

Psychology's Challenges in the 21st Century

Leonard W. Poon

Institute of Gerontology

University of Georgia

This essay addresses the inevitable and impending changes in our societies and psychology's responsibilities to help our populations to facilitate and adjust to these changes. To be very specific, population structures in all industrialized countries are changing in a rapid pace. Are these countries ready to deal with the changing demographics? More importantly for psychologists, do we have sufficient information or are we doing the necessary preparations to meet the challenges of the changing demographics?

Changing Demographics

Three types of changes are happening in the last half-century, and these changes are having profound impact on a country's eco-

This paper was presented at the 2011 meeting of the Korean Psychological Association, Jeonju, Korea. All correspondence to Leonard W. Poon, Ph.D., Dr. Phil, h.c., Institute of Gerontology, College of Public Health, University of Georgia, 255 E. Hancock Av. Athens, GA, USA 30606, lpoon@uga.edu.

nomics, health care, interpersonal relations, and social welfare and policy (e.g., Oeppen & Vaupel, 2002, <http://www.census.gov/ipc/www/idb/region.php>). *First*, people are living longer. This is true in developed countries as well as some developing countries. In 2006, there were about 500 million people 65 years and older in the world. By 2030, some 20 years from now, the projection is over one billion. One in eight people around the world will be over 65 years of age.

It is interesting to note that the average life spans in Japan, Hong Kong, Singapore, and South Korea were about 45 to 50 years at the end of World War II. The populations in these countries are now approaching the longest-lived in the world. Japan and Hong Kong have been challenging Sweden for the top spot in the longevity derby, and South Korea is not far behind.

A *second* and related phenomenon is the changing demographic profile of our societies. Our traditional demographic structure is similar to a pyramid or a triangle. We have proportionally larger number of younger persons and relatively less older adults. Along with increasing life span and decreasing birth rates, our traditional pyramids are now approaching a rectangle. With a population pyramid profile, we have many younger persons to support the relatively fewer older persons. The “dependency ratio” is generally high in a society structure that looks like a pyramid. As the population structure changes from a pyramid to a rectangle, or the rectangularization of the population profile, the dependency ratio becomes lower.

There are fewer workers to support the number of non-working and retired older persons. The dependency ratio becomes smaller. It is possible with very low birth and marriage rates, the population rectangle could become an inverted pyramid in which the dependency ratio is so low that it would threaten the existence of

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a society. There are simply not enough workers to support the society. Fortunately, we are not at the inverted pyramid stage yet; however, this could be an impending crisis in some countries, such as China, that had fostered a one-child policy with decreasing birth and marriage rates.

As noted earlier, South Korea has enjoyed a phenomenal increase in life span since World War II. Along with increasing life span, South Korea has enjoyed increased economic growth, increased quality of life, and a significant increase of older adults in the population. The transformation of the population pyramid to a rectangle is an ongoing process in South Korea.

A *third* population growth phenomenon is the rate of aging of different countries varied significantly. Asian countries are aging the fastest among industrialized countries around the world. France, for example, took 115 years (from 1865 to 1980) to increase its population age 65 years and older from 7 to 14 percent of the total population. In the United States, the process is expected to take 69 years (from 1944 to 2013). In Japan, this process took merely 26 years (from 1970 to 1996). It is interesting to note that those Asian countries that are experiencing rapid increase in average life span are also experiencing rapid aging of their population. South Korea is one of these countries. The implications of these rapid population changes are significant in terms of economics, work production, worker age profiles, dependency ratio, family structures and relations, caregiving, institutionalization, leisure, and policies associated with health care, welfare, and retirement. Are these rapidly aging societies ready for these changes, and more importantly, what relevant issues psychologists need to pay particular attention to in order to meet the demands of their changing societies?

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A brief personal and historical perspective. As noted earlier that it took the U.S. about 69 years for its population to age to a discernable proportion. It is of personal interest that my career development as a psychologist and gerontologist was during the time of realization that the U.S. society needed to prepare for these impending changes (Poon & Welford, 1980). I began my career in gerontology in 1972 when I began my postdoctoral fellowship on aging at the Center for the Study of Aging and Human Development at the Duke University Medical Center after I received my Ph.D. in experimental psychology.

My last 40 years had been an exciting time as a psychologist and gerontologist in the United States in terms of aging research development and funding and policy development in aging and care of the aged. My postdoctoral fellowship was funded by the National Institute of Child Health and Development – one of the primary National Institute of Health (NIH) institutes that funded research and training on the psychology of aging. In 1974, the National Institute on Aging (NIA) was founded as the primary NIH institute on aging research. In the same year the Veterans Administration initiated the Geriatric Research Education and Clinical Centers (GRECC) that were given the responsibility to improve the quality of life of aging veterans in the United States. In 1974, I went to work for the very first GRECC in Boston as well as the Harvard Medical School. Other national research and funding agencies were initiated that were charged to develop research and policy on aging. One such was the Program on Aging at the National Institute of Mental Health that funded some of my research. Every ten years, the United States convenes a White House Conference on Aging in that ordinary citizens, policy,

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research, and care professionals come together to make suggestions on aging policies and mandates for the next ten years. I was very fortunate to spearhead psychology's effort within the American Psychological Association to provide directions in the 1980 White House Conference (Poon, 1980). Finally, in the last 26 years I had the privilege of leading an Institute of Gerontology at the University of Georgia to meet the challenges of training the new cohorts of gerontologists.

Based on my experiences, I would like to discuss psychology's challenges in the face of the changing society. These are some lessons I have learned over the years, and I hope you may find the information useful in thinking about the psychology of aging and the aged in South Korea.

Interdisciplinary mandate. In the face of changing demographic structure, it is my opinion that psychology has at the minimal three major challenges. The *first* is that psychology could not afford to practice what we do in a "silo," or uni-disciplinary manner, anymore. Human development and behaviors are too complex to confine its study within disciplinary boundaries. A timely example is the increasing subspecialties within psychology departments of neuropsychology, neuroscience, biopsychology, psychophysiology, human factors, psychopharmacology -- to name a few. Another example of this trend is psychology journals contain increasing papers on multi- and inter-disciplinary domains such as gene-environment interactions or the use of MRI or other forms of brain scans to account for behavioral variances. In the U.S., it is difficult to get a psychology grant funded without employing multi- or interdisciplinary methods.

Some examples from my own work are used to illustrate the multi- and interdisciplinary nature of studying behaviors. In the

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last twenty years my primary area of research was on longevity and survival of the oldest old – the Georgia Centenarian Study (e.g., Poon, Jazwinski, Green, et al., 2007; Poon, Sweaney, Clayton, et al., 1992). My personal interests are on how cognition, personality, coping, time use, and survival skills impact longevity and quality of life of very old survivors (e.g., Miller, Mitchell, Woodard, et al., 2010; Poon, Martin, Clayton, et al., 1992). In order to answer these questions on the psychological aspects of survival, my projects included biomedical, demographic, and sociological measures in order to account for meaningful variances relating to longevity and quality of life. In order to understand the psychological constructs of life satisfaction and morale among cognitively-intact and community-dwelling oldest old, whom we call expert survivors, we studied the direct and indirect influences of environment, genetics, demographics, physical and mental health and diseases, cognition, personality and coping, survival skills, and nutrition and diet.

In our last project that began in 2001 and completed in 2009, we took an interdisciplinary approach of studying genetics, neuropathology, functional capacities, cognition, neuropsychology, personality, coping, and environmental resources on survival of the oldest old (Poon, Jazwinski, Green, et al., 2007). As a result we maintained a centenarian DNA bank and a brain bank as well as a database that could be shared with qualified researchers around the world. Owing to the disciplinary and interdisciplinary nature of moderating and mediating influences, we published about 150 papers in the first two phases of our study on cross sectional differences and longitudinal changes of cognitively intact centenarians and at present about 48 papers in the last interdisciplinary phase on population-based samples.

Based on these experiences, it is not exaggerating to note that

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interdisciplinary research is difficult, and at times impossible, to manage because scientists from different disciplines have their own issues and idiosyncrasies that may preclude compromises. I am glad that I persevered to complete these studies as it would be impossible to further our knowledge base without to resort to collaborative sharing.

Psychosocial Dynamics. Just as psychology needs to collaborate with other disciplines to better understand behaviors and treat psychological dysfunctions, psychologists needs to educate colleagues from other disciplines the influences of psychosocial dynamics that could produce variability in their measurements. Hence, a *second* challenge is for psychology to better define our constructs so that there is no lack of ambiguity for those who attempt to use them.

Again, some examples from my work are used as illustrations. It is generally accepted that as a person ages, his or her experiences acquired over the life time, ways in dealing with the environment, economic and social resources, and relationships and support systems could profoundly impact longevity and quality of life (e.g., Poon, Martin, Bishop, et al., 2010). Several significant issues for psychological researchers are ① how to measure these constructs in an experimental design, ② which reliable and valid measures should be employed to adequately measure these constructs, ③ how much do these psychosocial factors singly and in combination impact longevity and quality of life, and ④ how do these factors interact with other variables in both molecular and molar ways? The above research questions are important and worthy for future research agendas.

We recently published a paper that elucidated these questions in three ways (Poon, Martin, Bishop, et al., 2011). One, we seek to

define and increase our understanding on the measurement of two commonly-used psychosocial *outcome* measures in longevity research: self-rated health and quality of life. Two, we seek to outline the impact of four generally acknowledged psychosocial *predictors* of longevity and health. These are ① demographics, life events, and personal history, ② personality, ③ cognition, and ④ socio-economic resources and support systems. We use a similar format in each section starting with “*What do we know?*” which is used to provide a brief introduction of the concept, followed by “*Empirical Data*” which provides published or new data from the Georgia Centenarian Study, ending with “*Impact*” which attempts to delineate the relationship of the psychosocial construct to health and wellbeing among the oldest old. We believe more could be done among psychologists to not only educate ourselves on critical psychological constructs but help our colleagues from other disciplines to appropriately employ these constructs for mutual benefits.

Research and Application Methodologies. As the population structure changes with increasing number of older adults with increasing diversity, a *third* challenge for psychologists is to critically examine our extant methodologies or invent new methodologies that could adequately answer new research questions. Perhaps one of the most under-appreciated nature of aging research is the increased inter- and intra-individual variability with aging. The variability exerts its influence in chronological age, cohort, and time of measurement.

In our twenty years of research on the oldest old, we have shared in an annual review of gerontology and geriatrics (Poon & Perls, 2007) the following potential methodological confounding generally found in the literature. These potential confounding that could contribute to false positives and negatives are ① age

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verification, ② convenient versus population based samples, ③ selection of appropriate control group(s), ④ homogeneity of samples, and ⑤ understanding and inclusion of pertinent moderating and mediating influences.

Owing to the complexity of moderating and mediating constructs, complex modeling is generally employed to untangle the complexities in the psychology of aging. From this perspective multivariate methodologies such as linear structural equation modeling or growth curve functions are needed which necessitates some sophistication on the part of the users. When control groups are used in the design, attention is needed to ensure measurement invariance in that measures are processed in a similar manner for both the experimental and control groups.

Summary and Conclusion

This essay began with the well-known fact that people are living longer around the world. This fact, along with decrease birthrate in most industrialized countries, change the societal structure in that older adults are no longer the minorities. Society needs to enact policies with appropriate and efficient care techniques to maintain and improve the well-being and quality of life of our senior citizens. Psychology has a prominent role in understanding normative and pathological aging in memory and cognition, differential diagnosis, impact of mental health, physical and mental rehabilitation and therapy, design of facilitative equipment and environment, sexuality and relationships, caretaking and caregiving, grief and bereavement in dealing with inevitable death and many other domains that can directly impact the everyday lives of our seniors. In order to make these advances, I believe it is important to ① combine forces with other disciplines

in collaborative ways, ② understand and define basic psychosocial dynamics that are pertinent to quality of life of our seniors, and ③ understand and apply appropriate methodologies to efficiently answer needed research questions and for designing efficient interventions. There are virtually unlimited opportunities in making valuable contributions in the psychology of aging and the aged.

As noted earlier, South Korea is experiencing unprecedented economic growth along with the rapid aging of its population. Psychology has a responsibility to make meaningful contributions that will help our society better understand the aging processes and increase the quality of life of our larger and larger portion of our aging citizens. I hope by sharing lessons learned in my 40 years in the psychology of aging I could assist you in your research and training of the next generation of psychologists. I wish you well in this effort.

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(논문접수일: 2011년 09월 26일)

(수정논문접수일: 2011년 11월 11일)

(논문게재승인일: 2011년 11월 18일)