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The Influence of Critical Period Hypothesis on Children's Foreign Language Learning

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Abstract: In the context of globalization, China has been putting more and more emphasis on "telling the story of China in English", and the status of English teaching has become more and more important. The critical period hypothesis is a theory put forward by Ellis, a foreign linguist, who believes that there is a golden period for language learning. During this period, children are able to master language naturally and effortlessly. An important aspect of second language acquisition research is the age factor. In general, children are more likely to succeed in learning a foreign language than adults, and children have a child advantage in second language acquisition. However, academics have different views on the age factor, and Chinese parents are also hesitant to decide when their children should learn English, resulting in a trend towards learning at a younger age. Is there really a critical period in foreign language learning? Is there really a critical period in learning a foreign language and is it closely related to age? Do children really have an absolute advantage over teenagers and adults in learning foreign languages? Therefore, this thesis will firstly introduce the proponents and opponents about the critical period hypothesis, and secondly explain the influence of age factor on foreign language learning. Thirdly, talk about why the age factor affects second language acquisition. argue for the optimal age for foreign language teaching. Fourth, discusses the implications of children's foreign language learning. Finally, it is a brief conclusion.

Keywords: Critical Period Hypothesis; Age Factor; Foreign Language Learning.

1. Critical Period Hypothesis

1.1. The Concept of the Critical Period Hypothesis

The "critical period hypothesis" was first proposed based on native language acquisition. Based on neurolinguistics and the physiological basis of brain development, it is believed that native language acquisition is efficient and easy in natural contexts before the brain is lateralization. Penfield and Roberts, pioneers of the "critical period hypothesis", proposed the "plasticity hypothesis" of the brain. In their view, human language ability is closely related to brain development, and the optimal age for acquisition should be within 10 years of age. (Penfield &Roberts,1959:62) Lenneberg accepted and developed this theory, and put forward the famous Critical Period Hypothesis. He attributed the advantage of children's language acquisition to physiological factors, and believed that children acquire language most easily and quickly from the age of 2 to puberty (10~12 years old), and can realize the natural development of language acquisition. (Lenneberg, 1967:89) The Generative Grammar School, led by Chomsky, is dedicated to studying how children can master such complex language in just a few years; Chomsky believes that children have an innate ability to learn language, which can be called the language acquisition mechanism, which is inherited from the human brain, and is a mechanism for comprehending and creating sentences. Chomsky's mechanism of language acquisition coincides with the "critical period hypothesis", which states that language acquisition is brain-dependent and biologically based, and that children acquire different mother tongues through the triggering of acquired experiences. Due to the lack of research subjects in the study of the critical period of mother tongue, the experiments and arguments for the critical period hypothesis gradually shifted to second language acquisition, and a large number of empirical researches turned to the critical period and age factor of second language acquisition. Lenneberg argues that there is also a critical period for second language acquisition, and second language learning outside the critical period is different from learning during the critical period. Language acquisition during the critical period is a natural process, similar to the native language pathway, while after adolescence, language learning becomes an intentional process.

1.2. Proponents of the Critical Period Hypothesis and Their Theories

Proponents have used a great deal of data and experimental results to demonstrate the importance of the critical period for second language acquisition, especially in terms of phonology. The most representative study is the experiment of Johnson and Newport (1989). In their 1989 study, Johnson and Newport used syntactic judgment as the experimental material and orally tested 46 native speakers of Korean and Chinese who immigrated to the United States at different ages (3-39 years old) on their mastery of English grammar in an English-speaking environment, and concluded that age has an effect on second language acquisition, and second language acquisition has a significant impact on the acquisition of English grammar. It was concluded that age has an effect on second language acquisition and that there is a critical period in the process of second language acquisition. Johnson and Newport's 1991 study further confirmed the existence of a critical period in language acquisition. Later in 1992, Johnson repeated the experiment conducted by Johnson and Newport in 1989 by using the written method. The results of the study found that there was no significant difference between the language proficiency of the subjects who moved to the U.S. before the age of 7 and that of the natives, while the subjects who moved to the U.S. between the ages of 7 and 15 began to lose their mastery of grammar, and their English proficiency

clearly showed the effects of puberty. Their English proficiency clearly shows the decline brought about by puberty. (Johnson&Newport,1989) Our scholar LuXiaoyong (2004) empirical study of two of his graduate classes also concluded that if English is learned from the fourth or fifth grade onwards, it will be more difficult to learn English as an adult such as undergraduate and graduate. If they start learning English from the fourth or fifth grade, it is possible for a considerable number of them to reach a higher level of speaking ability and comprehensive ability in adult (undergraduate and postgraduate) stage; however, if they start learning English from junior high school, this possibility is relatively much smaller. However, if they start learning English in junior high school, the likelihood of this is much smaller. In these scholars' studies, adolescence seems to be the critical period for second language acquisition.

Even within the proponents, researchers vary widely in their conclusions about the age at which the critical period begins and ends: Lenneberg suggests that the critical period lasts from age 2 to puberty; Pinker suggests that it begins at age 6 and ends at puberty; Krashen suggests that brain lateralization is complete at age 5 and the critical period ends; Penfield suggests that the critical period ends at age 9; and Johnson and Newport suggest that the critical period ends at 15 years of age. Johnson and Newport believe that the critical period ends at the age of 15.

From this we can see that even if there is a critical period for second language acquisition, it is still a controversial issue as to when the critical period begins.

1.3. Opponent of the Critical Period Hypothesis and Their Theories

1.3.1. Why does it Actually Exist Critical Period in Second Language Acquisition

Meng xiaofang (2022) demonstrate that there are three theories can be used to explain the reason why critical period exists. To start with, lateralization theory, which holds that different language areas exist in both hemispheres. With aging, the right brain used to store second language weak, resulting that it's relatively hard for second language acquisition. What's more, universal grammar. Norm Chomsky proposed the concept of Universal Grammar which is an innate ability for language acquisition. (Chomsky, 1968: 49) The viewpoint of UG is consistent with critical period hypothesis from the perspective of biology.

1.3.2. At What Age does the Critical Period of Second Language Acquisition exist

Some people think that the critical period of second language acquisition is from 0 to 7 years old, some think it is from birth to adolescence, and some people think that it is from 6 years old to the end of adolescence. In addition, some scholars have analyzed from different aspects in which different elements of second language (pronunciation, semantics, syntax, vocabulary, etc.) may not have uniform critical periods. In other words, there is no unified conclusion at present, and further research and discussion are needed in the academic circle.

2. The Effect of Age Factors on Second Language Acquisition

2.1. Influence on Phonological Acquisition

Numerous empirical studies have shown that there indeed exists a critical period for phonological acquisition. The earlier the acquisition of a second language begins, the closer the phonology of the second language will be to that of the native language. Long found that children who began learning second language before the age of 6 generally did not have a foreign accent; children who began learning between the ages of 6 and 12 had either a foreign accent or no accent. In an experiment conducted by Flege etc. to determine the foreign accent of 240 native Chinese learners, the older the learners were, the stronger their foreign accent was. It can be seen from scholar Shi nijun& Li yanyang (2017:109) that the phonological system is the first to be realized in the language acquisition process.

2.2. Influence on Grammar Acquisition

Johnson & Newport's (1989:60-69) study of the critical period for the acquisition of bilingual morphological syntax is the most representative. They tested the English grammatical judgment of 46 Korean and Chinese immigrants to the U.S. at different ages and showed that age was a determining factor in the emergence of grammatical competence, i.e., the grammatical judgment of prepubescent immigrants was stronger and negatively correlated with their age at arrival.

2.3. Influence on Vocabulary Acquisition

The age of vocabulary acquisition is the age at which a word is exposed to its meaning in spoken or written form. Silverberg & Sammuel (2004: 381-391) showed that overall vocabulary knowledge is less affected by age. A study by Armon et al. found that words acquired in childhood, even into adulthood, could still show processing advantages across a range of tasks.

In conclusion, it can be drawn that the effects of age factors on language structures' learning varied alarmingly. Pronunciation is the most notable one, followed by grammar; vocabulary is the least influenced one.

3. Exploration of the Optimal Age for Foreign Language Teaching

Dai Manchun (1994) concluded from his research that the acquisition of language seems to be different in different aspects, with young children having the ultimate advantage in pronunciation, and teenagers having the advantage in listening comprehension, lexis and syntax. In other words, language learners of different ages have different advantages in acquiring different aspects of language, i.e., there are different critical periods for second language acquisition at different ages. Since there are different characteristics of foreign language learning in different age groups, foreign language teachers should formulate learning objectives and adopt targeted teaching methods according to the advantages and disadvantages of each age group. Learners of different ages have different intelligence and maturity levels. This paper will roughly categorize them into three levels: children, adolescents and adults.

3.1. Children' Stage (From the Age of 3-10)

One of the most obvious advantages of learning a foreign language for children between the ages of three and ten is that the brain is highly plastic. The brain's plasticity decreases with age, and as adults begin to learn a second language, the brain's plasticity decreases as well, thus affecting learning

efficiency. In addition, children's cognitive abilities are still immature. In terms of emotional factors, children have the lowest emotional filters. However, children's long-term memory ability is poorer than that of teenagers, their logical thinking ability is not yet fully formed, and their cognitive ability is even farther from that of adults. As a result, children are far worse than adolescents in grammar acquisition and even worse than adults in reading, which requires logical thinking skills. Newport(1991:72) claimed that cognitive immaturity facilitates language learning. In addition, children are not afraid of making errors in daily communication, which is also conducive for language acquisition. During this period, the brain is highly plastic, imitates language well, has a keen sense of hearing, and has few psychological barriers, therefore, learning quickly and well

The demerit for children is that their long-term memory skills are relatively poor and they are easily confused between native and foreign cultures. Therefore, it is essential for them to have good conditions for foreign language learning such as or professional teachers and teaching facilities, a bilingual social environment in which the foreign language is used as a thinking, playing, and communicative tool.

According to the laws and characteristics of physical and mental development at different ages, we can determine the teaching contents, objectives and methods of foreign language acquisition at different stages. Early foreign language initiation education should focus on cultivating children's interest in foreign languages, creating a language environment suitable for children to learn foreign languages in the form of games, encouraging children to develop listening and hearing through imitation, and not letting children come into contact with English spelling, grammar and reading too early. As far as specific teaching methods are concerned, the Direct Method, the Total Physical Response (TPR) and the Silent Way, which utilizes original sounds to help children acquire good pronunciation, are more suitable for children at present.

3.2. Adolescent Stage (from the age of 11-18)

For adolescents between the ages of eleven and eighteen, their logical thinking and cognitive abilities have developed to a high level, but not as high as those of adults, their meta-linguistic awareness is more sensitive, their long-term memory ability has increased, and their mother tongue habits have been formed. The advantage of adolescents in learning foreign languages is that they are good at cognition, imitation and memorization. In terms of affective factors, adolescents' affective barriers are not as high as those of adults, and relatively low affective barriers are favorable to language learning. Even though they make mistakes in learning a second language, they are less likely to think about other people's attitudes toward them, so they can learn faster and learn vocabulary, syntax, and listening skills better than adults and children.

On the one hand, adolescents have an advantage over adults in second language learning due to lower emotional barriers; on the other hand, they also need to invest more effort in language learning compared to children. At the same time, the demand for adolescents' qualities such as self-discipline and persistence are high and challenging. At the adolescent stage, the Audio-lingual Method, the Oral Approach and Situational Language Teaching, and the Communicative Language Teaching are commonly used.

3.3. Adult Stage (18 years old and above)

Relating to brain development, the neurological system of the adult brain is fully established, the way of thinking is perfected, and complex forms of language can be processed very easily. Thus, adults have a great advantage in reading and writing. Compared with teenagers, adults have a clear purpose for learning and are motivated to learn and have plentiful experience in comprehension and associative memory; when learning a foreign language, using their native language and supervising knowledge will allow them to learn faster than young children.

However, the disadvantage for adults is that they have high cognitive ability and emotional barriers, and they are concerned about the external attitudes toward them, fearing of failure and being laughed at because of the mistakes and errors they make in daily communication. In addition, adults may not have sufficient time to learn due to work pressure and may not be able to concentrate on learning at a particular time, and may have greater difficulty in pronouncing words, which directly leads to significantly poorer communicative skills than children.

3.4. Summary

Based on the elements discussed above, it is easy to see that there are different critical periods for foreign language acquisition. The immaturity of cognitive ability, low affective disorder and fear of making mistakes in children's stage make childhood a critical period for language learning, therefore, it is necessary to seize this critical period and create a good environment for them to learn language in a subtle way.

4. Implications for Children's Foreign Language Teaching Based on Critical Period Hypothesis

4.1. Create Good Language Environment and Absolutely Excellent Teachers

A good language environment and absolutely excellent teachers are the guarantee for foreign language learning. English is a foreign language in China, and there are obvious qualitative and quantitative differences between foreign language learning and second language acquisition in terms of language environment, language input, language learning goals and language level. Most studies have been conducted with immigrant children, and the critical period hypothesis is well adapted to second language acquisition in a good language environment. As everyone knows that it is impossible for a person who has never heard of a language to master it, and the story about wolf boy is a typical example. Jie jinling (2014:95) explained that because he had been living with wolves and had never been exposed to human language, it was very difficult for him to adapt to the human living environment after he was rescued by humans, not to mention acquiring the language. Thus, it can be seen that the acquired environment plays a crucial role in language learning. If children are encouraged to communicate in a foreign language by simulating real life situations during the learning process, they will be able to master the language quickly, which is the purpose of language learning. And since children tend to input more than they output when learning a language, it is important to have a good language environment. It is true for native language learning and even more so for foreign language learning. In China, due to the lack of

authentic and natural language learning environments, it is impossible to obtain quality and quantity of language input. Early English language learning can be counterproductive if teachers do not have a high level of oral proficiency or lack experience in teaching foreign languages to young children.

4.2. Use Immersion Foreign Language Teaching

Immersion in foreign language teaching promotes the improvement of children's phonological competence and phonological awareness. Various empirical studies have shown that there is indeed a critical period for the development of phonological skills. The younger a child learns a foreign language, the closer his or her spoken pronunciation is to that of a native speaker. Parents who are in a position to do so can provide their children with online English tutoring or read more picture books and play video materials suitable for children, so that they can be exposed to more authentic English, which is conducive to children's correct pronunciation and language formation.

4.3. Pay Attention to the Selection of Teaching Materials

It is essential for educators to choose teaching materials according to the age of the learners and grasp the level of difficulty of the content. According to education experts, a good foreign language textbook should include the following points: conform to the psychological development of children, follow the law of foreign language learning; mobilize children's interest in foreign language learning as the premise; improve the comprehensive application of foreign language skills as the purpose, but also reflect the practicality and fun of language learning. Therefore, it is crucial to select some appropriate teaching materials for children’s foreign language learning.

5. Conclusion

Through domestic and international research, we can naturally conclude that age is a key factor affecting foreign language learning, but not a decisive one. If we can fully grasp the critical period of language learning, we can get twice the result with half the effort. In addition, children's foreign language learning should not only consider the age factor, but also the emotional and psychological factors; not only the personal factors, but also the social and other external factors, so as to successfully learn a foreign language.

Based on the above conclusions, foreign language teachers should be inspired in the process of teaching foreign languages: they should pay attention to the developmental stages of language learners, and determine what aspects of language knowledge and skills should be emphasized at what stage of development through different developmental stages.

In conclusion, the existence of critical periods has important implications for the teaching and learning of foreign languages, especially for language teachers who want to ensure that their teaching methods are developmentally appropriate. Only in this way can they ensure that language teaching is scientific and effective.

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