

## THE ROLE OF AGE IN SECOND LANGUAGE ACQUISITION---A PSYCHOLOGICAL PERSPECTIVE

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**ABSTRACT:** *The role of age in second language (L2) acquisition is a subject of much debate. The paper is to examine the role of age in L2 acquisition. In this context, the paper firstly introduces Lenneberg's (1967) Critical period hypothesis, then further development of the hypothesis made by Johnson and Newport (1989) is offered. Following this, Felix's (1994) Competition Model and Bley-Vroman's (1990) Fundamental Difference Hypothesis for explaining age effect role in L2 acquisition will be presented and comparatively evaluated. Finally, a number of conclusions will be drawn with respect to the role of age effect and explanations of age role in L2 acquisition.*

**KEYWORDS:** L2 acquisition; Critical period hypothesis; the Exercise Hypothesis; the Maturational State Hypothesis; Fundamental Difference Hypothesis

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### INTRODUCTION

The role of age in L2 acquisition is increasingly attracting researchers' interests since Lenneberg's (1967) Critical Period Hypothesis on language learning was proposed, as it helps to explain how learners process, represent and produce a L2 (Carroll and Widjaja 2013). The paper firstly introduces and makes comments on the hypothesis, following this, two possible interpretations for the hypothesis offered by Johnson and Newport (1989), namely the Exercise Hypothesis and the Maturational State Hypothesis are made with regard to age effect role in second language (L2) acquisition. The Maturational State Hypothesis is supported by initial rate of acquisition and ultimate level of attainment among learners of different age, as well as L2 acquisition capacity decline in a critical and a sensitive period. Then, Felix's (1994) Competition Model and Bley-Vroman's (1990) Fundamental Difference Hypothesis for explaining age effect role in L2 acquisition is presented and comparatively evaluated. Finally, a number of conclusions are drawn with respect to the role of age effect and explanations of age role in L2 acquisition.

### Critical Period Hypothesis

Lenneberg's (1967) Critical Period Hypothesis holds that human beings are predisposed to acquire language in the early years of life, and that this predisposition is lost at the onset of puberty around the age of twelve. Johnson and Newport (1989:64) offered two interpretations for the Hypothesis regarding age effect role in L2 that is, the Exercise Hypothesis and the Maturational State Hypothesis.

The Exercised Hypothesis holds that humans have a superior capacity for acquiring languages early in life, if not exercised during the early time, the capacity will disappear or decline with maturation. If exercised, further language learning abilities will remain intact

throughout life. The Maturational State Hypothesis, on the other hand, holds that humans have a superior capacity for acquiring languages, and this capacity disappears or declines with maturation.

The two interpretations for Critical Period Hypothesis present different implications for the role of age effect in L2 acquisition. According to the predication of the Exercised Hypothesis that children will be superior to adults in acquiring a first language, if learners are not exposed to a first language during childhood, they will not be able to acquire L2 fully at a later time. However, as long as they have acquired a first language during childhood, the ability to acquire L2 will remain intact and can be utilized at any age. On such a hypothesis, L2 acquisition should be equivalent in children and adults, hence, there will be no age effect role in L2 acquisition. In contradiction, the Maturational State Hypothesis claims that there is something special about the maturational state of the child's brains which makes children particularly adept at acquiring any language, first as well as L2. With time going on, the special maturational state will not keep intact and the abilities to acquire L2 will decline with maturation, regardless of whether exercised or not. On such a hypothesis, age effects can be observed in L2 acquisition.

### **Age effects in L2 acquisition**

The two contradictory implications for age effect role in L2 acquisition are resolved when observing initial rate of acquisition and ultimate level of attainment in the learner of different age, as well as acquisition capacity loss in a critical and a sensitive period evidenced with investigations on age-related decline in acquiring for different area of linguistic domains.

### **Initial rate of acquisition vs ultimate attainment**

Initial rate of L2 acquisition varies from learners of different age. According to Krashen, Long, and Scarcella (1979, 1982), adults are superior to children in rate of acquisition and older children learn more rapidly than younger children. The study investigated by Snow and Hoefnagel-Hohle (1978) on English-speaking learners' acquisition of Dutch shows that there exists differential rate of acquisition between children and adults. Typically with regard to the demonstration of mastery on morphological and syntactic rules, the adults did better than the children, such study as pointed out by Larsen-Freeman and Long (1991) reflects differences in initial rate of acquisition among learners of different age. Olsen and Samuels (1973) found that American English-speaking adolescents and adults performed significantly better than children after ten 15-25 minute German pronunciation sessions.

Quite different from initial rate of acquisition, ultimate level of attainment, namely the stage at which the learner achieves native-speaker competence (Felix, 1985) favors children, not adults. According to Singleton (1989), those who begin learning a L2 in children in the long run generally achieve higher levels of proficiency than those who begin in later life. Felix (1994:492) concluded that children are more likely to reach higher levels of attainment in both pronunciation and grammar than adults. The study investigated by Patkowski (1980) on two age group learners' syntactic proficiency in English as L2 indicates that the younger age learners received higher proficiency scores than did learners of older age. However, in L2 acquisition either adults have rate advantages or children have advantages in ultimate attainment, these advantages are all resulted from initial age of exposure to L2, that is, both "depend in part on the age at which learning begins" (Gass and Selinker 1994:244).

**Critical vs sensitive period**

There are also a critical and a sensitive period differences in abilities of L2 acquisition. A critical period, as showed by Oyama (1979), is an initially strict and narrow period, during which the behaviour is short and abrupt, to be impervious to enviromental influences. Such period generally has sharply defined upper and lower bounds and differs from one functional system to another, with specific degree of abruptness in the changes of sensitivity (Immelmann and Suomi, 1981). A sensitive period, suggested by Oyama is a time of heightened responsiveness to certain kinds of environmental stimuli, bounded on both sides by states of lesser responsiveness, with the identification of gradual changes in sensitivity. Therefore, age-related decline in L2 acquisition ability is corresponding distinct in the critical and the sensitive period. This distinction rests on whether such ability declines abruptly or gradually within the given period. Such distinction is related to the distinction between a cumulative and a one-time catastrophic loss. A one-time catastrophic loss usually appears to suddenly disappear or decline the language skills (i.e. syntactic, morphological and phonetic skills, amongst others), a cumulative loss means the loss in acquisition abilities disappears or declines with gradual process. With the identification of ending abruptly in critical period, such loss in L2 acquisition ability is the catastrophic one-time event, in sensitive period due to gradual identification the loss in acquisition ability is a cumulative process

**Evidence of age effect**

Age-related decline in L2 acquisition capacity can be evidenced from phonological, morphological and syntactic domains, which is described in the following sections. As for acquisition capacity decline in phonological domain, Oyama (1976) investigated 60 male immigrants who had entered the United States at ages ranging from 6 to 20 years and had been resident there for between 5 and 18 years. She asked two adult native speakers to judge the nativeness of the learners' accents in two 45-second extracts taken from performance on a reading-aloud task and a free-speech task. Oyama found child arrivals performed in the range of native-speaker controls, those older than 12 did not, and accents were also evident in some who had arrived earlier than 12. This study suggests that learners' capacity for acquiring the phonology of a L2 declines with age.

With regard to the evidence of acquisition capacity decline in morphological domain, Harley (1986) investigated the levels of attainment of two age group students in acquisition of the French verb system in Canada. She obtained data from interviews, a story repetition task, and a translation task. After two group had both received 1,000 hours of instruction, Harley found neither group had acquired full control of the verb system; however, at the end of their schooling, there was lower levels of attainment in the mastery of verb system in older group. The result supports L2 acquisition capacity declines with age in morphological domain.

Concerning acquisition capacity decline in syntactic domain, Johnson and Newport (1991) investigated learners' syntactic proficiency based on different ages of arrival in the country of the L2. The learners ranged in arrival age from 3 to 39. These subjects were asked to judge the grammaticality of 276 spoken sentences. Johnson and Newport found that there was a steady decrease in syntactic performance according to age of arrival, extending past puberty and with the steepest decline at ages 14-16. The study suggests learners' capacities for acquiring the syntax of a L2 decline with age.

L2 acquisition, therefore, either observed from initial rate of acquisition or ultimate attainment will depend in part on the age at which learning begins. Loss of acquisition ability

in the critical and the sensitive period with evidences of age-related decline of acquisition capacity in phonological, morphological and syntactic domains also prove the reasonableness of the Maturational State Hypothesis, that is, age has effects in L2 acquisition, researchers propose different explanation of age effects from different perspectives, which is articulated in the following section 4.

## **EXPLANATION OF AGE EFFECTS IN L2 ACQUISITION**

Regarding reasons of age effects in L2 acquisition Felix's (1994) Competition Model and Bley-Vroman's (1990) Fundamental Difference Hypothesis offer their answers, there are similarities and differences implicated in their explanations.

### **Felix's explanation**

Felix's Competition Model (1994) contends that the child's learning process is guided by a Language-Specific Cognitive system, roughly equivalent to Universal Grammar, while adults tend to approach the learning task by utilizing a Problem-Solving Cognitive system which enters into competition with the Language-Specific Cognitive system. On the assumption that the Problem-Solving Cognitive system is a fundamentally inadequate tool to process linguistic structures beyond a certain elementary level, if Universal Grammar remains intact, due to insuppressible transfer of the Problem-Solving Cognitive system onto language acquisition data adults generally fail to reach Universal Grammar in L2 acquisition. Thus, age effects are observed in the process of L2 acquisition.

Felix's model is substantiated by Muysken's (1982) observation on the differences between the acquisition of Dutch and German word order by child first language learner and adult L2 learner. Muysken observes that child learners do not seem to have much trouble in discovering the basic SOV order of the Dutch and German at a relatively early stages of acquisition, whereas adult learners consistently assume a SVO base order for these two languages. When these learners have to deal with word order distinctions in main clauses and embedded clauses, the children starting with an underlying SOV order acquire a rule 'Verb-Second' which applies only in main clauses and moves the finite verb into a position following either the subject or some proposed elements as adverbials or objects. This rule is compatible with the rule of Universal Grammar. Adults, however, who assume an underlying SVO order learn a rule which moves the finite verb to final position in embedded sentences. This rule violates a principle of Universal Grammar. The fact that adults acquire rules that do not obey the constraints of Universal Grammar lies in that adults approach the learning task in a problem-solving manner, which is the result of age effects.

### **Bley-Vroman's explanation**

Different from the Competition Model, Bley-Vroman's (1990:23) Fundamental Difference Hypothesis contends that adult L2 learners acquire their L2 in a fundamental different way than they do their first language; first language development is controlled by an Innate Language Acquisition system which no longer operates in adults. Adult L2 learners possess two substantial advantages--Native Language and General Problem-Solving ability. In the process of adult acquisition, the two advantages are able approximately to cooperate with each other, namely Native Language mediates access to Universal Grammar, Problem-Solving Cognitive system operates in the analysis of L2 data, but such cooperation is not perfect to compensate for the loss in adults of the child's knowledge of Universal Grammar and a learning procedure designed specially to construct grammars. It is evident that adults

are less successful than children are at their first language learning.

The two explanations for age role in L2 acquisition contend that Language-Specific Cognitive system as an adequate acquisition device operates in L2 acquisition at certain age, i.e. before puberty; both contend that compared with Language-Specific Cognitive system Problem-Solving Cognitive system is inadequate to language learning during adult acquisition process. Differences of the two explanations lie in that whether Language-Specific Cognitive system still functions in L2 acquisition or not. Felix's (1994) Competition Model claims the Language-Specific Cognitive system still exists and competes with the Problem-Solving Cognitive system in the acquisition process. Whereas Bley-Vroman's (1990) Fundamental Difference Hypothesis argues that the Language-Specific Cognitive system ceases to function and the acquisition process in adults is the cooperation process between Native Language and Problem-Solving Cognitive system. This argument is consistent with the finding that aptitude for explicit learning plays in those successful adults by DeKeyser, Alfi-Shabtay, and Ravid (2010).

## SUMMARY

In this paper, two interpretations of Lenneberg's Hypothesis for age effect role in L2 acquisition have been presented and evaluated. Evidently, age effect role in L2 acquisition can be observed from initial rate of acquisition and ultimate level of attainment, that is, older learners have rate advantage over younger learners, conversely, younger learners outperform older learners in final stage of attainment. Furthermore, age-related decline in capacities of L2 acquisition is correspondingly variable in the onset, with the catastrophic one-time loss in a critical period and the cumulative loss in a sensitive period. Felix's and Bley-Vroman's answers for age effect role in L2 acquisition have consensus that acquisition process in adults is more complex (problem-solving cognitive system operates in adult acquisition) due to the role of age, although there is the controversy centred on whether the process is a competition or a cooperation process.

Note: Reading time (in milliseconds) was taken as a measure of relative momentary processing difficulty.

## REFERENCES

- Bley-Vroman, R. 1990. The logic problem of foreign language learning. *Linguistic Analysis* 20:3-49.
- Carroll, S. E., and Widjaja, E. 2013. Learning exponents of number on first exposure to an L2. *Second Language Research*, 29 (2) 201-229.
- DeKeyser, R. M., Alfi-Shabtay, I., and Ravid, D. 2010. Cross-linguistic evidence for the nature of age effects in second language acquisition. *Applied Psycholinguistics*, 31, 413-438.
- Ellis, R. 2004. *The study of second language acquisition*. Oxford: Oxford University Press.
- Felix, S. 1985. More evidence on competing cognitive systems. *Second Language Research* 1(1): 47- 72.
- Gass, S. M., and L. Selinker. 1994. *Second language acquisition. An introductory course*. Hillsdale, N.J. etc.: Lawrence Erlbaum Associates.
- Johnson, J. S., and E. L. Newport. 1991. Critical period effects in second language learning: The influence of maturational state on the acquisition of English as a second language. *Cognitive Psychology* 21: 60-99.
- Long, M. H. 1990. Maturational constraints on language development. *Studies in Second*

