AGE AND L2 ACQUISITION: SOME THEORETICAL CONCERNS

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This paper explores the issue of age-variance in second language (L2) acquisition. The classical dispute between “nature” and “nurture” theorists is reviewed. The “nature” theorists, presenting neurological evidence, claim that the capacity for L2 acquisition is dependent on the cerebral plasticity, whereas the “nurture” theorists ascribe the different degree of L2 acquisition between adults and children to environmental factors. It is proved, however, that both “nature” and “nurture” theories are inconclusive. I claim that the observable difference between adults and children in L2 acquisition is due to the developmental changes in conceptual operation; The child processes L2 in the unidimensional cognitive domain, in which L2 processing is congruent with that of L1. This unitary operation does not occur in the adult, who needs to modify and readjust the already-entrenched cognitive concepts. Lastly, the implications for Japanese language teaching are suggested.

1. Introduction
The child’s remarkable capacity for L2 oral performance exhibits the nature of age dependency in L2 acquisition. It has been assumed that the observable difference between adults and children in their L2 oral proficiency is attributed to the fact that there is some constraint on language acquisition in the maturational process. This notion of “maturational constraint” on language acquisition has been argued in terms of “nature” as opposed to “nurture.” The “nature” theorists, presenting a bulk of neurological evidence,
view the child's acquisition mechanism for languages as biologically different from that of the adult. On the other hand, the "nurture" theorists claim that it is the environmental factors that contribute to different degrees of accessibility to native level L2 proficiency. I will first question the validity of the "maturational constraint" views on L2 acquisition by reviewing critically "nature" and "nurture" theories and then claim that focus should be placed upon the cognitive domain to account for the age-dependent attainability of L2. I conclude by hypothesizing that the age difference in L2 acquisition is attributable to developmental changes in conceptual operation, in which adults and children process the linguistic input in cognitively distinct manners.

2. "Nature" theories

Among the proponents of the "nature" theory, Penfield (1965, Penfield & Roberts 1959) and Lenneberg (1967) examined a number of clinical studies of aphasic patients, including Basser's data (1962) on the effect of unilateral brain damage in childhood. These studies show that most patients who incurred brain lesions before the age of puberty had recovered from aphasic symptoms but the post-pubertal patients still retained speech disturbances. Penfield and Lenneberg suggest that the interhemispheric transfer of speech function occurs in the brain before puberty to substitute the impaired hemisphere for the other normal one and that this process of transfer contributes to the young child's recovery from speech disturbances. It is also claimed that localization of speech function in the left hemisphere, which is referred to as "cerebral lateralization" by Lenneberg, occurs with the onset of puberty and impedes smooth acquisition of languages: language learning becomes more difficult after puberty. This suggests a possible association with the child's superior capacity for L2 acquisition. Lenneberg states that once the "cerebral lateralization" of language function is established around puberty, "automatic acquisition from mere exposure to a given language seems to disappear..., and foreign languages have to be taught and learned through a conscious and labored effort. Foreign accents cannot be overcome easily after puberty" (Lenneberg 1967: 176). He has thus popularized the biological concept of
“critical period” for language acquisition: it is the period until around puberty, in which leaners can attain native-like proficiency.

Several investigators (e.g. Krashen 1973, Kinsbourne & Smith 1974) throw doubt on Lenneberg’s “lateralization-by-puberty hypothesis” which insists on the concurrent completion of a “critical period” with cerebral dominance. For example, Krashen, reviewing the neurological data used by Lenneberg, in which Krashen found all the pre-pubertal patients actually had brain damage before age five, argues that the brain is possibly lateralized much earlier than puberty and thus the “critical period” is independent of “cerebral lateralization.” He further adds that L1 learning is possible after puberty, citing the evidence from the case of Genie who started L1 learning after 13 years of social and experiential isolation.

Despite the controversy over the relationship between “cerebral lateralization” and “critical period,” the biologically-based “nature” theories consistently hold that cerebral plasticity is an important factor which determines the age difference in language acquisition. My objection is raised against this point. As evidenced by the neurological studies of age-dependent aphasia, cerebral plasticity may bring about the recovery of the aphasic patient from speech disturbance: both hemispheres are responsive to language function during the plastic state of the brain. It is difficult to view, however, that this plasticity, which serves one hemisphere’s substitution for the other in language function, as identical with the plasticity necessary to language acquisition. The connection between the cerebral plasticity and the capacity for language acquisition is not clear. Besides, associating L1 acquisition with that of L2 has no validity because processes of L1 and L2 acquisition are fundamentally discrete ones even though there are seemingly similar acquisition orders between them. Therefore, the claim that age-dependent degrees of L2 acquisition are attributed to the cerebral plasticity still remains of conjectural nature.

3. “Nurture” theories

The “nurture” theory is characterized by its theoretical dependence upon
the presumptive evidence drawn from observations of socio-psychological variables involved in L2 learning.

Wolfe (1967) views the child's language acquisition, either first or second, as an unconscious process and the adult's as a conscious one: the child's linguistic mechanism is not fully developed, whereas the adult has developed, in addition to linguistic concepts, "a general overall psychological consciousness" which serves to generalize and abstract concepts. Therefore, the adult's learning ability can be maximized by "conscious" study in a classroom setting, but the child cannot acquire languages as well in the same situation. Instead, the child can acquire languages more easily than the adult through natural exposure to an L2 environment, in which unconscious learning takes precedence.

Schumann (1975), reviewing several bodies of literature which includes those of Gardner and Lambert (1972) and Guiora et al. (1972), schematizes the relationship between the "initiating factors" which involve socio-psychological variables such as attitudes, motivation, empathy, etc., and the "cognitive processes" which involve generalization, imitation, inference, analogy, rote memory, etc., in order to account for the problem of age in L2 learning. He claims that the "initiating factors" which are "favorable to both the target language community and language learning itself" lead to the automatic function of the "cognitive processes" to generate language acquisition easily. Thus, the child's facility and the adult's difficulty in L2 learning derive from the fact that in children the "initiating factors" are usually adjusted to favorable or at least neutral functioning, but in adults "the development of firm ego boundaries, attitudes and motivational orientations which is concomitant with social and psychological maturation" constitutes the "initiating factors" unfavorable to positive functioning of the "cognitive processes."

It is noted that the claims made by "nurture" theorists deny the possibility of inherent superiority of the child over the adult in L2 acquisition. The adult can attain native-like proficiency in L2 speech by making affective socio-psychological variables favorable to L2 acquisition through the conscious learning setting. We can see that many adults, who are well-motivated,
malleable, flexible-minded enough to accept a culture of L2 community, and eager to be a member of that society succeed in L2 learning through a well-instructed situation. As far as phonological acquisition is concerned, the appearance of foreign accents is still evident in the adult’s L2 speech, whereas the child appears to acquire L2 with native pronunciation. This makes us think that the adult cannot overcome foreign accents in his L2 speech. But it is not true. Because there is no organic difference in auditory and vocal functions between adults and children, it is certain that the adult can perfect L2 pronunciation as the child can. From the “nurture” point of view, the observable difficulty of the adult in producing accent-free L2 speech stems from socio-psychological variables functioning unfavorably to L2 acquisition.

As has been noted so far, although most “nurture” proponents’ claims lack empirical bases, the “nurture” theory seems more convincing than the “nature” theory in accounting for different levels of L2 proficiency observable between adults and children. However, if I may go too far, it seems to me that the notion that L2 acquisition becomes most effective if socio-psychological variables favor it boils down to the saying: “Liking shows where one’s talent lies.” When one is well-motivated and has a positive attitude toward L2 and things relevant to it, he will become a good L2 learner and hence achieve the desired goal rather easily. This type of affective reasoning seen in the “nurture” theory weakens the tenability. Besides, there are many cases where the positive “attitudes and motivational orientations” do not lead to the successful L2 acquisition: one cannot always do well what he likes. Therefore, the socio-psychological account of L2 acquisition has still not proved to be conclusive.

A shift of focus is required here to account for the age difference in L2 acquisition, from the biological, social, and psychological views to the cognitive one, which leads to my hypothesis in the following section.

4. Cognitive views

It should be made explicit, first of all, that no inherent superiority of the child over the adult in the capacity to attain native-like proficiency of L2
exists: the adult has the same potential for L2 acquisition as the child. What matters here is the relative ease and difficulty in acquiring L2. In this respect, it is commonly observed that the difficulty increases as one gets older. I assume that this difficulty derives from a developmental change of cognitive processing, which is congruent with “cognitive maturity.”

Successful acquisition of L2 involves automaticity in producing L2 with contextual appropriateness. This automatic production requires the unitary operation in cognitive conditioning of L2. That is to say, L2 is processed in the unidimensional cognitive domain in which a single line of operation occurs congruently with L1 processing. When this line of operation is distorted by extra processing, automatic production of L2 becomes impossible. This explains the adult’s difficulty in L2 acquisition. The adult has already entrenched cognitive concepts (notably of L1) and needs to modify and adjust them when processing L2. Unsuccessful adult learner even displays a duality in the operation when allowing those cognitive concepts to remain by failing to modify them. On the other hand, the child does not have such cognitive complexity as seen in the adult and processes L2 in line of L1. This means that in the child the process of conditioning is unidimensional. Actually, there appears to be no distinction between L1 and L2 processing in the mind of the child. This is evidenced by the observation of the bilingual children who readily switch L1 to L2 and vice versa in their speech. Here, L1 and L2 are processed unidimensionally.

To summarize what has been discussed, the unitary operation in cognitive conditioning facilitates L2 acquisition. But, the fixation of the existing cognitive concepts occurs in the course of cognitive development of humans, which impedes the unitary operation and thus makes it difficult for the adult to master L2. The child is cognitively “immature” and “plastic,” which makes unitary operation of L2 conditioning possible: L2 is processed in line with L1. Thus the child demonstrates the facility in L2 acquisition.

One further point requires emphasis. The modification and adjustment of the already-entrenched cognitive concepts in the adult’s L2 processing reflect his syntactic orientation in learning. The adult tends to relate linguistic input
in terms of "subject," "object," "verb," etc. The child, however, categorizes linguistic input semantically (Bowerman 1973, Menyuk 1977): grammatical items are conceived as "animate actor," "action," "inanimate acted-upon," etc. (Menyuk 1977: 17). These differing linguistic dispositions of the adult and child may affect their learning strategies, which determine the level of proficiency.

5. Implications for Japanese language teaching

Finally, I shall make a remark on the pedagogical implications of what has been discussed so far, as I am currently in charge of the Japanese class which sensitizes me to the matter of age because of the different level of proficiency achieved by the students of different age.

It is generally observed that in the teaching of Japanese as L2, reliance on syntactic relations is evident. Grammatical analysis is made from the syntactic point of view and generation of a sentence is based on these syntactic bits. This syntactic orientation matches the adult's cognitive trait in processing L2, which, however, impedes automatic production because such orientation reflects a maneuver to modify the entrenched cognitive concepts. To gain the automatic control of L2, strategic efforts should be made to avoid a syntactic focus in the process of internalization. One of the suggested strategies includes semantic categorization of linguistic input, which is seen in the child's processing of L2: grammar should be taught in terms of semantic relations. As semantic concepts fit in with cognitive mechanism, a focus on semantic relations in teaching Japanese yields the unitary operation of conditioning the Japanese language in the unidimensional cognitive domain, which results in automatic production of Japanese.

More important is that whatever form a strategy takes, it requires contextual support to maximize the effect of internalization. Context facilitates the cognitive functioning of linguistic input in such a way that it subserves clarification of semantic concepts, which gives easy access to cognitive mechanism without syntactic aid and then makes linguistic input receptive to unitary operation. Thus, the teaching of Japanese should contain both seman-
tic and pragmatic foci.

REFERENCES


言語習得における年齢要因に関する考察－認知的視点より－

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本稿は年齢差による言語習得度の違いに焦点をあて、その要因を探る。まず最初に、古典的議論である“Nature”理論と“Nurture”理論を取り上げ、その対立点を明らかにする。“Nature”理論は、神経学の立場より年齢差による言語習得度の違いを生得的なものと捉え、大脳の機能的発達が言語習得を規定すると考える。脳障害の患者のデータを調べると、思春期前の患者において、機能不全になった左脳の役割を右脳が代用しているのが見られる。このような機能的代用を言語習得が促進される要因とみなし、思春期までを言語習得に最適な期間と規定した。思春期から脳の機能的分化が現れてくるにつけ、言語機能の左脳への局地化が起こり、これが言語習得を困難にする。これに対して、“Nurture”理論は大人と子供の言語習得度の違いを環境的要因によるものとし、学習者の態度や心的状態や動機付けの強さなどが言語習得に影響すると考える。

“Nature”理論も“Nurture”理論も年齢差による言語習得度の違いを明らかにするには説得性に欠ける。そこで、筆者は大人と子供の認知プロセスの違いに焦点をあて、一つの仮説を打ち立てた。まず、外国語を母国語のように操るには、両者の認知概念の同一化が要求される。つまり、既存の認知領域と同次元において外国語の認知処理が行われる。これが、言語生産における無意識化となり、流暢性が得られるのである。このような認知プロセスは、認知的発展途上にある子供にとって可能となる。しかし、認知概念が既に確立している大人は、外国語の言語処理を行う際、既存の認知概念の修正及び調整を必要とする故、概念的同一性が得られにくく、これが言語習得を困難にする。これらのことを踏まえ、最後に日本語教育の立場より、言語習得を促進する方法を考える。