Examination of the Critical Period Hypothesis in SLA

岳士森

Department of Foreign Language, Shanghai Jiao Tong University

FL3306-1: 语言习得

常辉

1/15/2023

**Abstract**

The ultimate attainment of the L2 possesses broad significance in both language pedagogy, human cognition and neuroscience and draws fierce debate in the academic circle. The Critical Period Hypothesis(CPH) argues that such a key period for learning L1 is also compatible with L2 learning. Though with great support in neurolinguistics, the CPH is questionable from many aspects and might overgeneralize the causality of age in SLA. This article organizes a range of research and examines the CPH in detail.

 *Keywords:* the Critical Period Hypothesis, second language acquisition, sensitive period,

Examination of the Critical Period Hypothesis in SLA

The level of second language acquisition is regarded as a besetting topic, either due to the difficulty in fitting into foreign societies or the strict foreign language threshold for job placements. However, as babies who don't possess enough subjective learning will or common world knowledge to bootstrap semantic conceptualization, they met no difficulty in fully acquiring any language with complex linguistic rules. Therefore, the factors blocking adults from fully acquiring another language arouse researchers' curiosity.

Within all explanations, the Critical Period Hypothesis (CPH) proposed by Penfield and Roberts (1960) draws great attention. It hypothesizes that people's language acquisition— be it L1 or L2— could only be fully conducted within a critical period at an early age, and after this period their faculty for learning language declines. Although the CPH seems acceptable at the first glance and abundant data have reported the existence of the Critical Period in first language acquisition, it still remains many unsolved parts in establishing the absolute causality between the Critical Period and L2 learning.

The contradiction stems from the dispute about whether language acquisition is domain-specific or domain-general, in other words, whether language acquisition is exclusively under the control of the language learning module or also depends on other modules in the brain. Manifestly, the CPH proponents make the assumption that the computational unit in language acquisition derives only from UG, the prenatal domain-specific linguistic knowledge. On the other hand, researchers holding the opposite opinion of CPH argue for the involvement of cognitive mechanisms in language acquisition. In their view, second language learners are mostly mature enough to be consciously aware of language acquisition, so they're more likely to adopt a cross-modular learning pattern than rely only on their innate linguistic knowledge. Therefore the decline in cognitive ability could also contribute to the decline in language learning ability. Many experiments have proved that older learners feature less concentration span, more reaction time and shorter long-term memory compared to children (Schaie & Gribbin, 1986). These cognitive abilities are essential in language learning and shouldn't be ruled out in explaining the puzzle for second language learners. Furthermore, the fixed boundary in the Critical Period of second language acquisition has been disproved. The data in a study by Bialystok and Hakuta (1999) demonstrates a gradual and constant decreasing line of people's language ability by their acquisition age. The continuity of the decreasing line contradicts CPH, according to which the sudden deprivation of Universal Grammar should render a disruption on the line at the moment of the close of the Critical Period.

The CPH also finds difficulty in explaining language transfer. In CPH's description, children within the Critical Period have the access to Universal Grammar so that they gain the abstract grammatical rules for every language they acquire mostly from UG. In other words, it suggests that within the Critical Period the transfer from the previous language should occur less frequently in children's language acquisition than the adult learners do. This presumption is disproved by a study by Bialystok and Hakuta (1999), in which the researchers have found transfer errors in children's speech similar to that produced by adults and the overall patterns of error of the adults and children are indistinguishable.

Being unreasonable in simply borrowing the Critical Period of L1 to explain SLA, the CPH was improved by Lenneberg et al. (1967), who denies the cut-off end of the Critical Period and proposes the language centers occupied by L1 are the underlying cause for the unableness in fully acquiring L2. The language parameters put forward by Chomsky (1993) have brought a similar viewpoint that the parameter of L2, if different from that of L1, is likely to lead to transfer errors since children's grammar choices have been set according to L1. The followers of the CPH have further refined CPH into a weaker and more detailed statement with ample evidence. The maturational state hypothesis proposed by Long (1990) indicates the close of the Sensitive Period, an alternative term for the Critical Period, is due to the maturational changes in brain structures that perform the language learning tasks. The rate of maturation differs between the linguistic aspects. For example, for many individuals, the close for phonology is as early as age 6 while for morphology and syntax around age 15. They also declare the close of the Sensitive Period isn't abrupt and the language learning faculty declines as a gradual process within which the ultimate attainment of L2 becomes variable.

The modified version of the Critical Period Hypothesis for SLA, though rationalized to a large extent, still remains unsolved problems and has yet to gain direct evidence of the maturation process in the human brain from the neurological perspective.

A contradictory viewpoint is concerned with the difference in language attainment between a child in the Critical Period and an adult learner. In the light of CPH, there should be a qualitative difference between learning within the Critical Period and outside it, which is caused by the presumable loss of Universal Grammar after the Critical Period. For instance, the sentence *Who do you wanna feed the dog* is ungrammatical in that there's a trace of *who* between *want* and *to* which blocks them from combining into *wanna*. Such an abstract syntactic rule, which involves the perception and proper use of hierarchical syntactic structure, is believed to be rooted in people's minds as a prenatal gift. This argument has been disproved in the study by White and Genesee (1996). It reports one-third of their adult subjects have gained a performance equivalent to children and native speakers in the tests of grammaticality. This result reflects the capability of adults to learn highly abstract rules which CPH would consider to be inaccessible for the lack of a specialized language acquisition mechanism. This evidence proves that there's no substantial difference between the process of SLA in children and adults.

The disparate attainment of children's second language in a different environment is also incompatible with the CPH. The Critical Period theory regards language acquisition only as a hint for children to choose the appropriate language parameters, which have already existed in the Universal Grammar. It's reasonable therefore to presume that with enough input, regardless of its quality, children can eventually acquire the language. Whereas the statistics demonstrate the contrary result. The data from the U.S. Census reports a high relationship between education and the immigrants' English attainment. Immigrants who arrive before the close of their Critical Period are classified according to the year of formal education they've received, including university, high school, less than 8 years and less than 5 years. Their ultimate language proficiency is in the same order as their education degree. This result has been substantiated in Bialystok and Hakuta's (1999) experiment. The explanation of this correlation is disputable. For one thing, the cause and effect relation couldn't be simply defined as the year of education causing the language proficiency to change, because conversely, only those who gain higher proficiency are able to attend the higher level of education. Besides, their English level before immigration isn't involved in the analysis. Still, this is evidence contradicting CPH in that the young immigrants though having received enough English input in their Critical Period, have gained disparate English attainment.

An instance of an adult second language learner who has gained the native-like mastery of Arabic without any formal instruction has overturned the presumptions of researchers believing in Critical Period theory. As reported in a case study by Ioup et al. (1994), a woman named Julie has attained the native level of Arabic as her second language. At 21 she moved to Egypt and from then, she has changed herself from a zero-basis learner to a native-like speaker without receiving any formal education in language. Her language proficiency has been acknowledged with a thorough evaluation included in the study. In particular, she was proven to understand the dialectal morphological changes in different areas in Egypt, for which even the native speakers can't guarantee mastery. Her success has been carefully analyzed by the researchers. First, she has paid much attention to the morphological variation, which isn't the focus of many second language learners who regard conveying semantic information as the most crucial ability in communication. The viewpoint is also mentioned by Schmidt (1990), who highlights the importance of conscious awareness of form for adults to acquire the redundant grammatical features of a language. Furthermore, she demonstrates her talents in learning languages from many aspects. Specifically, her speed in L1 acquisition is distinguished from the average, which is suggested to be correlated with the L2 by Skehan (1986). She also possesses extraordinary associative memory and the ability to master new vocabulary, which is a hint for talented language learners according to Obler (1989). The conscious awareness of subtle grammatical forms and her gift in language learning seem to create such a miracle for an adult to fully acquire a language from the very beginning and a counter-example to the CPH.

The above-mentioned hypotheses and studies, though illustrated in a logical manner, still lack absolute validity to let the answer skew to any side. The fundamental limitation of our research in brain science and methods in evaluating language proficiency obstruct researchers from reaching a predictable L2 attainment of adult learners. To sum up, although the Critical Period (or the Sensitive Period) that guarantees successful language acquisition is disproved by many empirical studies, it's true that children are better language learners and are more likely to reach native-level proficiency in L2 than adults do. Moreover, only the adults who are talented in language learning and consciously aware of every morphological rule in adequate language input can eventually attain native-level L2 proficiency.

**References**

Bialystok, E., & Hakuta, K. (1999). Confounded age: Linguistic and cognitive factors in age differences for second language acquisition. *Second Language Acquisition and the Critical Period Hypothesis*, 161–181.

Chomsky, N. (1993). *Lectures on Government and Binding: The Pisa Lectures (Studies in Generative Grammar [Sgg])* (7th ed.). Mouton de Gruyter.

Ioup, G., Boustagui, E., El Tigi, M., & Moselle, M. (1994). Reexamining the Critical Period Hypothesis. *Studies in Second Language Acquisition*, *16*(1), 73–98. https://doi.org/10.1017/s0272263100012596

Lenneberg, E. H., Chomsky, N., & Marx, O. (1967). *Biological Foundations of Language*. Wiley.

Long, M. H. (1990). Maturational Constraints on Language Development. *Studies in Second Language Acquisition*, *12*(3), 251–285. https://doi.org/10.1017/s0272263100009165

Obler, L. (1989). Exceptional second language learners. *Variation in Second Language Acquisition: Psycholinguistic Issues*, 141–159.

Penfield, W., & Roberts, L. (1960). Speech and Brain‐Mechanisms. *Medical Journal of Australia*, *1*(15), 581–581. https://doi.org/10.5694/j.1326-5377.1960.tb76238.x

Schaie, K. W., & Gribbin, K. (1986). Adult Development and Aging. *Journal of Gerontology*, *41*(2), 296–296. https://doi.org/10.1093/geronj/41.2.296a

Schmidt, R. W. (1990). The Role of Consciousness in Second Language Learning1. *Applied Linguistics*, *11*(2), 129–158. https://doi.org/10.1093/applin/11.2.129

Skehan, P. (1986). The role of foreign language aptitude in a model of school learning. *Language Testing*, *3*(2), 188–221. https://doi.org/10.1177/026553228600300207

White, L., & Genesee, F. (1996). How native is near-native? The issue of ultimate attainment in adult second language acquisition. *Second Language Research*, *12*(3), 233–265. https://doi.org/10.1177/026765839601200301