TOWARD A THEORY OF LANGUAGE ACQUISITION[1]

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The claim that the adult, in contrast to the child, is deficient in his ability to learn a second language leads to the conclusion that adult second language acquisition is a process which is characteristically different, cognitively, from that of child first or second language acquisition. This paper challenges this claim. The differences which do exist are more quantitative than qualitative and can be discovered by a shift of attention from the cognitive domain to the affective domain and to the psychological variables of attitude, motivation, and permeability of ego-boundaries. Five central issues are dealt with: 1) the notion of a "critical period" for second language acquisition, 2) psychological learning strategies in language acquisition, 3) the influence of the native language in second language acquisition, 4) the variable of cognitive maturity, and 5) affective psychological variables.

The relationship between first and second language acquisition has interested linguists and language teachers for many years. This paper will concentrate on five central issues which must be dealt with in attempting to formulate a framework for a comprehensive theory of language acquisition that can account for first and second language acquisition in both children and adults. These five issues are: 1) the notion of a "critical period" for second language acquisition, 2) psychological learning strategies in language acquisition, 3) the influence of the native language in second language acquisition, 4) the variable of cognitive maturity, and 5) affective psychological variables. An attempt will be made to provide a strong argument to support the position that first and second language acquisition are cognitively similar processes, and that the apparent differences between them can be accounted for by considering the variables of previous linguistic experience, cognitive maturity, and affective orientation.

THE NOTION OF A "CRITICAL PERIOD" FOR SECOND LANGUAGE ACQUISITION

Although either a child or an adult can learn a language, there is a body of largely anecdotal evidence which indicates that the child can acquire a language with greater ease and efficiency than the adult. Many language theorists have attributed the child's alleged superiority in language acquisition to a language learning ability that is lacking in the adult, and which atrophies, in the developing individual, at the onset of puberty, when cerebral lateralization is said to be completed (Lenneberg 1967, Scovel 1969). Lenneberg's observation that there is a "critical period" for language acquisition is supported by evidence from case-studies of individuals who have suffered brain damage with a resultant loss of language. Whereas children are able to recover completely from their speech loss by "switching" their language function to the undamaged portion of their brains, adults, who have passed this "critical age," rarely regain full language mastery.

Lenneberg's evidence for a critical period has been extended by Scovel (1969) and others to account for the lack of success of many adult language learners. Krashen (1973a), however, provides evidence to indicate that cerebral lateralization is completed much earlier than puberty (about the age of five), and therefore may neither be related to the notion of a critical period nor a barrier to subsequent language acquisition. Furthermore, the current linguistic data from Genie (cf. Krashen 1973a), a thirteen year old girl who, through enforced isolation, had acquired almost no linguistic competence, indicates not only that first language acquisition may be possible after puberty, but also that the claim that successful adult second language acquisition is impossible due to the lateralization of brain functions is unwarranted. This claim is further weakened when we realize that Lenneberg's evidence suggests only that a *first* language must be acquired by puberty, and that many adults, some even without the benefit of instruction, (cf. Upshur 1968, discussed in Spolsky 1969) can and do acquire a second language well.

We must be wary, then, of relying on the physiological argument regarding a critical period as an explanation for why children appear to be more successful than adults in language acquisition. Catford, in fact, maintains that because of their more mature cognitive processes, adults may be able to learn a language even faster than children. He attributes the adult's alleged difficulty "more to the adverse circumstances of most second language

learning than to the greater loss of an innate faculty" (Catford 1969:2). The fact that adults rarely appear to be as successful as children in language acquisition may be attributed to a number of factors which will be discussed later in this paper.

PSYCHOLOGICAL LEARNING STRATEGIES IN LANGUAGE ACQUISITION

In recent years investigators of child first language acquisition have been concerned with explaining how the child processes language data from his environment and constructs systematic grammars in order to generate utterances (McNeill 1970, Slobin 1971). The errors that children make in the acquisition of their first language have been used to suggest that children do not operate under an imitation or repetition strategy, but rather under a strategy which encourages them to simplify and regularize the syntactic structure of the language that they are learning. For example, children's errors involving the use of regular past tense endings on irregular verbs which they had previously learned indicates that they have acquired the mechanics of forming the past tense. This level of understanding, while only partially adequate in terms of adult competence, suggests that children sift through the raw linguistic data to which they are exposed and form broad generalizations about its syntactic organization. This overgeneralization of a target language rule to an inappropriate instance supports the notion that the rule is more important than the exception in the mind of the language learner.

This strategy of simplifying the structure of the target language is not restricted to child first language acquisition. The kinds of errors which child and adult second language learners make also suggest an attempt to deal with the target language directly and to use what they already know about the target language in new situations. The fact that this tendency to generalize and to make analogies seems to be characteristic of both child and adult second language acquisition indicates that adults still have the cognitive capacity, which is frequently attributed solely to children, to learn a language directly.

Dulay and Burt (1972) argue that the errors made by children learning a second language are similar to those that children make in learning their native language. These errors typically involve syntactic simplification, rule overgeneralization, and the reduction of syntactic redundancies.

Recent work in error analysis in adult second language acquisition suggests that the adult operates under a similar strategy of grammar simplification. Jain (1969) proposes that the reduction of the target language to as simple a system as possible is the principal adult language learning strategy. The overgeneralization of past tense endings on irregular verbs, which was just mentioned, is a common error in both children and adults, and it provides a clear example of this process of syntactic reduction.

Jain (1969) argues that the more numerous the subcategorization parameters a student must consider for each lexical item, the more likely it is that he will ignore some of them, presumably because of their essential arbitrariness and his inability to relate the new distinctions to something already present in his cognitive structure. Because the irregular past tense forms are apparently more arbitrary to language learners than the regular past tense endings, language learners frequently adopt strategies dependent on their cognitive structuring of the target data. This explanation is supported by Buteau (1970), who has suggested that second language learner errors may result from an inherent difficulty in the target language itself, and directly parallels Wolfe's claim (1967) that interference from the target language is the cause of many target language errors.

Carroll (1966:103) has noted that although teachers can control *what* students learn, "it is almost impossible to control the technique that the *student himself* will adopt to acquire a given skill." Piaget (cf. Ginsburg and Opper 1969) has also demonstrated that "conceptual readiness," that is, the available cognitive structures, will determine how well a child will assimilate new information. This reliance on cognitive strategies and on previous knowledge that is already in a stable cognitive structure seems to be characteristic of learning in both children and adults, and explanations of errors based on these learning strategies have been useful in second language learning studies of both children (Dulay and Burt 1972) and adults (Selinker 1972, Richards 1971a, 1971b, Jain 1969, Corder 1967).

Selinker (1972) calls the linguistic system used by a learner in his attempted production of a target language norm an "Interlanguage" and suggests that there are five central processes or strategies which exist in the "latent psychological structure" of humans. These cognitive strategies, Selinker maintains, can account for the attempted target language utterances produced by students of a foreign language. He calls these processes: language transfer, transfer of training, strategies of second-language learning, strategies

of second-language communication, and overgeneralization of target language material.

While "language transfer" can be applied only to second language acquisition, and "transfer of training" only to language acquisition when instruction is involved, the "strategies of second-language learning," of "second-language communication," and "syntactic overgeneralization" are equally applicable to first language acquisition.

As defined by Selinker (1972), a "second-language learning strategy" involves the simplification of the target language system, presumably in order to reduce the learning burden. Both child and adult language learners appear to use this strategy when they overgeneralize target language rules, reduce grammatical redundancy, and omit those target language rules which they have not mastered, presumably because of their essential arbitrariness. Selinker's "strategy of communication" is, basically, a strategy which tells the learner that he knows enough of the language to communicate effectively, and it encourages him to rely on what he already knows about the language in attempting to speak. Children and adults operating under this strategy typically exhibit overgeneralization by reducing the syntactic system and by omitting redundant elements. The second language learner may, in addition, fill in the gaps in his interlanguage competence by relying on what he already knows about other languages. Overgeneralization of target language rules, the omission of redundancies, and a reliance on native language structure when enough of the target language is not known seem, then, to be the most important cognitive processes in second language acquisition.

These proposed cognitive processes or strategies are given a degree of psychological validity when we consider Ausubel's meaningful learning theory (subsumption theory) (Ausubel 1967) and Brown's theory of cognitive pruning (Brown 1972). Both Ausubel and Brown maintain that there is a difference between rotely and meaningfully learned material, and that it is only the latter which is subsequently stored in long-term memory. Meaningful learning involves "subsumption" and "selective forgetting," and is a process by which new material is retained in long-term memory only when it is able to be related to and subsumed by already existing cognitive structures. Meaningful learning helps to explain concept formation; new concepts are meaningfully learned only when they are directly related to and subsumed by previous experience that is already in a "permanent" (i.e., more stable) cognitive structure. A simple non-linguistic example of this process would be an account

of how the child learns that objects which give heat and light can burn him.

As the child begins to learn about the world around him, he has various experiences with light- and heat-giving objects. Because he is inexperienced with these objects, he may touch a hot stove and find that it burns him. He may later touch a lit match and experience the same result. The child, however, does not yet have the concept of heat and resultant pain. For him, these two experiences are simply isolated examples that he learns in a rote fashion. After several more such experiences, however, he will be able to formulate a concept based on his abilities to generalize and to form analogies, and he will conclude that light-giving and heat-giving objects are painful when touched. Once he has arrived at this generalization we can say that he has formed a concept that can be generalized to other instances, and he will be able to "prune out" and "selectively forget" his previous experiences with pain. Thereafter, he will simply be able to rely on his one concept and will not need to either remember his previous, isolated experiences, or subsequently learn additional isolated examples. We can then say that he has been able to "subsume" certain facts into a larger concept or category. This explanation of how the child acquires new concepts has a measure of psychological validity which can be seen when the child is confronted with a florescent light bulb and is surprised that touching it does not cause pain. In this case we can say that the child has learned a concept, but that he has extended it to an inappropriate situation. This is an example of *overgeneralization*, and errors due to overgeneralization argue in favor of a learning strategy which involves creativity and participation on the part of the learner, and not simply imitative behavior.

Likewise, it seems that the overgeneralization errors made by children and adults in the acquisition of either a first or second language can be explained within the same framework. When a child or an adult language learner says, "I eated the cake," it indicates that he is operating under a rule which he has acquired, but using it in an inappropriate situation. This kind of error clearly demonstrates that the learner is an active participant in the language learning process. What the learner is doing, as Jain (1969) has pointed out, is simplifying the inherent irregularities in the target language system, presumably to reduce his learning burden. When a language learner says, "Does John can speak French?," he is showing us that he has reduced the complex process of English question formation into a rule which says that all English questions

must contain a "do." This process involves subsumption in that the learner has concentrated his efforts on the one rule of question formation which has the greatest generality, and he seems to have "pruned out" and "selectively forgotten" all other rules for forming questions in English. What he has failed to learn is that the English interrogative system is more complex than his rule covers and, like the child who overgeneralized with respect to the florescent light bulb, he must refine his system to conform to the target language norm. When we consider the overgeneralization and syntactic simplification errors made by learners, it seems that this learning strategy of subsumption—including exceptional categories into larger, more generalizable, more meaningful categories, is a valid psycholinguistic concept.

THE INFLUENCE OF THE NATIVE LANGUAGE IN SECOND LANGUAGE ACQUISITION

It has frequently been maintained that second language acquisition will never exactly replicate first language acquisition because the presence of the first language in the mind of the second language learner exerts a profound effect on the acquisition of all subsequent langauges. Corder writes that "whilst one may suppose that the first language learner has an unlimited number of hypotheses about the nature of the language he is learning which must be tested" (Corder 1967:168), the second language learner, because of his familiarity with the phenomenon of language, does not. And Stern writes that

> the presence of the first language in the individual as a second
> language learner is a factor that cannot and must not be ignored.
> The claim that it would be possible to repeat the first language
> acquisition process in second language instruction is an illusion
> (Stern 1970:64).

While we cannot ignore the influence of the first language on the acquisition of subsequent languages, we must be wary of attributing too much influence to the processes of transfer and interference. At the time when the Contrastive Analysis Hypothesis has its strongest support it was maintained that the habits acquired in first language acquisition prevented success in second language acquisition. Based on behaviorist psychology, the Contrastive Analysis Hypothesis represented the first significant attempt to develop a theory of second language acquisition and to explain the lack of uniform success in adult learners. Because so many second

language learners seemed to make second language errors that could be attributed to the native language structure, Lado and Fries (cf. Lado 1957) maintained that success in second language acquisition was impeded by a process of transfer.

Recently, however, the Contrastive Analysis Hypothesis has come under serious attack in the fields of Psychology, Linguistics, and Error Analysis. Chomsky's attack on Skinner's S-R conditioning paradigm to explain language acquisition (Chomsky 1959), and Wardhaugh's conclusion regarding the lack of feasibility of a theory of contrastive linguistics in the light of our present knowledge (Wardhaugh 1970) are now well known.

In the field of error analysis, Dulay and Burt's study (1972) of child second language acquisition, and the work of Richards (1971a, 1971b), Selinker (1972), and Corder (1967) on adult second language acquisition provide strong evidence that 1) while *some* second language learner errors appear to exhibit native language transfer, many do not, and 2) many second language errors are both systematic and similar for learners with diverse linguistic backgrounds.

Dulay and Burt (1972) argue that it is necessary to make a distinction between *product* and *process* in accounting for second language acquisition errors. They maintain that although an error may look like interference from the native language (product), this fact does not imply that the process involved in generating the error is, necessarily, negative transfer, as defined by S-R learning theory. The process of transfer, in fact, is suspect with regard to language acquisition since it seems to be both psychologically invalid and generally unpredictable. In addition, because Dulay and Burt's study of children (1972) and Richard's studies of adults (1971a, 1971b) have found errors which would not have been made if positive transfer had been employed, it seems preferable to try to account for errors that look like native language interference by citing other more viable strategies, such as overgeneralization and rule simplification.

It appears to be the case, however, that we *cannot* always adequately account for errors that look like interference by appealing to other learning strategies since the presence of the native language in the mind of the second language learner seems to influence the acquisition of all subsequent languages.

It seems necessary for us to realize, however, that the native language need not be viewed as simply a generator of interference or as a system which must be overcome, but rather, it can be considered as a reference point—a linguistic system which the

student has no alternative but to use when he wishes to say something in the target language for which he is linguistically unprepared and when he has no other meaningful linguistic category in the target language on which to rely (cf. Newmark and Reibel 1968). If we accept this view of the role of the native language in second language acquisition, we can still maintain that language acquisition involves creativity, conceptualization, and coping directly with the target language, at the same time that we account for interference-type errors.

THE VARIABLE OF COGNITIVE MATURITY

In addition to the influence of the native language, there are two other important reasons why first and second language acquisition will not result in parallel language acquisition data. First, because most adult second language learning involves instruction, we cannot assume that the emergence of grammar in the second language learner demonstrates any "natural" acquisition sequence because we, as teachers, have tampered with the process. And second, first and second language acquisition data will differ because the cognitive maturity of the second language learner is greater than that of the first language learner. Because of the adult's more advanced cognitive maturity, we should not expect to find one- and two-word utterances in the adult data; the adult's cognitive capacities have surpassed the simple universal-relationship stage which both Bloom (1971) and Schlesinger (1971) have found to be characteristic of the early utterances of the child. Whereas the child seems to develop simultaneously in language and cognition, each affecting the other, the adult has already developed a sophisticated cognitive capacity (cf. Ausubel 1964). If we assume, as Krashen (1973b) does, that the cognitive ability which enables a child or an adult to learn a language may not be inherently linguistic in nature, and may be more closely related to general cognition than to a specific language learning mechanism, it is easy to see how the degree of cognitive maturity of the learner can affect the language acquisition process. The fact that Ausubel's meaningful theory (Ausubel 1967), which is not inherently linguistic, appears to be able to account for both linguistic and non-linguistic learning, strengthens the argument that language acquisition is based heavily on general cognitive capacities.

It seems, then, that the two most important variables in first and second language learning are the presence of the native

language and the more advanced cognitive development of the adult. It must be pointed out, however, that previous linguistic experience and advanced cognitive maturity appear to affect the language acquisition process only in a *quantitative* way, by giving the second language learner the edge in the learning process. From a *qualitative* point of view, however, the fact that both first and second language learners appear to use many of the same kinds of learning strategies, as evidenced by the similarities in the kinds of errors that they make, indicates that, at a process level, first and second language learning seem to be identical.

AFFECTIVE PSYCHOLOGICAL VARIABLES

The last issue which will be discussed is why, if the processes are similar, with the second language learner having the edge, do adult second language learners frequently fail to acquire a second language with native proficiency? Jain (1969) maintains that a student's inter-language is not transitional in nature, but rather represents a *functional competence*. When the learner feels that he has learned enough of the target language to fulfill his purposes, he will simply stop learning. Thereafter, he will always speak an interlanguage marked with *fossils* (cf. Selinker 1972), which are errors that are firmly entrenched in his interlanguage and which distinguish his speech from that of native speakers. Jain (1969) suggests that once a student has reached this functional competence, he may not even adjust his interconflicts with his own system.

Krashen, *et al.* (1973) argue that the failure of many adults to acquire native proficiency in a second language is due to a "degeneration" of their ability to learn a language directly. While they are still able to use many of the strategies characteristic of child language learning, Krashen *et al.* maintain that adults must be taught a second language. There are many adults, however, who have been able to acquire a language with native proficiency, even without the benefit of instruction. And further, when we consider that adults are able to learn aspects of language that linguists cannot explain and that teachers cannot teach, it seems necessary to concede that the adult *does* have the ability to acquire native proficiency in a foreign language without instruction.

There is no cognitive reason to assume that adults will be less efficient than children in language learning. In fact, as already suggested, it seems logical to assume that the adult's more ad-

vanced cognitive maturity would allow him to deal with the abstract nature of language even better than children. If we reject a hypothesis which calls for a cognitive deficiency in adults, we are left with the alternative of accepting a non-cognitive deficiency—one based on affective measures—to account for the lack of uniform success in adult second language acquisition.

The affective variables of motivation, empathy, ego-boundaries, and the desire to identify with a cultural group all seem to contribute to the uniform success of children in learning their native language. Whereas child language acquisition seems to be a means toward an end—socialization—and lack of such motivation in adults and the absence of a positive attitude toward language learning and the target language and culture may be responsible for the lack of success in most adult second language learning. The evidence provided by Gardner and Lambert (1972), Guiora (1971), and Nida (1971) indicates not only that positive affective variables may be necessary to acquire native speaker competence, but also that they function independently of aptitude and intelligence (Gardner and Lambert 1972). When we realize that all children learn language, regardless of their aptitude or intelligence, it is somewhat disconcerting to have to maintain that intelligence and aptitude *become* important only in the adult learner. In addition, when we consider Lambert's findings (1967) that negative social attitudes are not usually present in young children, whereas they *are* in most adults, it appears logical to assume that a favorable disposition toward the language and culture is conducive and perhaps necessary to successful language acquisition.

Hill's (1970) evidence that adult-acquired multilingualism is *expected* in various cultures around the world may indicate that the inability of many Americans to acquire a second language is determined by our own cultural attitudes. The "melting pot" syndrome, which caused so many immigrants to cast off their native languages, coupled with the growth of English as a major language of commerce and diplomacy, might be partially responsible for the reluctance of many Americans to take language learning seriously. That these attitudes may be transmitted within a culture is given support by Lambert's (1967) findings that the favorable dispositions toward language learning and other cultures which are conducive to second language learning are transmitted through the family, and that these favorable attitudes are often dependent on socio-economic conditions and family orientations.

In view of these affective differences between children and adults and between successful and unsuccessful adult language

learners, it seems likely that affective psychological variables may constitute the major reason why adults are not always as successful as children in language acquisition. If we further assume that the psychological learning strategies involved in language acquisition are basically the same for children and adults, differing essentially in the degree of cognitive maturity of the learner, affective variables take on a special significance. What may be necessary, then, for the adult to acquire real native proficiency in a second language is a persevering motivation, the desire to identify with another cultural group integratively, and the ability to overcome the empathic barriers set up by ego-boundaries. It is vital, therefore, that language theorists recognize both the cognitive similarities in child and adult language acquisition and the importance of affective variables. Only then will we be able to develop a viable theory of language acquisition that can adequately explain how humans learn language.

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