THE CRITICAL PERIOD AND SECOND LANGUAGE ACQUISITION

Tran-Hoang-Thu

Alliant International University

indefatigable2003@yahoo.com

November 20, 2009

Abstract

Learning a second or foreign language is a long and time-consuming process, and not all language learners may be able to achieve a very high level of proficiency in the target language. It is even rarer to find second or foreign language learners who can use the target language as well as native speakers of the language. Researchers in the field of second language acquisition (SLA) have long been concerned with the factors that prevent learners from attaining such a successful level of language learning. Among various factors that have been empirically investigated, age has seemed to figure prominently in the literature. The critical period hypothesis (CPH) has been proposed to explicate the reason why adult language learners are unable to achieve native-like proficiency. This paper aims at providing a brief overview of the CPH. First, the origin of the CPH is pointed out. Second, studies that support the CPH and those that attempt to falsify the CPH are discussed respectively. It is argued that although it is hard for adult learners to attain native-like proficiency in another language, it may still be possible. Moreover, the importance of finding out if the CPH is true or not may not be as important as trying to help learners to use the language more effectively. It is concluded that helping learners to communicate effectively in the target language is more logically and realistic than trying to help them to emulate native speakers of the target language.

Language is a means of communication and it has been in existence for such a long time. It plays an essential role in our social life so it has been the subject of different branches of studies. How children learn languages has been observed and studied, and the results of such research studies have been applied to second language learning. It is generally accepted that younger children are better at learning a second language than adults, and most people agree that only children can achieve native-like proficiency in second language learning. There must be a reason for success in children language learning either in their first or second language (L1 or L2) and failure in adult second language learning. Throughout history, there have been many different versions of hypotheses to explain the success in language learning of children and the general failure to achieve native-like proficiency in a foreign language of adults.

To find the answer to the question of why younger is better, researchers have suggested different reasons. Ellis (1994) listed six explanations for the superiority of child L2 learning over adult L2 learning. First, adults' ability to perceive and segment sounds in L2 has deteriorated. Second, adults' brain area for language learning has been lateralized so language learning is less fruitful in comparison to children. Third, children are more motivated and less anxious about using the target language. Fourth, while children use their language acquisition device to learn an L2, adults rely on their general problem-solving ability to analyze the language. Fifth, children receive better input than adults, although adult learners have more negotiation of meaning. Finally, child learners store L1 and L2 knowledge in different areas whereas adult learners store L1 and L2 information together. Despite the fact that there are many possible explanations, the biological perspective of the CPH seems to have attracted the most attention.

The root of the assumption above was initiated by Penfield and Roberts (1959), who introduced the idea that there is a critical period which ends at age nine. Lenneberg (1967)

popularized the idea by stating that the ability to learn a language naturally by only being exposed to the language will disappear at puberty and one cannot learn foreign languages without being taught and learnt "through a conscious and labored effort" (p. 176). He also claimed that one cannot erase his or her foreign accent easily after pubescent ages. Since then, the Critical Period Hypothesis (CPH) has been supported by many respectable scholars and researchers, but it is hard to find a consensus about the exact offset of the critical period. The general period ranges from birth to puberty but different versions of the CPH suggest different onsets and offsets for it. This could be one of the reasons for many researchers to find empirical evidence to falsify the CPH. At first, it seemed that the CPH is a fact that no second language learners can deny, and adult learners have no hope of attaining native-like proficiency in another language if they start learning it after puberty. Staunch supporters of the strong version of the CPH proposed by Lenneberg (1967) hold the belief that it is impossible for anyone learning another language after puberty to have a native-like language performance, especially a native-like accent. In other words, if one learns a new language after the critical period, he or she can never easily erase his or her foreign accent despite how much effort and talent that person has. Long (1990) stated that just one late language learner who could attain native-like proficiency is enough to falsify the CPH. In a similar vein, Grosjean (1998) confirmed that it is impossible for L2 learners to become native-like.

Birdsong (1999) contended that superficially the CPH seems very logical and can be applied in many other areas outside language learning. He was once a strong supporter of it, but his own research results made him reconsider the CPH. In an effort to find empirical evidence to prove the strong version of the CHP wrong, many research studies have been done to find successful second language learners who begin learning a second language after puberty but

could still achieve native-like proficiency. These studies have been able to present many individuals who could make native judges think that such late language learners are native speakers of the target language.

According to Singleton (2005), from 1959 to 2003, there were at least ten different versions of the CPH suggested by various researchers and the offsets for each version vary greatly (APPENDIX 1). Although there are many versions of the CPH, Hyltenstam and Abrahamsson (2003) noted that basically the majority of disagreements are related to Lenneberg's (1967) original claim about the CPH. These two authors discussed three prominent aspects of the CPH that have often been questioned in research against the CPH. First, the CPH could be questionable when learners who have passed puberty learn a new language and have native-like proficiency from exposure to the target language only. Second, the falsification of the CPH could be confirmed if adult learners' ultimate achievement of language performance is higher than that of children. Third, the CPH could not be reasonable if old learners are better than younger ones at language learning, and to prove this researchers focus on specific language areas or aspects to test the effectiveness of older and younger learners.

Birdsong (1999) indicated that researchers' position on the issue varies tremendously from complete rejection to total acceptance. A large number of research studies have been done to either seek empirical evidence to support or to reject the CPH. The topic has sparked hot debates and the controversy about the issue is not likely to disappear. Lightbown and Spada (1999) stated that the CHP has been challenged from many different perspectives, whereas Birdsong (2004) asserted that a large number of cases of native-likeness have been found in several studies and more native-likeness is found in morphology and syntax but less is found in pronunciation.

A study conducted by Johnson and Newport (1989), which was described by Hyltenstam and Abrahamsson (2003) as a major research study, has attracted enormous attention from both proponents and opponents of the CPH. Johnson and Newport (1989) used a grammaticality judgment test to test the CPH with 46 native speakers of Korean and Chinese who came to the US between the age of three and 39, and by the time of the test they had been in the US between three and 26 years. Their statistical analysis showed that those who came early had a clear and strong advantage over the late comers. They remarked that test performance was linearly related to age of arrival up to puberty, and after puberty, performance was low but highly variable and unrelated to age of arrival. Their final claim is that a critical period for language acquisition affects second language acquisition. However, replicating Johnson and Newport's research (1989), Birdsong and Molis (2001) did not find evidence to support the CPH.

Birdsong (1992) reported interesting results from his research, which made him reconsider about the CPH. 15 out of the 20 native English speakers who began learning French when they were adults fell within the native speaker range in a grammaticality judgment test. The findings can be seen as a good challenge against the CPH. Likewise, White and Genesee (1996) found similar results from their research using a test of grammaticality judgment. In their studies of three groups (near-native speakers of English as a second language, non-native speakers of English as a second language, and native speakers of English), no significant differences were found between near-native and native speakers of English. They finally concluded that native-like competence is achievable for even adult learners of second language at least in the grammatical domain. Research findings seem to suggest that it is possible to achieve native-like grammatical competence in second and foreign language learning regardless of the age of initial learning experience.

In search of counter-evidence to the CPH, many researchers have managed to find late L2 learners who could attain native-like pronunciation in the target language. In his review of studies investigating the relationship between L2 learning age and the degree of foreign accent in the L2, Flege (1999) indicated that the finding in L2 pronunciation accuracy is not in alignment with the belief that foreign accents occur because the critical period has passed. He claimed that the pronunciation in L2 may decrease as one has learned to pronounce so well in L1, not because of the loss of the ability to learn how to pronounce.

Bongaerts (1999) presented three research studies in the area of phonology. The first study investigated three groups of participants: 5 native British English speakers, 10 highly successful Dutch learners of English, and 12 learners of English of different proficiency levels and all learners had only had English instruction after the age of 12. Each group was asked to speak about recent holiday experiences, and to read aloud a short text, ten sentences and twenty-five words in a list. The most interesting result was that native judges were unable to distinguish between highly successful English learners and native speakers of English. Even more interestingly, the average score of native speakers was quite low and half of the highly successful English learners received higher rating scores than any of the native speakers. The second study was carried out to verify the results of the first. In this study, three groups of participants were examined: 10 native speakers of standard English, 11 native Dutch speakers who were considered to be highly successful English learners, and 20 native Dutch speakers of various proficiency levels of English. The judges were 13 native speakers of British English. Each participant was asked to read aloud 6 sentences three times. The results show that native English speaking participants' mean score is 4.84, whereas the highly successful English learners' mean score is 4.61. A third study was conducted to testify if the second study could be replicated.

Three groups of participants include 9 native speakers of standard French, 9 native speakers of Dutch who had an exceptional command of French, and 18 native speakers of Dutch with various proficiency levels of French. The results reveal 3 highly successful French learners have attained native-like French accent. Noticeably, all participants from the three studies had not been extensively exposed to input from native speakers of the target language until they were approximately 18 years old. Bongaerts indicated that the results from the three studies could be evidence to show that "claims concerning an absolute biological barrier to the attainment of a native-like accent in a foreign language are too strong"(p. 154). He considered those highly successful learners who have achieved native-like pronunciation as exceptional cases and raised a question about the differences between such exceptional learners and less successful ones.

Similarly, Moyer (1999) studied 24 highly motivated graduate students in German who had not been exposed to German until the critical period had passed. The control group consisted of four native German participants. The participants of the study were asked to read words in a list, sentences in a list, and a paragraph. In addition, they had to choose one out of 5 topics to talk about their personal information or experience. Questionnaires were used to collect data about their initial immersion and instruction, affective variables, and instructional variables. Four native German judges had to listen to speech samples and decided if the speech they heard sounded native or nonnative. The findings did not support the idea that age alone affects the ability to sound native-like of learners who started to learn German after the critical period. Moyer suggested that many other interdependent factors such as instruction and motivation play a role in such effects. Although native judges were able to find non-native speakers, one learner was considered a native speaker of the language. Moyer calls this learner the exceptional.

Unlike Moyer, Klein (1995) emphasized the role of sufficient and constant input as well as the priority learners consider about improving their pronunciation. He pointed out that although a person starts L2 learning late, he may still be able to have a native-like accent if he receives sufficient and constant input and he considers attaining a native-like accent of crucial importance to him. Like Moyer, Ioup (2005) posited that adults could attain native-like proficiency but such individuals must have very high language learning aptitude and they are just exceptions to the CPH.

Hakuta, Bialystok and Wiley (2003) used US Census data of Spanish and Chinese immigrants to test the CPH. The census form asked respondents to describe their own language proficiency. After analyzing the data, they concluded that second language proficiency actually declines with increasing age of initial exposure but such declining pattern did not produce the discontinuity which is considered the essential hallmark of a critical period. In response of Hakuta et al. (2003), Steven (2004) criticized their study in terms of the details of sample selection, the error of measurement, and the assessment of results. He noted that the conclusions of the study by Hakuta et al. are not well founded. Wiley, Bialystok, and Hakuta (2005) addressed all three concerns raised by Steve but they reported that although such concerns had been addressed, little additional evidence for a critical period for second language learning could be found. They reconfirmed that their research found little support for a critical period.

Abu-Rabia and Kehat (2004) tested the CPH for pronunciation with 10 late starters who achieved native-like Hebrew accent. The subjects were interviewed about their second language acquisition, and they had to talk about a previous trip they had or to describe their favorite recipe. Some subjects were required to do some reading tasks (read a passage, read aloud some sentences and words). They were not told the aim of the tasks until they had finished them. Three

female and two male Hebrew native speakers judged the speech samples on a five-point scale from very strong foreign accent to definitely native. The results show that most of the judges rated some of the non-native subjects as native speakers and one native speaker was rated as having a slight foreign accent. Their conclusion is that their case studies show that some L2 learners can succeed in achieving a near-native or a native-like accent, although they were exposed to the target language after puberty.

Nikolov (2000) designed a research study to challenge the strong version of the CPH by trying to find out if adults beginning to learn a second language after puberty could achieve native-like proficiency and could be misidentified as native speakers on a tape recording. 33 successful language learners aged 20 to 70 were interviewed, asked to describe a happy or embarrassing moment in their life, and asked to read out a passage in the target language. The results indicate that two out of the 20 learners of Hungarian and one out of the 13 learners of English were mistaken for native speakers in a listening task by three groups of native judges. Interestingly, some native speakers were mistaken for non-natives.

In his review of the CPH, Singleton (2005) argued that the CPH as misleading and not plausible because of its vast variation in the ways it is perceived. He concluded that the CPH cannot be reasonably considered a scientific hypothesis as it appeared vague with a wide variations from birth to puberty. In the same vein, DeGroot and Kroll (1997) wrote that in reality the CPH is not necessarily correct because it is commonly believed by many people and even L2 researchers do not agree on the exact age where the CHP ends. Some researchers have even made very strong claims. Take, Ayoun (2005), as an example. Ayoun claimed that if there is a critical period, no adult learners can achieve native-like proficiency and because studies have clearly shown so many adult learners with near-native proficiency, such evidence cannot be

considered anecdotal or peripheral. In addition, Moyer (2004) asserted that sounding like native is an attainable goal at least for a few learners who work hard for it and have a strong desire to do so.

Marinova-Todd, Marshall and Snow (2000) pinpointed three misconceptions about age and L2 learning. Firstly, researchers have misinterpreted the fact about speed of acquisition. These researchers stated that whereas the CHP says children learn L2 quickly and easily, significant work provided evidence indicating older learners learn faster and more efficiently in initial stages of L2 learning. Moreover, they added that research in grammatical knowledge shows that deterioration in subjects' proficiency only happens after age 20, much later than puberty. Secondly, they reasoned that neuroscientists have committed an error of misattribution by concluding that differences in the location of the two languages in the brain and in the processing speed could explain the failure in L2 learning of adult learners. These authors suggested that more research should be focused on the brain activation patterns of child and adult learners who have achieved equivalent levels of proficiency in the target language. Thirdly, Marinova-Todd, Marshall and Snow emphasized that there is too much emphasis on unsuccessful adult L2 learners while the older learners who could achieve native-like L2 proficiency have largely been ignored. They stressed that although not all adult learners are capable of mastering an L2, it is worth investigating the most advanced L2 learners to be aware of the factors contributing to success in L2 learning of adults. Additionally, they mentioned the problems in testing. As even native speakers have their own accents, it may not be certain what criteria can be used to judge if someone sound non-native. This could be considered a problem that needs to be addressed to fairly judge L2 learners' accent. What can researchers say when

native speakers are found to sound non-native? Does the CPH have any explanation for such cases? These might be interesting questions that are worth researching.

Abu-Rabia and Kehat (2004) mentioned the famous “Conrad phenomenon” to talk about a successful and creative writer of English but still has a strong foreign accent whereas Brown (2007) suggested the modern case of “Arnold Schwarzenegger Effect” (current California Governor), a person who came to the US after the age of puberty (age 21 with little English) but is arguably as linguistically proficient as any native speaker although his accent is noticeably foreign. The two cases above could be examples of those late learners but could attain proficiency in some aspects of the L2 language to an extremely high level of proficiency. Harley (2008) asserted that there are reasons to reject the strong version of the CHP but a weaker version of the CHP could be defended.

There seems to be no easy answer to the question about the existence of the critical period for language learning as research has shown that adult learners could still achieve native-like proficiency in a foreign or second language. Even though achieving native-like proficiency in an L2 for late L2 learners does not seem a very feasible goal, under ideal circumstances one may be able to produce speech and writing that are not easily found to be different from that of native speakers (Ellis 1994). If it is possible to attain such an ideal level of success in L2 learning, hidden factors should be further explored to apply to second and foreign language learning and teaching. If the critical period does exist, the exact onset and offset for it should be empirically proven. Even in case it actually exists, although it is elusive for researchers to pinpoint its beginning and ending, some L2 learners have managed to overcome it to be so proficient in the target language. Thus, it is beneficial if researchers could ascertain what helps the successful learners in such a marvelous process of language learning. If the CPH is proved to

be false, reasonable answers are needed to better explain the reason of the majority of such imperfect result in L2 learning of adult learners. Overall, research has shown that it is still possible for late L2 starters to attain native-like proficiency, although the number of individuals found is still limited. Therefore, more well designed and reliable research is much needed to shed light on this contentious but important and interesting issue. Logically, the existence or non existence of a critical period is not as important as the optimal way to help adult L2 learners perform successfully in the target language, as it seems that the focal purpose of language learning is to communicate. Thus, it should be more realistic to try to help learners to be able to function successfully in the target language, rather than to try to help them to speak as well as native speakers of the language. Hyltenstam and Abrahamsson (2001) could be right when maintaining that language teaching that sets the goal to help students achieve native-like proficiency runs the risks of making students feel despair and failure.

References

Abu-Rabia, S., & Kehat, S. (2004). The Critical Period for second language pronunciation: Is there such a thing? Ten case studies of late starters who attained a native-like Hebrew accent. *Educational Psychology*, 24(1), 77-98.

Ayoun, D. (2005). *Parameter setting in Language Acquisition*. London, England: Continuum International Publishing Group.

Birdsong, D. (1992). Ultimate attainment in second language acquisition. *Language*, 68, 706-755.

Birdsong, D. (1999). *Introduction: Whys and Why Nots of the Critical Period Hypothesis for Second Language Acquisition*. In D. Birdsong (Ed.) *Second Language Acquisition and The Critical Period Hypothesis* (pp. 1-22). Mahwah, NJ: Lawrence Erlbaum Associates.

Birdsong, D., & Molis, M. (2001). On the evidence for maturational constraints in second language acquisition. *Journal of Memory and Language*, 44, 235-249.

Birdsong, D. (2004). Second Language Acquisition and Ultimate Attainment. In Davies, A., and Elder, C. (Eds.), *The Handbook of Applied Linguistics*. Oxford, England: Blackwell Publishing.

Bongaerts, T. (1999). Ultimate attainment in L2 Pronunciation: The Case of Very Advanced L2 Learners. In D. Birdsong (Ed.), *Second Language Acquisition and The Critical Period Hypothesis* (pp. 133-159). Mahwah, NJ: Lawrence Erlbaum Associates.

Brown, D. H. (2007). *Principles of Language Learning and Teaching*. White Plains, NY: Longman.

De Groot, A. M. B. and Kroll, F. (1997). *Tutorials in Bilingualism: Psycholinguistics Perspectives*. Mahwah, NJ: Lawrence Erlbaum Associates.

Ellis, R. (1994). *The Study of Second Language Acquistion*. Oxford, England: Oxford University Press.

Grosjean, F. (1998). Studying bilinguals: methodological and conceptual issues. *Bilingualism: Language and Cognition*, 1, 131-149.

Hakuta, K., Bialystok, E., & Wiley, E. (2003). Critical Evidence: A test of the Critical Period Hypothesis for Second Language Acquisition. *Psychological Science*, 14(1), 31-38.

Harley, T. A. (2008). *The Psychology of Language: From Data to Theory*. New York, NY: Psychology Press.

Hyltenstam, K. and Abrahamsson, N. (2001). Age and L2 learning: The Hazards of Matching practical "Implications" with theoretical "Facts". *TESOL Quarterly*, 35,(1), 151-170.

Hyltenstam, K., & Abrahamsson, N. (2003). Maturational Constraints in SLA. In J. Doughty and H. Long (Eds.), *The Handbook of Second Language Acquisition* (pp. 539-588). Oxford, England: Blackwell Publishing.

Ioup, G. (2005). Age in Second Language Development. In Hinkel, E. (Ed.), *Handbook of Research in Second Language Teaching and Learning* (pp. 419-436). Mahwah, NJ: Erlbaum.

Johnson, J. S., & Newport, E. L. (1989). Critical Period Effects in second language learning: The influence of maturational state of acquisition of English as a second language. *Cognitive Psychology*, 21, 60-99.

Klein, W. (1995). Language acquisition at different ages. In D. Magnussion (Ed.), *The lifespan development of individuals: Behavioral, neurobiological, and psychological perspectives. A synthesis* (pp. 244-264). Cambridge, England: Cambridge University Press.

Lenneberg, E. H. (1967). *Biological Foundations of Language*. New York, NY: John Wiley.

Lightbown, P. M., and Spada, N. (1999). *How Languages are learnt*. Oxford, England: Oxford University Press.

Long, M. H. (1990). Maturational Constraints on language development. *Studies in Second Language Acquisition*, 12, 251-285.

Marinova-Todd, S. H., Marshall, D. B., & Snow, C. E. (2000). Three Misconceptions About Age and L2 Learning. *TESOL Quarterly*, 34(1), 9-33.

Moyer, A (1999). Ultimate attainment in L2 phonology: The critical factors of age, motivation, and instruction. *Studies in Second Language Acquisition*, 21, 81-108.

Moyer, A. (2004). *Age, accent and experience in second language acquisition: An integrated approach to critical period inquiry*. Multilingual Matters.

Nikolov, M. (2000). The Critical Period Hypothesis reconsidered: Successful adult learners of Hungarian and English. *International Review of Applied Linguistics in Language Teaching*, 38(2), 109-124.

Penfield, W., & Roberts, L. (1959). *Speech and brain mechanisms*. Princeton, NJ: Princeton University Press.

Singleton, D. (2005). The Critical Period Hypothesis: A coat of many colours. *International Review of Applied Linguistics in Language Teaching*, 43, 269-285.

Steven, G. (2004). Commentary: Using census data to test the Critical Period Hypothesis for Second Language Acquisition. *Psychological Science*, 3(3), 215-216.

White, L. & Genesee, F. (1996). How native is near-native? The issue of ultimate attainment in adult second language acquisition. *Second Language Research*, 12, 233-265.

Wiley, E. W., Bialystok, E., & Hakuta, K. (2005). Commentary: New approaches to using census data to test the Critical Period Hypothesis for Second Language Acquisition. *Psychological Science*, 16(1), 341-343.

APPENDIX 1

Summary of a range of proposals for critical period termini (Singleton ,2005, p. 273)

Penfield & Roberts (1959)	Offset: age 9
Lenneberg (1967)	Onset: age 2 Offset: puberty
Molfese (1977)	Offset for phonetics/phonology: age 1
Seliger (1978)	Offset for phonetics/phonology: puberty
Diller (1981)	Offset for phonetics/phonology: age 6-8
Scovel (1988)	Offset for phonetics/phonology: age 12
Johnson & Newport (1989)	Offset of phase 1: age 7 Offset of phase 2: puberty
Long (1990)	Offset of phase 1: age 7 Offset of phase 2 for phonetics/phonology: age12 Offset of phase 2 for morphosyntax: age 15
Ruben (1997)	Onset for phonetics/phonology:6th month of fetal life Offset for phonetics/phonology: age 1 Offset for syntax: 4th year of life Offset for semantics 15th/16th year of life
Hyltenstam & Abrahamsson (2003)	Offset: shortly after birth

Source: Singleton, D. (2005). The Critical Period Hypothesis: A coat of many colours.

International Review of Applied Linguistics in Language Teaching, 43, 269-285.