Native-like Phonology in Second Language Acquisition:
Effective Learner Strategies

Final Paper
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"We each of us possess, in a greater or less degree, what the German call "speech-feeling," a sense of what is worthy of adoption and what should be avoided and condemned. This in almost all of us is an instinctive process; we feel the advantages or disadvantages of new forms and new distinctions, although we should be hard put to it to give a reason for our feeling. We know, for instance, that it is now wrong to say "much" rather than "many thanks," though Shakespeare used the phrase; that "much happier" is right, though the old "much happy" is wrong, and that 'very' must in many cases take the place once occupied by much. We say a picture was 'hung', but a murderer was 'hanged', often, perhaps, without being conscious that we make the distinction...Grammarians can help this corporate will by registering its decrees and extending its analogies; but they fight against it in vain. They were not able to banish the imperfect passive, "the house is being built," which some of them declared was."

Anonymous

Introduction

The phenomena of language has intrigued a great number of scholars. The abstract relation between cognition and language has further caused controversy and confusion. Opinion is sharply divided between those who believe that a certain degree of cognition always exists before human beings are exposed to language, and those who believe that language influences and determines the development of cognition. Linguists, developmental psychologists, psycholinguists, and educators have all attempted to decipher the mysterious connection between cognition and language. The rationale behind conducting empirical research is that it will give deep insight into the complicated process of language acquisition and linguistic processes. Continuing in the same tradition, this paper attempts to address certain interesting and controversial issues

related to the field of second language acquisition, especially the acquisition of native-like phonology in second language.

Since the late sixties, a considerable amount of research has been conducted in the field of second language acquisition. The complicated process of language learning has attracted continuing interest from researchers in English, Linguistics, Psychology, and Education. Such interest has led to the emergence of second language studies as an area of professional emphasis within academic communities taking into consideration both teaching and learning perspectives. The field of second language acquisition has become a vibrant field with a literature of its own, frequently using explorations in first language as a starting point.

Interlanguage Phonology

While much work has been done in studying the acquisition of morphology and syntax, there is one area of second language acquisition that has been largely overlooked by researchers. Heretofore, little has been done in the field of interlanguage phonology. While summarizing existing second language research, Schumann (1976) found absolutely no studies on the phonology of interlanguage. The term 'interlanguage' coined by Selinker (1972) refers to "the structured system which the learner constructs at any given stage in his development." (Ellis, 1986). Until recently, there has been a paucity of phonological data collected from second language learners in reasonably natural speech situation (Tarone, 1976).

The reason for the dearth of studies in interlanguage phonology is the common belief that the learner's phonological system does not provide useful insights into the nature of the second language acquisition process. To a large extent, this notion was

based on the wrong assumption that all phonological errors were the result of direct transfer of the native language phonology to the interlanguage system in some uninteresting ways (Tarone, 1978). That is to say, the pronunciation of a second language was not significant for the field of second language research. This conviction is still prevalent among second language acquisition researchers, second language teachers, and students. However, it would be misleading to presume that language learners only need to acquire the grammar system and vocabulary of a second language. It is equally essential that they acquire the rules of the second language phonology to be intelligible to other speakers of that language. Furthermore, it is reasonable to assume that "research in this area will shed much light on our understanding of the process of speech perception in general (Tarone, 1978).

The most contentious issue concerning interlanguage phonology is the effects of language transfer on the pronunciation of second language learners. It is important to mention that transfer is not a simplistic process as once believed. It is rather one of several processes influencing the shape of the second language phonological system (Tarone, 1976). These processes are interrelated and appear to interact in an interesting way.

According to the 'interlanguage hypothesis,' second language learners internalize a system of rules which may be distinct from both the target language and the native language (Selinker, 1972). Dulay and Burt (1973) call this internalization of rules 'creative construction.' They suggest that it cannot be attributed wholly to negative transfer from the native language to the second language. In other words, creative construction is considered to be operating totally independent of the native languages of

language learners. This gives rise to an intriguing question as to how distinct and independent interlanguages are and to what extent, they are similar or different from first languages.

In his paper 'On the naturalness of interlanguage phonological rules,' Eckman (1981) answers this question in an interesting way by arguing that the grammar exerting influence on a learner's utterances must be an independent system because the interlingual productions do not belong entirely to the class of native language utterances nor to the class of second language utterances. According to him, this implies that interlanguages cannot be governed by the grammar of the native language or the grammar of the second language. Eckman (1981) postulates two possible interlanguage rules:

1. Interlanguages are similar to languages which are learned as first languages.

2. Interlanguages are independent systems and are different from other language systems.

It is clear that the first rule is motivated for the grammar of native languages whereas the second rule is not motivated for either the native language or the second language. At this point, we will not discuss which rule is more substantial because it is important to introduce the notion of fossilization to shed light on interlanguage systems.

The Notion of Fossilization

As Selinker (1972) points out, the most important fact concerning the description of interlanguage is the phenomenon of fossilization. According to him, "Fossilizable linguistic phenomena are linguistic items, rules, and subsystems which speakers of a particular native language will tend to keep in their interlanguage relative to a particular

target language, no matter what the age of the learner or amount of explanation or instruction he receives in the target language (Selinker, 1972).

Similar views are put forth by Tarone (1976), Nemser (1971), and Sridhar (1980), who have tried to explore the causes of fossilization in language learners' interlanguage phonologies. There are two related questions here which have puzzled scholars:

1. Is phonological fossilization inevitable for second language learners?

2. What are the causes of such fossilization?

Phonological Fossilization

According to Scovel (1969), the answer to the first question is a resounding yes. He maintains that no adult ever achieves native-like pronunciation in a second language. Scovel (1969) has named this the 'Joseph Conrad phenomenon' after the prominent British author who achieved native-like fluency in English syntax (his second language), but retained a Polish accent. Scovel is so confident of his theory that he promises to offer a free dinner to anyone who can show him someone who learned a second language after puberty and who speaks that second language with perfect native-like pronunciation.

Some researchers do not go along with this idea. Hill (1970) maintains that phonological fossilization is by no means inevitable. Neufeld (1977) argues that there are methods that can enhance the teaching of pronunciation of a second language and that can help students acquire native or near native proficiency in pronunciation. It is, however, important to mention that the subjects of Hill and Neufeld have not been examined by second language acquisition researchers to determine whether they really achieved native-like pronunciation in their respective second languages. It seems that the question of the inevitability of phonological fossilization in adults remains undecided.

Causes of Fossilization

The second question is complicated and requires serious attention. One possible explanation for the cause of phonological fossilization is the atrophy of the nerves and muscles necessary for articulation. This theory maintains that the nerves and muscles instrumental in pronouncing second language pronunciation patterns have atrophied so that native-like pronunciation is almost impossible. This notion, however, has not been proved empirically.

Another physiological explanation comes from Lenneberg (1967) who suggests that after puberty, it is difficult to master the pronunciation of a second language because a critical period in brain maturation has been passed, and "...language development tends to freeze." (Lenneberg, 1967). He calls this phenomenon "lateralization" - the completion of cerebral dominance. According to him, lateralization impedes the learning of the phonology of a second language more than the learning of the syntax or vocabulary of a second language.

Flynn and Manuel (1991) contradict Lenneberg and argue that the effects of age-dependent variables on the language acquisition process, and the universal properties shared by language learners are not known clearly. They argue that lateralization doesn't increase by age, and it is hard to reconcile the fact that plasticity is the determining factor in language acquisition and that it becomes less functional with age. Discussing modularity and categorical perception, Flynn and Manuel (1991) note that perceiving and discriminating between speech sounds is a specialized behavior. They claim that adult L2 learners don't lose their ability to perceive speech sounds, but they have difficulty

with certain perceptual distinction. To acquire new speech sounds, L2 learners need feedback which need not be auditory, they suggest. Finally, they point out that the critical period hypothesis is less convincing because it doesn't account for successful second language learners.

A somewhat different position has been taken by Krashen (1977) who also opposes Lenneberg. He maintains that adolescents consciously construct abstract theories about the world during the course of their cognitive development. They tend to learn their second language by abstracting grammar and pronunciation rules and applying them. It is obvious that this theory considers second language acquisition the same as learning a first language. Krashen (1977) calls this 'creative construction' and argues that the close of the critical period is related to Piaget's stage of formal operations. In another study, Krashen and Harshman (1972) reanalyzed Lenneberg's data and came to a conclusion contradicting his finding. They argue that lateralization takes place long before the end of the 'critical period' for language learning. However, Tarone (1978) does not agree with Krashen and Harshman and puts forth her argument, "Why should formal operations affect only the pronunciation and not the syntax or morphology?" This indeed puts a question mark on the formal operation type of psychological explanation for phonological fossilization.

In contrast to both Krashen (1977) and Flynn and Manuel (1991), Johnson and Newport (1989) support Lenneberg and argue that critical period is the primary determining factor in terms of adult acquisition of a second language. Their argument is based on their study in which they concentrated on performance errors. In doing so, they overlook language transfer and complexity of acquisition. It should be noted that

performance errors may not necessarily reflect learners' competence. In other words, performance errors could be triggered by attitudinal factors, experimental setting, nature of task, etc. It would be misleading to presume that performance errors are caused by age. That is, age cannot be a definite predictor of performance because of a great deal of variability among individuals. Any recommended mechanism accounting for adult performance in a second language cannot, therefore, be related with age alone.

Another psychological explanation is related to the issue of language transfer. Theoreticians claim that transfer has its strongest effect on the pronunciation of a second language (Broselow, 1988). According to the 'psychological habit formation hypothesis,' language transfer operates to shape interlanguage phonology (Tarone, 1978). In the light of what we have discussed so far, it can be said that this claim has been weakened by recent research results.

Neufeld (1977) reports on a study in which he used a new techniques to enhance teaching second language pronunciation to adults. He says that adult learners tend to form inaccurate acoustic images of the second language sound patterns, thus attributing this to inappropriate learning situations. These acoustic images get set once they are formed. This leads to the fixation of the learner's pronunciation patterns. He maintains that the learner's inability to perceive and articulate a new sound could result from his or her psychological inability to alter the criteria used to categorize speech sounds. It is, however, not clear from his discussion why adults are affected by acoustic images and children are not. Though his subjects' pronunciation improved remarkably, there is no guarantee that these subjects would maintain the same native-like pronunciation in real communication.

A third type of explanation is very different from psychological habit formation and uses affective arguments to prove that interlanguage pronunciation is a sensitive indicator of adult learners' lack of empathy with the native speakers and culture of the second language. Unlike children, who are more compatible to second language culture, adults have more rigid language ego boundaries. They may be inclined to establishing their cultural and ethnic identity and this they do by maintaining heir stereotypical accent (Guiora et al., 1972).

According to Guiora et al. (1972), adults do not have the motivation to change their accent and to acquire native-like pronunciation. Guiora et al. (1972) attempted to mitigate the empathy level of their subjects by administering increasing amount of alcohol. They found that the learners' pronunciation of the second language sounds improved to a certain point and then decreased as they drank greater amount of alcohol. However, a different explanation could be that subjects were under the influence of alcohol and had less difficulty in articulating the target language sounds because of muscle-relaxation.

That socio-emotional factors are powerful in determining degree of proficiency in pronunciation cannot be denied. It should be noted that these factors are hard to determine in an experimental setting. Nevertheless, the findings of Guiora et al. (1972) may have some feasible implications for the use of socio-emotional factors in enhancing the learning process.

Our understanding of what causes phonological fossilization is still inconspicuous. It is obvious that none of the above discussed explanations provide deep insights into this debatable phenomenon. There is persuasive evidence that supports the

existence of different processes and constraints that operate to shape interlanguage phonology.

Universal Grammar

The main objective of this study is to discuss if phonological fossilization is inevitable for second language learners and to investigate if native-like phonology can be achieved in a second language. The theory of innateness assumes that all human beings are born with a language acquisition device, which precedes linguistic experience. In other words, the theory states that language acquisition is species-specific and that human beings are able to yield a particular language, using the principles of Universal Grammar in interaction with presented experience.

Research has proven that language acquisition is quite a difficult and cumbersome process (Klein 1991). Research has also proven that despite this difficulty, children acquire it with relative ease and speed (Hyams 1991). Chomsky's theory of UG primarily concerns itself with explaining how children acquire language with such ease (Chomsky, 1986). This is the logical problem that has become an empirical question. It is very important to understand that any approach to solving this problem has no bearing on the developmental problem; what distinct stages of development children go through to acquire language is a separate issue and, therefore, should be dealt with separately.

It would be reasonable to say that Chomsky's theory of Universal Grammar sets out to describe and explain language acquisition in the light of linguistic processes. That is to say, it is based on the assumption of the idealization that human beings are born with language acquisition device and that the child develops language from internal

processing. Unlike the behaviorists and learning theorists, the theory of the initial state of the language faculty assumes that there are certain language universals that exist independent of the physical world.

Based on this philosophical premise, this study intends to explore if the acquisition of second language phonology could be a ramification of the same postulation. The following is the hypothesis we will attempt to validate in this paper:

Hypothesis

Native-like phonology can be achieved in second language acquisition by average learners, if they use relevant learner strategies which have been identified as helpful to successful learners.

Rationale

1. First language acquisition capability is virtually universal, as is the capacity for second language acquisition of syntax, morphology, lexicon, semantics and pragmatics (according to the evidence of this semester's course work).

2. Some second language learners achieve native-like phonology in their second languages.

3. By extension the capability for complete acquisition of second language phonology should also be universal, however evidence supporting this conclusion is scarce.

Data Collection Procedures

Phase A:

The purposes of the phase A data collection are to identify learner strategies used in second language phonology acquisition and to provide reference or control data to compare successful and non successful acquirers who have had several years of English

as a Second Language (ESL) instruction with beginning/progressing ESL students. Data

to be collected by:

Step 1. Interviewing:

Interviews to be conducted one on one and taped.

1. Ask respondents about the types of learner strategies they felt were helpful to them in

acquiring English phonological forms/pronunciation.

2. Request description of the strategies.

3. How were strategies used?

4. What tasks were they used on?

5. How frequently were they used?

6. Which strategies seemed most effective?

7. Use list of suggested strategies below to clarify definitions or as prompts if the

respondent has difficulty remembering strategies used:

Suggested Strategies List:

 1. Successive approximation

 2. Rote memorization

 3. Avoidance of troublesome forms

 4. Willing to use unmastered forms even at expense of sounding foolish

 5. Practice

 6. Monitoring

 7. Asking for correction

 8. Focusing on English intonation patterns

 9. Directed, selective attention to phonetic detail in aural reception of English

10. Self-evaluation

11. Making opportunities for practice

12. Requesting English speakers to speak slowly

13. mimicking

14. Reading aloud to oneself instead of silently

15. Focusing on form-on correct phonology

16. Repetition

17. Resourcing-looking up correct pronunciations in dictionary

18. Creating and grouping auditory representations in memory

Step 2. Follow-up Self Report Questionnaire:

Questions regarding the use of strategies reported in step 1 and in the suggested strategies list will be formulated, then asked in written form. Questions will be of the type "Do you ever practice English in front of a mirror so you can watch the positions of your lips, tongue, etc.?" All answers to this questionnaire will be in closed form, recorded by putting a mark next to one of four possible answers, either "seldom/never," "occasionally," "often," or "usually/always."

The same questionnaire will be used in Phase B of the study.

Phase B:

Longitudinal study of effectiveness of proposed good phonology learner strategies.

Must provide instruction in use of effective strategies which have been identified in Phase A. The benefits anticipated from the use of those strategies should also be

communicated to the subject learners, as this will probably provide the primary motivation for using them.

Test speech production initially and periodically at 6 month intervals. Oral production to be tested by free speaking, reading aloud a monologue prepared to include sufficient representative English phonological forms, and reading of word lists.

Follow oral testing with self report questionnaire.

After completing the questionnaires each test group should be refreshed in how to use the appropriate strategies and in their resultant benefits.

The control subjects, who will be drawn from the same classrooms as the test subjects will not receive strategy instructions. They will be tested orally along with the test subjects.

Subject Pool:

Phase A. Advanced ESL students, and graduates of ESL programs (may include university students and teachers). Native languages of Spanish, Japanese and Arabic will make up separate test cells within each cell type. Age and other variables not controlled. Cell type 1: Subjects with native-like phonology; Cell type 2 (control): Subjects with non native-like phonology.

Initial selections of subjects could come from teacher recommendations or from oral screening. Decision on whether subjects have native-like or non native-like phonology would be based on a consensus decision of a panel of native English speakers.

Phase B. Beginning ESL students, about 9th grade level with Japanese, Hispanic and Arabic native languages. Select subjects from different classes and schools, from both

multilingual classes and classes with the identified languages as the predominant first language.

This age group was selected because they have possibly the largest potential for improvement, making it easier to show the relative effects of relevant strategy use, and because they have reached Piaget's stage of formal operations which means they have the metacognitive awareness to be able to benefit from instruction in strategy use.

Control group will come from same pool.

Method of Analysis of Data:

A) In Phase A, identification and definition of learner strategies reported by interviewees and from suggested strategy prompts. Review tape recordings are required.

B) Self report questions keyed to strategies defined in A. Relative strategy use quantified by responses to questionnaire: seldom/never = 0, occasionally = 1, often = 2, and usually/always = 3.

C) Oral production errors would be tallied by type (e.g. intonation, incorrect phone, incorrect distinctive feature, vowel quality, etc.). The errors which allow minimal intelligibility but fall short of native like production would be weighted, with close to native form receiving 1 point, distinctly different but intelligible receiving 2, and unacceptable receiving 3 (native-like forms would receive 0 points, making it unnecessary to tally the correct forms). All judgments to be based on consensus by the previously described native English speaking panel.

The scores for each strategy would be maintained by test and control cells and compared for relative gains over time in Phase B and between Phase A and Phase B.

D) Try to answer following questions, based on test data comparison:

1. Are there learner strategies which, if taught to learners and used consistently, will enhance second language phonology acquisition?

2. What is evidence for discontinuous versus accretive phonological development?

3. Which learner strategies are best for specific phonetic tasks (according to cognitive complexity)?

4. As certain phonological forms are acquired, does the effectiveness of specific learner strategies change?

5. How can fossilization of phonological development be forestalled?

6. Can effectiveness of learner strategies by first language be correlated with minimization of first language transfer?

7. What inferences can be made from the self report questionnaire data bout he effect of motivation on the use of appropriate learner strategies?

8. It has been hypothesized that some learners do not pay attention to their phonological acquisition after achieving some minimal functional level of competency so that they can focus on other aspects of second language acquisition. Will encouraging learners to remain focused on phonological acquisition until native-like proficiency is attained result in slower or poorer acquisition of English syntax, semantics, pragmatics or vocabulary?

Variables which may Affect Results of Testing of Use of Phonological Acquisition Strategies

 1. Age

 2. ESL vs. English as a Foreign Language

 3. Multilingual or single first language classroom

 4. Effectiveness of specific strategies by learner development stage

5. Effectiveness of specific strategies by task type

6. First language type

7. Variability in native English of panel selecting Phase A subjects

8. Acquisition (and strategy use) in formal versus natural learning environment

9. Individual learner differences

10. Frequency, amount and quality of class instruction in strategy use and benefits

11. Instructional content in questionnaires

12. Motivation

Hypothesized Effects on Acquisition, and Ideas on how to Account for Variability in Test

1. Age: doesn't affect rate or path of second language acquisition except starting younger may let learner achieve better phonology-remove variable from Phase B by studying age group with most potential (hypothesized) for improvement, i.e. adolescents

2. ESL vs. EFL: affects exposure to native phonology-limit study to ESL

3. Multilingual or single first language classroom: affect unknown-try to represent both in Phase B subject pool and note trends in data collection

4. Effectiveness of specific strategies by learner development stage: try to capture-test periodically in Phase B to relate strategy use to developmental acquisition of English phonological forms

5. Effectiveness of specific strategies by task type: ask respondents in Phase A about using different types of strategies for different type tasks, ask similar questions in Phase B self report questionnaire after periodic oral tests, including differentiation of strategies by oral test type

6. First language type: strategies may vary with first language-analysis of phonological and phonotactic errors in oral tests may reveal strategies of underdifferentiation, systematic (first language) misrepresentation of second language contrasts, or phone substitutions-capture possible variable strategy use by testing Japanese, Hispanic and Arabic ESL learners (both test phases)

7. Variability in native English of panel selecting Phase A subjects: since it is difficult to determine the brand of English learned by each of the subjects in their ESL programs, the selection panel which assesses whether the subjects have native-like phonology should be representative of a variety of English phonologies-this will minimize possible selection bias

8. Acquisition (and strategy use) in formal versus natural learning environment: subject pool to consist of learners with formal exposure-selection of ESL over EFL students should ensure some "natural" exposure-ask good speakers in interviews if different strategies are used in formal versus natural environment

9. Individual learner differences: minimize possible effect on test results by using large subject pool

10. Frequency, amount and quality of class instruction in strategy use and benefits: will affect strategy use-instruct Phase B test subjects in use and benefits of strategies after every periodic test sequence, use same instruction for all test cells.

11. Instructional content in questionnaires: will reinforce strategy learning-this effect will be consistent and not objectionable across test cells; effect on control cells could bias results-plan to split control cells and measure relative gains due to learning achieved by reading and answering questionnaire

12. Motivation: Neufeld (1977) said all learners can achieve a primary language level, which includes a functional lexicon, and competency in pronunciation and syntax. A secondary language level which has access to complex grammatical structures, a variety of language registers and native-like phonology is only achieved however with high motivation. If motivation is the key to attaining native-like phonology, then (after identification of strategies and instruction in their use) testing for use of event the most productive phonology learner strategies will show a range of improvements which vary primarily by the motivational level which underlies the use of the strategies.

Conclusion

It is believed that universal grammar is available to first language learners only. Second language learners, on the other hand, do not have access to universal grammar and use information-processing strategies or problem-solving procedures, which make adult language learning very different form child language acquisition. Although the input processing strategy may not work sometimes, "the insight that acquisition involves input-processing strategies of some kind is important and should be pursued" (White, 1991).

Motivation seems to have the most significant effect on the acquisition of second language phonology. This supposition would require adding a qualifier to our principal hypothesis, something along the lines of "native-like phonology can be achieved in second language acquisition by average learners, assuming sufficient motivation, if they use relevant learner strategies which have been identified as helpful to successful learners." A strong dependency on motivation would not necessarily discount the potential importance of appropriate strategy use however. Whether the use of certain

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learner strategies results in across the board gains in phonological acquisition should still be verifiable.

Assuming the likely outcome of a range of gains, one would still be faced with the possibility that there were remaining unaccounted for variabilities in the test. However, although the contribution of motivation to the success of the learner strategies cannot be quantified in a statistically meaningful way, it can be accounted for. This could be done by including questions in the self report questionnaire designed to obtain relative motivational rankings by learner, task, and development stage.

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