

The Optimal Age for Learning English as a Second Language and Its Implications for English Education in Japan

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Abstract

This paper discusses the optimal age for Japanese learners to learn English and implications for English instruction at the elementary school level. It discusses the Critical Period Hypothesis by reviewing previous studies primarily conducted in natural settings. The issue of optimal age for learning English as a second language is considered from the aspects of neurology, term of acquisition, cognition, social and affective factors and physical factors. Previous studies show inconclusive results about the optimal age for learning English. They only agree that younger learners acquire better pronunciation of English. This study also discusses existing early childhood foreign language programs by reviewing bilingual ESL programs and Canadian immersion programs. Further, this study examines current English teaching professional development for elementary school teachers in Japan and provides an insight into English instruction at Japanese elementary schools.

1.1 Introduction

The pendulum of Japanese society has swung towards globalization in response to the global age. Globalization and the arrival of a borderless age have come together to forge an urgent necessity to develop the language proficiency of learners of English in Japan.

There are inconclusive results in studies regarding the optimal age of learning English as a second language. It is claimed that around puberty, corresponding to junior high school age (age 12 or 13) students have sufficient cognitive development for abstract thinking to understand grammar, so English learning should start in junior high school. On the other hand, supporters of the Critical Period Hypothesis (hereafter, CPH), which will be mentioned later, maintain that language acquisition rapidly slows down if learners of language do not start to learn the target language before puberty, i.e., the ages of 10 to 12, which implies that English education during the adolescent period is not appropriate for learning an L2 (second language). On the other hand, Krashen (1973) claims that the critical period ends around the age of 5. The question about the optimal age to learn a second language has not been settled yet. The purpose of this paper is to examine three questions. (1) Is the Critical Period Hypothesis for first language applicable to SLA (second language acquisition)? (2) Do children perform better in SLA than adults or adolescents? (3) What are the implications of SLA maturation research findings for Japanese English education? The extreme position of challenging whether English education should at all be introduced into Japanese elementary school will not be pursued. The tangible

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variables of younger SLA children and older learners will be examined.

When compared with learners of English in other Asian countries, it appears that Japanese learners of English start to learn English at an older age. English as a compulsory subject at public school in Japan generally starts with the 7th grade (age 12 or 13) in junior high school. Other countries start to teach English at an earlier grade, e.g., Malaysia (compulsory from gr. 3), Thailand (compulsory from gr. 1), China (elective from gr. 4). Yet, reflecting on the strong demands from society, the Ministry of Education and Science (1998) suggested that English should be introduced as an elective course in elementary schools from 2002. Accordingly, most public elementary schools have started to teach English as an elective class from the first grade.

Another fact which led the Ministry of Education to suggest the introduction of English education into elementary school was the test scores of the Japanese candidates of TOEFL (Test of English as a Foreign Language). TOEFL data (Miyahara & Yamamoto, 1999) show that the average score of the Japanese ranks at the lowest of Asian countries. This evidence continues to have a great impact on economic, political, and educational fields. A plan for early childhood English education also emerged prompted by the success of bilingual and immersion programs in the U.S.A. and Canada.

And finally, the pedagogical implications for younger and older learners respectively in terms of second language acquisition will be investigated. The relevant literature examining various views, including neurolinguistic research, cognitive research, psychological research, terms of learning, and physical factors which affect second language acquisition for both younger children and adolescents or adults will be reviewed. Maturation in terms of learning a second language will be the focus in the review of recent research findings. The distinction between learning and acquisition will not be made in this paper. Ellis (1985, p. 292) states, "Acquisition can be broadly defined as the internalization of rules and formulas which are then used to communicate in the L2. In this sense the term 'acquisition' is synonymous with the term 'learning'". Lastly, a particular research limitation should be kept in mind, namely, that in most cases references are made to natural settings, due to the paucity of SLA classroom research of age difference in Japan. Despite this, the paper aims to propose implications for formal instruction of English in Japan.

2.1 Age difference in SLA research in natural settings

Age difference in terms of SLA research in natural settings will be investigated and discussed in this section.

2.1.1 Critical Period Hypothesis and neurolinguistic factors

There seems to be a strong belief that children learning a second language surpass adults or adolescents. The optimal age of learning a language has been a major concern for linguists and educators. The Critical Period Hypothesis (CPH) states that children must acquire a language before puberty or they will not be able to learn from later exposure (Larsen-Freeman & Long, 1991). This view supports the advantages of learning a language in early childhood. The concept of a critical period is originally based on biological research carried on with birds, fish and other animals. Hess (1973) investigated in his research the characteristic behaviors of baby geese which follow moving objects or mother goose. He found that baby geese are imprinted in their brain to follow moving objects which they see for the first time a short period after birth, but after that specific time passes they never learn to follow even their mother goose.

This concept of a critical period characteristic of lower animals influenced the research on the human brain.

Penfield and Roberts (1959) observed in accident cases that if the left hemisphere of a brain is damaged, L1 speech is lost, and that older patients after the age of 9-10 cannot recover speech function, but younger children can recover speech function. They assumed that the speech function of children shifts from the left to the right hemisphere because of the plasticity of children's brains. This evidence led them to conclude that there exists a critical period for a human to learn an L1.

Lenneberg (1967) introduced similar research findings in his book, *Biological foundations of language*. He proposed, when older children over the age of 12 have the left hemisphere of the brain damaged, language will not be produced due to lateralization having already taken by the age of 12. This evidence led him to hypothesize that there exists a critical period for learning an L1 in human beings.

Walsh and Diller (1981) have a different neurolinguistic view regarding the optimal age of learning a language. Lenneberg explains the disability of acquiring language after puberty due to lateralization. Walsh and Diller consider language acquisition in terms of lower order and higher order cortical areas in the brain. Their hypothesis maintains: "Lower-order processes such as pronunciation are dependent on early maturing...Higher-order language functions, such as semantic relations, are more dependent on late maturing neural circuits..." Yet Genesee (1988) contends that the dichotomous distinction of low-order process and high-order process is not congruent with the current conception that integrated skills of language continuously interact with one another and develop.

It seems that the findings of Penfield and Roberts, and Lenneberg imply that language learning does not take place after puberty because of lateralization and loss of plasticity of the brain. Yet, when their research findings on L1 are applied to SLA, as Genesee (1988) points out, it does not follow that healthy adults with intact neurological systems have difficulty learning a second language. Shirahata (1994) also claims that the assumption of Lenneberg is based on recovery of language functions which have already been mastered, and is not likely to be applicable to L2 learning which takes place after mastering an L1. Moreover, Lenneberg's study is restricted to speech function. Thus, it does not follow that his study supports a critical period for other language features.

Another disagreement among researchers concerns the age of the critical period of a second language. For example, while Krashen (1973) claims it to be up to five years of age, Lenneberg (1967) claims that it is between 11 to 12 years of age. Some researchers take into consideration the critical periods for various language features. Seliger (1978) proposes that there may be multiple critical periods for different language aspects of the L2. Long (1990) concludes from reviewing previous studies that an L2 is usually spoken without an accent if learning begins by the age of 6. Patkowsky (1990) concludes from his study of U.S. immigrants that the acquisition of syntax is completed around the age of 15. The critical periods for different language features will be discussed in 2.1.3 and 2.1.4.

In summary, it seem from the point of view of neurological research there exists a critical period for first language acquisition. The specific optimal age for acquiring an L2 is still inconclusive (Krashen, 5 yrs.; Long, 6 yrs.; others, 10-12 yrs). The current view is, rather, that

there exist multiple critical periods depending on language features. As Long (1990) and Patkowsky (1990) point out above, it seems that the critical period for syntax is later than that for pronunciation.

2.1.2 CPH and two cases of isolated natural settings

Two extreme cases in natural settings supporting the critical period hypothesis will be examined. The famous case of a child who did not learn normally in her early years is that of Genie (Lightbown & Spada, 1993). She was thirteen and a half years old when she was found. Genie was isolated from the outer world and deprived of any communication by her disturbed father for more than eleven years, since the age of 20 months. Her father forbade her mother and brother to speak to her. Genie was unsocialized, primitive, and undeveloped physically, emotionally, and intellectually. Genie had no language. After she was discovered, Genie was cared for and educated by many teachers and therapists. In spite of a five-year effort made to develop her language, it did not develop to the elaborated language system of a five-year old child. Genie's case provides important evidence which cannot be observed in a normal setting. Yet as Lightbown and Spada (1993 p.12) point out: "...it is difficult to support the CPH with examples from such unusual children because the unknown circumstances of her early life make it unclear as to what factor (for example, social isolation or physical abuse) might be contributing to her inability to learn a language". It is arguable that Genie's immature cognition and social behavior interfered with language learning.

Another case is that of Nicaraguan sign language users who were completely isolated from the outer world and developed their own language systems. Kegl (2000) found among Nicaraguan sign language users that younger sign language learners had superior communication abilities compared to those of older sign language users. What was ideal about their natural setting was that sign language users of Nicaragua had not been exposed to external input at all and developed their own languages using their own system of signs. There was diversity in the types of their sign languages. So Kegl developed a new systematic sign language and tried to teach it to deaf students. She found that younger deaf students learned new sign language much faster than older deaf students. In particular, students over the age of 8 had difficulty in learning the sign language she taught. This result led her to conclude that there is an age limitation for learning a sign language. Kegl's study with Nicaraguan sign language users may give insight into the age differences in language learning, provided Nicaraguan students learned sign language in a completely natural setting which had no interference from outside circumstances. Yet another view is to take this research as evidence to verify that children have an innate ability to create a language even when not exposed to input from the outside. Children's innate ability for language learning will be discussed in 2.1.5.

Two extreme cases of L1 CPH in a natural setting have been examined. Both cases suggest the existence of a critical period for learning a first language. Next, the age differences of L2 language proficiency will be examined in the following sections. Much research, which will be examined below, has focused on the differences between children and adults or adolescents in the achievement of linguistic proficiency.

2.1.3 Research of long-term second language acquisition

Long-term acquisition and short-term acquisition studies show significant proficiency differences in

SLA between children and adults. Long-term research consists of longitudinal studies which investigate the age of arrival (starting age of learning English as an L2) and the proficiency of non-native speakers who have lived for more than five years in English-speaking countries. Long-term research shows that those who start learning English early as children outperform those who start later as adults. Asher and Garcia (1982) examined the optimal age to learn a second language. They investigated the English pronunciation of an experimental group of 71 Cuban immigrants. The Cuban immigrants, ranging in age from 7 to 19, had been in the United States for about 5 years. Though not all immigrants achieved native-like pronunciation, children who were exposed to English at an early age (1-6) outperformed children who arrived after the age of 7. The research findings suggest that children who start learning English at an early age have better pronunciation than older children.

Seliger and Krashen (1982) and Oyama (1982) obtained similar findings when examining the rate of SLA with respect to the age differences upon arrival. Seliger and Krashen made a survey of 394 adult subjects representing 28 mother tongues. They asked their linguistic class students to interview adult immigrants. The results showed, in response to the questionnaire, that the adults who arrived before the age of 9 reported that their accent was taken for that of native speakers more frequently as compared to the adults who arrived after puberty. Oyama examined 60 Italian male immigrants who had lived in New York for 5 to 18 years. Pronunciation was judged by native English-speaking graduate students using a five point scale from two taped speech samples. The results showed that the subjects who arrived in the U.S.A. at a younger age had a better native-like pronunciation than those who arrived at a later age. Another interesting finding of her research was that the age of arrival in the U.S.A. was a more important factor than the length of residence in measuring language proficiency.

To sum up, the above-mentioned research suggests that the learners who start learning English as an L2 in their childhood may have better pronunciation proficiency than learners who start in adulthood. According to the research findings, learners of late arrival are, in most cases, taken for speakers with an accent. Here an important question can be raised as to whether the accent of older learners was affected by L1 transfer or just neural maturation or other environmental factors.

Flege (1999) supports an interactionistic linguistic view that the less an L1 is used, the less L2 pronunciation is affected by the L1. That is, when the first language is used less frequently, learners have better pronunciation in a second language. If this claim can be verified, this may account for the accent-free L2 children. It can be argued that other language features of long-term SLA show similar results. Patkowsky (1982) investigated the existence of a sensitive period for the acquisition of syntax in a second language. She conducted an experiment on 67 immigrants who had lived in the U.S.A. for more than five years. Syntactic acquisition was measured with rating scales by trained native English-speaking judges using tape-recorded oral interviews. The results indicate that subjects who were exposed to English before puberty demonstrated better syntactic proficiency than subjects who were exposed to English or learned English after puberty. Another of her findings was that when the amount of informal exposure to English and the amount of formal instruction were compared, only informal instruction was a significant factor in determining syntactic proficiency. Oyama (1982) made a similar study using comprehension of masked spoken English sentences. Her research findings support early arrival learners' (i.e., children) superiority in acquiring a second language.

The research on long-term acquisition and age difference concerning grammatical proficiency conducted by Johnson and Newport (1989), using Chinese and Korean subjects, indicates a more comprehensive analysis of maturation issues. They report that adults of early arrival outperformed adults of late arrival. What is important from their findings is that there is a gradual decline in the L2 around puberty, rather than a sudden drop, and there is no clear cutoff as shown in the critical period. This continuous decline of SLA may be consistent with the sensitive period which views learning with degree of difficulty or easiness, as some researchers call it, the weak version of the critical period, rather than the sudden discontinuity of language learning (the critical period). In this paper the distinction between these two hypotheses will not be made.

Six empirical studies of long-term acquisition comparing those who started as children and those who started as adults were discussed above. These studies seem to support the existence of a critical period in SLA. The research findings suggest that early arrival learners outperform late arrival learners, irrespective of length of residence. We also may draw the general conclusion that early L2 learners are better than late L2 learners where pronunciation is concerned. Moreover, we agree with the general advantage for children in naturalistic settings. It seems to follow that language learning of younger children is facilitated in natural settings. This question will be examined in subsequent sections. Next, the CPH will be examined against studies of short-term acquisition of children and adults or adolescents.

2.1.4 Research of short-term second language acquisition

Short-term studies do not seem to support the advantage of children over adults learning a target language. Short-term studies are cross-sectional studies which investigate the proficiency of non-native speakers who learn English as an L2 for a short period of time. Snow and Hoefnagel-Hohle (1982) investigated short-term learning of Dutch by English speakers from very beginning learners to learners who had studied for 18 months. The subjects were 51 Americans ranging from age 3 to adulthood. A comprehensive survey was made of the achievement of the learners of Dutch including pronunciation, auditory discrimination, morphology, sentence repetition, sentence translation, sentence judgment, vocabulary, story comprehension, and storytelling. The result of this study fails to support the CPH. The greatest second language acquisition in these tests occurred in subjects aged 12 to 15 years. The least occurred in subjects aged 3 to 5 years. Yet one puzzling aspect of this research is that younger children caught up on most tasks by the time of the third testing. This finding is congruent with the generalization that younger children have an advantage in ultimate attainment in long-period learning. Olson and Samuels' (1982) study also fails to support the Critical Period Hypothesis for SLA.

To sum up, generally among the learners who learned English as an L2 for a long period (long-term acquisition), those who started as a child outperformed those who started as an adult, and short-term second language learning favors adults or older children rather than younger children. Larsen-Freeman and Long (1991) conclude that older learners are faster and younger learners are better. That is, at the initial stage older learners have the benefits of learning faster; however, children have the advantage in ultimate level of attainment.

2.1.5 Cognitive factor and SLA

Researchers also attempted to connect the assumption that those who start as children

learning an L2 outperform those who start as adults with the theory of Universal Grammar (UG) as proposed by Chomsky (1965). According to his theory, children have an innate language acquisition device (LAD). It is presumed that a parameter setting which every child has is triggered by the input of the language which children are exposed to so that children unconsciously acquire language in natural settings. Chomsky, however, did not himself mention the application of UG to second language acquisition. In an attempt to investigate the existence of UG, Dulay and Burt (1974) claimed that transfer of L1 syntactic patterns rarely occurs in children, and that children learning a second language use a creative construction process. When learning an L2, it is presumed that younger learners reset parameter settings. The current view as represented by Towell and Hawking, however, is that parameter values become progressively resistant to resetting with age, following the critical period (Birdsong, 1999).

Given children can access UG in SLA, it is of great interest to ask whether adults have similar parameter settings, such that they can acquire a second language irrespective of maturation. Schachter (1996) made a survey using Dutch, Korean, Indonesian, and Chinese subjects to investigate whether an adult learner can access UG. The results showed that transfer of Dutch, which is syntactically similar to English, affected performance the most. This result suggests that an adult's only access to UG is via transfer instantiated in the L1. White (1995) and Schachter (1996) concluded from their research that transfer of L1 features affected performance and this means that adults cannot access UG in learning an L2. Yet McLaughlin (1984) claims from reviewing the previous research that about a third of the errors in the L2 was attributable to first language structures, and that many errors reflect the learners' attempt to generalize and apply the rules of the second language before they are mastered. It can be concluded that children's innate ability of resetting parameters has an advantage in learning a second language.

With a different view from the innatists, Piaget's (1978) cognitive development model seems to explain the existence of a critical period although the neo-Piagetian theories currently criticize this theory (Sternberg, 1987; Halford, 1995). According to Piaget's model, at the formal operational stage, around the age of 11, a person becomes capable of abstract thinking which transcends concrete experience and direct perception. Therefore, adult learners of language have advantages when dealing with grammar or abstract explanation. The question here is whether an adult's greater cognitive capacity interferes with second language learning or facilitates it.

Rosansky (1975) views the cognitive development of adults as interference in SLA. According to her, young children are not aware of what they are doing. They are self-centered and lack flexible thinking. The absence of meta-awareness is a prerequisite for automatic and unconscious language learning in natural settings. Conversely, an adult cannot learn an L2 automatically and naturally. An adult learner has a strong meta-awareness. As a result, an adult is likely to have strong attitudes towards the use of his own language and the target language. These may serve as blocks to natural language acquisition, requiring the learner to consider the acquisition task as 'problem solving'.

Yet Ellis (1985 p. 109) contends that "Rosansky's argument is based on the false assumption that post-puberty learners are less efficient and less successful than younger learners". In spite of Ellis's claim, Rosansky's explanation has a strong intuitive appeal to the writer. Larsen-Freeman and Long (1991) similarly view the age difference of success in SLA in terms of cognitive development. They claim that children utilize an LAD (language acquisition device), whereas adults, with more intellect, employ general problem-solving abilities instead.

2.1.6 Social and affective factors in SLA

Affective and social factors have a strong effect on the acquisition rate of a second language. Social distance from the target culture may specifically influence SLA, whereas the rate of acquisition of the first language seems more or less unrelated to the attitude towards one's own culture. In this respect, the development of second language acquisition goes through more complicated stages than those of first language acquisition. Gass and Selinker (1993) contend that there are socio-psychological research reasons why adults learn languages less readily. They also claim that children more easily adapt to the target language culture so that children perform better in second language acquisition than adults. Affective and social factors which influence second language acquisition by children and adults are discussed below.

Schumann (1978) made a longitudinal study of a Spanish-speaking adult, Alberto, age 33. Alberto had been exposed to English for four months at work in natural settings following six years of English instruction in his country. The English proficiency of Alberto developed at a slower rate than that of five other younger subjects. His linguistic development showed reduced and simplified English characteristic of migrant workers' pidginization, as compared to other younger subjects. In fact, the questionnaire given to Alberto did not show negative attitudes towards the target culture as expected prior to the survey. Yet Schumann claims from the observation of Albert's life style that his negative attitude and the maintenance of his own culture inhibited second language learning, although the questionnaire did not support these observations. Pidgin English of adult migrant workers like Alberto illustrates the social distance which interferes with learning a second language. Later in Schumann's (1986) acculturation model, social and psychological factors influencing immigrants are explicitly accounted for by four variables: language shock, culture shock, motivation, and ego-permeability.

Recent research by Bosher (1998) views acculturation in more comprehensive ways. Bosher made a survey of U.S. university students from a Laotian immigrant community. Identities as both Hmong (the Laotian indigenous group) and Americans were tested as to success in SLA. Assimilation into American culture and maintenance of Hmong ethnic values were considered as possible factors contributing to each subject's English proficiency. Bosher's research findings about successful English learners showed that those who assimilated well in American culture while retaining the identity of a Hmong performed better in overall English skills. His model is bicultural. His bicultural concept is congruent with the finding that maintaining the native culture and language in the process of being adaptive to the target language and culture encourages learners while they are provided with support from their community.

Similar to this bicultural model, some biculturally based-bilingual programs which employed bicultural programs reported successful cases of an immigrant's adaptation to a new country. Miami's bilingual programs (Mackey & Beebe, 1977), different from other U.S. bilingual programs which emphasized only the learning of English, promoted language instruction for English and Spanish as well as ethnic education. The result was that Cuban refugees with Spanish as an L1 developed parity in English proficiency with native students of English. This led school teachers to conclude that appreciation of non-English native language and its ethnic values contributes to the success of bilingual education

Ellis (1997) explains in his book a longitudinal case study of a Japanese artist named Wes conducted by Schmidt as a counter-example to Alberto's case. Wes, 33, emigrated from Japan to Hawaii and learned English in a natural setting. Wes developed a high degree of communicative

competence, but he did not acquire comparable linguistic competence in English. A characteristic of Wes's English was frequent use of formulas such as 'Whaddya want?' or 'I dunno why'. Those formulas helped him develop fluency in using English. Yet it is arguable whether high proficiency of communicative language in Wes's case verifies success of older learners in SLA. Failure of attaining native-like grammatical accuracy simply leaves a question as to how native-like proficiency should be defined. Bialystok and Hakuta (1999, p. 165) raise a question in terms of second language proficiency, "What do we mean by proficiency in a second language?" They cite an example of a native English speaker who spoke a dialect which was standard in his home state, Arkansas. This is a crucial question when attainment of second language proficiency is discussed.

Schumann (1986) cites Stengal's analogy to describe the difference in affective factors between adult and child learners. He compares the use of a second language with wearing fancy clothes. The adult learner may want to wear his fancy clothes (that is to use the target language), but he also fears criticism and ridicule. The child, however, sees language as a method of play and finds communication as a source of pleasure. This metaphor may help researchers understand the differences between social and affective factors which influence children and adults' SLA.

To sum up, all these positions suggest that psychological distance caused by social and psychological maturation is important to account for difficulties in adult second language acquisition. Children seem easily to adapt to the target culture, but adults' reluctance to assimilate to the target culture interferes with SLA. Yet when older learners show positive attitudes towards a TL, their L2 proficiency may be enhanced. Furthermore, maintenance of L1 culture for older learners and younger learners also encourages them to acquire the target language without losing their own identities.

2.1.7 Input and SLA

The difference in achievement in SLA between children and adults may be partially due to the kind of input they receive. Snow (1983) attributes variance in achievement to differences in communicative demands between children and adults. That is, adults are forced to discuss more complex and abstract topics, so that adult learners are likely to make more syntactic and vocabulary mistakes. Conversely children receive simple input from peers and adults with the modified form addressed to younger children. The crucial point about the simple input addressed to children is that the comprehensible input turns into intake, whereas complex and incomprehensible input addressed to adults rarely becomes intake (Krashen 1981).

In addition to the question of comprehensible input, it is interesting to know to what extent the amount of input which learners are exposed to affects the rate of SLA. There seems to be little evidence for comparing exposure time between children and adults attainable to investigate the rate of success in SLA. It might be difficult to decide how many hours of input enable learners to achieve native-like proficiency because individual learners have different rates of acquisition. However, Johnson and Newport's (1989) research may be relevant to this question. Those who had lived in the United States longer did not always perform better than those who lived there for a shorter duration. Rather, age of arrival was a more important key to judging success in learning English. Oyama (1982) also found that the age of arrival was a more important factor than the length of residence when predicting success in SLA. This evidence

seems inconsistent with the general belief that the more exposed to a TL, the better language learners perform. These results may be explained an earlier arrival which gives the learner the benefit of receiving larger amount of input. However, adults who keep receiving less comprehensible input do not always perform better in SLA. At this point it is difficult to seek out a plausible explanation for this contradiction.

Larsen-Freeman and Long (1991) maintain that children are likely to receive a larger amount of input than adults. Children have a strong desire to be accepted by their peer group, so they are exposed to much more input through interaction. On the other hand, adults tend to associate with people who share the same language since they want to retain their native identity and culture. This keeps adults from receiving a large quantity of input. However, as in the relationship between age of arrival and length of residence is discussed above, not only the quantity of input but also the comprehensible input is an important factor for predicting success in SLA. At what stage exposure to the target language should start and how much comprehensible input should be given seem to be the most crucial factors to take into consideration when comparing age differences of learners.

Pienemann (1985) made a survey of age differences as they relate to the order of acquisition within an L2. His research finding was that there was no difference in the order of within L2 acquisition according to age difference of learners. Likewise Pienemann and Johnson's (1987) multidimensional model proposes a fixed order of acquisition and the social-psychological variables which affect proficiency. In spite of its sophistication, Pienemann's model seems to be limited to morpheme and syntactic phenomena (Larsen-Freeman & Long, 1991). His model needs to be expanded if it is to explain more complicated features of L 2 acquisition.

2.1.8 Physical factor and SLA

Cognitive development and social and psychological attitudes towards the target culture are concerned about the internal mechanisms of the human mind. Success due to age difference in SLA can be also explained in terms of physical maturation. Brown (1993) draws on the phonological advantage of children on the assumption that the articulatory speech muscles to pronounce complex sounds are completed by around the age of 5, so that adults cannot articulate phonemes which do not occur in their own sound systems. He claims that younger children's muscles are more flexible for learning a second language while the completed articulatory system of the adult is not flexible enough to pronounce the phones in a new sound system. Children's superior phonological performance parallels the observation that many great musicians started to practice music training in early childhood.

To summarize the SLA research in natural settings, there seems to exist a critical period for first language acquisition as neurolinguistic research findings and Genie's case show. As discussed in 2.1.1, the current view is that there exist multiple critical periods in SLA. Specifically the critical period for syntax seems to be completed later than that for pronunciation. Initially, older learners with developed cognition learn a second language more readily, but in the long-term, younger learners perform better in ultimate attainment. Socio-psychological distance and amount of comprehensible input also seem to affect the rate of SLA. Next, the effect of formal instruction on SLA proficiency will be examined.

2.2 Formal instruction in SLA research and early childhood English education

So far SLA research has mainly been concerned with SLA success in natural settings. Some SLA research findings from studies conducted in school instruction situations are discussed below. Canadian immersion programs have been evaluated in terms of qualitative and quantitative success, while achievement in U.S.A. bilingual programs has been shown to vary greatly. The comparison of these two programs will be useful when it comes to considering early childhood English education in Japan. Subsequent to the discussion of Canadian immersion programs and U.S. bilingual programs, the status quo and problems of early childhood English education in Japan will be discussed.

2.2.1 Immersion Programs in Canada

Immersion programs in Canada have been implemented on a nationwide scale and are based on results from continual longitudinal research. The data provided by these programs are fairly reliable in that the number of students and teachers involved in the programs is remarkably large, and in that the programs have been regularly revised based on actual classroom practices. The immersion programs started in response to the demands of society in 1965 with the belief that younger language learners perform better, also in response to the demands of the society. Here research results from immersion programs will be addressed in detail since they have a strong implication for early childhood second language education. The three types of Canadian immersion programs consist of early total immersion programs, delayed immersion programs, and late immersion programs. The distinctive feature of immersion is the use of the second language to teach regular subjects such as mathematics, or science, and not language itself.

In the early total immersion programs all curriculum instruction, beginning in kindergarten, is taught in French (100% L2) until around the fourth grade, and from then till 9th grade, e.g., in the Montreal area, about 60% of instruction is taught in English (L1). The age range of instruction varies according to region. A follow-up to the early immersion years is often provided at the secondary school level. Delayed immersion programs postpone the use of French as the main medium of curriculum instruction until grade 4, at which time all instruction except English language arts is given in French for one or two years. In higher grades, the students take enriched French language arts courses, and one or more subjects may be taught in French. This continues throughout secondary school. Late immersion programs postpone intensive use of French until the end of elementary school (gr. 6) or the beginning of secondary school. At grade 7 all or most curriculum instruction is taught through French for one year. After that, a mixture of immersion and follow-up continues. Late immersion programs are often immediately preceded by one or two years of special second language courses.

Assessing French proficiency as a second language in these three programs, including listening comprehension, dictation, reading comprehension, oral production, and writing yielded different results. In Ottawa, the results favored the students who had been in an early total immersion program from kindergarten. However, in Montreal the two-year late immersion classes achieved parity with the early total immersion students despite the former's greater cumulative exposure to French. Genesee (1981) concluded from the result in Montreal that older students may learn a second language faster than younger students. Genesee (1983, p.19) explaining the differences between the two surveys writes, "...there seems to be an advantage to starting second-language instruction late, namely the apparent speed of learning characteristic of

the older students. At the same time, the Ottawa results indicate that there is an advantage associated with early second language instruction". Genesee found out that compared to the program in Montreal, the early total immersion programs of Ottawa provide a greater amount of exposure. Genesee (1983, p.41) adds, "intensity of second language exposure may be more important than cumulative exposure". His research also shows that students' task-based interaction conducted in the late immersion programs helped students to develop proficiency equivalent to that of the early total immersion programs which emphasized cumulative and passive reception of input. This criticism resulted in the Output Hypothesis by Swain (1985) who advocated pushed output. The above research seems to imply that not only cumulative input but also interactive production facilitates SLA in the content-based curriculum.

2.2.2 A comparison of U.S. bilingual programs and Canadian immersion programs

A comparison of U.S. bilingual programs and Canadian immersion programs will provide insight into implementing early childhood English education in Japan. Except for some successful bilingual programs, such as the Miami case mentioned in 2.1.6, McLaughlin (1982) points out that children in Canadian French immersion programs succeed very well, while less success is reported in U.S. bilingual programs. Skutnabb-Kangas (1981) mentions the causes for some differences between the two programs. In Canadian French immersion programs, English-speaking children have no sense of inferiority in the school because they are usually chosen from English monolingual communities and not expected to compete with native speakers of French. In this case, bilingualism is additive in that it enriches the children and has positive benefits. On the other hand, in U.S. bilingual programs many children do poorly, often drop out and have low respect for their own culture and language as a linguistic minority. They also need to compete with native English speaking-students. For such children, bilingualism is subtractive in that their first language is endangered by the L2. The findings of this comparison suggest that the students' own culture and language should be acknowledged, as in the bicultural model, and second language education should serve as a beneficial (additive) function to enrich students' cognitive development.

It has also been reported that in U.S. bilingual programs immigrant children have problems due to L2 interference. Skutnabb-Kangas (1981) claims that, in this case, learning a second language should be delayed until children have sufficient cognitive development. A great concern in connection with learning English as a second language in early childhood must be whether children's school subjects are impeded by being taught through a second language.

In Cummins' (2000) literature review, opponents claim that bilingual education (BE) should be delayed until children have sufficient cognitive development in an L1 so that they can learn a second language more effectively. Proponents of BE point out: (1) BE is superior to monolingual education regarding abstract thinking as in mathematics or science; (2) BE develops a deep understanding of language, and is beneficial to learning other languages; (3) BE cultivates the motivation to accept other languages and cultures; (4) BE provides equivalent or superior academic success as compared with monolingual programs. Implications for bilingual education in Japan will now be considered.

2.2.3 Status quo and problems of early childhood English education in Japan

The average TOEFL score of Japanese candidates is often criticized. The correct answer

percentages on different sections of TOEFL between 1989 and 1998 (Miyahara and Yamamoto, 1999) show the following results for each section: listening (33.7%), structure (52.8%), vocabulary (50.7%), reading (36.0 %). These results indicate that average Japanese learners of English have high proficiency in structure and vocabulary, but they demonstrate lower listening and reading skills. In my view writing and speaking skills among Japanese learners of English are the weakest components although the data are not available. There is a demand that English learning should start with early childhood. This demand seems to be stimulated not only because of low TOEFL score results but also because of general complaints that most Japanese cannot speak basic English in spite of six years of learning from junior high through senior high school. 'Developing communicative ability in English' has been a primary goal among English teachers for more than 30 years, but significant progress has not been made yet. The fact that English education in Japan has not succeeded in developing students' communicative competence prompted the Ministry of Education to introduce English education into elementary schools. The deficiencies in English education in Japan may be explained by the following. First, English language is viewed by many parents and students not as a medium of communication but as one of many goals for passing the entrance examinations for senior high schools or universities. Okihara (1999) maintains that students are more likely to have low motivation to learn advanced knowledge through English because higher education can be achieved through their own native language. Other reasons include class size (maximum 40), instruction dominated by Grammar-Translation and Audio-Lingual methods and a structure-centered syllabus.

The Ministry of Education plan to implement English education in public elementary schools is originally based on the 2002 Course of Study: "When foreign language conversation is conducted as a means of intercultural understanding, it is advisable, depending on school settings, to conduct experiential learning by familiarizing students with foreign languages and foreign cultures." That is, English education should focus on intercultural understanding and not on grammar teaching or the language itself. Moreover, language learning as experiential learning appropriate to the elementary school level, which is different from language learning as a school subject at junior or senior high school, is emphasized.

English class will be implemented within the range of 'periods for integrated study' which has started as a new area in the 2002 national core curriculum. Each school can choose its own 'periods for integrated study' class activities such as volunteer activities, international understanding, nature observation and computer literacy, i.e. English is an elective class, depending on the decision of school authorities. English class with the aim of international understanding will be conducted a maximum of two or three hours a week as a regular or extra-curricular activity.

It does not seem that elementary schools in Japan can start the new program of English readily. Shirahata (1998) points out problems in introducing English into elementary schools in Japan. Firstly, teachers have not received appropriate in-service training for foreign language teaching in spite of implementation of the new curriculum from 2002. By contrast, the South Korean government has provided 120 hours of mandatory English instruction in-service training to all elementary teachers since 1996. Yet, according to Matsukawa (2000), the Ministry of Education plans to give just two week-in-service training session for 600 elementary teachers. This is not adequate. Tsuido (2000) points out that most university level elementary teacher diploma curricula provide only 8 credits for 9 classes (English not included). At this point, only five universities provide the required pre-service English teaching classes for the elementary

school program. Secondly, although the Ministry of Education published “A Practical Manual for Teaching English in Elementary School”, there is concern as to how the manual has been applied in each school. Thirdly, a general curriculum for English teaching has not been planned since each school is to design its own curriculum. At this stage it has not been confirmed to what degree and in what manner English education is being implemented in elementary schools.

At present, 105 private elementary schools (out of 126 schools, 83.6%) teach English to students from 1st grade to 3rd grade, and 118 private schools (93.6%) teach it to students beginning in the 4th grade. According to a three-year pilot study of public elementary schools (Watanabe, 1999), it has been reported that students showed high confidence in communicating with native speakers in English although they had not mastered sufficient proficiency in English. These schools are aiming to cultivate their students’ motivation to communicate in English and understand foreign languages and cultures. Tamai (1998), however, criticizes early childhood English education institutions which require students to compete for number of words memorized or aim to have children pass the Children’s English Proficiency Test.

3. Implications

The first two questions addressed in the initial part of this paper have been discussed in the previous literature review. The final question, regarding implications for Japanese English education from SLA research findings dealing with maturation, will be discussed in this section. Here the focus is placed on the application of age-related research findings to classroom English learning. Implications for both elementary English education (grades 1-6) and junior and senior high school (grades 7-12) will be considered in terms of classroom activities and materials, curriculum design, and teacher training.

First, it may be claimed that the classroom language situation should be similar to a natural setting because younger children seem to learn a TL more readily in natural settings (2.1.3). In the early grades of elementary school (ages 7-9), students may learn English naturally through listening to English songs or accompanying body movement, or playing games in English so students do not feel any burden of learning. After the age of 9, equivalent to Piaget’s age of formal operation (2.1.5), students may develop meta-awareness so that they may not be satisfied with simple repetition and games. Simple grammar or sentence formation may be preferable, according to their mental maturation. Accompanying activities should aim to emphasize communication where meaning is conveyed in context, e.g., learning cooking in English (hands-on experience through the L2) (Curtain & Pesola, 1994).

Social and psychological research findings, congruent with the aims of the 2002 Course of Study, suggest that younger students should be familiarized with the target culture and its language so that a positive attitude towards the target culture and TL will facilitate language learning. As verified by bicultural programs in bilingual education (2.1.6), the school should encourage students and parents to be familiarize themselves with foreign culture.

Adult or adolescent learners with more developed cognition are more likely to demonstrate better proficiency in abstract thinking or problem-solving activities (2.1.5). It has been maintained in the above discussion that older learners learn better through formal instruction. This evidence may lead us to assume that adults with developed cognition perform better in acquiring grammar and syntax. Yet there seems to be no agreement among researchers that adults or older children perform better in acquiring syntax and grammar. The evidence shows

that over a short period older learners master syntax and grammar more readily (2.1.4). However, in long-term attainment, Johnson and Newport's findings favor younger adolescents (2.1.3) while Patkowsky and Oyama's findings favor younger children (2.1.2). At this stage it is hard to conclude that grammar and sentence formation should be taught at high school. In this respect English games or songs designed for younger children may not be appropriate to junior high school students although many English teachers in Japan use nursery rhymes and games with action in the classroom. Rather it may be suggested that older learners should be encouraged to express their own ideas in English or listen to adolescents' favorite English songs according to their cognitive and mental maturation.

As discussed in 2.2.1, Canadian immersion programs seem highly valued in Japan (e.g., Tamai, 1998). There are, however, some clear differences between the Canadian immersion context and the Japanese English education context. It seems difficult to apply the results of Canadian immersion cases directly to Japanese early childhood English education. First, the content-based instruction in an L2 may be almost impossible in Japan because we do not have sufficient ALTs (assistant language teachers) who are also able to teach a subject content area in English, although studying subjects in an L2 has shown to be effective in immersion programs. Current English education in Japan is most likely to aim at teaching language as a subject itself, e.g., focusing on grammar or vocabulary or pronunciation. Second, since English is a foreign language in Japan, children inevitably receive little or no chance to be exposed to English input outside the classroom while in Canada L2 communities are located close by. Thirdly, in Canada the students who joined the immersion programs decided to participate on their own volition so that they were highly motivated (McLaughlin, 1982). On the contrary, in Japan English education in public schools is mandatory. Fourthly, although McLaughlin (1982) points out parental support as a cause of success in Canadian immersion programs, support from parents and the community cannot be ensured in Japan. The plan for introducing early childhood English education into elementary school was originally based on the assumption that six years of secondary school English education has failed to develop students' communicative ability. Yet the cause may not be due to the quality of language teaching as such. Rather, students do not seem to receive sufficient English input. It may be assumed from the study results reviewed in 2.1.7 that sufficient comprehensible input enables learners to acquire a second language. Japanese students receive roughly 1,000 hours of input through six years of English education, given that English teachers continue to speak English throughout the class. Native children receive roughly 9,000 hours of input until the completion of the development of basic language ability around the age of 5 (Krashen, 1973), provided they receive about 5 hours of input a day. It follows that the amount of input which junior and senior high school students receive is far below that of even five year-old native speakers. Beginning English education in elementary school may be effective if younger children receive a greater amount of comprehensible input as a result.

From the results of the studies discussed in 2.1.3, it is assumed that younger children have superior ability to develop L2 pronunciation. Therefore, younger school children should be exposed to English sounds, e.g., listening to English songs or nursery rhymes, frequent use of classroom English, and reading aloud. Older children with developed cognition should be involved in more complicated language activities, as mentioned above. Implications have been discussed so far mainly focusing on suggested classroom activities and the nature of learning. Next, implications for teacher training and curriculum design will be discussed.

As discussed in 2.2.3, a limited training program for teaching English in elementary school has been provided to just 600 teachers in Japan. It is strongly recommended that appropriate teacher training should be provided to all elementary school teachers for a longer period of time if English programs in elementary school are successfully implemented. An alternative solution might be for the board of education of each district to employ certified TESOL teachers who teach only English, just as we have science and music teachers who teach only these subjects in elementary school. In addition, universities should provide more required classes for teaching English at elementary school or provide night classes to practicing teachers.

There seem to be strong concerns among teachers as to how they should modify 'the Manual of Teaching Education' by the Ministry of Education and how they should design the English teaching curriculum although several model curricula from pilot schools are available. As previously stated, the Ministry of Education suggests that English be taught at elementary school, but detailed decisions seem to be left to each school. Confusion may grow among teachers if not given detailed guidance and more support and involvement by the Ministry of Education.

In summary, the following points are recommended. In lower grades, students should learn English naturally and in higher grades the students should participate in more advanced activities. Younger students should also be familiarized with English sounds. At the same time, understanding the target culture and language should be encouraged. Where the curriculum, textbooks and teacher training are concerned, more detailed support and involvement by the Ministry of Education are strongly recommended.

4. Conclusion

It can be concluded from the above discussion that those who start to learn an L2 at an early age in most cases outperform those who start at a later age. Yet, in the initial phase of learning, older learners demonstrate better proficiency in an L2. There seems to be undeniable agreement about children's superior ability to acquire pronunciation. At this point it is hard to maintain that the critical period research findings of an L1 can be directly applicable to SLA research. The current view is that there are multi-critical periods for L2 learning depending on different language features (Selinker, 1978).

When implications for early childhood education in Japan are considered, a limited application of SLA research findings in terms of age difference can be suggested. L2 students showed that they should be encouraged to appreciate their own culture while familiarizing themselves with the culture of English-speaking countries. Phonological practice may have to precede other activities. Given the success of the Canadian immersion programs, the possibility of implementing content-based learning through the L2 should be explored when designing curriculum for Japan's elementary schools. A consensus among parents and within community regarding which subjects to teach in the L2 is also needed.

The main problem encountered in teaching English in elementary school may be the fact that there is no agreement as to how many hours English should be taught, who should teach it, and what type of textbooks should be used. In spite of the emphasis in the Guidelines of Courses of Study (Ministry of Education, 1998) on teaching English in elementary schools, it seems that many problems are left unsolved although school teachers have already tried to implement the new curriculum. One problem is that if English is offered as an elective, this deprives elementary school teachers of responsibility and undermines interest in teaching English.

The Ministry of Education itself does not seem to have a plan to train all the elementary teachers for teaching English, as other countries do. If the Ministry of Education does not take English programs in elementary schools seriously and leaves every decision to each individual school, such programs may not be very successful.

Japanese schools have just started to make themselves aware of the need to teach English in elementary school. In order to make this enterprise a success, the cooperation of parents and the community, well planned teacher training courses, and a curriculum based on SLA research are necessary.

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