilizing a detailed inventory of the subjects' activities, with attention to the nature, frequency, and duration of the activities.

Perspective on measures of success. Before listing interim findings, it is important to note the perspective of clinicians and researchers in the field of aging regarding expectations around results from this study. Given that the average age of the subjects was approximately 80 years—a number greater than life expectancy in the United States—interventions in this age group would generally be considered successful, in terms of positive health- and social-functioning effects, if over time the intervention group, as compared to the control group, showed *less* decline. That is, some degree of decline would be expected to occur in this age group, regardless of the effects of any intervention.

Interim results. This study had a staggered start, beginning with the Chorale in Washington, D.C., in September 2001, followed by art groups, first in New York City and then in San Francisco, along with control groups in all three sites. Data at the time this paper was being written were still being analyzed. Interim results follow:

- At the Washington, D.C., site, the Chorale (the intervention group) reported better health one year after baseline starting-point measures, while the control group reported that their health was not as good one year after baseline.
- Both the Chorale and the control group had more doctor visits one year after baseline compared to baseline, but the control group increased their doctor visits at a significantly greater rate.

- Both the Chorale and the control group had more medication usage one year after baseline compared to baseline, but the control group increased their medication usage at a significantly greater rate.

- At the one-year follow-up, participants in the Chorale reported fewer falls than at baseline, while the control group reported more falls than at baseline.

- At the one-year follow-up, participants in the Chorale showed greater improvements over baseline on each of the depression, loneliness, and morale scales than did the control group.

- At the one-year follow-up as compared to baseline, participants in the Chorale had on the average an increase of two activities per person, while those in the control group had on the average a decrease of two activities per person.

For the New York City site, the data are still under analysis. Trend data show better reports in the art (intervention) group as compared to the control group, such as with health, medication use, memory, heart problems, cholesterol levels, and osteoporosis.

At the San Francisco site, both the art (intervention) group and the control group indicated an improvement in their general health over the past year, but the art group reported a greater degree of improvement than did the control group. In addition, in preliminary findings the art group showed improvement in morale, while the control group morale declined. Trends for such measures as loneliness and increase in number of activities were for better results for the art group than for the control group.

Conclusions of this study. Concluding comments here are based primarily on results from

William Carlos Williams: 'Old age that adds as it takes away.'

William Carlos Williams, known in particular for his poetry, was also a pediatrician. In his early 60s, he suffered a stroke that prevented him from continuing to practice medicine. In addition, along with the 50 percent of the population who develop depression following a stroke, Williams developed a severe depression that hospitalized him for a year. But he pulled out of the depression, helped by writing poetry, and ten years later published his work *Pictures from Brueghel and Other Collected Poems* (1962) that was awarded a Pulitzer Prize. In his late-life poetry, Williams wrote about "old age that adds as it takes away." It was through his creative expression, his poetry, that he was able to add to his life while aging. ☪

the Washington, D.C., site, where analysis is farther along. For this site, the data are for the most part statistically significant. Findings from the other two sites are still under analysis, but trend data from the New York City and San Francisco sites are moving in the direction of data from the D.C. site. What is remarkable in this study is that more than a year into the study, the art groups, in contrast to the control groups, are showing areas of actual stabilization and improvement apart from decline—despite an average age that is greater than life expectancy.

These results indicate that these community-based art programs run by professional artists can have powerful positive intervention effects, with the benefits being true gains in health promotion and disease prevention. In that they also show stabilization and actual increase in community-based activities in general in the art groups, the results reveal a positive impact on maintaining independence and on reducing dependency. Thus, these community-based cultural programs for older adults appear to be reducing risk factors that contribute to the need for long-term care.

THE POSITIVE IMPACT ON ILLNESS AND AGING

There is a long history of case reports and observational studies on the impact of art and art therapy on alleviating illness in later life (Cohen, 2000a). The stories of two famous names in the arts, the poet William Carlos Williams and the painter Elizabeth Layton, see left and below, are emblematic of the experiences of many not-so-famous older people.

The ultimate illustration of the impact of art and creative expression on illness in later life is

perhaps with Alzheimer's disease. Certainly the story of Willem de Kooning applies here. Despite being afflicted with Alzheimer's disease, de Kooning's preserved and reserve skill in the form of art allowed him for a few years to continue to produce work sought after by museums and to continue to paint for several years beyond that, nearly up to the time he died.

And there are other fascinating illustrations of facility with art despite the presence of dementia. Recent research, for example, has identified various patients with a form of dementia (frontotemporal) that affects a particular portion of the brain—the frontotemporal lobe. These patients suffer significant intellectual impairment while at the same time, remarkably, showing newly acquired or enhanced artistic skills. It appears that the damage done by the unwanted deterioration also destroys something that has caused blockage of activity in the artistic arena (Miller et al., 1998).

THE FOUR S'S: ADDRESSING HEALTH AND ILLNESS TOGETHER

Medical care continues to predominantly adopt a problem focus to its comprehensive treatment planning. The problem focus essentially revolves around two S's—*signs* and *symptoms*. But, especially with chronic progressive disorders, the two-S approach is not sufficient to maximize quality of life. Consider the situation wherein one can apply the state-of-the-art of medical treatment for Alzheimer's patients better than anyone in history has ever done before, and still the patient will get worse. What can you do to have a positive impact on the patient's quality of life? One strategy is to move from a *two-S* patient-centered problem focus to

Elizabeth Layton: Art therapy for herself

Until her late 60s, Elizabeth Layton had experienced a history of chronic debilitating depression going back to her young adulthood. She had received considerable medical and psychiatric treatment, but still her depression was unremitting. Then, at age 68, in her "liberation phase," she enrolled in an art course, examined herself in her looking glass, and wondered if she could draw a self-portrait. To her surprise and elation, she was able to draw with excellence. This experience launched a twenty-year painting career and associated fame, and her self-applied art therapy put her depression in complete remission. ☺

a *four-S* approach that adds a person-centered focus on potential, even in the face of loss. The latter approach emphasizes *skills* (or *strengths*) that are preserved to varying degrees and also *satisfactions* (areas, activities, actions that bring a satisfying or pleasurable feeling). The potential focus particularly applies to interventions using art, reflected in the story of Willem de Kooning who drew upon his preserved skill, and it applies to related creative approaches, such as has been reported through the use of video biographies and a novel artistically designed new game for those afflicted with Alzheimer's disease (Cohen, 2000b).

MEMORY VS. IMAGINATION, MEANING VS. ENGAGEMENT

Part of the tragedy of Alzheimer's disease is the marked deterioration of memory on the part of the afflicted individual and the deterioration of a sense of meaning among significant others observing such painful decline. But again, this is where art and creative opportunities in a strengths-based comprehensive intervention approach come into play. Anne Basting's (2005) research with her creative storytelling project, *TimeSlips*, poignantly demonstrates that even as memory fails, imagination persists (Sierpina and Cole, 2004). (See also article by Basting in this issue.) And in the study of the use of the game for Alzheimer's disease, alluded to above, the research shows that even while families lament a sense of loss of meaning, creative opportunities enable ongoing meaningful interpersonal engagement that contributes to overall quality of life for the patient and the family. The continuation of imagination and engagement provides intervals of good feeling in the face of overwhelming adversity. That is what art and creativity can provide in the most challenging of situations.

CONCLUSION

The optimal treatment of the patient focuses not just on clinical problems but also on the individual potential of that person. It is only when problems and potential are considered together that health is best promoted and illness best cared for. This is the ultimate art and creativity of medicine and healthcare,

bringing hope and clarity to situations that might otherwise be challenged by despair and confusion.

Odd how the creative power at once brings the whole universe to order.—Virginia Woolf ☪

Gene D. Cohen, M.D., Ph.D., is professor of healthcare sciences, professor of psychiatry and behavioral sciences, and director of the Center on Aging, Health & Humanities, George Washington University, Washington, D.C.

Support for the work in developing this paper came from the Small-Alper Family Foundation, Inc.

REFERENCES

- Avlund, K., Damsgaard, M. T., and Holstein, E. E. 1998. "Social Relations and Mortality: An Eleven Year Follow-Up Study of 70-Year-Old Men and Women in Denmark." *Social Science & Medicine* 47(5): 635–43.
- Basting, A. 2003. "Dare to Imagine: Exploring the Creative Potential of People with Alzheimer's Disease and Related Dementia." In J. Ronch and J. Goldfield, *Mental Wellness and Aging: Strength-based Approaches*. Baltimore, Md.: Health Professions Press.
- Cabeza, R. 2002. "Hemispheric Asymmetry Reduction in Older Adults: The HAROLD Model." *Psychology and Aging* 17(1): 85–100.
- Cohen, G. 2000a. *The Creative Age: Awakening Human Potential in the Second Half of Life*. New York: Avon Books.
- Cohen, G. 2000b. "Two New Intergenerational Interventions for Alzheimer's Disease Patients and Families." *American Journal of Alzheimer's Disease* 15(3): 1–6.
- Cohen, G. 2005. *The Mature Mind: The Positive Power of the Aging Brain*. New York: Basic Books.
- Glass, T. A., et al. 1999. "Population Based Study of Social and Productive Activities as Predictors of Survival Among Elderly Americans." *British Medical Journal* 319: 478–83.
- Kiecolt-Glaser, J. K., et al. 2002. "Emotions, Morbidity, and Mortality: New Perspectives from Psychoneuroimmunology." *Annual Review of Psychology* 53: 83–107.
- Kolb, B., and Whithshaw, I. Q. 1998. "Brain Plasticity and Behavior." *Annual Review of Psychology* 49: 43–64.
- Kramer, A. F., et al. 2004. "Environmental Influences on Cognitive and Brain Plasticity During Aging." *Journal of Gerontology: Medical Sciences* 59A(9): 940–57.
- Maduro, R. 1974. "Artistic Creativity and Aging in India." *International Journal of Aging and Human Development* 5(4): 303–29.
- Miller, B. L., et al. 1998. "Emergence of Artistic Talent in Frontotemporal Dementia." *Neurology* 51(4):

978–1982.

Rodin, J. 1986. "Aging and Health: Effects of the Sense of Control." *Science* 233(4770): 1271–76.

Rodin, J. 1989. "Sense of Control: Potentials for Intervention." *Annals of the American Academy of Policy and Social Science* 503: 29–42.

Rowe, J., and Kahn, R. 1998. *Successful Aging*. New York: Pantheon Books.

Sierpina, M., and Cole, T. R. 2004. "Stimulating Creativity in All Elders: A Continuum of Interventions." *Care Management Journal* 5(3): 175–82.

Williams, W. C. 1962. *Pictures from Brueghel and Other Collected Poems*. New York City: New Directions.

Verghese, J., et al. 2003. "Leisure Activities and the Risk of Dementia in the Elderly." *New England Journal of Medicine* 348(25): 2508–16.