

## Promoting Second Language Learning in Older Adults

Martin Baidon

### Abstract

With the unprecedented global increase in the number of people over 60 years old, governments, communities and organisations are now considering how they will need to develop and evolve in order to manage, care for and support older people in the new demographic order. Ageing has many detrimental effects on the health of individuals both physically and psychologically. To improve the quality of life and reduce the burden on both families and communities, it is essential for elderly individuals to have an active lifestyle after passing the age of retirement. This article will show the benefits of learning a foreign language particularly in older age and its results on ensuring healthy cognitive functions. Research shows that being able to communicate in a foreign language not only delays cognitive decline but can also protect against the onset of neurodegenerative diseases such as Alzheimer's disease. This article will further demonstrate that despite common thought to the contrary, older adults learning a second language can achieve levels of proficiency affording opportunities not only to communicate effectively to other cultures and peoples, but also opportunities for self-development through greater knowledge and self-awareness, and increased confidence. In doing so individuals are capable of countering the often negative perceptions of old people in society.

**Key words:** older adult learners, geragogy, foreign language learning, Critical Period Hypothesis, cognitive decline, impairment associated with ageing

### Background

People worldwide are living longer and this trend is set to continue for the foreseeable future. This has caused a major shift in the distribution of many country's populations in a phenomenon known as population ageing. Although economically developed countries have been the first to experience this phenomenon, such as Japan where almost 30% of the population are now over 60 years old, many other middle-income and low-income countries are also experiencing a monumental shift in population composition. The result is that by 2050, there will be an estimated 2 billion people world wide over the age of 60, up from the 900 million in 2015 (WHO, 2015). During the next few decades, all countries will face

major challenges to ensure that their health and social systems are able to sustain and manage this demographic transition. With further additional years to a life span older people can be an essential and valued member of a community and family. Further education and the ability to live a complete and independent life are opportunities afforded to this age group. Yet such contributions and opportunities are dependant on one vital component; health. Ageing often results in many undesirable conditions largely the result of molecular and cell damage and the inability of the body to replicate damaged cells effectively, often the result of deterioration to DNA repair mechanisms. The ageing process typically involves a decline in both physical and cognitive functions, which can cause irrevocable changes in the quality of life of individuals.

Ageing is neither linear nor consistent and is only loosely connected to a person's age in years. We can see many a healthy individual at 70 while others at the same age are frail and require significant help from others (WHO, 2015). However, no matter how well symptoms are delayed through genetics or lifestyle choices, at some point in our future we will experience a decline in our physical and cognitive functions. As the decline becomes more extreme, individuals become less able to contribute positively to families and communities, and become more reliant on those members in order to function and live safely. Ageing affects not only the physical form of individuals but often has profound psychological effects, manifested in the loss of dignity and self-worth, interminably affecting both those subject to the symptoms and those closest to them.

### **Cognitive deterioration**

Ageing of the brain, in particular, can have metamorphic, chronic results on individuals. Generally, cognitive ageing is categorised into two definable terms; normal ageing or successful cognitive ageing, and pathological ageing. Normal ageing entails predictable changes to cognitive function along with the increase of age. Symptoms we associate with 'getting older', such as forgetfulness and the slower ability to process information. Pathological ageing is a loss of cognitive function outside the term of normal ageing often apparent as neurodegenerative diseases. The distinction between the two forms of cognitive decline is often contested as it has been argued that dementia is a natural part of ageing since many individuals over 85 have clinical symptoms of dementia (Cheng et al., 2015).

Decline in cognitive abilities due to ageing has been extensively researched. Antoniou et al. (2013) provides a detailed summary of researched effects of ageing on the brain. With increasing age, a broad range of cognitive functions are affected including, memory decline, poorer working memory, reduced verbal span, delayed verbal recall and reduced information processing speed. In addition, language and communication are affected through speech perceptions, speech production, comprehension of semantics and lexical items, grammar and discourse. Ageing is also associated with a decrease of both grey matter (responsible for controlling and managing the body's senses including hearing, feeling, seeing, memory functions as well as muscle control) and white matter (responsible for transmitting information to and from

the body to the brain and relaying information between different brain regions). The effects of significant cognitive decline include dementia and other neurodegenerative diseases such as Alzheimer's disease. "The disease-state of such a decline—Alzheimer's disease and other cognitive disorders—not only hijacks our consciousness and intellectual autonomy, but also burdens families and health care systems." (Antoniou et al., 2013). Even with normal ageing there is a significant loss of grey matter in the brain, associated with the decline of major cognitive functions. Between the ages of 30 to 90 grey matter within the brain will decrease by 15% to 25% (Chen, 2015, p. 268).

### **Delaying the ageing effect**

Empirical evidence shows that participation in social activities after the age of retirement significantly lowers the risk of functional disability and dependence on others for everyday living. Research by Kanamori et al. (2014) shows how being an active member of a group or groups in older age encourages greater social participation which in turn;

*provides purpose encouraging older individuals to keep active and maintain routines and daily habits.*

*improves knowledge often relevant to the health of older people, including knowledge of symptoms, access to health-relevant information and other forms of social support.*

*affords direct physiological benefits including the buffering of stress or loneliness, boosting host resistance and reducing the onset of disease related genes and characteristics.*

With increased social activity, older adults can realistically improve their physical and physiological well-being with participation in several activities after retirement recommended. "Participation in multiple organizations may have a protective effect on depression, well-being and oral health status, while having a role within the organization may reduce the risk of mental health problems ... Among the different types of social participation, it is thus likely that participating in a local community, hobby, or sports group organization may be especially effective for decreasing the risk of long-term care in the future." (Kanamori et al., 2014).

### **Second language learning and delaying the effects of ageing**

Studies undertaken in the 2000's all conclude that language learning improves cognitive reserve, protects the brain against neurological diseases and strengthens brain areas which are prone to cognitive decline (Antoniou et al., 2013; Bak et al., 2014; Cheng et al., 2015; Gomez, 2016, p. 16 & p. 196). The connection between foreign language learning and delayed cognitive decline first came to the attention of scholars

with the discovery by Canadian scientists Bialystok, Craik and Freeman in 2007, that the average age of bilinguals diagnosed with Alzheimer's disease was later than those of monolinguals. A further study by the same researchers, using a larger sample of subjects found similar conclusions in 2010. This was confirmed by a separate Canadian team researching the link between bilingualism and delayed effects of Alzheimer's disease, also in 2010 (Cheng et al., 2015, p. 263). This induced further research on the learning a foreign language and its effects on general cognitive decline beyond the parameters of Alzheimer's disease. One study proposes that the learning of a foreign language to a high level of proficiency would increase the probability of protection against cognitive impairment by more than four times (Chen et al., 2015, p. 262). Other studies purport that the more languages old people spoke on a regular basis the stronger the effect on cognitive levels (Bak et al., 2014, p. 962; Chen et al., 2015, p. 262). "Knowing 3 or more languages produced stronger effects than knowing 2." (Bak et al., 2014, p. 962). Several studies have concluded that learning foreign languages later in life not only improves language-related functions of the brain but also general cognitive functions in older adults (Antoniou et al., 2013, p. 2694; Bak et al., 2014, p. 959; Chen et al., 2015, p. 269).

At any age, language acquisition involves the engagement of a large area of the brain, providing protection from neurodegenerative diseases. However, the learning of foreign languages results in a significant number of positive effects beyond physical changes to the brain. The ability to communicate to a wider group of people improves social skills and can shield against depression and loneliness. The learning of a foreign language in adulthood has shown to positively affect L1 reading levels, L1 verbal fluency and general intelligence (Bak et al., 2014, p. 962). Foreign language learners can comprehend new items or information more efficiently. They are able to apply creative techniques to solve complex problems. They exhibit better listening and memory skills. They have wider social networks, understand their own and other societies better. They have a higher level of self-confidence, and are more tolerant to different views of the world (Gomez, 2016, p. 131).

### **Pedagogy to Geragogy**

The term *education gerontology* first appeared in the 1970s. Its purpose is to provide education to older adults recognising the specific learning needs of that demographic group. Education gerontology serves as a tool for older adults to manipulate and control their own situation and circumstances, empowering individuals to go beyond the goals of merely expressing themselves. Although many authorities regard educational programs a key instrument for the reconstruction of lives after retirement, the education of older adults can lead to more purpose than merely an activity to consume the greater leisure time this generation is often afforded. In recent years the term critical education gerontology has emerged which aims to escape from traditional concepts of geragogy, being confined to the teaching of frail and vulnerable individuals, to a new paradigm "... where older adults are in control of their thinking and learning, and have the possibility for further development, thinking, questioning and reflecting on what they know or

new areas of content for this learning.” (Formosa, 2002, p. 75). The learning of a foreign language in older age provides opportunities for individuals to effectively change and control their individual situations. Gomez (2016, p. 115) demonstrates that in being able to communicate in a second language, new tools are acquired to be used in jobs and volunteer activities. New social networks are opened particularly in an ever more global and international environment. Through the internet, older adults can communicate and share knowledge and interact with a much wider community than would be possible in monolingualism. Formosa (2002, p. 74) describes that many older adults feel helpless against their social conditions and are powerless to transform society. Through the learning of a foreign language, preconceptions towards ageing can be challenged and refuted. “Additionally, the visibility of more confident older adults, who are competent in skills that require the use of cognitive systems, may contribute to transforming social, ageist preconceptions regarding older learners.” (Gomez, 2016, p. 200). In many societies, negative images related to old age are widespread and deep-rooted. The inability to perform tasks to the level of younger generations or the failure to understand new concepts concisely, compound these views. The acquisition of a foreign language, is often thought to be beyond the capabilities of the older generation.

### **Impairments affecting proficiency in learning a foreign language in older adults**

It has been widely documented that the attainment of native-like levels of a foreign language are almost impossible after puberty, and the idea that “younger is better” can never be challenged. Those purporting such concepts often refer to the works of Penfield and Roberts (1959) and Lennenberg (1967). Lennenberg in particular is most well known for his concept of the Critical Period Hypothesis, arguing that language acquisition to native-like levels was impossible after this critical period before the end of puberty. His research was based on observing nerve connections in the brain, which ceased at puberty coinciding with the child’s acquisition of language. Other commentators have purported a much earlier age than the end of puberty. “If exposed to language prior to the age of seven, children are capable of becoming totally fluent, but after this age the prognosis becomes gradually worse”, (Breathnach, 1993).

The task is further compounded by ‘a natural ageing’ of the senses. It is considered that no matter the effort, ageing senses are an unavoidable constraint working against a language learner in advanced years. Kowalski and Cangemi (1978) conclude that auditory acuity peaks between the ages of 10 and 14, suggesting that this marks the endpoint of the critical period for language learning. Beyond this, deterioration continues to decline gradually. However, a much greater decline in auditory acuity occurs after individuals enter their 50’s and a further sharper deterioration when individuals enter their 70’s. A survey in the United States showed that while 85% of children between the ages of 5 and 14 had normal hearing, the figure was only only 12% for those 65 or older (Singleton and Ryan, 2004, p. 120). Lack of phonemic awareness not only impairs the auditory field but also the ability to replicate sounds accurately orally and there is little evidence to contradict the claim that mature older adult learners perform consistently worse in the aural and phonetic domains than their younger counterparts. Pronunciation is

often cited as the largest difference between early foreign language learners and adults, even by those questioning the credibility of the critical period hypothesis argument (Gomez, 2016; Lecumberri and Gallardo, 2003, p. 117).

Although not as impairing as the aural field, visual impairment is also cited as a constraint working against the older second language learner. Again, the rate of deterioration in the visual field increases rapidly at around 55 and by the age of 65, half the population have a significant visual impairment (Singleton & Ryan, 2004, p. 121). Problems focussing is amplified by the inability of many elderly people to distinguish between light and dark surroundings, and bright colours. Many visual impairments may be rectified through corrective glasses, increased font size of materials, and increased time for adaptation between light and dark surroundings. Nevertheless, difficulties can inhibit language learning particularly those learning in mixed aged environments.

The memorisation of new vocabulary and syntax is perhaps the most troubling aspect of learning a foreign language for older adults. Attempting to memorise items within the lesson and from lesson to lesson can prove frustrating for both learner and instructor (Gomez, 2016, p. 198). Working memory, in particular, is thought to be subject to deterioration and learners quickly forget material and data as soon as it is presented. Unable to recall new items learners are unable to communicate using the target language. Ageing also affects the ability to transfer information from working memory to long term memory, often necessary to recall previously learnt material (Burke & MacKay, 1997). This is often exacerbated by a decline in both processing speed and the ability to understand new concepts clearly, particularly important in tasks which require learners to hold information in the working memory for longer periods. Slower processing speed also often results in learners experiencing difficulty understanding complex instructions, retaining information for a vital task, and producing appropriate vocabulary. Gomez (2016, p. 42) illustrates the problems many older learners experience in attempting to explain directions and read maps, where comprehension, information retention and the ability to recall lexical items and coherent syntax are necessary in order to complete the task successfully.

There is often much pessimism about the learning and teaching of a foreign language to those in advanced years given the impairments of this age group. It is commonly thought that high levels of competency are unattainable and 'younger is always better'. With such pessimism, the exercise becomes no more than a social event, a way to still meet others, negating the true purpose and goals. The value of learning in a group environment should not in itself be undermined as simply being a participant in social activities has many health benefits on individuals. However, teachers administrators and older adults should not accept this as the only goal of learning a foreign language, given the mounting evidence supporting the belief that older adults can attain some level of language proficiency.

### **Effective communication in a second language can be achieved**

It is perhaps preconceptions that older learners face too many physical and cognitive disadvantages from

the outset that renders accomplishment of a foreign language to high-levels of competence improbable if not impossible. These preconceptions conceivably exist within society as a whole but, more importantly, are prevalent in both instructors and elderly learners themselves. “The greatest obstacle to older adult language learning is the doubt—in the minds of both the learner and the teacher—that older adults can learn a new language.” (Schleppergrell, 1987). However, such preconceptions are unfounded if approaches to learning are adapted to the requirements of older learners. Research shows that aptitude, often considered an inherent, unchanging genetic endowment, can be improved with training (Gomez, 2016). Similarly, age related cognitive problems including the capacity of the working memory and reduction of grey matter can be palliated and even enhanced with appropriate activities (Klingberg, 2010). Gomez (2016, p. 196) states clearly the potential of second language learning in older age.

*“In sum, advances in cognitive science have shown that the brain is continually changing, and that it is able to maintain its capabilities even in old age, as long as individuals engage in activities that allow it. Thus, older learners of a foreign language may face a different set of challenges from those encountered by younger adults, but there is no evidence that shows that these challenges, if approached appropriately, will keep them from learning the FL to a high standard of proficiency.”*

Any research focussed on learning in older age has often seemed ambivalent. Until the mid-1990’s there was a general lack of information or empirical research around older language learners. “Although a large body of literature exists on age-related differences in second language acquisition, few studies are available on the older second language learners ... There seems to be general agreement that there are age related differences in second language acquisition but few answers to the many of the questions which can be raised.” (Wagner, 1992). Although there have been some research advances since that time, many commentators still bemoan the lack of evidence on foreign language learning in older age, particularly while learning in an L1 community. Yet, older age does not equate to an inability to learn a language to a high level of attainment. Wagner (1992) cites an article by Zdenek (1986) who reports the significant progress of an individual over 90 years old in learning Spanish.

A number of research complements the paradigm that there is a maturational limit beyond which it is simply impossible for individuals to attain a foreign language to native levels (e.g., Johnson & Newport, 1989; Patkowski, 1990; Scovel, 1988; Seliger, 1978). The Critical Hypothesis Period theory cannot be refuted. Yet, Singleton & Ryan (2004, p. 108) offer a summary of empirical evidence which showcases a wealth of research where adults have outperformed children and adolescents in multiple linguistic areas. One study of subjects learning Russian, found that adults outperformed children and adolescents at ‘every level of linguistic complexity’. Genesse, (1988) concludes that phonological, syntactic and comprehension aspects of a second language can be learned, at least in earlier stages, more efficiently and more easily in post-pubertal learners. Equally, Gomez (2016, p. 36) purports that there is no evidence to support the alleged superiority of younger learners across all aspects of L2 learning. Birdsong (1999, Ch1) describes

how his position on the Critical Period Hypothesis changed from a staunch supporter to an advocate of the notion that adults can attain native-like levels of proficiency citing his own and others' research on grammatical proficiency of post-pubertal foreign language learners. Even in the aural phonological domain, often cited as the most vulnerable to critical period effects, several studies show better results for adults compared to their younger counterparts (Singleton & Ryan, 2004, p. 73). Bongaerts (1999, pp. 154–155), in particular, presents results of research in which native Dutch speakers of varying age ranges in adulthood were able to attain native-like pronunciations of British English and standard French. This researcher suggests that the ability to understand and copy phonological elements of a language may be attributed to something other than age, including inherent aptitude of individuals, motivation, continued access to massive L2 input and intensive training.

The above studies contradict the Critical Period Hypothesis and high proficiency levels can be achieved in adulthood. However, the subjects of those studies were individuals above the age of puberty and not specifically older adult learners, for which more research is still required. With appropriate pedagogical approaches though, older learners can overcome the physical and cognitive impairments to produce confident, proficient second language communicators. It may also be considered that the goals for many learners do not require native-like proficiency. Indeed, if massive amounts of L2 input is required to achieve such a level, and assuming the learning of vocabulary necessitates more time and effort than younger learners (Gomez, 2016, p. 33), many older learners may lack the willingness or opportunity to devote such time especially when other commitments compete for that time and energy. For many, being able to effectively communicate in a foreign language will be the target, and ultimately maintain healthy cognitive functions and a non-dependent lifestyle. This is a realistic goal that can be achieved as relatively limited vocabulary does not necessarily inhibit the ability to communicate proficiently. For non-technical, adult conversations effective use and knowledge of high frequency items, in addition to relatable lexical and syntactic information, is sufficient for effective communication. In sum, time and effort spent on high frequency, high relatable items neutralises the challenges many older learners experience in memorising new information (Gomez, 2016, p. 193). By presenting relevant language connected to a learner's reality and which can realistically be comprehended and employed can produce effective outcomes. Knowing fewer words will not hamper communication ability and will result in a perfectly satisfactory learning experience, potentially to a high level.

Indeed, is it necessary that those learning a foreign language need reproduce the sounds of native speakers? Many studies of proficiency focus on whether learners can sound native-like, but this can prove contentious. In many languages there is a great deal of variation in pronunciation and as Lecumberri and Gallardo (2003, p. 117) identify, native speakers often confuse learners' pronunciation for regional strains of their own language. In widely spoken languages, such as English, it is fair to assume that global varieties exist and it would be highly controversial for learners to be judged on language ability because their pronunciation does not replicate one of the mainstream varieties. Indeed Gnutzman (2000) suggests that 80% of verbal interactions in English are between non-native speakers, the vast majority



communicating coherently with presumably a form of ‘accent’. Similarly, language proficiency cannot be determined because learners produce sounds which still contain elements of their native language since such assumptions can repudiate fundamental aspects of identity.

## Conclusion

Any possible improvement to the quality of life and health of older adults has the potential to affect millions and maybe even billions of lives in an ever demographically ageing world. Any mechanism for improvement should therefore be regarded as a significant contribution to human development. Engaging in activities in older age encourages social participation resulting in a healthier physical and physiological state lowering the risk of functional disability and dependence on others. The learning of a foreign language, as presented here, is a particularly effective mechanism for countering the numerous symptoms synonymous with ageing. The acquisition of a foreign language requires the brain to employ a complex network of functions which has the real potential of not only protecting individuals against brain atrophy and resulting neurodegenerative diseases, but also stimulate mechanisms for improved cognitive performance, including increased grey and white matter. The level to which older learners may attain is limitless, despite the continuing disputes over the legitimacy of the Critical Period Hypothesis. With appropriate pedagogical and geragogical approaches, impairments related to the working memory, ability to transfer information to long term memory, hearing and visual field can all be overcome to produce proficient foreign language communicators. In doing so, older adults can control the direction of their own lives, realise potential for further opportunities and sustain personal development. A confident elderly speaker of a foreign language has the ability to change negative perceptions of the aged, both to those who are in direct contact with them and also to society as a whole. As societies age globally, it is for each community and government to decide the most effective medium and infrastructure required for effective implementation of older adult education. Matters relating to access, logistical issues and perhaps most importantly instructors trained in geragogical approaches need to be addressed along with an examination of the existing paradigm of adult education. Lifelong learning especially in older age has the potential to afford all individuals knowledge and a greater appreciation of the world. The perception of old age being equated with declining age can be refuted and through education, the golden years can be perceived as an age of advancement and development.

## References

- Antoniou, M., Gunesakera, G., Wong, P. C. M. (2013) Foreign language training as cognitive therapy for age-related cognitive decline: A hypothesis for future research. *Neuroscience & Biobehavioral Reviews* Volume 37, Issue 10, Part 2, December 2013, Pages 2689–2698
- Bak, T. H., Nissan, J. J., Allerhand, M. M., Deary, I. J. (2014) Does Bilingualism Influence Cognitive Aging? *Annals of Neurology*. Retrieved December 2nd, 2017, from <http://onlinelibrary.wiley.com/doi/10.1002/>

ana.24158/full

- Birdsong, D. (1999) Introduction: Whys and Why Nots of the Critical Period Hypothesis for Second Language Acquisition. In David Birdsong (ed.), *Second Language Acquisition and the Critical Period Hypothesis* (pp. 1–22). Lawrence Erlbaum Associates: Mahwah, New Jersey
- Bongaerts, T. (1999) Ultimate Attainment in L2 Pronunciation: The Case of Very Advanced Late L2 Learners. In David Birdsong (ed.), *Second Language Acquisition and the Critical Period Hypothesis* (pp. 133–159). Lawrence Erlbaum Associates: Mahwah, New Jersey
- Breathnach, C. (1993) Temporal determinants of language acquisition and bilingualism. *Irish Journal of Psychological Medicine* 10 (1), pp. 41–47
- Burke, D. M., Mackay, D. G. (1997) Memory, language and ageing. *Philosophical Transactions of the Royal Society: Biological Sciences*, 352, 1845–1856. Retrieved December 29th, 2017 from <https://pdfs.semanticscholar.org/aa8f/782761b85ccb9a8cef262523404f327eebb9.pdf>
- Cheng, K., Deng, Y., Li, M., Yan, H. M. (2015) The Impact of L2 Learning on Cognitive Aging. *ADMET & DMPK* 3(3) (2015) 260–273; Retrieved December 29th, 2017, from <http://hrcak.srce.hr/144318>
- Formosa, M. (2002) Critical Gerogogy: developing practical possibilities for critical educational gerontology. *Education and Ageing*, Volume 17, Number 1, 2002
- Genesee, F. (1988) Neuropsychology and second language acquisition. In L. M. Beebe (ed.), *Issues in second language acquisition: Multiple perspectives* (pp. 81–112). Cambridge, MA: Newbury House
- Gnutzmann, C. (2000) Lingua franca. In: Byram, M. (ed.) *The Routledge Encyclopedia of Language Teaching and Learning*. London: Routledge
- Gomez, D. R. (2016) Language Teaching and the Older Adult: The Significance of Experience. *Multilingual Matters*: Bristol, Buffalo, Toronto
- Johnson, J., Newport, E. (1989) Critical Period effects in Second Language Learning: The influence of maturational state on the acquisition of ESL. *Cognitive Psychology* 21, 60–99
- Kanamori, S., Kai, Y., Aida, J., Kanamori, S., Kai, Y., Aida, J., Kondo, K., Kawachi, I., Hirai, H., Shirai, K., Ishikawa, Y., Suzuki, K. (2014) Social Participation and the Prevention of Functional Disability in Older Japanese: The JAGES Cohort Study. *PLOS One*. Retrieved December 26th, 2017 from <https://doi.org/10.1371/journal.pone.0099638>
- Klingberg, T. (2010) Training and plasticity of working memory. *Trends in Cognitive Sciences*, Volume 14, Issue 7, pp. 317–324, July 2010
- Kowalski, C., Cangemi, J. (1978) Characteristics of older adults and the aging: Some new evidence. *Language Learning* 23, 63–74
- Lecumberri, M. L. G., Gallardo, F. (2003) English FL Sounds in School Learners of Different Ages. In Maria del Pilar Garcia Mayo and Maria Luisa Garcia Lecumberri (eds.), *Age and the Acquisition of English as a Foreign Language*. Multilingual Matters Ltd: Clevedon, Buffalo, Toronto
- Lenneberg, E. (1967) *Biological Foundations of Language*. New York: Wiley
- Patkowski, M. (1990) Accent in a second language. A reply to James Emil Flege. *Applied Linguistics* 11, 73–89
- Penfield, W., Roberts, L. (1959) *Speech and Brain Mechanisms*. Princeton, NJ: Princeton University Press
- Schlepppegrell, M. (1987) The Older Language Learner. *ERIC Clearinghouse on Languages and Linguistics*. Retrieved December 29th, 2017, from <http://ericae.net/edo/ed287313.htm>
- Scovel, T. (1988) *A Time to Speak: A Psycholinguistic Inquiry into the Critical Period for Human Language*. Rowley, MA: Newbury House
- Seliger, H. (1978) Implications of a multiple critical periods hypothesis for second language learning. In W. Ritchie (ed.) *Second Language Acquisition Research: Issues and implications*. New York: Academic Press
- Singleton, D., Ryan, L. (2004) *Language Acquisition: The Age Factor*, 2nd edition, Multilingual Matters Ltd.

Promoting Second Language Learning in Older Adults

Clevedon, Buffalo, Toronto

World Health Organization (2015) Aging and Health. *Fact Sheet 404*. Retrieved January 2nd, 2018, from <http://www.who.int/mediacentre/factsheets/fs404/en/>

(受理日 2018年1月9日)