

## INTRODUCTION TO SPECIAL ISSUE ON PSYCHOGEROMUSICOLOGY

### THE PSYCHOLOGY OF MUSIC AND AGING COMES OF AGE: PSYCHOGEROMUSICOLOGY

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The escalation of research in both the psychology of music and the psychology of aging has led to a natural convergence on a new shared domain, that of *psychogeromusicology*. The present Volume of *Psychomusicology* represents eight different views of this domain: melodic memory, rhythmic processes, neurophysiology, quality of life, strong musical experiences, adult development, pathology, and ergonomics. An international perspective is represented by authors from France, Germany, Sweden, Japan, Canada, and the United States. Taken together the articles provide a foundation for further basic and applied research in this new area. The Volume also invites individuals to consider the options and opportunities for life long involvement in music.

Toshio Iritani, an Emeritus Professor of Psychology in Japan, began to study piano after the age of 60 years. Within five years, he performed Beethoven Sonatas, and Chopin Nocturnes and Etudes. The present author and guest editor of the present Volume of *Psychomusicology* had a similar experience about a decade earlier in her life, when she began the study of singing. Within five years, she mastered some of the most challenging repertoire for the soprano voice and earned a credential in voice performance from the Royal Conservatory of Music. These and countless other examples – from the legendary performances of octogenarians like Casals or Rubenstein to the nonogenarian amateur choristers in Germany and elsewhere—serve to illustrate lifelong learning and enjoyment from music.

Within psychomusicology, developmental psychology has directed much attention to the potential for music in infancy and early childhood (Deliège & Sloboda, 1996; Hargreaves, 1996). By comparison, the older end of the lifespan spectrum has been overlooked. The present Volume addresses this neglect.

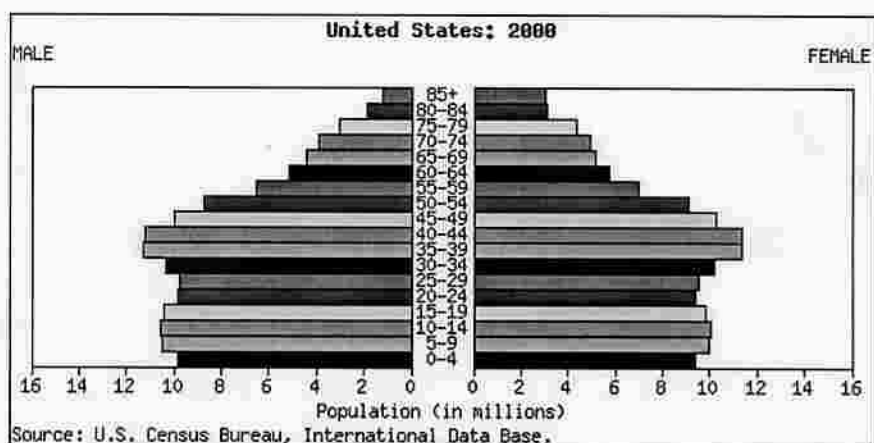
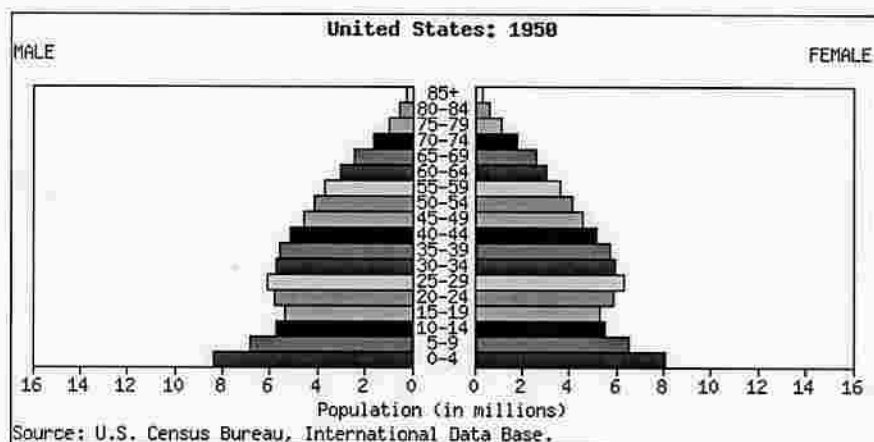
Interest in both the psychology of music and the psychology of aging has escalated independently in the last two decades. One common factor affecting the growth in both areas is the Cognitive Revolution. Its beginning is sometimes marked with the publication of the first book entitled *Cognitive Psychology* (Neisser, 1967), however, the cognitive zeitgeist was motivated directly by technological developments of the 1950s. Newly invented computers had promised much for artificial intelligence, the ability for a machine to carry out human tasks like speech recognition and translation. These early promises were met by disappointment when computers failed to easily carry out these tasks. As psycholinguist George Miller (1974) pointed out, better

theories of cognitive organization were needed as a basis for the design of computers that could take on these human tasks. The earliest history of experimental psychology had of course directed attention to cognitive issues concerning thought, and mental imagery (including music). These pioneers of experimental psychology, however, did not have the necessary scientific methodologies needed for successfully obtaining and quantifying data. The Behaviorist period from 1920 to 1970 arose as a reaction to this failure. The Behaviorists ultimately developed the scientific rigor that could later serve the renewed focus on mind of the Cognitive Revolution. The renewed legitimacy of mind by the Cognitive Revolution opened the doors, admittedly slowly at first, to psychomusicology and also to information processing, memory and thought, which are central to many studies of the psychology of aging.

Technological developments in the audio industry also facilitated the study of music perception and cognition. The same technology that made it possible to control musical stimuli in the laboratory also increased the accessibility to music of the average individual, through home stereo systems, sound systems in vehicles, wearable devices (walkmen), and portable boom boxes. Amplification created instant amphitheatres on any summer hill or winter stadium. The generation most affected by developments in audio technology was initially a youth culture. Woodstock 1969, for example, was a gathering of over 450,000 young people for a pop music festival, a "happening" that served as an icon for the significance of music for the entire youth culture generation. But in 2002 the Woodstock generation is more than 30 years older. What has become of the role of music for them?

The same period associated with the growing significance of cognitive psychology and the growth of computer and audio technologies is also associated with a changing demographic, the aging of America and of other first world countries (Foot & Stoffman, 1999). The proportion of older persons has increased and is forecast to increase for the next decades. This increase is due to better medical care, healthier life styles, improved standard of living, and heightened opportunity for education. In the United States, the average life expectancy at birth was 47 years in 1900 and increased to 77 years in 2000 (Hoyer, & Roodin, 2002). Lowered birth rates and reduced immigration has also led to a greater proportion of elderly persons in the population than ever before. The population pyramid which depicts the numbers of male and female persons at each age at a particular time (see Figure 1) is thus becoming more top heavy. The growing proportion of older persons is transforming the pyramid from the traditional triangular shape to that of a rectangle (Schaie & Willis, 2002). The increased birthrate after the Second World War created the Baby Boomer generation—the Woodstock generation. Its impact is seen as the bulge in the pyramid. With each passing year, the bulge moves up the pyramid. The Baby Boomer generation will gradually diminish, but due to high life expectancy, it will remain a significant bulge for years to come.

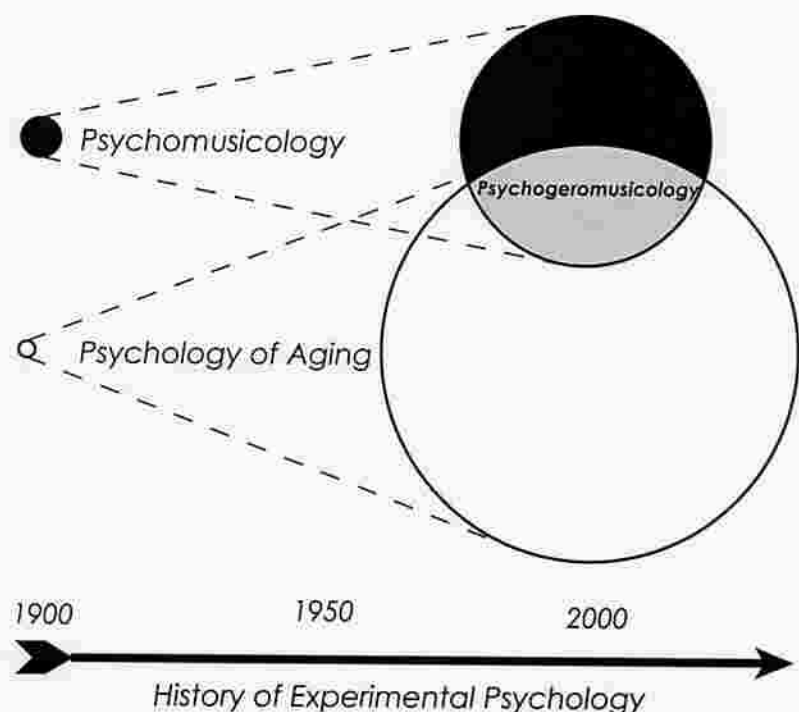
The gerontic bulge faces governments with many problems. How will the small work force of younger people support the significant segment of the population that is not working? How will health care issues associated with



*Figure 1.* Population pyramids for United States in 1950 and 2000. The x-axis refers to number of persons and the y-axis refers to age grouped by 5-year intervals. For 1950, the Baby Boom is depicted as the lowest bar (0-4 years). It appears for 2000, 50 years later, as the bar for ages 50 to 54. For several age groups below this, the bars are longer, reflecting the full force of the Baby Boom, little affected by life expectancy in these earlier age groups. Data are from <http://www.census.gov/ipc/www/idbpyr.html>.

growing numbers of elderly be addressed? For individuals there are also issues. How does one make the remaining years of life meaningful, healthful, and worthwhile? These issues have motivated an enormous research effort on the psychology of aging. Such recent research is finding that cognitive intervention can significantly improve cognitive abilities (Ball et al., 2002) but questions remains regarding the extent to which the mental processes involved in music contribute to cognition.

Thus, the psychology of music and the psychology of aging have flourished simultaneously in recent years. Early in the history of experimental psychology, however, while researchers had an interest in music perception, there was almost no interest in mental activity of older individuals. As the two fields of music psychology and the psychology of aging expanded, it is not surprising that they would intersect. This intersection, as depicted in Figure 2, is the ground for the articles in the present Volume. The papers in this collection represent cognitive, neuropsychological, developmental, social, health, and ergonomic psychology perspectives.



*Figure 2. Psychogeromusicology: the convergence of psychomusicology and the psychology of aging over the course of the history of experimental psychology.*

The Volume begins with the effect of aging on elements of music—melodic memory by Andrea Halpern and James Bartlett and rhythmic perception and production by Richard Ragot, Viviane Pouthas and Anne-Marie Ferrandez. Both of these articles refute the general notion that musical abilities only decline with age, and each examines the role of expertise and practice in maintaining psychomusicological performance levels.

A global neurological perspective on music capabilities is then provided by Barbro Johansson who gives a perspective from her lifelong research career that has included a focus on neural plasticity. This article also furnishes support for the possibility of lifelong development of musical skill.

The role of music on the quality of life in older individuals is then presented by Don Coffman from an adult music education standpoint. A second empirical paper by Annabel Cohen, Betty Bailey, and Thomy Nilsson, focuses on the significance of music to older people regardless of their mental status. This is followed by Alf Gabrielsson's empirical report of strong experiences of music in older persons in Sweden, revealing the enduring nature of profound musical events. Herbert Bruhn from Germany takes a dynamic view in an article on the development of musical activities in older people and includes discussion of singing, a musical activity available to anyone. A research report by Elzbieta Slawinski and Jane McNeil draws attention to certain practical considerations of music and aging, focusing on the risks created by music in automobiles detecting auditory warnings. A personal viewpoint by Toshio Iritani on learning to play the piano in senior years closes the Volume.

In addition to a broad perspective on themes and content, an international perspective is represented by authors from six countries: United States, Canada, Sweden, Germany, France, and Japan. With increasing globalization, the experience of young people today may be more similar than it was of young people 50 or more years ago. Commonalities and differences among findings from older people of different nations can assist in determining universal characteristics of aging because lifelong exposure to music would differ for this cohort. For example, as Gabrielsson describes, the elderly in Scandinavia were exposed primarily to classical music on the radio in their youths. In Germany, as described by Bruhn, the music was more typically national. In Canada, as described by Cohen et al., exposure was of popular American music. The research reveals that the preferred music of older people in Europe and of older people in America differs in content. What is important is that this preferred music, though different in content, is functionally similar in that it typically comes from an early period in life. This cross-cultural comparison can support the claim that memories of music of one's youth are retained throughout life and have priority for many elderly people. Thus, readers of the different articles can conclude that it is the early time of presentation not the type of music that seems critical.

This first collection of articles on psychomusicology and aging reflects what can be referred to as a new domain of *psychogeromusicology*. The collection aims to serve several purposes for basic and applied research and for practice in this field. With regard to basic research, the Volume first draws attention to theoretical issues about brain plasticity for music and to the connection between music and theories of successful aging. It is hoped that this theoretical discussion will encourage further studies. Secondly, the research findings provide a foundation for future research on what can be achieved in music appreciation and performance in later life and on the connection

between music and well-being in later life, that is also between music and successful aging (Baltes & Baltes, 1993). Thirdly, the Volume provides a compilation of references to research papers in music and aging that otherwise are scattered among sources that are diverse in discipline (music, music therapy, psychology, education, sociology, neuroscience) and country of origin. This corpus provides a resource in one place for researchers who may be interested in beginning to work in this field. It also reflects the work of several authors who might equally well have contributed articles to the present volume.

With regard to applied research, the Volume brings to light evidence for the contribution of music to the quality of life of ordinary older persons. It suggests the continuing capacity for making and appreciating music. Listening to and performing music are widely available cognitive opportunities for seniors and in theory could provide mental exercise that would contribute to remaining productive and independent. The present volume lays groundwork for future studies that could test this hypothesis. Similarly, the link between certain music performance activities and maintenance of hearing sensitivity through attentive listening, vibration sense (by string players), and breathing force (forced expiratory volume, by wind and horn players and vocalists) during senior years needs to be determined since these measures have been shown to predict age-related variance in cognitive test performance (Anstey & Smith, 1999). Much more documentation through research is needed if there is to be an impact on decision makers of research on music in aging. However, the present volume is a beginning toward advocacy for the incorporation of musical activities in homes for seniors and the increased availability of music for older persons in general (e.g., Shaw, 1993). In view of the general decline in hearing ability, the importance of providing hearing assistive devices that preserve musical information, and the importance of hearing health is also encouraged.

Finally, for persons approaching seniorhood, this Volume provides information about life long musical choices and invites planning for inclusion of music in late life. The articles challenge ideas about the linkage between youth and the ability to acquire musical performance skills. Although in general many capacities such as hearing, timing, and motor coordination decline with age, the evidence for maintenance and compensation is found in articles by Halperin and Bartlett, Ragot et al., Coffmann, Bruhn, and Johansson. The article by Cohen et al. suggests that regardless of mental status, music can have importance to older people. The Volume of *Psychomusicology* does not imply that musical capabilities are immune to age effects but the Volume also shows that there is no barrier to beginning or continuing music practices in later life. Barring profound hearing deficits, music is one activity that can be continued throughout life. As lifetime and leisure time increases, so does the potential time for the joy of music. This volume of *Psychomusicology* assists in making that potential for music in maturity more of a reality. At the same time, evidence for acquisition and maintenance of musical skill in senior years suggests the similar potential in other cognitive domains.

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