Optimal Aging Across the Life Course: The Purposes of Longer Lives

“Ironically, evolutionary theory about aging tells us that longer lives for organisms are pointless beyond the stage of reproduction and perhaps the rearing of offspring. If we are to find meaning in outliving this biological design, it will need to come from human and cultural aspirations for more time alive.”

—GSA Past President David J. Ekerdt, PhD, FGSA

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Seen alone, a single thread of a beautiful tapestry is just a string of one color, in isolation, lacking meaning. Take four such threads and weave them into a beautiful design or an image telling a story, and the tapestry comes to life—rich, colorful, beautiful, meaningful.

Life itself can be that way. Individually, the length of a life, personal or professional achievements, or the impact someone had on family, friends, and neighbors constitute the threads in life’s tapestry, but they must be viewed together to convey an accurate meaning.

As researchers and professionals whose lifework is to define, describe, measure, and ultimately optimize aging across the life course, members of The Gerontological Society of America (GSA) are interested in those factors that make life longer, happier, and more fulfilling in whatever ways each person values. Through the activities of 5,500 members in four diverse sections composed of educators, emerging scholars, and dozens of interest groups, GSA seeks to accomplish the many goals inherent in its mission and purpose: To advance the scientific and scholarly study of aging and to promote human welfare by the encouragement of gerontology in all its areas.

In this third annual Trends in Gerontology report, optimal aging and human welfare are examined from the perspectives of the 2018–19 chairs of GSA’s four sections: Biological Sciences, Health Sciences, Behavioral and Social Sciences, and Social Research, Policy, and Practice. The differing perspectives of the GSA sections are like threads in a beautiful tapestry, even when each thread is examined, measured, and studied through different lenses and methodologies.
# Trends in Gerontology for 2019 Through the GSA Lenses

## Health Sciences
- For staying healthy, physical activity is important, and any movement is good movement.
- An improved health system in the United States is needed for ensuring access to quality preventive care and therapy of chronic diseases that accompany aging.
- Interprofessional care is critically important to integrate care among the numerous health providers who care for older adults.

## Behavioral and Social Sciences
- The need for caregiving of an aging population is increasing and will be immense.
- Many decisions during later life are not those concerning life-and-death choices people tend to focus on, but rather questions about treatments that can lead to more suffering with limited prospects for benefits.

## Social Research, Policy, and Practice
- Social determinants of health—where a person is born and lives and whether that person lives in wealth or poverty—are critical factors in healthy aging.
- Technology is helping those who use digital devices in countering the effects of social isolation and supporting some aspects of caregiving.

## Academy for Gerontology in Higher Education
- A health care workforce that is equipped to address the health and well-being of older adults will help ensure optimal aging.

## Biological Sciences
- Research is making significant progress in understanding the biology of aging, but today’s knowledge only scratches the surface.
- The real goal of biological science research into aging isn’t so much to extend lifespan as to maximize healthy longevity, or healthspan, by delaying the declines in biological function and the increased risks for diseases that go along with aging.

## Cognitive well-being is a fundamental determinant of positive aging.
- Superaged societies are presenting challenges around the world; countries willing to learn from the experiences in other lands can create better lives for older adults.

## Social determinants of health—where a person is born and lives and whether that person lives in wealth or poverty—are critical factors in healthy aging.
- Technology is helping those who use digital devices in countering the effects of social isolation and supporting some aspects of caregiving.

## The human cost of social isolation is currently coming into focus.
- The village movement and development of age-friendly communities have potential for supporting people as they grow older.
- End-of-life decisions must—or at least should—be faced.
“Most of us are going to be 85, but we’re not going to be 100. The annual mortality rate for those older than 100 is about 30 percent. Living beyond 100 for the majority of people is so far beyond where we are now that we are not going to get there soon.”

— Eileen Crimmins, Behavioral and Social Sciences Section
Life has Length
As with a thread, everyone can agree that length is the first and most basic measure of a life. There is a birth and a death, and the number of minutes, days, weeks, or years in a life can be measured consistently.

For the bench scientists whose research involves a lab animal or other nonhuman model, the length of life is a common measure, according to Biological Sciences Section Chair Matt Kaeberlein. It is quantitative, it is measurable, and it avoids concepts with more subjective aspects such as emotional states, quality of life, health, and security. Kaeberlein emphasized, however, that the real goal “isn’t so much to extend lifespan as to maximize healthy longevity, or healthspan” by delaying the declines in biological function and the increased risks for diseases that go along with aging. As reported in the 2017 and 2018 Trends in the Biological Sciences, several promising lines of research could provide insights into the limits on the length of a person’s life and on maximizing the healthspan. But is an extra day of life in a lab animal translatable to an extra year for a person?

Actually, they might relate. “We are making significant advances in understanding the biology of aging,” Kaeberlein said. “I predict those advances are going to have a big impact on quality of life for people in the future. I started working on aging as a graduate student in 1998. I’ve seen how much we’ve learned in 20 years and it’s amazing—I’m shocked at where we are now in some ways. I expect this trend will continue or probably accelerate going forward.”

Not everyone is convinced, especially given recent declines in life expectancy in the United States resulting from the opioid epidemic, suicides, gun violence, and other factors; the possibility of a dystopic future seems all the more real in the current political climate in the United States and around the world. Many in gerontology would argue that the measure more relevant now is the impact of research on years of expected life remaining at various points of interest, particularly the historically common retirement age of 65 years, or the years of healthy life remaining at that or other age points.

“I’ve become convinced we can’t change aging that fast,” added Eileen Crimmins, chair of the Behavioral and Social Sciences Section. “If you look at people 85 or 90 years of age, we’ve hardly added to life expectancy. We’ve added about a year at 90 or 100+ years. People who are 65 and 70 are a lot more likely to live to 85. Most of us are going to be 85, but we’re not going to be 100. The annual mortality rate for those older than 100 is about 30 percent. Living beyond 100 for the majority of people is so far beyond where we are now that we are not going to get there soon.”

Creating an expectation of impending increases in years of added life for today’s middle-aged or older adults also is a concern for some in the Health Sciences Section, including Elsa Strotmeyer, the 2018–19 chair. This part of life is affected by availability of preventive, corrective, and restorative health care services, and the quality of life produced when such services are accessible and used. Social determinants of health come into play, including both quantitative and qualitative factors from many years earlier. And the time and place of a person’s birth—and that person’s role and place in the society in which
the person was born and lived—are certainly critical in determining the specific adjectives that might describe that life.

“Our country has been extremely successful at extending lives and promoting health,” Strotmeyer said. “If we continue to follow public health trends and suggestions for improving long lives, then we’ll be able to reinforce to older adults that preventive health is just as important when you’re 65 so you can live to 90, as when you’re 45 so you can live to 65.”

“If you’re really focused on geriatrics, you may not feel as though what we as basic scientists are learning about aging is going to have a huge impact on quality of life for older people or social aspects of aging,” Kaeberlein said. “But I think recognizing that while we have made significant progress in understanding the biology of aging, in many ways we’re still only scratching the surface. There’s so much more to be learned—that’s really what’s going to drive the advances in how effective these translational applications are going to be for human aging. A big unknown at this point is whether the interventions and the pathways that we have identified in model systems are going to translate to humans. That’s one important thing that we’re going to learn in the next 10 years.”

**Life Has Quality**

For those concerned with how people live and what they do with their lives, life must be assessed with more subjective measures. Threads are linear and their length can be measured, but people are alive, active, purposeful, and intentional, and they make decisions that have ramifications for themselves and others.

Enter quality of life, both health related and general. Bringing in the perspective of GSA’s Social Research, Policy, and Practice Section, Bob Harootyan emphasized the social determinants of health and the oversized impact they have on both the length and the quality of people’s lives. There’s undoubtedly a difference between a year of perfect happiness versus one of poor health, a year spent in danger or insecurity about the necessities of life, or one filled with constant worry about financial problems.

“The growing degree of economic inequality across the U.S. population is exacerbated and worsens in the older population,” Harootyan said. “That trend, which has been going on for two to three decades in terms of growing disparity in wealth and income, has numerous implications for the older population, especially their physical and mental well-being.”

Harootyan continued, “That leads to a variety of other problems, but it doesn’t happen simply because people turn age 65 or older. Socioeconomic determinants—such as a person’s birthplace, economic and societal circumstances, racial or ethnic background, educational achievement, and even gender—are all factors related to lifelong advantage or disadvantage. The issue of life-course disadvantage is often not significantly addressed or understood by many professionals in gerontology. We need to take a broader life-course perspective to understand the growing problems from disparities as people age. Economic inequality is driving this trend and creating greater risk to well-being at older ages.”

Another critical factor in achieving optimal aging and enjoying a purposeful life is physical
activity, adds Strotmeyer. “Any movement is good movement,” she said. “We haven’t been very successful in modifying diets, and our weight advice has not been successful in stopping the obesity epidemic. So, the other idea—of physical activity—is you move and you burn calories. You exercise your muscles. People are much less likely to stick with a structured physical activity program, but they have short periods when they can be active.”

A recent report provides recommendations on physical activity in older adults, Strotmeyer said.1 “The report describes how important it is to vary the activities you’re doing,” she added. “People get stuck doing one thing and they have trouble changing routines. We need to be more creative about how we promote and include people in exercise. For older adults, that’s really important. Telling somebody to get active—to walk around the block—isn’t super helpful if they’re having knee or foot problems. It might just be that we need to get more creative in our recommendations.”

Life Has Strength
Just as important to quality of life as staying physically active is maintaining the health of the mind. In the “behavioral and social sciences, one of the biggest trends is an emphasis on cognitive decline, cognitive change, dementia in all phases,” Crimmins said. “Cognitive decline and dementia are a primary reason for nursing home institutionalization,” Harootyan added, noting that “cognitive well-being is a fundamental determinant of positive aging.”

In this regard, aging is like the tensile strength of a thread—how much stress it can take

“Cognitive decline and dementia are a primary reason for nursing home institutionalization... cognitive well-being is a fundamental determinant of positive aging.”

— Bob Harootyan, Social Research, Policy, and Practice Section
before it breaks, what the thread is made of, what has happened that make it stronger or weaker, and how likely it is to break given a certain amount of stress. A person’s mind is strengthened and sharpened through education and life experiences, but over time, some damage occurs as life wears down the connections, or the battles of life may have broken the mind in places.

“We want to understand why some people decline faster or slower,” said Crimmins. “We know that social and background factors are strong influencers of mental function and that how much education a person had is a major factor in how fast mental acuity declines. So, what can we offer people with mild cognitive impairment who can still make contributions but are beginning to feel the decline? Can we provide support so that they can continue to live independently, perhaps even to work for a while? We’re in a new phase of understanding these different phases of cognitive loss that are very common with aging.”

Technology could provide answers for many older adults, Harootyan said, but large segments of this group do not use computers, the internet, or social media. “About 35 percent of the 65+ population do not access the internet and do not use computers, compared with only 10 percent of the total population ages 18 and older,” he said. “But this is largely a life-course socioeconomic issue—those elders who are not on the internet, don’t know how to use computers, or do not have access to or use cellphones or smartphones are the least educated and the poorest. Socioeconomic disadvantage within the older population explains the lower proportion of internet users. My analysis of Pew Research Center 2014 survey data presented at the 2015 GSA Annual Scientific Meeting and published in a 2015 Benton Digital Beat article, showed that 89 percent of older persons with some college and incomes of $50,000 or more regularly use the internet. In sharp contrast, only 20 percent of older people with a high-school diploma or less and incomes under $20,000 are internet users. Clearly, chronological age is not the key factor. Life-course disadvantage and lower socioeconomic status are the influential determinants.”

Harootyan added, “There are many programs—mostly local—that are helping older people become digitally literate, which makes a substantial difference in keeping people connected to family, friends, and the community at large. Otherwise, those elders—the poorest and least educated—are the most likely to be socially isolated and to have more

IMPACT OF TECHNOLOGY ON AGING

“Technological advances provide important benefits with regard to promoting or maintaining the independence of an aging population. In most communities, older adults are now able to access a car on demand. Within a decade, we should have autonomous vehicles, which will be a distinct advantage for older people whose ability to drive has diminished, especially those who live in expansive suburban, exurban, and rural areas with little or no public transportation. But many technologies will be problematical in terms of costs and who is going to pay them, whether it’s public or private. An extremely important trend is the technology-driven component of health care, which tends to drive up costs, especially for diagnostic procedures, acute care, and pharmaceuticals. Yet these technologies offer treatments, medications, and interventions—especially in older years because of age-related diseases—that were not previously available. Hence, use of health care services inevitably increases in an aging population, and so does cost.”

—Bob Harootyan, Social Research, Policy, and Practice Section
severe mental and physical health problems than those who are engaged technologically.”

The human cost of social isolation is a major trend that is presently coming into focus—it’s becoming “the new smoking gun” in lay-media headlines. “Social isolation of older persons has deleterious effects on mental well-being as well as physical health,” Harootyan said. “A recent review published in the *Journal of Aging Life Care*, Spring 2018, noted that some studies suggest that loneliness and social isolation have the same effect on health as risk factors such as hypertension, obesity, and smoking.”

The AARP Foundation’s Connect2Affect initiative targets social isolation, and GSA Executive Director James Appleby serves on its Executive Council. The program seeks to educate people about isolation and the pervasive ways it is affecting older adults:

- Loneliness and isolation are not the same thing: loneliness denotes how people perceive their experience or how they feel, whereas isolation is quantifiable with reference to the size of a person’s social network and amount of engagement with it, availability of transportation, and ability to access resources and information.

- Isolation is a growing health epidemic: more than 8 million adults aged 50 years or older are affected by isolation and its health effects.

- Isolation in older adults is rarely caused by a single event: it can result from transportation challenges, poor health and well-being, life transitions or role changes, societal barriers, or lack of access and inequality.

If mental function declines and dementia results, the challenges of caregiving come into play. “We are in a new phase of understanding these different phases of cognitive loss that are very common with aging,” Crimmins said. “No matter how many things are discovered in the next 10 years, this generation is going to have Alzheimer’s disease at approximately the predicted level. It’s not going away. Once people age to the point that the brain is already gone, you can’t bring it back.”

With all the sociodemographic factors that are now well known—smaller families, family members living far apart, older adults living to ages at which mental decline is common—the need for caregiving will be even greater than it already is. “It’s going to be hard to provide needed care,” Crimmins said.

The village movement might provide some support for those able to stay in the community, Harootyan said. This emerging concept relates to volunteer groups in mostly urban areas that are formed to provide a kind of social assistance network. “It’s not unlike the informal service credit networks that existed in some communities during the 1980s and 1990s,” Harootyan said. “Now transformed into more formal villages that are created as nonprofits by groups of local volunteers, the villages usually require annual dues of a certain amount, maybe $600. Some villages provide different levels of help depending on one’s dues level. The village may provide information and referral guidance, or direct assistance to the individual, including help provided by other members who volunteer in their areas of strength. Others may be paid to provide transportation assistance or help with some kind of home repair or help them access professional home repair services.”

Another concept for supporting people as they grow older is the age-friendly community.
“Cities and towns are adopting age-friendly standards for improving the physical and social environments for older people,” Harootyan said. “In the best ones, this is really universal design—what’s good for the older population is generally good for people with disabilities, for children and youth, or really for everyone, but not always in the same way. Who doesn’t need both physical and environmental improvements that promote independence, sidewalks and bike paths that separate people from cars, or social service programming that promotes social engagement and activity?”

**Life Needs Care**

Without routine care and cleaning, the threads of the most beautiful tapestry will fray, fade, and break. People are like that too.

In aging, health care is the common support system that makes life and happiness possible. No matter how much exercise people get, how well they eat, and how well they take care of themselves, the health care system is needed for preventive care, for treating acute conditions such as infections or injuries, and for addressing the chronic diseases that are common in older adults.

In the United States, this care is provided by a wide variety of health professionals in many fields, including generalists and specialists. This presents problems for the older adult with several conditions that require care from several physicians, multiple medications that need to be managed, and treatments by other health professions such as physical therapy, home-based care, or nutritional support.

“Almost every older adult has some chronic condition being managed by a specialist,” Strotmeyer said. “The old model—with a primary care physician and one or more disconnected specialists—doesn’t make sense. Those people need to be in contact with each other. Electronic health records will enable some collaboration between these providers, but really, health care will need to be transformed to adequately address the needs of an older population.”

That’s where interprofessional care and teams come into play. “Some of the big practices are going to a format in which you have the internist and also the professionals associated with a lot of other specialty practices, so that all the electronic records are under one practice,” Strotmeyer explained. “Older adults need to be at practices in which primary care and the different specialists are working together. The inclusion of geriatricians in this model is ideal, as they tend to be more multidisciplinary. But we don’t have that many geriatricians in the United States. Unless you’re in a city with a big university medical

**HEALTH CARE FINANCING**

“If enough people understand that Medicare’s administrative cost is phenomenally low compared with the private health insurance sector, then the tide may turn toward a Medicare-for-all approach to health care financing. It’s generally agreed that Medicare’s administrative cost is only 2 to 3 percent, compared with 14 to 18 percent for the private sector. Our private-sector system is inefficient and costly, in part because of private oversight of treatment and competition for enrollees. Changing to a publicly administered single-payer system could reduce those administrative costs in a sector that accounts for 17 to 18 percent of the U.S. gross domestic product, which is notably higher than in any other country. Although employment in the administrative part of the health care system might be reduced, money would be freed up to expand the provider sector.”

—Bob Harootyan, Social Research, Policy, and Practice Section
center or near a big medical center, you might not have access to a geriatrician. How can we create a pseudo-geriatrician system? That’s what the internists working with different specialists—and also with nurse practitioners, pharmacists, and members of the other health professions—can be.”

Something better is clearly needed in the United States. “Health in this country is relatively poor,” Crimmins said. “We’re ranked 36th in life expectancy—in the same range as Cuba and the Eastern European countries. We’re not anywhere near our income peers—yet we’re spending more money on health care than anyone.”

The United States is currently transitioning from the “aging society” category (7 percent or more people aged 65 years or older) into an “aged society” (14 percent or more). In a short 6 years, the United States will likely cross into the “superaged society” category, with 20 percent or more of the population 65 or older. During this time of change, Americans can learn much from several countries in East Asia where the aging movement is well under way. “Japan has been a superaged society for a while,” Crimmins said, “and there’s much we can learn from the experience of having so many older people for an extended time period. South Korea is probably the fastest aging society in the world—they lag Japan in percentage of older adults, but the rate of change is faster. People’s perception of well-being and life satisfaction is extraordinarily low among older South Koreans. I think this is a reflection of the fact that the world has changed so markedly from what their expectations were as they entered adulthood to what’s happening in their old age.”

Taiwan is on track to be the world’s oldest country by 2060, with 41 percent of the population projected to be 65 or older at that time. In Singapore, an unexpected aging trend is taking the country from below 7 percent to more

America also has big geographic differences. In some places, health care availability approaches the high standards of the leading European countries, Crimmins said, and in some states such as Minnesota, spending is both relatively low and care very efficient. It’s a different story in other places, where care is expensive and the results poor. “Look at what Medicare is getting for a dollar in Minnesota compared with Texas,” she noted. “Such differences within the country and overall poor results are causing people to look internally and to look at health care and aging in other parts of the world for lessons we can apply in our country.”

**Life Needs Support**

Environment, climate, and available resources for proper maintenance affect the number of years that a tapestry remains beautiful and functional as a wall hanging or rug. Just as a person’s ability to take care of a tapestry can depend on where that person lives or travels, making the most of life is also affected by such factors.

— Elsa Strotmeyer, Health Sciences Section

**“Electronic health records will enable some collaboration between these providers, but really, health care will need to be transformed to adequately address the needs of an older population.”**

— Elsa Strotmeyer, Health Sciences Section
than 20 percent in a projected 27 years. These countries and others in the region offer much to learn about their complex mixtures of mandatory retirement policies, efforts to encourage re-employment of older adults, family obligations dictated through filial piety, health care policies, pensions, and social programs.

These changes point to the importance of the life-course perspective in understanding aging. “In the United States, our younger adult population is notably less well-skilled in numeracy and literacy than those in countries such as Japan and Poland,” Harootyan said. “What does that portend as those younger adults become older? It’s different in many other countries, as published in an OECD Skills Outlook 2013 report. In Japan, the younger population is much better skilled than the older population, but that’s a testament to how better educated their young adults are. In the United States, we shortchanged our educational system and as a result have not kept pace with other countries.”

“The idea that people’s lives aren’t playing out the way they expected is something that’s coming to the forefront in the United States because of current political differences,” added Crimmins. “The ‘red state’ group includes people who feel their economic well-being has been diminished or the prospects for them and their children are lower than they expected. I think they provide an example of how the global economy moved on and the well-off moved with it, and we didn’t do much to encourage the well-being or to specifically designate resources for those who lost with this market change. Those people are unhappy now.”

Crimmins pointed to other western democracies as additional examples for the United States. “In Europe, people who are unhappy about immigration are growing in number. However, in some countries, they don’t have the same sort of unhappiness about job loss as in the United States because those countries protect jobs for people,” she said. “How is this going to play out as people mature and age? Our electorate was changing in one direction with the aging of the population. It has been moving to the left as more progressive younger cohorts began replacing more conservative older adults. That could change at some level as there seem to be young people who are enamored of the new right.”

**Life Ends**

Just as a tapestry one day is worn through, or torn in pieces, life comes to its final conclusion. As people approach the terminus of life, the effects of decades-long circumstances and decisions come into play, and many end-of-life choices must—or at least should—be faced.

“Toward the later stages of life, the cumulative disadvantages a person has experienced during the life course are exacerbated,” Harootyan said. “It’s not simply an age factor, but life-course disadvantages are cumulative and become more evident when people reach older ages. Even though we now have Social Security, Medicare, Medicaid, Supplemental Security Income, and other programs that make up for some of these life-course disadvantages, a person’s ability to maintain function and enjoy older adulthood is inherently affected by race, gender, education, income, and personal physical, emotional, and financial health. In a recent column, Robert Samuelson asserted that income disparities are not as great as assumed. To compare the wealthiest and the poorest, he used data that included income from these government sources to supposedly show that the income differences are not so great. But that ignores

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the essential problem: government assistance only *ameliorates* the institutionalized income and wealth disparities. Such assistance does not resolve the essential problem of growing income inequality, including at older ages.”

Another trend that is affecting older adults is the opioid crisis. Older adults are themselves addicted to opioids provided as treatments for the acute pain of surgeries or procedures or for chronic diseases. In addition, opioid use disorder (OUD) is occurring in caregivers who might otherwise help an aging relative or friend. Problems of elder abuse are exacerbated by caregivers with OUD, and potential caregivers have died from opioid overdoses. Crimmins said, “The older population has really suffered their children’s problems. Children’s problems are major problems of parents. They never go away. The older population even suffered when children lost homes or had other financial problems during the economic crisis in 2008.”

Another reality in older adulthood is the need to make decisions, ones with consequences that are unknown at the time. Even something as simple as picking a Medicare Part D prescription drug plan is complex. Formularies differ and can change during the benefits year, or a new diagnosis can change the medications the person needs. It’s complicated to begin with and fraught with risks brought on by events that are not predictable or known.

People also need to have wills, advance directives, and medical powers of attorney in place. “People now are better at understanding what these documents mean and why they are important, but there’s still a lot of resistance to making such choices,” Crimmins said. “I think people and the professionals who help them are seeing why not making these choices can make your life worse.”

Other very important choices precede such end-of-life decisions, Crimmins added. “I think the professionals have not yet figured out how to present the potential that treatments can actually lead to more suffering with limited prospects for benefits,” she said. “We need better ways to offer people choices in a reasonable way so they understand them and can decide what they want to do in their lives or what their loved one would prefer.”

Characterizing a representative decision an older person might confront, Crimmins said, “If I’m 85, how do I decide if I should get my knees replaced? Is it worth spending my time in rehabilitation? There’s a difference between ‘Are you going to survive?’ versus ‘Do you want to spend most of a year getting your knees working again?’ Some people say ‘yes’ and some say ‘no.’”

**Life Is Like a Tapestry**

Providing a comprehensive picture of life from cradle to grave requires a multi-disciplinary approach. That’s why GSA was formed and excels now, on the cusp of its 75th anniversary.

As if describing the beauty of a tapestry by describing its threads and how they intertwine, each researcher or professional who joins with colleagues under the GSA banner contributes a necessary part of the understanding of optimal aging. Together, the four GSA sections, educators, emerging scholars, and dozens of interest groups are helping Americans and people around the world live longer, healthier, happier lives through their unique studies of the aging process and how to optimize it. Evolution may presume that a person’s worth lies in reproduction, but GSA members show each day how this value extends throughout long, purposeful lives.