



## **Consideration of Age in L2 Attainment - Children, Adolescents and Adults**

Annie Hong Qin Zhao  
Carol Morgan  
Department of Education, The University of Bath  
Bath, UK

### **Abstract**

The idea of “earlier is better” is modified by the concept of a “Critical Period” in a person’s age during which language acquisition is optimal. It is controversial when applied to L2 acquisition (L2A). Evidence from a close examination of the studies relating age to L2A supports the proposition that there is a period in the learner’s age when L2 is acquired more proficiently in terms of the final language *outcome or output*. After the “Critical Period”, there is a statistical decline in the L2 acquisition by older people. This literature survey is intended to suggest that the age effect is a dominant pervasive influence in L2A and can be interpreted beyond the recognition of a “Critical Period”, and, along with other variables in age difference such as the nature of the input and the time committed to learning being taken into consideration. The consideration of age should be reflected in the teaching approaches to different age groups.

### **Introduction**

Age has often been considered a major factor in the L2A field, and over the years, various hypotheses have been proposed to account for the correlation of age of acquisition and the degree of ultimate mastery of the second language. A number of empirical studies have been designed to investigate the question of optimal age to learn a second language. From the view of education practice, it is of great importance to understand as far as possible

how maturational effects interact with environmental factors in the acquisition of L2 (Wode, 1981). It has significant credibility for approaches to second language instruction and implications for foreign language learning and teaching. These are the indicators for educational policy-makers to plan the allocation of the resources for second and foreign language learning, particularly in respect of the effort for serious teaching of language to younger children. In the case of China, according to the National Curriculum, L2 teaching starts at Primary 4 (10 years old) in urban areas, however, some schools in rural areas cannot meet this requirement, it may not commence as late at Junior High (12 years old). In Japan, foreign languages are not included in the National Curriculum. In UK, according to the National Curriculum, foreign languages are not taught until 11 years unlike all other subjects. A European example is Germany, where in some states (Lander) foreign languages start from grade 5 (US Department of Education 2002). Different approaches are required for different age groups.

### **“Critical Period” Validity**

Generically, a “Critical Period” is considered to be the period of time during which an organism displays a heightened sensitivity to certain environmental stimuli, typically, there is an abrupt onset, or increase of sensitivity, a plateau of peak sensitivity, followed by a gradual offset, or decline which is asymptotic (Birdsong, 2001). The idea of “Critical Period” was first introduced by Penfield & Roberts. According to Penfield & Roberts (1959), a child’s brain is more plastic compared with that of an adult, and before the age of 9, a child is a specialist in learning to speak, he can learn 2-3 languages as easily as one.

However, “for the purpose of learning languages, the brain progressively becomes stiff and rigid” during the age span of 9-12 (Penfield & Roberts, 1959). Penfield hypothesizes that the child’s brain plasticity makes for superior ability especially in acquiring units of language. He goes on to recommend the teaching of a second language at an early age in school. Along similar lines to Penfield, Lenneberg (1967), based on studies in the field of neurophysiology, as applied to the brain, argues that the acquisition of language is an innate process determined by biological factors which limit the critical period for acquisition of a

language from roughly two years of age to puberty. Lenneberg believes that after lateralization (a process by which the two sides of the brain develop specialized functions), the brain loses plasticity. Lenneberg claims that lateralization of the language function is normally completed at puberty, making post-adolescent language acquisition difficult.

Later Krashen (1975), who researches into second language acquisition, language teaching and development of literacy, argues that Piaget's cognitive stage of formal operation beginning around puberty may be the basis for a close of the critical period for the second language acquisition. Lamendella (1977) introduces the term sensitive period, which is now often interchangeably used with "Critical Period" in the field, and emphasizes that language acquisition might be more efficient during early childhood. As Bornstein (1989) observes, it is sometimes assumed that the degree of sensitivity remains constant over the course of the critical period. More recently, Pinker (1994, p. 293) describes the age effect in language acquisition, and its underlying causes, as follows:

*(. . .) Acquisition of a normal language is guaranteed for children up to the age of six, is steadily compromised from then until shortly after puberty, and is rare thereafter.*

Robertson (2002) following intensive research on the Korean learner, suggested the term, "windows of opportunity" was more apt than 'critical period.'

Though the exact extent of the "Critical Period" during which learners learn a second language with relative ease and are more likely to reach a success varies slightly from different theoretical perspectives or individual researchers, this above study indicates, however, that most theorists and a number of researchers do agree that there is potential advantage to an early start in childhood. Results from the studies suggest that early exposure, even when it is minimal and there is little or no productive use of the second language, may be of importance to ultimate success and may produce a qualitatively different type of language learning even when later learning takes place in a formal

classroom setting. Early exposure appears to activate innate neurofunctional systems in such a way that learning at a much later period are facilitated, Carroll (1980).

The consistent evidence from the more recent empirical study of Birdsong & Mollis (2001), combined with the earlier experimental study of Johnson and Newport (1989), which have studied the effect of age of arrival to the L2 country and the attained L2 proficiency, indicates that earlier learners acquire L2 more proficiently over a particular age range, albeit with a declining trend. Although the trend of decline is different, there exists a “Critical Period” from 5-15 years, when acquisition is more proficient than later age. After this “Critical Period” later learners follow a generally downwards age-related trend. The findings of the study, in addition indicate that the later the arrival is, the lower the incidence of nativelylike performance will be. Birdsong (2002, p.38) claims:

*...age entails a loss of ability to learn a second language. It is clear that the sensitivity decline persists over the age spectrum: it is more a case of progressive losing than eventual loss. L2 learning appears to involve not a single monolithic faculty, but distinct neural and cognitive components with differential susceptibilities to the effects of age.*

Birdsong&Mollis (2001) indicate that even in the “ Critical Period” there is an age related decline, and that there is a maximum age limit to the “Critical Period” of 15 years approximately.

I *concur with* the supposition that “earlier is better” has validity, since the data from many researches agree with this assertion. However, evidence from both the Johnson & Newport and Birdsong studies, along with other researches, such as Johnson (1992) and Shim (1993), indicates that significant numbers of late learner individuals are able to achieve relatively high proficiency, higher even than some younger learners. It is also worth pointing out that all the theorists who support the “Critical Period” hypothesis and the researchers who have found evidence of age effect and L2A negative correlation do not deny the possibility that later learners, including adults, may achieve success in L2A. From this, the existence of the “Critical Period” does not result in the nonexistence of relatively

high attainment for adults, nor does the credibility of the “Critical Period” sacrifice the possibility of older children learning faster and more efficiently in some stages in L2 learning. The “Critical Period” hypothesis focuses on the high ability of early learners and seeks to find the optimal age of L2A so that their success can be maximized.

While acquisition of a language outside the period in which it normally occurs is not impossible, it will proceed by a different route Krashen, (1975). Lenneberg’s findings (1967) are also compatible with the prediction that the older learner may acquire the second language via a different route from the child, and argues that after puberty the automatic acquisition from mere exposure seems to disappear and languages have to be taught and learned through a conscious and labored effort, and a foreign accent cannot easily be overcome.

Consistently, Birdsong(2002, p.38) points out:

*Age effect is moderated by other variables at the same time, any number of exogenous and endogenous variables may come into play that may flatten the slope of the decline and result in significant numbers of nativelylike attainers. Not everybody is “losing it” on a strict schedule... “it” is perhaps better understood as “them”.*

Indeed, there also exists some modest evidence to show that later learners are more proficient in terms of their final state in L2A. This can be examined in terms of age differences.

### **Age Differences**

In recent years a number of empirical studies have been undertaken which show that, apart from the general downward age-related trend, there are also incidences of successful individual later learners. Although we know that among the multiple factors that affect L2A, age is the one that is most pervasively dominant, sometimes even stronger factors show up, such as personal motivation, anxiety, input and output skills, settings and time

commitment. Robertson (2002) has explored such factors. For later learners their age related decline is much more variable and is markedly different from one individual to another. Generally, because of their greater memory storage and greater capability of their conceptual system, older learners may learn faster and more efficiently in some aspects in L2A. It indicates that further research into age differences in second language acquisition will need to take the dimensions of cognitive involvement and contextual support into account (Harley, 1986).

Ausubel (1964) considers that children may be better able to acquire an acceptable accent in a new language and that they have certain cognitive advantages too, so that they are less rigid in understanding new learning tasks. Ausubel goes on to point out that such assets are outweighed by two overwhelming advantages that adults have. Firstly, adults have a much bigger L1 vocabulary and, therefore, do not have to acquire thousands of new concepts in the L2 as children do, but only the verbal symbols representing these symbols. Secondly, adults' ability to make conscious grammatical generalizations and apply them to suitable exemplars is an asset rather than an inhibiting factor. Similarly, the relative cognitive maturity of adolescents and adults and their experience in L1 will give them an initial advantage over children in at least some aspects of L2 performance.

The affective and social factors may act as intervening variables that impede L2 acquisition in adolescents and adults. Some adults may have obvious purposes and that may make them highly motivated. Schumann (1978) presents social factors as equal in importance to affective ones in determining the degree to which the L2 is acquired. For older learners, who arrive in a new country with well-developed academic skills in their L1, schooling largely via the L2 is likely to lead to the more rapid learning of related skills in L2, because they have high motivation to get academic success and need to integrate into the new culture.

When the L2 is learned in a foreign language classroom as opposed to a natural target language environment, there is an important difference in the nature of the L2 interaction. When L2 is learned in a foreign language classroom, the language interaction is

constrained and extremely limited in time and place. In natural target language environment, exposure is maximal and opportunity for interaction is authentic. And the nature of the input is important in determining which aspects of the L2 are acquired by older or younger learners (Harley, 1986).

Carroll (1969) argued that time is a key variable in L2 acquisition on the basis of measured L2 achievement in formal educational settings which indicated that the most important variable in L2 acquisition is time. Later, Burstall et al. (1974) agree that the achievement of skill in a foreign language is primarily a function of time spent in formal study of that language. For Swain (1981), the time issue in L2 acquisition is intimately bound up with the sociocultural circumstances in which the L2 is acquired. As Lightbown & Spada (1993) point out, younger learners in informal settings in the target language environment usually have more time to devote to learning language, and they often have more opportunity

To sum up, according to this literature survey, the correlation between age and L2 attainment is generally negative, the maximum age for nativelylike achievement in L2 is 15 years approximately, the commonly held view of “the earlier, the better” has credibility, and there are potential advantages in an early start to L2A, particularly when the instruction is well designed for early learners. However, the age-related effect also reflects the differences in affective, sociocultural and input variables. L2A cannot be considered simply on the basis of the “Critical Period” without considering all the other prevailing conditions.

### **Learning Characteristics and Teaching Approaches**

Children, adolescents and adults have neurological, cognitive and psychological differences in L2A. Children are generally observed to be intrinsically better learners, while adolescents and adults have developed cognitive skills and self-discipline which enable them to utilize a greater efficiency in the acquisition of a larger volume of comprehensible input within the same exposure time period, on the other hand, they may be more greatly affected by the other factors in L2A. The difference in the acquisition

process demands different approaches to instructing learners of different age groups. The following section will further explore the most effective approaches in formal learning settings.

## **Children**

Children generally are not consciously interested in language for its own sake and usually tend to direct their interest towards things that are easy for them to understand. They possess a natural desire to actively participate in the social life around them that helps them to learn new languages. If they know how to pronounce a word it is easy for them to add it to their speaking vocabulary, the immediate uses of the language makes for communicative confidence. According to J. Piaget's theory of cognitive development stages (Ginsburg & Opper, 1979), children process languages generally through sensory experience, and intelligence develops in the form of motor actions, young learners receive more concrete input. Therefore their instruction should preferably involve concrete references in the language being taught and actively engaging tasks. Well instructed immersion gains much more effect

On the other hand, with children in the concrete operational stage, learning activities should involve exercises of classification, ordering, location, and conservation using concrete objects. Children are relatively more field-dependant, so teachers should use direct methods and try to provide a rich and stimulating environment with ample objects to play with. Along with audio visual aids, all kinds of sensory input are important. Game-like language learning activities are an excellent, even essential, part of a programme of children's learning activities. Children in general learn well when they are active and when action is channeled into an enjoyable game, they are often willing to invest considerable time and effort in playing it (Ur, 1996).

As Ur (1996) also points out this is not to be confused with the situation where the language learning activity is called a "game" which conveys the message that it is just fun not to be taken too seriously, a message which is likely to be anti-educational and potentially demoralizing. The conclusion to be drawn from this is that a teacher needs to be



aware of children's learning strategies and have the appropriate techniques for conducting classroom-learning activities. Without such knowledge, learning efficiency will be seriously impaired as can be seen in numerous schools teaching foreign languages in countries with insufficient teacher training resources, like China, for example. Children's learning characteristics need to be reflected in the design of teaching curricula.

### **Adolescents**

In Piaget's theory of cognitive structures, the last stage, that of formal operations, comprises the age group 12-15, which encompasses the start of adolescence. In this stage thinking becomes more formalized and deals increasingly in abstractions. Adolescents are at a stage in life when they increasingly want to start taking responsibility for their own lives, including forming views about their own education, and the manner in which it is conducted (Ur, 1996).

The adolescent's pattern of learning becomes influenced by affects concerning feelings of self-consciousness, about how the individual appears and what image is projected or perceived. This can result in anxiety, which may manifest itself as risk-aversion, or as extroversion. As language-learning involves a certain amount of risk-taking, in the sense that a student wants to avoid making mistakes in their language, then the risk-aversion tendency will impede active experimentation with language use. They tend to be intolerant of ambiguity, and want to know the one right way, and ignore all other possibilities, however, this is also the period when they are starting to acquire a mature attitude which directs them towards the adult position of tolerance of ambiguity. On the other hand, extroversion may produce an attitude where whether language is correct or incorrect is of little or no consequence. Older learners are often in situations, which demand much more complex language and expression of much more complicated ideas (Lightbown & Spada, 1993).

For adolescents language instruction should be concerned with the learners' level, and engage the learners in activities or situations that require adaptation, by using teaching methods that actively involve students and present challenges, taking into account each

individual's own preferences over method and style. As they are getting older, they begin to realize that good learning costs effort. At this stage, motivation and commitment to learning are becoming conscious decisions made by the student. Instruction increasingly needs the positive cooperation of the students in order to make progress.

## **Adults**

Adult language learners are notorious for their lack of ultimate mastery of language structure. Johnson and Newport make it clear that a maturational-based critical period for language acquisition should be bounded, emphasizing the biologically determined point at which sensitivity (and thus attainment) reaches its lowest point, then levels off. However, in many ways adults are superior to children as learners, they have greater cognitive maturity, better learning strategies and study habits, better focus and goal orientation, a longer attention span, the ability to make a greater variety of associations, and better short-term memory (Hammerly, 1991).

The processes that adults use to acquire language give them a good start, but ultimately limit their final level of mastery. According to the biological hypothesis, adults who become language learners have less possibility of achieving native mastery. When one cannot be distinguished from a native speaker by another native speaker, then one has mastered the language.

Adults are people with years of experience and a wealth of information whose style and pace of learning has probably changed. They have established values, beliefs and opinions and relate new knowledge and information to previously learned information and experiences. Adults have pride and have a deep need to be self-directing. Adults are often embarrassed by their lack of mastery of the language and they may develop a sense of inadequacy after experiences of frustration in trying to say exactly what they mean. Individual differences among people increase with age (Lightbown & Spada, 1993). Adults generally want to immediately apply new information or skills to current problems or situations and do not wish to learn what they will never use.

Instruction for adults who wish to achieve a high level of ultimate mastery should emphasize meaningful components rather than memorizing whole phrases or sentences, using a variety of teaching strategies such as small group problem solving and discussion. Teaching should engage the students in a process of mutual inquiry, avoiding merely transmitting knowledge or expecting total agreement.

### **Conclusion**

There is strong evidence of the existence of a “Critical Period” for L2A, and there is evidence to show that even in this period there is an age effect, clearly demonstrating the value of early exposure to the second language. From the point of view of educational practice, allocating second or foreign language resources to younger learners has pedagogical credibility and cost-effectiveness. In today’s society with much more global movement of people and more accessible worldwide communication, L2 is much more of a survival necessity rather than a school subject.

In the non English speaking countries, like China, on the national level, English is perceived by the government as a necessary means for helping the nation to further open up, and an important cornerstone of global competition. Individuals see English proficiency as key to a host of opportunities: to enter and graduate from a university, to go abroad for further education, to seek desirable jobs and to be eligible for promotion to higher professional rank (Hu, 2002). Currently, in China, English is first taught in Primary 3 (9 years old) in most schools in cities, in rural areas in Junior High (12 years old), and there are eight million primary school pupils studying English as a school subject for two or three hours a week. If primary schools start to teach English at Primary 2, as recommended by the Ministry of Education, then there would be an annual increase of more than one million primary English learners (Hu, 2002). This would require an increase of 25 thousand primary school English teachers annually. The increase in the cost of salaries alone is 450 million Yuan (\$56 million) a year, not including training. At present, primary school English teachers usually have no formal training. Investment in teacher training for

foreign language teaching would gain more pedagogical effect when different age groups are educated with appropriate teaching methods.

## References

- Ausubel, D. P. (1964). Adults versus children in second-language learning: psychological considerations, *Modern Language Journal*, 48,420-24
- Birdsong, D. (2002). Interpreting Age Effects in Second Language Acquisition. <http://ccwf.cc.utexas.edu/~Birdsong/index.htm>
- Birdsong, D., & Molis, M. (2001). On the evidence for maturational effects in second language acquisition, *Journal of Memory and Language*, 44, 235-249.
- Bornstein, M. H. (1989). Sensitive periods in development: Structural characteristics and causal interpretations, *Psychological Bulletin*, 105, 179-197.
- Burstall, C., Jamieson, M., Cohen, S. & Hargreaves, M. (1974). Primary French in the balance. Slough: NFER Publishing Co.
- Carroll, J.B. (1969). Psychological and Educational Research into Second Language Teaching to Young Children. In Stern, H.H. (Ed.) *Languages and the Young school child*. London: Oxford University Press.
- Carroll, F. (1980). Neurolinguistic processing of a second language:experimental evidence research in second language acquisition, in Scarcella, R. & Krashen, S. D. (Ed.) *Research in Second Language Acquisition*. Newbury House, Publishersw, Inc, Rowley, Massachusetts 01969.
- Ginsburg, H. & Opper,S. (1979). Piaget's theory of intellectual development,
- Hammerly, H. (1991). Fluency and accuracy: Toward Balance in Language Teaching and Learning. In Sharp, D (Ed.) *Multilingual Matters 73*. Multilingual Matters LTD, Clevedon Philadelphia Adelaide.
- Harley, B. (1986). Age in Second Language Acquisition. *Multilingual Matters LTD*
- Johson,J. & Newport, E. (1989). Critical period effects in second language learning: The influence of the maturational state on the acquisition, *Cognitive Psychology*, 21, 60-99
- Johnson, J. (1992). Critical period effects in second language acquisition: The effect of written versus auditory materials on the assessment of grammatical competence, *Language Learning*, 42, 217-248.

- Krashen, S. D. (1973). Lateralization, language learning and the critical period: Some new evidence, *Language Learning*, 23, 63-74.
- Lamendella, J.T. (1977). General principles of Neurofunctional organization and their manifestation in primary and non-primary language acquisition, *Language Learning*, 27, 155-96
- Lenneberg, E. H. (1966). The natural history of language. In Smith.F. & Miller.G. A. (Ed.) *The Genesis of Language*. Cambridge: M.I.T. Press.
- Lenneberg, E. H. (1967). Biological foundations of language. New York: Wiley.
- Lightbown, P. & Spada, N. (1993). How Languages Are Learned. Oxford University Press
- Penfield, W. & Roberts, L. (1959). Speech and Brain Mechanisms. Princeton, Princeton University Press
- Pinker, S. (1994). The Language Instinct: How the Mind Creates Language, (P.293). New York: Morrow.
- Robertson, P. (2002) The Critical Age Hypothesis, The Asian EFL Journal (On-Line) [http://www.asian-efl-journal.com/marcharticles\\_pr.html](http://www.asian-efl-journal.com/marcharticles_pr.html)
- Schumann, J.H. (1978). The acculturation model for second-language acquisition, in *Second Language Acquisition and Foreign Language Teaching*, In Gingras, R.C. (Ed.) Arlington, W. Virginia: Center for Applied Linguistics.
- Shim, R.J. (1993). Sensitive Period for Second Language Acquisition: A reaction-time Study of Korean-English Bilinguals. *Ideal*.
- Swain, M. (1981). Time and timing in bilingual education, *Language Learning*, 31, 1-15.
- Ur, P. (1996), A Course in Language Teaching, Practice and Theory. Cambridge University Press.
- US Department of Education (2002), To Sum It Up: Case Studies of Education in Germany, Japan, and the United States  
<http://www.ed.gov/pubs/SumItUp/>
- Wode, H. (1981). Learning A second Language. Gunter Narr Verlag.