

## AGE AS A FACTOR IN LANGUAGE ACQUISITION

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### ABSTRACT

*In recent years, age has been considered as a major factor in second language acquisition. It is widely known that children who are given the natural facilities and raised in a positive environment can master in any language more effectively and quickly than the adults. Due to age factor young learners get an advantage, but adults can also retain their brain through therapy to achieve higher success. However, successful language learning is correlated to the assumption stated by CPH (Critical Period Hypothesis) and Neurological Hypothesis. This study focuses on the theories of major authors, empirical evidences for and against CPH and some relevant case studies that manifests the existence of critical periods and investigates the influential factors that enables the young learners to have an advantage over adult language learners.*

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### Introduction

Since the establishment of “School of Thoughts”, language researchers are dealing not only with the analysis of language acquisition device and process in the brain, but also with the internal and external factors which may affect the level of achievement and accuracy

in both first and second language learning. Age, motivation, need, personality, aptitude, cognitive style, learning strategies, learning and teaching context, etc., are some of the significant factors which play a crucial role in the degree of achievement in language learning. It is widely known that children who are given the natural facilities and raised in a positive environment can master in any language more effectively and quickly than the adults.



However, in the field of linguistics, it is a very controversial issue. In order to proffer a satisfactory response to this disputable issue, SLA researchers have stated, the existence of an internal factor ‘age’ as a decisive influence. Now the question is, if age indeed is a factor which may limit the success in language learning – then is there any ‘Optimal age’ to start learning a language? The answer to this question is really important in the field of Language teaching, because educators are keen to know when is the fruitful period to start any language learning and how far one can process.

It is very common for a language teacher to hear adult learners often lament and think that learning a new language would be easier if only they had studied it when they were young. It is also surmised by the researchers that, young children get some benefits in the trial of language learning than the adults. The term “Optimal age” for language learning refers to a certain stage when learning a new language becomes comparatively easy and due to biological development it enables to reach the level of mastery. So, if a learner starts learning a language after this stage he is less-likely to have native like competence.

This study focuses on the theories of major authors, empirical evidences for and against CPH and some relevant case studies that manifests the existence of critical periods and investigates the influential factors that enables the young learners to have an advantage over adult language learners.

#### **Age As A Factor In Language Learning:**

It is believed that our first language acquisition is due to an innate capability or an inborn language acquisition

device (LAD), which can be corresponded with Universal Grammar (UG). Due to this Universal grammar we have the diversity of human languages. This LAD was first proposed by Noam Chomsky; later Linguist Eric Lenneberg contributed the idea of the Critical Period Hypothesis (CPH) in 1967. He mentioned that human has a narrow “critical period set aside by nature for the acquisition of language”. (Lenneberg 1979:158)

However, his theory of CPH was related to first language acquisition. But the inquiring question regarding the timetable is also about second language learning. Till now researchers are trying to find the suitable age that might facilitate language learning. They suspect that this ‘Critical period’ may also have a significant influence in the process of second language learning. In the favor of CP, Breathnach (1993:43) says that,

*“During Development there are periods of special sensibility related to particular elements in the environment towards which the organism is directed with an irresistible impulse and a well-defined activity. These periods, which help organisms to acquire certain functions or characteristics are ephemeral. In language, above all else, the transitory sensitive period is vital...”*

His words indicate that, during puberty language learning mechanism develops readily and the level of achievement is higher. On the other hand, if a learner has crossed that certain period, then it becomes difficult and the outcome is incomplete. Therefore, it is believed that, young learners get the advantage to acquire a language in a more straightforward manner and can process better than the adults who are learning the same target language.



As I already mentioned that – drawing a line considering the most ‘potential age’ is a debatable topic. However, researchers hypothesize that, children over five to somewhere around an age when they step into puberty can learn a language better and more easily than post-pubescent children. This age boundary theory is called “Critical Period Hypothesis”.

#### **Critical Period Hypothesis:**

CPH has given a major consideration in any discussion regarding language learning. All the researchers in SLA got inspired after Lenneberg (1979: 158) proposed the existence of ‘critical period’; as he claimed that human being has a narrow “critical period set aside by nature for the acquisition of language”. He argued that during the critical period (age 2 – puberty) natural language acquisition can happen through exposure. According to Brown (2000:53) the term CPH refers to — “*a biologically determined period of life when language can be acquired more easily and beyond which time language is increasingly difficult to acquire*”.

In order to give a formal definition regarding “critical period” Professor Newport (1991, p. 112) claimed that-

*“Any phenomenon in which there is a maturational change in the ability to learn, with a peak in learning at some maturationally definable period... and a decline in the ability to learn, given the same experiential exposure, outside of this period.”*

#### **Pinker points out that –**

*“Acquisition of a normal language is guaranteed for children*

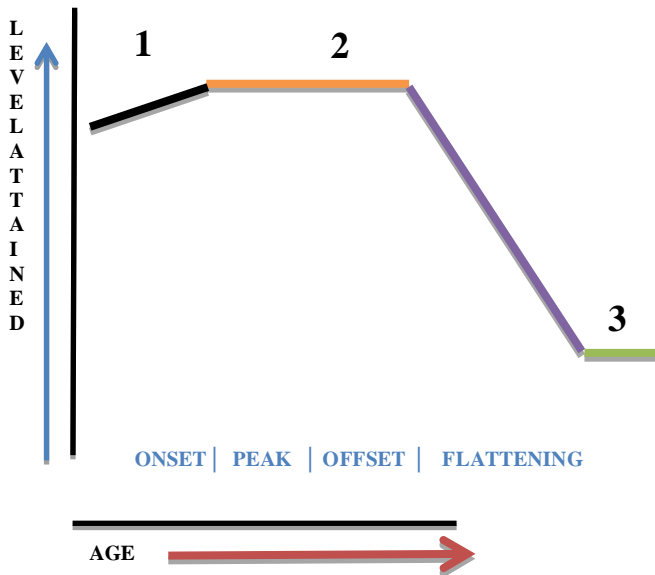
*up to the age of six, is steadily compromised from then until shortly after puberty, and is rare thereafter.”*

All these theories suggest that ‘age’ can limit the development of language production and typically adult learners face this restriction.

#### **Shape Of A Maturational Based Critical Peiod:**

Researches point out that, our language productivity starts from birth. Various studies have shown that even new-born babies have the ability to distinguish between /ba/ and /pa/ sound. If we consider the constructive stages from birth to puberty and characteristics of a multinational based critical period then we could give a shape to “critical period”.

Many researchers had tried to draw the features of the critical period. I would prefer to describe it as a stretched “Z” shape (  $\neg \_ \_$  ) and this geometric and temporal features of maturationally based critical period is submitted by Johnson and Newport (1989:276) and Pinker (1994/293).



**STRETCHED “Z”**

**1 = beginning of offset**  
**2 = peak sensitivity**  
**3 = end of offset**  
**4 = baseline sensitivity**  
 NB: 3 coincides with end of maturation  
 NB: 4 age effects do not persist

**1. Figure 1: Geometric and temporal features of a maturationally-based critical period.**

These geometric features of a prototypical critical period can be divided into four hypothetical stages-

- i. **Onset:** The first stage starts after birth to early childhood, when there is a gradual sensitivity.

- ii. **Peak:** It is the most effective period, because if a child starts learning a language from this stage, then the full attainment in grammar and pronunciation is ensured.

- iii. **Offset:** The third stage begins with an offset of sensitivity, which declines in ultimate attainment. It means a gradual diminishing of language learning capabilities. This decline eventually stops at the end of maturation (3).

- iv. **Flattening:** In the fourth stage (has started just after the slanted line) age effect does not persist any longer. This stage is also considered as “flattening or bottoming out” stage. This means if a late learner starts learning a language from this stage with the same amount and quality of input as the young learner, he will still not be able to get the same level of achievement as the younger learner will achieve.

To illustrate this figure Pinker (1994, pg: 293) describes-

*“Maturational changes in the brain, such as the decline in metabolic rate and the number of neurons during early school-age years, and the bottoming out of the number of synapses and metabolic rate around puberty, are plausible causes.”*

Fromkin et al. (2000, p. 346) notes that, “young children who are exposed to more than one language before the age of puberty seem to acquire all the languages equally well”,

All these researchers believe that, there is a certain age when our brain is ready to acquire and after we cross that certain age our language development is hampered. Before age two our brain has not developed enough and after puberty, it has developed with the loss of



'Plasticity' and brain 'Lateralization'. Most of these theories are regarded First language acquisition, however, human brain functions in the same manner in the case of second language acquisition. So these theories can be also applied for second language learning.

#### **Neurological Evidence:**

To prove the existence of Critical Period, Lenneberg showed the relationship between language learning and the progress of the cerebral hemispheres from birth until puberty. According to his investigation, during pre-pubescent time, dominant hemisphere becomes more and more specialized for language and after it reaches puberty all language functions are centralized in that part of the brain. Referable to this specialized process, there is a loss of cerebral plasticity. As Lenneberg (1967:176) states-

*"... the incidence of "language learning blocks" rapidly increases after puberty. Also automatic acquisition from more exposure to a given language seems to disappear after this age and foreign languages have to be taught ad learned through a conscious and labored effort. Foreign accents cannot be overcome easily after puberty."*

We can compare this "critical period" with a Rocket, imagine when a rocket is sent to the outer space and it relinquishes the vessel, and it burns out because its job is done. May be our brain also intakes during a certain period and it stops absorbing when its primary work is done. Critical period works like this vessel. It is a mechanism which burns out when its job is over.

#### **Plasticity:**

From the above section, we can see the correlation between Critical period and Plasticity. Penfield, a neurologist advanced this theory of "Brain Plasticity Hypothesis". All his research was based on neurophysiological data. According to his hypothesis, the beneficial time for learning falls within the first ten years of life, because during this sensitive period a child's brain is malleable and flexible. His hypothesis also claim that, if a part of a brain becomes damaged due to an accident, another part of a brain will take over its functions and linguistic capability will be regained. This will be only possible before that child reaches puberty. However, such flexibility in the brain is not possible in older person. Penfield also supports that language learning is facilitated by age.

There are many other researchers who are also working on neurological plasticity. Hoffman, (1991) states that, "The brain must be stimulated during a certain period of time when it is "receptive to new input," known as plasticity, in order to aid in the development of correct functioning". We can compare plasticity with an open window. For example, from the age of two to before puberty a young learner's brain is like an open window and after the learner reaches puberty this window is closed, which means the plasticity has taken place and it operates as a barrier which plays a negative role in the case of learning a second language. Thus, this barrier makes it difficult for the learner to achieve a higher level of proficiency and grammatical aspects. This hypothesis does not indicate that it is impossible for an adult learner to have excellence in language learning, it claims that after one enters into post-puberty stage, then language learning becomes tough and the level of accomplishment is quantitatively lower than a young learner.



### **Lateralization:**

The human brain is divided into two portions – called cerebral hemisphere: the left and the right. Steinberg (2004:318) reports that some language functions are operated by right side and the rest is controlled by the left side of the brain. Usually language functions are controlled by the left side of the brain. It is assumed by the neurologists that, these employments of language function are not assigned completely to either side of the brain before puberty and just after puberty both sides are assigned to specific functions. This process of localization and specialization of functions is called Lateralization.

Before any localization takes place, prepubescent brain functions like a “Sponge” – it absorbs everything, new knowledge, experience, ideas and complex rules. The reason is that during this critical stage (from two- puberty) brain has the adaptability to grab new things and not yet specialized in its functions. So it makes learning any language easier and quicker than adults or adolescents as their brain is already lateralized.

Puberty symbolizes a biological change in the human body and brain. Due to this change in brain (lateralization) and lose of cerebral plasticity are some of the reasons that blocks the natural ability to achieve a higher level of competence especially in pronunciation.

### **Other Factors Associating With Age:**

It is not only the dominance of brain lateralization and loss of plasticity, which creates the barrier for the late learners to achieve ultimate attainment. There exist other countable factors which permit young learners to have an advantage over adults and late learners.

### **McLaughlin (1984, p. 73) notes that-**

*“Ultimate retention of two languages depends on a large number of factors, such as the prestige of the languages, cultural pressures, motivation, opportunities of use. But not on age of acquisition”.*

### **Dominance Of Mother Tongue/First Language:**

All most all of us have relatives and friends who are living abroad, where they are exposed to another language on a daily basis. Even though they have lived there for a long time, but still they don’t have the native-like proficiency. Even I have a few cousins who are living in the United States more than ten-years, but still they lack native-like accent and proficiency. Linguists assume that it is due to the dominance of mother tongue. When an adult learner starts leaning a new language he develops an ‘interlanguage’, which is neither his mother tongue nor the target language. However, while learning the target language they borrow patterns and grammatical structures from the mother tongue. They tend to overanalyse the concepts and it blocks the language learning process. Whereas young learners start learning a second language at an early age, where their first language has not fully developed yet. Due to this advantage they probably have less interference from the first language and as a result, they achieve a high level of proficiency in the second language.

### **Adapting New Identity And Environmental Factors:**

Especially in the case of adult immigrants the emotional bondage towards own culture, language, own identity and ego of adapting new culture brings a barrier. Whereas, young children are more receptive towards



imitation in order to become a part of new surroundings and to form a new identity. They love to explore and feel easy to communicate in a new language. They have no fear and shame of making mistakes or speaking nonsense. Young immigrants have a desire to be like others, whereas adults don't have such desire rather they have an ego, which holds them with their own identity and native culture. Guiora (1972) investigates that learning a second language necessitate the adaptability of a new identity and this reshaping is only possible if one can permeable the language ego boundary, though, typically this quality is absent in adults.

Then, when we teach young kids we use simpler structures, easy vocabulary and non-linguistic features, e.g., hand movements, body gestures, pictures and drawings, etc. Our purpose is to give them comprehensible input so that the language learning becomes easier for them. On the other hand, in an adult language learning classroom, we focus on grammatical rules and structures than communication. May be it is because we expect that they are capable to understand the second language rules as they are already mastered in the first language. As Collier (1988) claims-

*"The factors that affect second language acquisition and advancement in language learning depend on the learner's cognitive style, socioeconomic background, formal schooling in first language and so on".*

#### **Affective Filter:**

Krashen's renowned "affective filter" is an invisible innate device that can control anxiety, confidence, motivation, self-esteem, ego and stress in order to learn a language. According to him, a number of affective variables facilitate learning. Young learners are more confident and their eagerness to learn new things minimizes the level of affective filter. Thus, it helps them to experiment with new languages and practice more in order to get higher achievement. On the other hand, adults generally suffer from lack of motivation, high self-esteem, shyness and enfeebling anxiety. All these negative variables combine together to cause the raise of affective filter as well as creating a mental block. Singleton (2005, p. 277) also cites Krashen's claims that the *"affective filter" is strengthened at puberty thanks to the onset of formal operations, so that "for the adult it rarely goes low enough to allow native like attainment"*

#### **Younger = Better" – Evidences For Critical Period:**

It is assumed that young children have some inherent advantage in learning languages than adults. It is claimed by many researchers that 'the young = the better'. Young children possess a neurological advantage, cerebral recovery, they are more motivated, have less responsibilities and minus complexity in life. They are far more open and receptive; ready to grasp new ideas and keen to explore. On the other hand, adults deal with the many complications in their daily life and they have also exceeded the hypothetical critical period line. Generally, they are unreceptive to new ideas and



knowledge, more importantly, they have gained self-esteem, which forbids and limits their forwardness to learn a new language. They feel shy to make mistakes and often lose confidence as well as motivation. All these negative factors make learning more laborious and complex.

There might be a question, why not “Younger = Best”? – The reason I used the term best is because, it is not completely impossible for adults to learn a language after they cross puberty. Few researchers (Dr Iverson and Dr Hazan, White and Genesee 1996, Birdsong and Molis 2001) have challenged and proved that adult late learners can achieve native-like competence.

**To make my point (younger = best) more elaborate, I would like to mention some empirical evidences –**

Many Young children and adults face disruption in language learning and cognitive functioning due to cerebral damage or Aphasia (brain injury). But young children get the advantage to recapture their speech capability of transferring the cognition and speech functioning to the undamaged hemisphere, whereas adult brain loses the capability to shift as it is already lateralized.

As second evidence, I would like to include a very well-known and tragic case of Genie. She was found at the age of 13 in a locked room. She was tied to a potty chair and rarely heard any sound. She was isolated from

normal life and language learning. As soon as she was found, she grabbed all the attention of psychologists and linguists. At the age of 13 she could only speak a few words, like, “stop it”, “no” and few negative words. She was given intensive language therapy and psychotherapy, but still there was no improvement in her language learning. If we put this case under Lenneberg’s Critical period hypothesis, then it clearly shows that Genie has lost her natural language learning capability due to reaching puberty as her innate learning mechanism is circumscribed.

Studies done with deaf individuals also support the effect of maturation in learning first language. Researchers have found that, the early and late sign language learners have differing language ability. Chelsea was born deaf and was exposed to language with the help of a hearing aid at the age of thirty one. She was also given language therapy and was able to produce a large number of vocabularies, but yet failed to produce grammatically correct utterances.

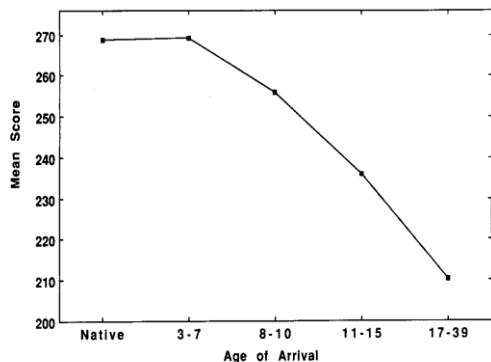
Johnson and Newport (1989) investigated the age effect for second language learning-

- Target Group - 46 Korean and Chinese learners of English.
- Age of arrival in U.S.A - Between the ages of 3 to 39
- Duration of stay - An average of 10 years.
- Tested items - Twelve basic structures of English grammar (e.g. past tense, plural, determiners, pronominalization, auxiliaries, sub-categorization, yes/no – WH- questions etc).





- All these items were presented in an audio tape and the correlation test analysis (figure: 2) manifested an advantage for young arrivals over older arrivals.



**2. Figure 2: The relationship between age of arrival and total score correct on a test of English grammar (from Johnson & Newport, 1989)**

This figure (2) shows the overall performance and the mean score correct (out of 276) for each of the learning groups. This study draws a systematic relationship between performance and age of arrival. The test result indicates that, (except the controlled native group) only 3-7 aged group performed at the near native level. In the remaining groups, as age of arrival increased, their performance became significantly poorer. So this research shows that, age of exposure and maturity can decline the capability of learning language and may restrict in the ultimate attainment.

Most of these theories and findings of Lenneberg, Penfield and Roberts, Johnson and Newport etc. are outdated and often criticized due to lack of enough physiological evidences. Young and adult brain does

differ, but there is no scientific proof or neurological data that indicates the effect on learning a second language. The popular CPH theory somewhat demotivated former adult learners, but recent researches shows that, we are not physiologically destined to fail to learn a new language and their findings brought confidence among late adult learners.

**Evidence Against CPH:**

However, Lenneberg’s theory of language learning and Penfield’s theory of brain plasticity has been criticized by the modern researchers. A newly research by Dr Iverson and Dr Hazan claim that, adults’ inability or failure to produce and hear small sound differences is not due to brain plasticity rather it is caused by their experiences from their culture. According to them, our experience of culture warps our perception and teaches us to ignore certain sounds which are uncommon in our native language.

Their research showed that, it is possible to return adult brain in order to hear such sound differences and it may help late learners to achieve native like proficiency. They tested 63 native Japanese subjects in Japan and London through a 10-session training course. They were given (before and after) a number of perceptual tests to evaluate their perception of acoustic cues. Throughout the training course, they were retrained to hear the difference between r’s and l’s (something that Japanese adult learners of English tend to find particularly difficult) and gradually they were able to distinguish (r’s and l’s) sounds by an average of 18%. Therefore, if a learner can recognize the difference between r and l 60% of the time, then by the end of the session, he will be able to get this correct 78% of the time.



Similar tests were carried out in London on Sinhalese (Sri Lankan language) and German speakers who had lived in the UK for more than 20 years and their results also support the view that, the brain can be returned. These findings are the objection against the typical views of CPH. As our experience ‘wraps’ our perception and it is difficult to undo this but thanks to this new intensive course that will make adults more confident and will help them to retain their brain.

White and Genesee (1996) also challenged Lenneberg’s CPH. They test 89 adult speakers of English as a second language, using grammatical judgment task and an interview and their result proved ample evidence of the existence that late adult learners can also attain native-like competence. Birdsong and Molis (2001) replicated Johnson and Newport (1989) study and they found many native like subjects among their native Spanish speakers.

Some researchers mark, motivation as a key factor in second language learning. Moyer (1999) suggests that, there are nonbiological factors such as learners’ motivation, cultural empathy, desire to sound like natives and type or amount of input are crucial factors which are often left unexamined by researchers, and they fall back solely on CPH and length of residence as a default explanation for the variance in learner outcomes. Researchers’ often overlook that, a highly motivated and self-confident learner can perform higher compared to a more intelligent learner with less motivation (Reece and Walker 1997).

#### **The Effect Of Motivation – Personal Reflection:**

Motivation is also considered as a significant factor in order to achieve a higher level of accuracy in language learning. Motivation triggers the urge of in taking new things and makes a learner more active. It is very difficult to teach as well as learn a second language without having the desire to learn. According to my teaching experience, I observed that, early language learners are more motivated and active. Their motivation is associated with pleasurable activities, intrinsic and extrinsic motivation e.g. competition, rewards like; getting star stickers on their copies, winning color pencils, good grades and candies. On the other hand, adult learners seem to have only extrinsic motivation, e.g. job purpose, getting promotion, higher studies or immigration. They rarely learn a second language for pleasure.

As a multilingual, my experience indicates that, adult or late learners get limited time to practice and they have to give maximum effort. Thus, they feel pressured and face a massive drop-off in the learning process. Whereas young learners get more time to practice, communicate and have less pressure. In my case I started learning English when I was four years old and it was from my school. It was a very positive environment, though I don’t have native like proficiency because I got the minimum exposure from my surrounding and less chance to practice the language. However, I used to feel more motivated by seeing my seniors and my elder brother talking in English.



Afterwards, I was taught Arabic when I was fifteen. I never enjoyed the learning Arabic as there was always an intense pressure from my mother. She wanted me to learn to read Arabic within two months and expected me to recite the Holy Quran. I am not implementing that it is impossible to learn to read and recite the Holy Quran in two months. For example, my nephew who is 8 years old can read and write Arabic. All the young students from Madrasah (Arabic School) can speak and write Arabic from the age of 4. But I couldn't do it because I wasn't motivated and there was a fear of my mother. I learned Urdu and Hindi for pleasure purpose. Though my mother always tried to motivate me to learn Arabic but unfortunately it turned to be negative.

#### Conclusion:

The literature review and overwhelming evidences for and against 'age factor' makes it difficult to draw a fix result. Due to age factor young learners get an advantage, but adults can also retain their brain through therapy to achieve higher success. Age of a learner does have its implications, but we should not consider it as the sole determining factor. Puberty symbolizes a biological change in the brain and body which creates a barrier to attain native-like competence, but other factors, e.g. motivation, affective filter, surroundings, pressure, as well as language therapy can help to achieve native like attainment.

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