

**ISSUES IN The Critical Period Hypothesis
In Second Language Acquisition**

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ABSTRACT

The Critical Period Hypothesis (CPH) maintains that humans are genetically endowed with a language acquisition device which gradually fades with age.

This article attempts to find out whether this hypothesis is also true with regard to second language learning.

Along with this issue, other related questions are also investigated, notably: which layers of language is the CPH applicable to? Do children and adults learn the same way? Do they process the linguistic input similarly?

The issues are debated by various empirical research works conducted over a large time span.

The conclusions arrived at indicate that:

1. Adults do have the ability to acquire a second language, especially in the fields of syntax and morphology.
2. Children's superiority in fluency and accuracy of pronunciation is due to biological and sociocultural reasons, since they have the opportunity to engage in casual speech.

If the target of second language learning is to achieve communicative competence, both children and adults can do that,

provided that they are motivated, dedicated and have the appropriate learning circumstance.

المستخلص :

مسائل في فرضية الفترة الحرجة لاكتساب اللغة الثانية

تنص فرضية الفترة الحرجة على إن الإنسان مزود وراثيا بالقابلية على اكتساب اللغة الأم في مرحلة الطفولة. إلا إن هذه القابلية تتضاءل تدريجيا مع التقدم بالعمر. نحاول في بحثنا هذا استكشاف مدى صحة هذه الفرضية عندما يتعلق الأمر في تعلم اللغة الثانية. كما يتناول البحث أسئلة أخرى ذات علاقة بالموضوع من بينها : على أي جانب من التراكيب اللغوية تنطبق فرضية الفترة الحرجة ؟ وهل يتعلم الأطفال والكبار بالطريقة نفسها؟ وهل تعالج عقولهم ما تتلقاه من التراكيب اللغوية بوسائل متشابهة ؟ نستند في مناقشة المواضيع المذكورة على عرض ومناقشة الآراء المتضاربة التي توصل إليها الباحثون من خلال دراساتهم وتجاربهم العلمية وبحوثهم الميدانية في هذا الحقل والتي أجريت على مدى حقبة طويلة من الزمن .

تشير النتائج التي توصل إليها البحث إلى ما يأتي :

1- إن بإمكان الراشدين اكتساب لغة ثانية بكفاءة عالية ،خصوصا الجوانب النحوية والصرفية والاشتقاقية.

2- يعزى تفوق الأطفال في حقل الطلاقة ودقة التلفظ إلى أسباب بيولوجية وثقافية واجتماعية، حيث أنهم يتمتعون بفرص الانخراط في حوارات اعتيادية طبيعية مع إقرانهم.

وإذا كان الهدف من تعلم اللغة الثانية هو الوصول إلى الكفاءة في التواصل مع الآخرين فإن الأطفال والكبار قادرون على تحقيق ذلك على حد سواء، بشرط أن يمتلكوا الدوافع الكافية وأن يبذلوا قصارى جهدهم وأن تتاح لهم الظروف الملائمة

1. Introduction

Most people seem to agree, depending on personal observation or published research, that younger children exceed in learning a second language, and perfecting it to the level of a native speaker.

The critical period hypothesis (CPH) was first introduced by Lenneberg in 1967. It claims that there is an age limit for learning a second language easily, with a higher possibility of achieving native-like proficiency. This stage ends at around the onset of puberty, after which acquiring a language becomes like learning any other knowledge.

The younger the better argument was originally based on the hypothesis that humans are genetically endowed with a language acquisition¹ device (LAD), which gradually fades with age, the period being referred to as the Critical Period (CPH).

Whether such a limitation exists or not, as far as second language acquisition (SLA) is concerned, is the debate of this article. An attempt is made to draw conclusions through exploring some of the many conflicting viewpoints, each backed by empirical examples carried out by various researches over a large time span.

In addition to the question of its existence, the other question is which areas of linguistics the CPH is applicable to. Another is the question of the methodology of acquisition, and whether adults and children learn the same way, and whether linguistic input is processed similarly.

Amongst the group that believes in the CPH, there is division. Some think it is biologically based, whereas others ascribe children's supremacy in second language acquisition to social, psychological and cognitive reasons.

¹ The term 'acquisition' is used here in favour of the traditional term 'learning' due to the increasing correspondence that has been recently discovered between the processes involving first and second language acquisition.

The first part attempts to answer the question: does the CP for SLA exist or not, and tries to present some of the backing research on either side of the argument. The second part covers variables that affect the researches, and the degree of their effect. The third part reviews opinions about age related SLA subjects, such as the rate and process of acquisition.

If there were proven to be a critical period, biologically based or otherwise, it will eventually necessitate introducing two, or more, different settings of educational programmes purposefully designed to suit each age group's specific requirements.

2. For and Against CPH

2.1 For

The CPH is built on the belief that children are better language learners than adults are, *i.e.* the younger the person, the higher the chances of acquiring linguistic perfection. This assumption is based on the biological explanation of lateralization (the gradual transfer of knowledge to the left hemisphere of the brain). As well as interhemispheric specialization (each area of the brain becomes more and more specialized in one field of knowledge) and fossilization (cerebral cortex losing its plasticity). Seliger *et al.* (1974) refer to these as maturational constraints that prevent learners from learning a second language with proficiency of a native speaker.

The language acquisition device (LAD), that humans are born with, gradually declines with age until it comes to a complete halt at puberty (although some say at about the age of five or six). Skehan (1998: 91) agrees with Pinker that people acquire their first language with the help of an "internally generated pressure of syntacticisation."

According to a research, done by Oyama, on sixty Italian males living in the USA, she found that the length of residence is irrelevant, whereas age of arrival is determinant to the degree of oral proficiency. She agrees with Lenneberg (1967) by saying "language is indeed different from intellectual disciplines ordinarily approached after childhood has passed, and is more akin to a biologically programmed activity like walking." (1982: 32)

Oyama stresses that even if adults become fluent, on the high morpho-syntactic level, children still have the upper hand in native-like pronunciation: "learning to speak like a native seems to be quite difficult for all but the very young"(1982: 34).

Phonology is the most controversial aspect in the CPH, speaking with an accent is unavoidable, according to Oyama, if the person arrives in the target language (TL) country after about the age of twelve; the time before what she terms the *sensitive period*. Oyama believes that even if there are cases where adults do speak with a native-like accent, the percentage is too insignificant to be considered as evidence that would eventually refute the CPH.

The indistinguishably native accent by adult learners does not exceed 5% according to Selinker (1972) cited in Seliger *et al.*'s article on maturational constraints (1982:18). With their own results almost matching those of Selinker, scoring at 7.6%, they believe that "there are real differences between child and adult learning". There are two issues here: the first is that younger learners are "better" than their adult counterparts in ultimate attainment. The other issue is that of different input process, that will be further discussed in part three.

Pinker (1994: 293) thinks 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." Depending maturational constraints, he gives the example of Chelsea: a girl of Northern California who was thought to be retarded, until the age of thirty, when she was discovered to be only deaf not retarded. Fitted with a hearing aid, and taught language through intensive courses, she learned to speak and communicate, yet with a very poor syntactic competence.

Skehan (1998: 79) thinks that after the critical period has passed, language learning becomes like any other kind of learning, whereas during the critical period input processing, memory and output are distinct from general cognition. "After the critical period, that is language development can be viewed as an example of the human information processing system at work."

Scovel (1978) reporting experiment on native/non native adults, found out that 90% of non native, yet very proficient speakers, were recognized as non native in their oral corpus, whereas only 47% were recognized by the judges as foreigners from their written corpus. He concludes that even advanced adult second language learners can still be identified by their accent, even with a small amount of phonological data.

In his opinion, skill-related attributes are independent from the age factor. Adults have the potential from "perfect lexical and syntactic performance, and the impossibility of phonological performance" (ibid: 64). Termed as the Joseph Conrad phenomenon, someone who could write beautifully, and speak fluently, with a very strong native Polish accent. Although Scovel agrees that morphosyntactic competence is not necessarily related to phonological proficiency, he does not support the biological explanation that depends on maturational constraints.

Bialystok (1994: 82) thinks "older learners and adults make more rapid progress than younger learners". But children have the ability to catch up and exceed in the longer run. She calls this the tortoise-and-hare effect." In terms of their ultimate attainment, younger learners enjoy an advantage."

Scovel (1988: 66) thinks "biological constraints on language learning do not impede ultimate achievement in any linguistic skill except native-like phonological fluency." However, he also believes that communicative competence is far more important to achieve than phonological proficiency. He then goes on to redefine the CPH as the "early exposure a necessary but insufficient condition for achieving a native-like pronunciation."

Both Ellis (1994) and Bialystok and Hakuta (1994) are opposed to Lenneberg's (1976) theory that the critical period ends at puberty, when supposedly lateralization and loss of brain plasticity occur. They also disagree with Long's (1990) myelination explanation (a fatty sheathing tissue is formed around the neural cells and changes in neurotransmitters). To that, Bialystok and Hakuta submit that localization of functions in the brain is possible, *i.e.*, functions can move to new locations. They also raise the question why reorganization is not possible after completion of myelination (loss of plasticity), wondering how humans are capable of continuing to learn other areas of knowledge competently if that was the case.

2.2 Against

Although Oyama is a supporter of the CPH, she admits to the effect of motivation, *e.g.*, the foreign born teenagers would like to conform with their peers at school or in the local area, or generally to

the culture of TL. Generally a child and a teenager are keener to integrate with the TL culture than would an adult; being less aware of their L1 social identity than the adult, they would imitate the habits and values of the other culture, where imitation is the "bedrock" of SLA.

One of the distinguished rejecters of the CPH is a study conducted by Hoefnagel Hohle and Catherine Snow (1977) on 136 different aged English learners of Dutch. In naturalistic approach, where conditions were as close as possible to first language acquisition, they assessed pronunciation development through three tests during the first year of residency. Learners were grouped according to their age into five groups: (3-5), (6-7), (8-10), (12-15) and adults. Results confirmed that for all tests, except pronunciation, the 12-15 group scored the highest.

They oppose the supposition that children suffering from aphasia could be completely recovered. "Although it is true that children show better recovery from traumatic aphasia than adults, aphasia resulting from vascular disorders rarely shows recovery even in young children."(1988: 108) Furthermore, the rate of recovery was exactly similar between the (6-10) and the (11-15) group.

They justify the long-term superiority of younger learners by variables, such as motivation, being in their favour. The young have to conform to the peer group, so they would suffer from peer pressure until they acquire the language properly. Another aspect is the influence of the cultural identity issue and attitude towards the TL culture, which is vital. They demonstrate examples of such post-pubertal first language acquisition, as in the Chelsea case.

An interesting point suggested by Snow and Hohle (1977) is that for very young children, SLA is associated with the break down of their

first language, *i.e.*, it is a first language that they are learning, but a different one. Therefore, such cases should not be considered as supremely successful cases of SLA.

Learners are different in their first language acquisition; therefore, individual differences must be considered in SLA studies. Snow and Hohle (1982: 109) stress the importance of these differences, as their learners differed in "the degree to which they had achieved control of pronunciation, morphology, grammar, vocabulary, fluency and metalinguistic skills."

Scovel (1988) dismisses the opinion that non-biological/neurological changes are the only explanations for 'the younger the better' *i.e.*, sociocultural, affective and cognitive factors are not accountable for children's phonologically successful performance. He believes that morphological, lexical and grammatical factors, plus communicative competence, are strongly relevant to accentless L2 speech. "If there are age constraints on language learning, they are caused exclusively by non biological factors." (p: 123) Yet he does not completely dismiss the effect of the biological factor. "The influence of variables . . . should not prelude the likely influence of biological constraints on certain types of language acquisition performance." (p: 100)

Scovel (1988) gathers evidence for and against the biological factor in CPH, but he is definitely against Seliger *et al.*'s (1982) notion that lateralization and complete loss of cerebral elasticity almost conclude at the age of five. Scovel rather is of the opinion that completion of lateralization takes place at some time in puberty. He (1982: 141) relies on scientific evidence of hemispherectomy, an operation where one part of the brain is removed, of children at and

above the age of 11, who were able to continue language learning normally.

Ellis (1994: 487) thinks that "some learners who start learning a second language after puberty achieve a level of competence indistinguishable from that of native speakers." As a proof he demonstrates Birdsong's (1992) research who has found out that there was no great difference between native and non native speakers, as an answer to Long's (1990) challenge to researchers to investigate whether L2 speakers had "native-like competence".

He also emphasizes the importance of the "right conditions", if provided, adults *can* achieve native ability in phonetics. He relies on a study by Neufeld (1978) of 20 English native speakers who took intensive 18 hour Japanese and Chinese pronunciation courses, (10 learners each language). On a five point scale ranging from unmistakably native to heavily accented, 9, and 8 learners out of each group were rated as native.

Singleton (1989) concludes that according to evidence, the hypothesis that younger learners are generally more efficient than older is annulled, nor is the other extreme of the argument true. Even at the phonological level, according to Singleton's survey of different researches, results are not consistent in proving that younger is better. Against what is commonly known about children's extraordinary ability in SLA, Singleton (1989: 111) believes that evidence gathered in favour "is for a trend rather than for an absolute and inexorable law." In this he relies on the evidence that percentages of child/adult differences are not that huge, in addition to Neufeld's (1977) experiment that resulted in 40-70% of adults passing as native speakers in oral tests.

The term acculturation refers to the change, or adjustment, of habits, values and behaviour from the mother culture to another one. The concept is linked to researchers that ascribe the critical period's existence and eventual child excellence to sociocultural and psychological reasons. Schumann (1978), as reviewed by Stuable (1980), in his study of pidginisation and creolisation found that the closer the members were to the target language group, socially and psychologically, the better their chances were of a better production. The study was performed on six learners who were children when their families immigrated to USA. Aleberto (33 years old) a Latin American, was one of these children, but he distanced himself from the culture, the people and the media (television, music, . . . *etc.*). Personally he did not like to mix with English speaking people, or try to integrate with the culture. Socially, his family was of a working class, whereas others were children of professional immigrants. The result of the study showed that his language fell far below native. Aleberto had no cognitive, or biological/neurological difficulties that would prevent him from further linguistic development. Therefore, the reason for his inefficiency was most probably associated with the psychosocial detachment problem. The results of this famous study show that the higher the social/psychological proximity, the higher the acculturation, and consequently, the better the linguistic development.

Ellis (1994: 201) believes that the social element has stronger influence on younger than older learners. The "younger speakers are subject to social pressures from their peer group, while middle-aged speakers have less cohesive social networks and are most influenced by mainstream societal values."

3. Variables Affecting Age-Related SLA Research

Apart from arguments related to the CPH, there are several factors that are known to affect rate and quality of SLA process and performance.

3.1 Acquisition in a Formal vs. Informal Setting

It is observed that this variable is of immense importance as it features in all researches. The context and environment of acquisition has to be identified, reflecting the effect it has on the studies. Formal *generally refers to language instruction in schools or any other institution*. Informal learning is linked with naturalistic approach, as the learner living in the country of the TL (*e.g., children acquiring a second language from a play group*). Fathman (1982: 119) thinks that there is no relation between age and the type of language programme. That said, *one must avoid the stereotyped supposition of linking adults to formal education on the one hand, and children to natural exposure and acquisition on the other*. Ellis (1994: 491) thinks that in formal settings, adults seem better than youngsters; however, in the long run, children will overtake especially those who have informal exposure to the TL. *Children become more capable of acquiring the native-like accent*. "Children are more likely to reach higher levels of attainment in both pronunciation and grammar than adults."

3.2 Length of Instruction/Exposure

Most studies seem to agree that time and proficiency correlate positively. Fathman (1982: 119), however, in her study seems to disagree. She believes that there is "no significant interactions between age, language programme, and number of years in the United States."

Singlton (1995), on the other hand, refutes Oyama's (1978) research results, which prove that length of residence affects SLA.

3.3 Individual Differences

There are good language learners and there are bad language learners, depending on attitude, motivation and other personal attributes. However, cases of particularly talented good language learners and extremely problematic language learners are considered as exceptions by several studies. In a study focusing on the main stream average learner, Pinker (1994: 290) sums up individual differences into "effort, attitudes, amount of exposure, quality of teaching and plain talent", yet they are not enough, if all are available, to compensate and overcome the fossilization in the adult's mind. Bialystok and Hakuta (1994) think that the personal factors are very important. They present a study where test scores correlate positively with motivation.

3.4 The Field of Linguistics

The field of linguistics discussed also has to be considered. Vocabulary aside, most studies of CPH focus on grammar or phonology, since these fields seem to be the most affected by the age factor. Krashen (1982) thinks that no one has a problem with learning/memorizing an infinite number of lexicons. Yet there are some much-criticized studies that deal with language as one unit, rather than being comprised of independent sections.

The effect of age, in Ellis's (1994: 491) opinion, "may be a minimal one in the case of grammar, but possibly more significant in the case of pronunciation." Scores results by Snow and Hohle (1982: 95) recommend that "different language abilities be tested separately."

3.5 Age of Commencement

Some studies suggested introducing second language learning at early learning stages, others thought that this might interfere with children's first (native) language. Ellis (1994: 488), for example, believes that the age at which second language acquisition commences does not seem to affect the ultimate L2 level of proficiency: "starting early is no guarantee that native speaker abilities will be achieved even in the most favourable learning situation."

Bialystok thinks that (depending on Johnson and Newport's study) age correlates negatively with test scores.

Johnson and Newport (1989) tests show that the younger the age of arrival in the USA, the higher the pronunciation test scores and vice-versa.

Singleton (1989: 107) thinks that the younger the child the higher the possibility of easily acquiring a native-like accent. "Unless exposure to the second language begins in the childhood years, an authentic accent will not be normally acquired."

3.6 The Type of Task

The type of task performed is also a determinant factor, as in Schumann's (1978) study where two types of tests were performed to evaluate oral proficiency. Results proved that learners in story telling activities showed fewer accents than the paragraph reading task.

To these variables, the researchers would like to add the importance of the quality of interaction in informal naturalistic settings, which very much depends on personal circumstances and opportunity. Furthermore, the quality of teaching method affects learning results in formal settings. Mothers in immigrant families do not acquire L2, as

easily and quickly as their children do, is a fact not only ascribed to biological and social reasons, but also because of the kind of communication they have with TL people.

4. Rate and Process of Acquisition

4.1 Rate

In a study of two hundred children of different origins learning English as a second language in America, Fathman (1975) found out that there is a relation between age and the rate of acquisition. Older children (aged 11-15) learned syntactic structures faster than the younger group (aged 6-10), and performed better in morphology and syntax, whereas the younger group exceeded the older in pronunciation, and learned it faster.

Ellis (1994) dismisses Krashen, Long and Scarcella's (1979) generalization that "adults learn faster than children" in the short term, and think it is more applicable to grammar than general L2 acquisition. Pronunciation, for instance, is the linguistic section that children are equally rapid, if not faster in learning than adults are. Ellis (1994) concludes that, regarding the rate of acquisition, adults have an advantage over children, especially in short term syntactic mastery.

Krashen (1988: 123) has found out that "adults, and older children in general, initially acquire the second language faster than young children (older is better for rate of acquisition), but child second language acquirers will usually be superior in terms of ultimate attainment (younger is better in the long run). Distinguishing rate and attainment, then, resolves the apparent contradictions in the literature."

In short term acquisition, according to Krashen, Long and Scarcella's (1979) research, adults exceed children in the rate of

acquisition, regardless of whether the type of acquisition is natural or formal. In the longer run, the young catch up and exceed, albeit having one year of exposure. In reply to Snow and Hohle's (1977) research, they conclude that if the same study was conducted a year after the last test, they would have found that (6-10) group have equaled, if not exceeded the (12-15) group, even in syntax and morphology. Therefore, they believe that mastery and eventual attainment is on the youngsters' side.

4.2 Process

Do adults and learners learn their second language in the same way?

Is learning a second language the same process as the first?

Age, in Ellis's (1994: 493) opinion, does not affect the process of learning. It "does not appear to affect the general developmental pattern." He thinks "the acquisition of phonology (which appears to be particularly to age), proceeds somewhat differently from the acquisition of grammar (which appears much less sensitive)." Singleton (1995) also believes that the process of adult and child learning is totally different.

Conversely, some researchers think that the process of second language acquisition is quite similar to that of the mother tongue in specific aspects. Skehan (1998) believes that L1 and L2 are principally different in modularity. Whilst comparing older and younger learners, the matrix of the first language is based around the contrast between semantics and syntax, (or form vs. function). In comprehension, adults rely on their schematic knowledge (like Krashen's conversation competence because LAD is no longer functional. Memory and communicative skills correlate positively with age. The older the

person the more the dependence on memory and conscious knowledge of the rules of language and their ability to communicate skillfully.

Conclusion

However controversial the subject is, it is evident that different variables do affect SLA, and therefore have to be taken into consideration. Even in the most supportive researches of CPH, setting is always mentioned and considered relevant because the context and circumstances in each case are case-specific and unique.

It seems that adults do have the ability to acquire a second language, especially in the fields of syntax and morphology. If with special dedication, good learning circumstances and enough motivation, accentless L2 of oral proficiency can be achieved. Scovel (1988) thinks that communicative competence should be the ultimate target in general, and it is more crucial and necessary to acquire than a native-like accent.

Whether reasons for children's superiority in SLA are biological, sociocultural, individual or cognitive, most of the aspects are to their advantage. Acculturation is easier for children, as well as imitation and circumstantial opportunity. This is because children have a better chance of more qualitative interaction with the host culture, since they have the opportunity to engage in casual speech. Research shows that the more casual speech is, the more fluent it becomes, and most importantly, the closer it is to native-like accent than formal speech (Oyama, 1982). In most cases, children's linguistic mistakes are quite humoured, rather than directly corrected as in many cases of adult learning.

Adults do compensate for much of the lack in linguistic proficiency by their knowledge of the world to fill in the information gaps.

With increased tolerance, less instructional restriction of formality, and some of the advantages that children enjoy provided to adult learners, learning a second language might become much easier.

Schumann's acculturation study shows that it is not an age-related problem that prevents the learner from progress, but rather being detached and unwilling to integrate to the culture of the TL.

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