THE ROLE OF LINGUISTIC CONTEXT IN INTERLANGUAGE PHONOLOGY

By

GUZIDE DILEK CANŚIN

B.Ed., Macalester College, 1983

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF

THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

in

THE FACULTY OF GRADUATE STUDIES

(Department of Language Education)

We accept this thesis as conforming

to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA

September, 1986

© Guzide Dilek Cansin, 1986
In presenting this thesis in partial fulfilment of the requirements for an advanced degree at The University of British Columbia, I agree that the Library shall make it freely available for reference and study. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by the Head of my Department or by his or her representatives. It is understood that copying or publication of this thesis for financial gain shall not be allowed without my written permission.

Faculty of Education

The University of British Columbia
2075 Wesbrook Place
Vancouver, Canada
V6T 1W5

Date: September 1986
ABSTRACT

The phenomenon of the foreign accent has long been of interest to linguists, second language teachers, language pathologists, and others. This study investigated the influence of certain factors on the degree of foreign accent in learners of English as a second language. Specifically, it examined the effects of two linguistic contexts, age of arrival in Canada, years spent in Canada, and native language on the accents of 29 subjects at an advanced level of English language study. The degree of accent was rated on a five-point scale by 13 native speaker judges. It was hypothesized that non-native speakers of English would exhibit greater degree of foreign accent when reading aloud than when recalling a traumatic personal experience. A previous study by Oyama (1982) has found that, contrary to predictions based on native speakers' behaviour in the same task (Labov, 1966), foreign learners of English displayed greater accents during the oral reading task than when telling about a brush with death or about another traumatic time in their lives. It was, therefore, hypothesized that the subjects in this study would perform like the subjects in Oyama's study. The other hypotheses were: 1) the earlier the age at which subjects arrived in Canada, or other English-speaking country, and began learning English, the better their accents would be judged; 2) the greater the number of years spent in Canada, or other English-speaking country, the better their accents would be judged; 3) the native languages of ESL speakers would influence the decisions about the degree of foreign accent made by judges.

Taped samples from 29 ESL learners were collected, edited for length, and played to 13 native speaking judges who rated the degree of accent for each speaker heard on a five-point scale. Included on the tape which the judges heard were
samples from native speakers to determine intrajudge validity (i.e., how effectively the pronunciation measure differentiated native from non-native speakers). Those judges who were unable to identify the speech of native speakers were dropped from the study. Previous researchers have used the mode of the judges’ decisions as the appropriate indicator of each subject’s accent; in this study, computations were made using both the mode and the mean. They were found to yield nearly identical results in the analyses.

Data were analyzed using a multivariate analysis of variance (MANOVA, SPSS X) with the two linguistic contexts as the dependent variables and age of arrival, years in Canada and native language as independent variables. The results showed no difference between the two linguistic contexts, and that age of arrival and native language contributed significantly to the degree of foreign accent while years in Canada did not. Specifically, learners who arrived at a younger age had better accents than those who arrived at an older age. Because subjects were unequally distributed across the languages, it was not possible to determine which native languages are statistically significant in predicting the degree of foreign accent of these learners of English.
# TABLE OF CONTENTS

Abstract .................................................................................................................. iii

Table of Contents .................................................................................................. v

List of Tables ......................................................................................................... vi

Acknowledgement .................................................................................................. vii

I. Introduction ......................................................................................................... 1

II. Review of Literature .......................................................................................... 6
   A. Interlanguage ................................................................................................... 6
   B. The question of age .......................................................................................... 14
   C. Variability of Interlanguage ............................................................................ 22

III. The experiment .................................................................................................. 29
   A. Experimental hypothesis ................................................................................ 29
   B. Method ............................................................................................................ 29
       1. Subjects ........................................................................................................ 29
       2. Procedure .................................................................................................... 31
       3. Judges .......................................................................................................... 32

IV. Analysis and results ............................................................................................ 35
   A. Judges ............................................................................................................. 35
   B. Hypotheses ...................................................................................................... 36
       1. Hypothesis I ................................................................................................. 36
       2. Hypothesis II ............................................................................................... 36
       3. Hypothesis III ............................................................................................. 37
       4. Hypothesis IV ............................................................................................. 38

V. Discussion ............................................................................................................. 42
   A. Directions for future research ........................................................................ 47

VI. Bibliography ....................................................................................................... 51

VII. Appendix ........................................................................................................... 59
LIST OF TABLES

1. Table I

2. Table II

3. Table III

4. Table IV

5. Table V

6. Table VI

7. Table VII
ACKNOWLEDGEMENT

I would like to thank Prof. Mary Ashworth and Dr. Bernard Mohan for the help and advice they provided throughout the writing of this thesis.

Special thanks go to Dr. Terry Piper, whose extreme patience and encouragement made the whole experiment a more pleasant task and Dr. Lee Gunderson, whose willingness to help aided in data analysis.

I would also like to thank my family who gave me tremendous amount of encouragement and made me realize I had the potential to succeed.
I. INTRODUCTION

The issue which underlies this study is the foreign accent; in acquiring a second (or third or any non-native) language, some people attain native or near-native pronunciation while others do not. The term foreign accent refers to the flawed pronunciation of a non-native speaker of a language and has traditionally been attributed to transfer of elements of a learner's first-language phonology to the second language phonology, a process more commonly known as interference. More recently, however, researchers have begun to discover that there are a variety of other factors which influence the second language phonology, and that interference itself may be influenced by a number of factors such as the age and previous language-learning experience of the learner.

Obviously, teachers of foreign languages are interested in the phenomenon of the foreign accent since part of their task is to try to eliminate it, but it is also of great interest to applied linguists and psycholinguists studying second language acquisition and, more generally, to learning theorists. The principal theoretical perspective from which current research views the issue is that of interlanguage. Recognizing that learner errors in a new language are seldom random, Selinker (1972) coined the term interlanguage (IL) to refer to the rule system which is believed to underlie the language used by language learners.

The concept underlying IL is that learner language, or the language produced by a second language (L2) learner is, not random but, like natural language, rule-governed. The term Interlanguage refers, then, to the rule system which is
believed to underlie the language used by the second language learner from the
time s/he begins the acquisition process until language fossilization or until the time
that s/he reaches native speaker proficiency. According to Selinker, (1972), Corder
(1967), Nemser (1971), and others, IL has certain properties. Perhaps the most
interesting of these properties is that of variability. Variability has two senses. One
refers to the fact that rules governing second language production within a single
learner may not always apply or may seem to apply optionally. The second sense
of variability applies across learners; although IL is systematic in the sense that it is
fairly consistent among different learners, it also recognizes individual differences.

A second property of IL is that it is dynamic; it changes constantly over time
within each learner. Moreover, IL recognizes a phenomenon long bemoaned by
language teachers, i.e., backsliding. In other words, a learner will suddenly seem
begin to make errors where s/he previously did not, suggesting the loss of a rule
which had been earlier acquired. Acquisition does not necessarily proceed, then, in
a strictly linear manner. As the learner's attention shifts from one language aspect
to another, a stable system becomes less stable and the learner begins to lose
aspects of those target language rules that s/he already has acquired. The
systematicity to which IL refers underlies all aspects of language, but most research
attention has been directed toward syntax and phonology. The study reported here
is a study of interlanguage phonology.

Being physically measurable, pronunciation is the only aspect of language whose
completeness can be determined physically. (Seliger 1978). Pronunciation is the
"...most salient aspect of the language ego, the hardest to ... acquire in a new
language, the most difficult to lose (in one's own)" (Guiora 1972, cited in Schumann et. al. 1978). Phonological acquisition is the most difficult aspect of a second language for adults to attain under normal circumstances (Snow, 1983). Although elimination of foreign accents is not always necessary for effective use of a language, not only may there be a social penalty, but also a possible inhibition stemming from imperfect pronunciation, which may affect the speakers' "...aspirations, perhaps even leading them to avoid certain situations" (Oyama, 1976).

Many recent studies in second language acquisition address the question of what influences interlanguage phonology. Understanding the causes of the foreign accent would make a major contribution to our understanding of the influences on the learner's interlanguage. One of the variables which has been the subject of much comment, both anectodal and in the teaching and research literature, is that of age. Repeatedly the observation has been made that children seem to lose their foreign accents more easily than do adults. There is a common belief, for example, that anyone who begins the study of language after the onset of puberty will be unlikely to attain native-like pronunciation even though the ability to learn other aspects of language - the syntax and vocabulary, for example - may well be at its peak. Even though this belief is widely held and many kinds of evidence are cited in its support, it is nevertheless the case that little hard, experimental evidence exists to support it. Solid empirical studies have been conducted, but the results have been so mixed that one must conclude that there are a number of other variables in operation. These studies will be described in Chapter II.

The fact that very few adult learners attain a native-like accent while most do not
has been attributed to many factors such as the degree of similarity of the target language to the native language, the language environment, the nature of the learning experience, the degree of ego permeability, the age at which the learner begins acquiring the target language, and the kind and degree of his/her motivation. Although there is a great deal of speculation about the role of these factors, very few studies have actually used controlled, precise methods. The studies that have dealt with the question of age generally conclude that the younger a learner starts to acquire a second language, the more likely is s/he to attain a native-like accent. However research findings are far from conclusive so far.

This study aims to shed more light on the nature of interlanguage phonology, by focussing on moderating variables, namely the effects of age of arrival, length of residence, native language, and linguistic environment. Chapter II is a review of literature on IL phonology research. It begins with the discussion of important studies that have addressed the question of IL in general and proceeds with a review of major literature dealing with IL phonology.

Chapter III is the description of this study which investigated the effects of age of arrival, length of residence, native language, and linguistic context on the phonological acquisition of second languages, specifically by studying subjects who were learning English as a second language in Canada. It was hypothesized that the subjects who had arrived in this country at an earlier age and lived here the longest would have a more native-like pronunciation. It was also hypothesized that their foreign accents would be more noticeable when they were under stress. Specifically, it was expected that oral readings would produce the highest degree of
foreign accent and the retelling of a personal experience in which the subject had
been in fear for his life would produce the least, in direct contrast to previous
findings with dialect variation in native speakers. Furthermore, the native languages of
ESL learners were expected to influence their decisions about the degree of foreign
accent made by native speaker judges.

Chapter IV describes the analysis and results. The analyses showed age of arrival to
be a significant variable, as expected. They also showed native language, which had
received little attention in the research literature, to be a significant variable. Length
of residence in the English speaking country did not appear to be significant. The
more surprising result was that the two linguistic contexts, recounting of a personal,
traumatic event and oral reading of an expository passage, did not yield significantly
different judgements of foreign accent. Chapter V discusses the result of this study
in the light of current IL theory and offers directions for future research.
II. REVIEW OF LITERATURE

The purpose of this chapter is to review the literature related to the acquisition of an L2 phonology. It will begin with a review of the major literature in IL in general and proceed with a review of the important literature dealing with IL phonology.

A. INTERLANGUAGE

Although there have been many approaches to the study of second language acquisition, the one which has received the most attention in recent years is that of Interlanguage (Selinker, 1972). The notion of IL is based on "...the learner's systematic handling of the language data to which he has been exposed" (Richards, 1972). As mentioned in Chapter I, the concept underlying IL is that learner language is not random, but, like natural language, rule-governed. The term IL refers to the rule system which is believed to underlie the language used by the second language learner from the time s/he begins the acquisition process until language fossilization occurs (or, theoretically, until the time that s/he reaches native speaker proficiency). Selinker argues that successful language learners continue to form hypotheses about the TL and reorganize linguistic material from an IL to the TL. According to the IL hypothesis, a learner's IL is shaped by five distinct processes central to second-language learning and the concept of fossilization. He argues that the following processes are the processes that are central to second-language learning:

If it can be experimentally demonstrated that fossilizable items,
rules, and subsystems which occur in IL performance are a result of the NL, then we are dealing with the process of language transfer; if these fossilizable items, rules, and subsystems are a result of identifiable items in training procedures, then we are dealing with the process known as the transfer-of-training; if they are a result of an identifiable approach by the learner to the material to be learned, then we are dealing with strategies of second-language learning; if they are a result of an identifiable approach by the learner to communication with native speakers of the TL, then we are dealing with strategies of second-language communication; and finally, if they are a result of a clear overgeneralization of TL rules and semantic features, then we are dealing with the overgeneralization of TL linguistic material (Selinker 1972).

In his discussion of IL, Selinker refers primarily to syntax. Tarone (1978) extends the concept to phonology, recognizing the role of language transfer and overgeneralization and adding approximation, avoidance, and L1 acquisition processes. It is difficult to try to assess the relative influence of each of Tarone's five factors because they are not parallel, but they are likely to involve three levels of operation. Both first language acquisition processes and transfer from L1 seem to govern the learning of the TL phonology. These two processes "can be thought of as the mechanisms by which the learner simplifies the new phonological system into a system from which to construct rules for production" (Piper 1985).

Approximation and overgeneralization occur at the next level of organization. These processes affect the rules that the learner creates for production. For example, approximation takes place as the learner gradually refines the IL rule and moves his production successively closer to the L2 rule. Overgeneralization occurs when the learner creates an IL rule which has a broader domain of application than that of
the corresponding L2 rule.

Avoidance, on the other hand, is likely to be a particular kind of communication strategy, as Selinker called it (1972). As the learner attempts to express meaning in spontaneous speech, s/he might avoid sounds which are impossible or difficult to produce because s/he does not have an adequate grasp of the TL phonology.

Most researchers who addressed the question of Tarone's five processes have focussed on the transfer and developmental processes. For example, Garnica and Herbert (1979) provided evidence which argued against a strong position for negative transfer and in favor of first language acquisition processes as being more relevant in explaining their L2 subjects' errors. These researchers discussed the compatibility of their data with the theory of natural phonology, developed by Stampe, which states that "assimilation is one of several natural processes which the child learning his first language must learn to suppress in order to acquire the target adult forms" (Stampe 1979, cited in Piper 1985). An L2 learner would have to begin anew, to learn once again to suppress these natural processes. Although this explanation would account for the assimilation errors found in their data, Garnica and Herbert rejected this analysis, arguing that the theory could not account for the biases of the L1 phonology that an adult learner brings to the second language learning task.

Eckman (1981) argued that some IL phonology rules are independent of both L1 and L2 phonologies. He claimed that terminal devoicing of obstruents by Spanish ESL speakers and the addition of schwa to word final consonants by Mandarin ESL
speakers did not originate either in the native nor the target languages of the learners. He argued that although Spanish allows only for voiceless obstruents word finally, and Spanish speakers frequently devoice word-final consonants in English, this devoicing behaviour cannot be considered as purely interference since it is the contrast between voiced and voiceless segments which must be learned and besides, Spanish "exhibits no morphophonemic alternations which would motivate a rule of Terminal Devoicing" (p.210). Similarly, words in Mandarin can end only with sonorant consonants or vowels and Mandarin speakers frequently append schwa to English words ending with obstruents. Nonetheless, Eckman argues that this behaviour reflects a phonological rule which cannot result entirely from interference since there are no forms in Mandarin which motivate the addition of a word final schwa.

Hecht and Mulford (1982) tested both the transfer and developmental hypotheses in a case study of a six-year-old Icelandic child's acquisition of the English affricatives and fricatives. They constructed two orders of difficulty for these sounds: one predicted by contrastive analysis and the other based on what is known about L1 acquisition of these sounds. They compared the two hypotheses by examining the phonological processes that governed the child's substitutions for target segments. Their results were mixed with some errors clearly corresponding with the developmental hypothesis and others corresponding with both the developmental and the transfer hypotheses. They concluded that transfer was the significant factor in determining the difficulty of segments while developmental processes provided a fuller account of the actual substitutions made.
Altenberg and Vago (1983) reported data consistent with negative transfer from learner's L1. They found evidence of transfer not only of phones but of phonological rule. However, they also observed that their subjects appeared to have "a class of mapping rules which cannot be explained as interference from the native language" (p.433). These rules were not part of the TL phonology, but they described natural phonological processes, in particular, word-final devoicing, affrication, and stress-vowel lengthening. These researchers concluded that L2 learners can apply rules from their native languages as well as from their "innate" conception of linguistic structure as regards pronunciation.

In a laboratory experiment investigating the production of English stop consonants, Flege and Port (1981) found that their Arabic-speaking subjects produced VOT (voice onset time), closure duration, and vowel duration values for English stops which were very similar to those produced in Arabic and quite dissimilar to those produced by American speakers of English. Although they concluded that interference played a significant role in their subjects' L2 phonetic production, they found that American speakers did not have any difficulty in recognizing the English stops produced by Arabic speakers and they raised the possibility that other factors, such as social constraints, might be operating.

These studies reviewed above indicate that more research attention has been directed toward the negative transfer and the other three processes identified by Tarone. However, some researchers have studied approximation. Flege (1980), for example, found evidence for successive approximation, i.e., a series of substitutions moving gradually closer to the target phone, in the speech of his Arabic-speaking
subjects learning English. He claimed that more advanced ESL subjects seemed to have acquired a duration contrast between word-final /ptk/ and /bdg/, which less advanced subjects had not. His cross-sectional design did not allow observation of change in individual learners, however.

Piper (1984) also reported evidence of approximation in the IL phonologies of five-year old ESL children of various NL backgrounds. She found that the children in her longitudinal study acquired the interdentals, the voicing contrast in word-final fricatives, and consonant clusters by gradually approximating the target forms rather than by replacing a single incorrect substitution for the correct form. She claimed that the "existence of phonetic approximation in the developing phonologies of both L1 and L2 learners argues against a central role for first language interference in the changing phonological systems of second language learners". She also suggested, in agreement with Eckman, that IL phonological rules may be largely independent of both the learner's native and the target phonology.

Williams (1980) found evidence of approximate behaviour in the acquisition of English stops by 72 Spanish speakers learning English as a second language. He investigated the VOT and found that when subjects were producing English words there was a decrease in Spanish-like VOT characteristics.

Because the majority of research is directed toward the transfer and developmental hypotheses, one might be misled into assuming that these two processes are the major factors influencing IL phonology. Very little attention has been paid to the other processes identified by Tarone with the exception of approximation. Therefore,
we have a great deal of evidence in support of an important role for both transfer and developmental process, some for the existence of approximation, and almost none about overgeneralization and avoidance, and none about the balance and interaction among the five processes in the IL phonology of the same learner. Moreover, most studies use cross-sectional rather than longitudinal designs or are the longitudinal investigation of a single subject, both designs limiting the generalizability of the findings.

The only study which has investigated all five of these processes simultaneously is Piper's (1984) longitudinal study of 15 five-year-old children from a variety of L1 backgrounds who were acquiring English as their second language in an English kindergarten. Tape recorded samples were collected each month during the ten-month school year and transcribed. The results showed that the children made very few errors, most of which were consonant errors. Although the ratio of errors to words produced stayed roughly the same throughout the ten months, the patterns of the errors changed. Patterns of change over the ten months provided strong evidence of approximation and some indication of both avoidance and overgeneralization. Another interesting finding was that 86% of the errors made by the 15 subjects could be attributed to at least one of the major categories of phonological process and that devoicing accounted for more errors than any other single process (40%) followed by the deletion of word-final segments (20%) and stopping (12%). Piper concluded that the order of importance of processes in the IL phonology of these 15 subjects was:

1) first language acquisition processes
2) approximation
3) overgeneralization
4) avoidance
5) transfer from L1

There is still no clear answer, however, to the question of whether or not Tarone's all five processes influence the system of IL equally.

In addition to the five processes that govern the shaping of a learner's IL, Selinker's concept of fossilization is crucial to the concept of IL. He defines fossilizable linguistic phenomena as "... linguistic items, rules, and subsystems which speakers of a particular NL will tend to keep in their IL relative to a particular TL." He notes that fossilizable structures reappear in IL performance when the learner's attention shifts to new and difficult intellectual subject matter or when he is in a state of extreme relaxation. Thus the concept of fossilization is an important one in viewing one aspect of interlanguage variability: backsliding, a term which refers to the situation in which a learner will suddenly seem to lose a rule which s/he had earlier acquired. The notion of fossilization has particular salience in the study of pronunciation since it has often been observed that even proficient, successful L2 learners frequently fail to lose their foreign accents. Whatever its cause, the persistent foreign accent may be the clearest evidence - highly relevant data, in Selinker's terms - for that fossilization is a nearly inevitable occurrence in non-native learners.

Selinker claims that only a small percentage, perhaps a 5%, of learners succeed in acquiring a native-speaker proficiency. The question raised is why fossilization occurs
at an earlier point of learning in some learners. Research thus far points to the 
**age** at which second language acquisition begins as a critical variable. The fact that 
very few adult learners attain a native-like accent while most do not has been 
attributed to many factors such as the degree of similarity of the target language 
to the native language, the language environment, the nature of the learning 
experience, the degree of ego permeability, the age at which the learner begins 
acquiring the TL, and the kind and degree of his/her motivation.

Although there is a great deal of speculation on these factors, very few studies 
have actually used controlled, precise methods. The studies that have dealt with the 
question of age generally conclude that the younger a learner starts to acquire a 
second language, the more likely is s/he to attain a native-like accent. However 
research findings are far from conclusive so far.

**B. THE QUESTION OF AGE**

There have been two basic types of research which have addressed the issue at 
hand. One type is the laboratory experiment in which learners are taught foreign 
(or artificial) languages in laboratory conditions, then given a test. Their responses 
are tape-recorded and played to native-speaker judges who rate the accuracy, or 
fidelity, of pronunciation. The variable which has received the most attention in 
experiments of this type is age and the more usual finding has been that younger 
learners possess no particular advantage and that adults can and do achieve 
remarkably good pronunciation.
Interestingly, many studies done under laboratory conditions show that adults are capable of, and sometimes superior to, children in acquiring native or near-native pronunciation. Neufeld (1978) successfully demonstrated that adults can achieve native-like proficiency in pronunciation of a foreign language after 18 video-taped, one-hour lessons with a focus exclusively upon phonetic material in the language. Olson and Samuels (1973), in their study of German pronunciation acquisition at three different age groups, taught 33 German phonemes to 60 subjects, using ten pre-taped 15-20 minute sessions over two weeks and saw that junior high and college groups were superior to the elementary group in foreign language pronunciation. Judy Gilbert (1980), after a series of studies on prosodic development, concluded that there is a positive value in active mimicry when it is used selectively in the classroom for adults. Loewenthal and Bull (1984) asked 39 monolingual English school children, at five different age levels, to imitate single syllables, words and short phrases in Armenian and noted an improvement with age in children's replication of these sounds.

Snow and Hoefnagel-Hohle (1977) investigated the ability of 136 speakers of British English ranging in age from five to 31 years to imitate five difficult Dutch words and concluded that older subjects were considerably better than younger subjects at pronunciation in the short term. The younger subjects began to excel after about a year. These researchers also studied 47 English speakers between the ages of three to 60 during their first year of exposure to Dutch in informal environments by administering tests that involved the imitation and spontaneous production of 80 words at four to five month intervals and found that although all subjects were equally good at imitation, the adults were generally superior to the youngest
children in the spontaneous production condition. However, again, this age effect diminished with time. Obviously there are serious doubts about the generalizability of data obtained under laboratory conditions, which may resemble classroom learning conditions to a limited degree but which in no way replicate the full nature of any language learning experience.

The second type of study investigates the pronunciation of adult learners who have acquired their second language under more natural conditions. Their pronunciation is rated by native-speaker judges and the scores analyzed with respect to various factors including age of the learner, age at which the second language learning began, and the number of years in the host country. This type of study has greater generalizability, particularly if speakers of a number of different first languages are investigated. The major findings of these studies to date have been:

1. In a study of 200 ESL students between the ages of six and 15 in Washington D.C., Fathman (1975) used an oral production test which consisted of 60 items about descriptions of two pictures and a general description of a composite picture. The tape-recorded descriptions were later evaluated by two linguists. She found the younger children to be better in their English pronunciation and concluded that pre-teen children may be learning English phonology at a faster rate than the older children.

2. Tahta, Wood, and Loewenthal (1981) also found a strong age effect in their study with 109 ESL learners between the ages of nine and 77, who had lived in the United Kingdom for a minimum of two years. Subjects were interviewed about
the history of their L2 learning and were asked to read a paragraph into a tape-recorder. Three independent judges, all of whom were native speakers of English, used a three-point scale to judge the degree of foreign accent. Their results showed excellent chances of a native accent if L2 acquisition begins by age six, reduced but fair chances until puberty, and minimal chances if acquisition begins during or after puberty.

3. Seliger, Krashen, and Ladefoged (1975) interviewed 364 Israeli and American immigrants to the U.S. and Israel, respectively. The immigrants' self-reported pronunciation proficiency ratings showed that although 85% of immigrants who arrived in a foreign country before age ten had no accent, 50% of those who arrived between the ages of ten and 15 and only 8% of those who arrived after age 16 had no foreign accent.

4. Asher and Garcia's 1969 study with 71 Cuban immigrants between the ages of seven and 19, most of whom had lived in the United States between one and eight years, showed the age of arrival in the U.S. to be an important factor. All of these subjects had learned their English in the San Francisco Bay Area of California. Each subject was asked to read four sentences which were tape-recorded and rated by a member of a class of American high school students on a four-point scale. Among the 1919 independent decisions on the pronunciations of the subjects, the judges had perfect agreement among themselves in 70% of those decisions. The results showed that the highest probability of a near-native English pronunciation occurred when the child came to the U.S.A. between the ages of one and six, and lived in this country from 5 to 8 years. There was an inverse relationship
between the age of arrival and the acquisition of a native-like pronunciation. While 41% of those subjects who arrived between the ages of seven and twelve accomplished this, only 7% of those who arrived between the ages of thirteen to nineteen could do so. Length of residence in the States was found to be an important variable. Although only 15% of those who lived in the U.S. between one and four years achieved native-like pronunciation, 51% of those who lived there between 5 and 8 years could do so.

5. That other factors may influence the foreign accent was suggested by Oyama in another study. Recalling Labov's finding that monolingual speakers who had undergone a change in dialect reverted to that dialect when telling stories of personal tragedy or trauma while maintaining the more recently acquired, and possibly more prestigious, dialect in more formal tasks such as reading aloud, Oyama tested her Italian male subjects to see if the degree of foreign accent was greater than when reading aloud. Master tapes were made of the tape-recorded stories and paragraph readings, with control samples mixed in at irregular intervals and judged for degree of foreign accent on a 5-point scale by two American-born graduate students in Linguistics. Although Oyama found a significant difference between the personal incident and oral reading, the difference was in the opposite direction. In other words, oral reading produced the greater foreign accent. ESL teachers could have told her what she would find; they have long known that oral reading in a new language can be far more stressful than is the telling of a personal incident in which the speaker has great control of the language.

These five long-term studies deal with subjects who have had several years of
exposure to English. They all show that age of arrival is the most significant variable in predicting pronunciation accuracy: The subjects who arrive in a foreign country as children eventually attain a higher level of proficiency than those who arrive as adults. The question which arises, of course, is why. Stevick (1978) claims that "people who have normal physiological equipment can mimic new sounds". Snow (1983) reports a test of auditory discrimination which, contrary to the popular belief that kids "have an ear for accent", showed a clear increment in skill with age, through the teenage years and superiority of the adults over the younger children. Why is it that very few adult learners attain a native-like accent under normal circumstances? Why do adults, who have an initial advantage lose this advantage? It seems that children learn more slowly but they continue to learn longer. They finally catch up with and surpass older learners (Krashen, Long and Scarcella, 1982).

One explanation is the critical period hypothesis based on Lenneberg's concept of lateralization. Scovel (1969) writes:

...the same plasticity that accounts for the ability of the child's brain to relocate speech to the non-dominant hemisphere accounts for the plasticity that must be evident in the neurophysiological mechanisms underlying the production of the sound patterns of a second language.

He notes that lateralization does not affect syntax because sound patterns are directly initiated by neurophysiological mechanisms, since they are produced by actual motor activity. Lexical and syntactic patterns, on the other hand, seem to lack any such "neurophysiological reality".
The critical period hypothesis is not currently considered to be a valid explanation. Recent research has demonstrated the short-term superiority of older speakers in the laboratory experiments discussed earlier in this paper. These serve as strong evidence against the existence of a biological critical period for language acquisition.

Another explanation is the phonological translation hypothesis which rejects the possibility of a critical period. Flege (1981) writes that children and adults possess the same general capacity for learning to pronounce foreign languages, but mature speakers tend to "interpret sounds occurring in a foreign language in terms of sounds found in their native language". He argues that the important cause of foreign accents is the phonological translation between the languages by the speakers who already speak a first language. His hypothesis is particularly appealing because it links negative transfer, or interference, with the age of the learner, providing an explanation for the observation that children's errors seem not to be greatly influenced by their L1 (see Piper 1984). Suter (1976) and Purcell and Suter (1980) also found the first language to be one of the significant factors predicting pronunciation accuracy in second language learning.

Tahta, Wood, and Loewenthal (1981), on the other hand, give a psychological and social explanation: a shift of identification from the first language culture to the target culture, evidenced by the use of second language at home. It has also been suggested that because people model their foreign language pronunciation after their peers, immigrant adults who tend to associate with people who speak their language have a stronger accent than their teachers and classmates who are native speakers (Olson and Samuels, 1973).
While Selinker (1972) suggests that adults who are successful in attaining near-native pronunciation may go through very different psycholinguistic processes than do the majority of second language learners who are less successful, Neufeld claims that adults' inferior performance in acquisition of prosodic and articulatory features is not a product of linguistic or psycholinguistic disabilities, but a result of social and psychological phenomena. He argues that adults form inaccurate acoustic images of the target language sound patterns, because they are generally exposed to inappropriate learning situations. Once they form these images, their pronunciation patterns are set (Neufeld, 1977).

The motivation factor is also considered to be very important. It is suggested that children have a greater motivation to achieve a native-like skill and a greater need to pronounce correctly in order to achieve communication, whereas older subjects are less reliant on correct pronunciation to communicate effectively because they are much better at other aspects, such as vocabulary, syntax and morphology (Snow and Hoefnagel-Hohle, 1977). Piper (1984) has seen that even ESL children, who are excellent mimics and who acquire a native-like pronunciation easily, make errors, perhaps beginning when they turn their attention to other aspects of language.

Adults' failure to attain a native-like accent under normal circumstances is also attributed to the degree of ego permeability. Guiora (1972) claims that children have more fluid language ego boundaries. Because adults have already decided on their cultural identity, they use their accents to identify themselves appropriately. Guiora (1972) and Schumann, Holroyd, Campbell and Ward (1978) point out the importance of the degree of ego permeability of the individual. Both alcohol studies and
hypnosis studies, which manipulate ego boundary permeability by lowering inhibition, show that subjects perform significantly better when they are relaxed. This brings us back to the whole question of variability of interlanguage phonology.

**C. VARIABILITY OF INTERLANGUAGE**

As stated earlier, in addition to being varied among learners, the system of interlanguage is dynamic; it changes constantly over time within each learner. Further, a look at any one individual at one point in time shows a high degree of variability. Interlanguage phonology is highly sensitive to shifts in communication situation, speaker mood, etc. Tarone, 1979). Dickerson (1977) shows that nature of the task (free speech, dialogue reading, or word list reading) produces systematic style shifting in interlanguage phonology. Dickerson points out the fact that ESL students' less target-like behavior outside the classroom as compared with their behavior inside the classroom is normal, resulting from giving less attention to speech. Seliger, Krashen and Ladefoged (1975) report a case of a Puerto Rican teacher of English in New York City, whose pronunciation in English was quite good in the ESL classroom as long as she was conscious of her pronunciation, but tended to lapse into a heavier Spanish accent in more informal situations.

People are also variable in their use of their first language. This variability is not random but it is patterned and related to the social context of the speech activity. Labov writes about stylistic norms which are striven for and achieved to different degrees by different groups of people in their first language (Labov 1966). The prestige norm, which is approached most nearly by the speech of the upper middle
class, shows relatively little difference between careful and casual speech. Similarly, at the other end of the socio-economic scale are the norm of the lower socio-economic classes who also exhibit rather small amounts of stylistic variation. Between these extremes is a population that shows rather marked stylistic shifts. This approach of using four levels of carefulness of speech is based on the notion of stylistic variation in different speech contexts, characterized by various degrees of self-monitoring. It is assumed that when people are speaking formally or carefully they are in fact listening quite closely to themselves, and when they are speaking casually, the motor activity involved in speaking is less well regulated.

In his description of a number of methods of recording casual speech, Labov mentions the "danger-of-death" technique, in which the subject is asked to remember an experience in which he thought he was in danger of losing his life. This task must be introduced as informally as possible and the subject must be encouraged to give a detailed and involved description of the event.

It would be expected, then, that native speakers would revert to their native dialects in recounting traumatic personal experiences than in reading aloud when they adopt a more "prestigious" dialect.

Research on this topic with non-native learners suggests just the opposite. As mentioned earlier, Oyama (1982) found the subjects' telling of personal experiences to be less heavily accented than their oral readings. From Labov's writings, casual speech would be expected to be farther from the norm than formal. However, Labov conceives casual speech to include speech under stress, as well as
emotionally involved speech. Oyama suggests that the immigrants who are often painfully aware of their accents, would find the reading aloud of printed material to be a more stressful task than the informal recounting of an anecdote. Oyama goes on to say that:

...while casual speech and accented speech both depart from the prestige norm, in the case of native speakers the departure is assumed to be due to the use of another, more basic, style involving less self-monitoring, whereas for a nonnative, accent is less the expression of an early acquired system than it is the result of imperfect control of any of the second language variants.

She suggests that increased attention might have a deteriorative effect on performance of those whose command of English phonology was shaky.

Suter (1976), on the other hand, measured 61 nonnative speakers of English on 20 variables suspected of displaying significant relationship to pronunciation accuracy from four different NL backgrounds, using an oral mimicry task and a free speech sample from each subject, describing a holiday in his/her native country. Information on the 20 variables was collected using a Likert-like scale and interview questions. Students from an introductory linguistic course served as judges. A six-point scale was used for each of the 30-second speech samples on the master tape. The results showed the strength of speaker's concern about his or her pronunciation to be one of the four most important factors (Purcell and Suter, 1980). The more concerned the speaker was, the better was his/her pronunciation. This brings us back to the case of the Puerto Rican teacher whose accent became lighter in the formal setting of the ESL classroom. Perhaps it is the degree of concern that must be studied further. Some concern would be productive, but too much concern
would probably be a disadvantage.

This point is supported by the alcohol studies. When Guiora artificially increased the empathy levels of second language learners by gradually increasing amounts of alcohol, he observed that the learner's pronunciation of the target language improved up to certain point, and then as subjects drank greater amounts of alcohol, it rapidly deteriorated. It is interesting that interlanguage phonology is a much more sensitive indicator of empathy than either syntax or morphology (Tarone, 1979). Tarone discusses the concept of interlanguage phonology as a capability continuum which includes a range of styles. Her continuum is founded on the assumption that Labov's (1969) Observer's Paradox applies to IL. Labov states that there are no single-style speakers, but that every speaker shifts phonetic and linguistic variables as the situation and topics change. He claims that it is possible to range the styles of a speaker along a continuous dimension that is defined by the amount of attention paid to speech. Furthermore, he argues that the most regular and systematic of phonological and grammatical patterns are evidenced in the vernacular style, where the minimum of attention is given to speech. Tarone's capability continuum also includes a range of styles varying from a stable subordinate style which is free of L1 influence to an unstable superordinate style in which the speaker pays a great deal of attention to the form. The speech is thought to contain more L1 interference in the superordinate style.

There is empirical evidence to support Tarone's claim that the vernacular is the least attended style which has the least variability and greatest internal consistency, and that the superordinate, or careful, speech is the most attended style which is
Review of Literature / 26

more variable and more permeated by TL or NL phenomena. In other words, she
claims that the greatest systematicity is to be expected in the task in which the
least attention is paid to language form.

Dickerson's (1977) longitudinal study with Japanese learners of English provide
empirical evidence for the claim that IL vernacular is the most consistent of IL
speech styles. She tape-recorded ten subjects at three separate occasions over a
nine-month period giving each subject a three part test consisting of free speaking,
reading of dialogues, and word lists and transcribed the tapes in fine phonetic
detail. Her findings showed that these learners produced /r/ with varying degrees of
correctness, depending on the task. Correct production of the target /r/ occurred
most frequently in careful speech and least frequently in casual speech.

Schmidt (1977) saw that the same kind of style-shifting seemed to occur when
Arabic learners of English performed the same three tasks in their native language
and in IL. He observed that the target form /θ/ which occurs in the more careful
IL style (minimal pair task) is also a prestige variant of the NL, Arabic. This kind of
variability was also reported in Beebe's 1980 study with Thai learners of English. The
supply of /r/ variability depended on whether or not the subjects were conversing
or listing words. In producing the final /r/ in IL, learners followed the general
pattern: there were more TL forms in the careful style (listing 72.2% correct) than
in the casual style (conversing 36.5 % correct). Initial /r/ was produced correctly in
fewer instances (8.9%) in the careful style and in more instances (38.5%) in the
casual style. The subjects' careful style seemed to be marked by more NL forms
than the casual style did. These NL forms were prestige variants of initial /r/ which
are used more frequently in careful styles in Thai. It was seen that the learners were using prestige NL variants to an increasing degree in their careful IL style. Once again, social value attached to particular forms in the L1 is to be taken into consideration when attempting to explain second language data.

Much research is needed to gain insight into the nature of IL. Although phonology is very interesting and convenient, as pointed out at the beginning of this chapter, Tarone's warnings must be taken into account for further research. As she discusses the concept of IL as a continuum of styles defined by the amount of attention paid to speech and argues that most systematic second language learner speech is produced when the learner is paying the least attention to speech, she also points out the fact that research and its methods lead subjects to pay attention to their speech. She claims that the experimental situation forces learners to go beyond their competence and thus encourages errors. Although the best way to obtain good data on any one speaker is through an individual tape-recorded interview, unfortunately this is a formal context which causes the speaker to pay more than the minimum amount of attention to speech. Tarone emphasizes the importance of recording the data gathering procedures very carefully (1979).

There is a great need for controlled studies which will shed light upon the causes of a foreign accent. We still need to know how and why interlanguage phonology is affected by linguistic context. We need to know how similar the effect of context is on native and nonnative speech.

The purpose of this study is to investigate the effects of age of arrival, length of
residence, native language, and linguistic context on IL phonology.
III. THE EXPERIMENT

A. EXPERIMENTAL HYPOTHESIS

This study investigates the effects of four variables on the degree of foreign accent as rated by native-speaker judges of 29 subjects. The hypotheses were as follows:

1. That subjects will exhibit greater foreign accent in an oral reading task than in the retelling of a personal experience;
2. That the earlier the age at which subjects arrived in Canada or other English speaking country and began learning English, the better their accents will be judged;
3. The greater the number of years spent in an English speaking country, the better their accents will be judged;
4. The native languages of ESL speakers will influence the decisions about the degree of foreign accent made by judges.

B. METHOD

1. Subjects

Because of difficulties in obtaining subjects, the researcher was not able to choose the ideal sample, but had to work within the assessable population. Twenty-nine subjects, 14 females and 15 males, from advanced ESL classes at two community colleges in Vancouver were interviewed. Teachers of advanced classes chose classes which represented the most diverse first language backgrounds. Students were
encouraged to volunteer fifteen minutes of their time for an individual tape-recorded interview with the investigator.

Subjects were immigrants, foreign students, and visitors who had come to Canada and started learning English at various ages and had lived in Canada or another English speaking country for various periods of time ranging from two months to 37 years. They were between the ages of 18 and 37. They came from 12 native language backgrounds: Amharic, Chinese, Finnish, French, Gitskan, Gujerati, Italian, Korean, Persian, Punjabi, Spanish, and Tagalog. Some had been born in Canada into non-English speaking families, and some had not lived in an English speaking country until the age of 29. Most had studied some English at their schools abroad, before coming to Canada, but felt that they did not really learn to communicate in English before arriving in Canada.

Most of the subjects in this study were landed immigrants who had a high motivation to learn English in order to continue their education and to get into the job market to compete with native speakers of English. A few were in this country temporarily, and either wanted to improve their English to study at Canadian universities before returning to their countries, or to function better in an English speaking community during their visit here. Thus the sample in this study showed a great deal of variety in their native-language background, length of residence, age of arrival, present age, but all had a high motivation to learn English.

In addition to these 29 non-native speakers of English, three native speakers, two females and one male, who were born and grew up in Canada were interviewed
to serve as controls, to ensure that the judges could in fact distinguish between non-native and native speakers. The ages of these controls varied from 21 to 26.

2. Procedure

Subjects were admitted to the interview room individually. Each subject's interview consisted of three parts, all of which were recorded for future editing:

a) answering personal questions about native language, year of first arrival in Canada, number of years spent in Canada or other English speaking country, etc. (please see Appendix A),

b) reading aloud from a passage entitled "Room for One More" (please see Appendix B), and,

c) the retelling of a personal narrative.

The retelling of a personal narrative was prompted by the same instructions used by Labov (1969) and by Oyama (1982), i.e., to recall a time "when you thought your life was in danger or when you were deeply concerned for someone close to you." The same procedure was followed for the native-speaker controls.

The three parts of the interview were given in different orders to control for a possible order effect. There were six different orders and they were administered sequentially to the subjects as they came in.

ABC (questions, reading, personal narrative)

ACB (questions, personal narrative, reading)

BAC (reading, questions, personal narrative)
Part A of the interview was not used in the ratings of pronunciation, but the information was used in the analysis of the other two independent variables. Each of the other two speech samples were edited for length, 20 seconds for each task plus a five second interval between tasks, randomized and rerecorded, along with matched segments from three native speakers. A table of random numbers was used to randomize the sixty-four segments, including those of the native speakers. The subjects were identified by codes on the tape (i.e., ABC 1, ACB 1, ..., CBA 5,...).

3. Judges

The master tape was played for native-speaker judges to evaluate the degree of foreign accent on a scale of one (no foreign accent) to five (very heavy foreign accent). The judges were 13 ESL teacher candidates taking an advanced Applied Linguistics course at the University of British Columbia. Three of these judges were later dropped from the study because of their inability to identify native speakers or their poor correlation with the rest of the judges. All judges sat together in a seminar room and made their assessments on individual rating sheets while listening to the tape. They each used a rating form to assess each sample they heard. At the beginning of the tape, four speech samples were used for training purposes to accustom the judges to the task. A set of instructions were read to the judges at
the beginning of the tape:

Please listen to each speaker and make a decision about the degree of his or her foreign accent. If you believe that the speaker is a native speaker of English then you should circle 1 (no foreign accent), but if you believe that he or she is a non-native speaker, then you must judge the degree of his or her accent on the remainder of the scale. The first four speech samples you hear will be examples to accustom you to the task.

Interjudge reliability was determined by performing a multiple correlation and by using analysis of variance. Originally, for each of the 29 subjects and the three controls, there were thirteen judgements for each of the two tasks, totalling up to 832 independent judgements on the pronunciation of the subjects. Previous researchers have accepted an agreement rate of 70% or higher on all items (19 judges) (Asher and Garcia, 1982) or a correlation of .80 or higher (two judges) (Oyama, 1982) as an indication of interrater reliability. Reliability for this study was determined by using both measures. A multiple correlation table was constructed to examine the correlation between the decisions made by each judge and those made by every other judge. The multiple correlation allowed the judges whose correlation with other judges was less than the predetermined level of 70% to be dropped from the study. Analysis of variance was used to confirm that the variation among the judges was non-significant. Intrajudge validity, or how effectively the judges were able to differentiate native from nonnative speakers, was determined by examining the percentage of instances in which the judges correctly identified native speakers. Judges had to identify at least eight of the nine samples from native speakers as being from native speakers; otherwise they were dropped from the study. These two procedures resulted in reducing the total number of judges
Previous researchers have used the mode of the judges' decisions as an appropriate indicator of each subjects' accent in each task, recognizing that using the mean may obscure the variation between subjects. In this study computations were made using both the mode and the mean; they were found to yield nearly identical results. The means and the modes of the judges' ratings were matched back with the speaker identification numbers, and later they were coded along with the subjects' age of arrival, length of residence, and the native language for statistical analyses.

Data were analyzed using a multivariate analysis of variance (MANOVA, SPSS X) with the ratings for the two linguistic contexts as the dependent variables and the age of arrival, years in Canada and native language as independent variables.
IV. ANALYSIS AND RESULTS

A. JUDGES

The first step was to establish the reliability and validity of the judgements. As mentioned earlier, three of the 13 judges were dropped out of the study when the multiple correlation table showed that their correlation with the other judges was less than the predetermined level of 70%. Moreover, two of these three judges were unable to identify eight of the nine samples from native speakers as from native speakers.

The remaining ten judges' decisions were used in the analysis of the data. For each of the 29 subjects and the three controls, there were ten judgements for each of the two tasks, totalling up to 640 independent judgements on the pronunciation of the subjects. In 96% of those decisions, the judges had perfect agreement among themselves (alpha=0.9602 with 63 D.F.). Means of the judges' decisions for each subject were used in the statistical analyses. The results are given in Tables I and II.

<table>
<thead>
<tr>
<th>IV</th>
<th>DV</th>
<th>B</th>
<th>Beta</th>
<th>Std. Err.</th>
<th>T-value</th>
<th>Sig. of T</th>
<th>L 95%</th>
<th>U 95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOR</td>
<td>OREAD</td>
<td>-.658</td>
<td>-.061</td>
<td>2.026</td>
<td>-.325</td>
<td>.748</td>
<td>3.515</td>
<td>-4.831</td>
</tr>
<tr>
<td></td>
<td>PEX</td>
<td>-2.129</td>
<td>-.190</td>
<td>1.970</td>
<td>-1.080</td>
<td>0.290</td>
<td>-6.185</td>
<td>1.928</td>
</tr>
<tr>
<td>ARR</td>
<td>OREAD</td>
<td>2.143</td>
<td>0.397</td>
<td>1.012</td>
<td>2.118</td>
<td>0.044</td>
<td>0.059</td>
<td>4.226</td>
</tr>
<tr>
<td></td>
<td>PEX</td>
<td>2.699</td>
<td>0.478</td>
<td>0.983</td>
<td>2.744</td>
<td>0.011</td>
<td>0.673</td>
<td>4.724</td>
</tr>
<tr>
<td>NL</td>
<td>OREAD</td>
<td>-.938</td>
<td>-.438</td>
<td>0.328</td>
<td>-2.862</td>
<td>.008</td>
<td>-1.612</td>
<td>-.263</td>
</tr>
<tr>
<td></td>
<td>PEX</td>
<td>-.655</td>
<td>-.292</td>
<td>0.318</td>
<td>-2.058</td>
<td>.050</td>
<td>-1.311</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Table I. Regression analysis for within cells error term. The independent variables are length of residence (LOR), age of arrival (ARR), and native language background (NL). The dependent variables are the oral reading (OREAD) and retelling of a personal experience (PEX) conditions.
Table II: Univariate F-Tests with (3,25) D.F.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Hypoth. MS</th>
<th>Error MS</th>
<th>F</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>OREAD</td>
<td>236.117</td>
<td>37.178</td>
<td>6.351</td>
<td>.002</td>
</tr>
<tr>
<td>PEX</td>
<td>304.506</td>
<td>35.134</td>
<td>8.667</td>
<td>.000</td>
</tr>
</tbody>
</table>

B. HYPOTHESES

1. Hypothesis I

Subjects will exhibit greater degree of foreign accent in an oral reading task than in the retelling of a personal experience.

A t-test on the overall means in between the two linguistic contexts showed no significant difference between the two linguistic contexts (p=0.746 with 28 D.F.). This was an unexpected result which will be discussed in the next chapter.

2. Hypothesis II

The earlier the age at which subjects arrived in Canada or other English speaking country and began learning English, the better their accents will be judged.

the multiple analysis of variances showed age of arrival to be a significant factor both in oral reading (OREAD) and in the retelling of a personal experience (PEX) conditions: p=0.044 for OREAD and p=0.011 for PEX.
Table III: The mean scores assigned by judges for each age of arrival (ARR) group.

It is interesting to note that although subjects who arrived in an English speaking country before the age of six were judged to have the least degree of foreign accent, the 12-17 age group in the OREAD condition was judged to have the highest degree of foreign accent among the groups of that condition. In the PEX condition, the 12-17 age group was again judged to have the same degree of foreign accents as the 24-27 and 28+ year olds.

3. Hypothesis III

The greater the number of years spent in an English speaking country, the better the subjects' accents will be judged.

The multiple analysis of variances showed that the length of residence in an English speaking country did not contribute to the degree of foreign accent (p = 0.748 for OREAD, p = 0.290 for PEX).
TABLE IV: Cell means for ARR (age of arrival) and LOR (length of residence) conditions. Numbers in parantheses refer to the number of subjects. The first mean score is given for the PEX condition and the second for the OREAD condition.

<table>
<thead>
<tr>
<th>LOR</th>
<th>OREAD</th>
<th>PEX</th>
<th>Number of subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-9 years</td>
<td>3.1087</td>
<td>3.2130</td>
<td>23</td>
</tr>
<tr>
<td>10-19 years</td>
<td>2.5500</td>
<td>2.2000</td>
<td>4</td>
</tr>
<tr>
<td>20-29 years</td>
<td>2.6000</td>
<td>2.5000</td>
<td>1</td>
</tr>
<tr>
<td>30+ years</td>
<td>1.9000</td>
<td>1.6000</td>
<td>1</td>
</tr>
</tbody>
</table>

Table V: The mean scores assigned by judges for each of the length of residence (LOR) group.

4. Hypothesis IV

The native languages of subjects will influence the decisions about the degree of foreign accent made by the judges.

While there was no significant difference in linguistic context, judges did discriminate among the native languages in the OREAD task (p=0.008) better than in the PEX task (p=0.050). The mean scores assigned by judges for each native language group
are given in Table VI.

<table>
<thead>
<tr>
<th>Native Language</th>
<th>PEX</th>
<th>OREAD</th>
<th>Number of subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spanish</td>
<td>3.5250</td>
<td>3.5250</td>
<td>4</td>
</tr>
<tr>
<td>Chinese</td>
<td>3.1000</td>
<td>3.1733</td>
<td>15</td>
</tr>
<tr>
<td>Finnish</td>
<td>2.3000</td>
<td>3.3000</td>
<td>1</td>
</tr>
<tr>
<td>Tagalog</td>
<td>3.0000</td>
<td>2.7000</td>
<td>1</td>
</tr>
<tr>
<td>Amharic</td>
<td>3.8000</td>
<td>2.8000</td>
<td>1</td>
</tr>
<tr>
<td>Korean</td>
<td>3.2000</td>
<td>2.5000</td>
<td>1</td>
</tr>
<tr>
<td>Gujarati</td>
<td>1.7000</td>
<td>1.2000</td>
<td>1</td>
</tr>
<tr>
<td>Italian</td>
<td>2.6000</td>
<td>2.2000</td>
<td>1</td>
</tr>
<tr>
<td>Gitskan</td>
<td>1.6000</td>
<td>1.9000</td>
<td>1</td>
</tr>
<tr>
<td>Punjabi</td>
<td>3.5000</td>
<td>3.4000</td>
<td>1</td>
</tr>
<tr>
<td>Persian</td>
<td>2.2000</td>
<td>1.9000</td>
<td>1</td>
</tr>
<tr>
<td>French</td>
<td>2.3000</td>
<td>2.6000</td>
<td>1</td>
</tr>
</tbody>
</table>

Table VI. The mean scores assigned by judges for each native language group (NL).

Because subjects were unequally distributed across the languages, it is not possible to determine which native languages are statistically significant in predicting the degree of foreign accent of these learners of English.
Table VII: Cell means for native language background (NL) and age of arrival (ARR) conditions. Numbers in parantheses refer to the number of subjects. The first mean score is given for the PEX condition and the second score is given for the OREAD condition.

<table>
<thead>
<tr>
<th>ARR</th>
<th>0-5</th>
<th>6-11</th>
<th>12-17</th>
<th>18-23</th>
<th>24-27</th>
<th>28+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spanish</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.7(1)</td>
<td>3.7</td>
<td>3.5(7)</td>
<td>3.5(4)</td>
<td>3.6</td>
<td>3.2</td>
</tr>
<tr>
<td>Chinese</td>
<td>1.9(2)</td>
<td>2.2(2)</td>
<td>2.3</td>
<td>2.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finnish</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.3(1)</td>
<td>3.3</td>
</tr>
<tr>
<td>Tagalog</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.0(1)</td>
<td>2.7</td>
</tr>
<tr>
<td>Amharic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.8(1)</td>
<td>2.8</td>
</tr>
<tr>
<td>Korean</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.2(1)</td>
<td>2.5</td>
</tr>
<tr>
<td>Gujerati</td>
<td>1.7(1)</td>
<td>1.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italian</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.6(1)</td>
<td>2.2</td>
</tr>
<tr>
<td>Gitskan</td>
<td>1.6(1)</td>
<td>1.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Punjabi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.5(1)</td>
<td>3.4</td>
</tr>
<tr>
<td>Persian</td>
<td>2.2(1)</td>
<td>1.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>French</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.3(1)</td>
<td>2.6</td>
</tr>
</tbody>
</table>

In summary, the results showed no difference between the two linguistic contexts. Age of arrival and native language contributed significantly to the degree of foreign accent while years in an English speaking country did not. Specifically, learners who arrived at a younger age had better accents than those who arrived at an older age. Unfortunately, it was not possible to specify which native languages were significant in determining the degree of foreign accent of these English learners.
because of the existence of too many empty cells. In general, these findings in the Canadian setting are consistent with those of Oyama (1982) in the American setting, except that linguistic context did not affect the degree of foreign accent as predicted.
V. DISCUSSION

1) No difference between the two linguistic contexts:

This finding is surprising given earlier findings, but probably it can be explained by
the selection of judges. Since the judges were preparing to become ESL teachers
and had had some experience with non-native learners, they were likely aware of
the difficulty ESL learners experience with oral reading and more tolerant of errors.
Of course it is likely that they were generally more accepting of errors in either
condition, i.e., less discriminating than other judges might have been.

It is also possible that although the judges were asked to judge only the foreign
accent of these subjects, the syntactic and morphological errors made by the
subjects while retelling their personal experiences might have influenced the judges' 
decisions. The oral reading task, on the other hand, was totally controlled for such
errors.

The single order of presentation of recorded speech samples to the judges might
also have obscured differences. It is possible that the judges were beginning to get
bored, thus became biased toward the end of the tape, and it is likely that
boredom would affect their judgements of the reading more than spontaneous
speech because they heard the same passage read again and again while each
personal experience was unique.

The explanation might also lie in the two tasks themselves. It might be the case
that both reading aloud and retelling of a personal experience were equally stressful or that neither was stressful, depending on the subjects' previous experience with these tasks. It is possible that the narrative did not induce the kind of effect that the investigator hoped to induce, for example. Possibly, the subjects were not intimidated by the reading task since they were advanced learners who were likely accustomed to reading aloud in class. Perhaps at the conclusion of the interview, each subject could have been asked which task s/he had found more stressful, in order to ensure the validity of the stimulus. Another possibility is that the mention of Iran in the oral reading task could have caused some kind of bias, either on the part of the subjects or the judges, or both.

Even though there were three parts to the interviews that were given in different orders to control for a possible order effect, this might have caused other problems: subjects may have been more relaxed and less attentive to their speech after certain tasks rather than others, and hence more likely to provide more informal speech style at such points in the interview.

2) Age of arrival contributed significantly to the degree of foreign accent:

The significance of age of arrival in Canada was expected and seems to be keeping with the generally accepted view that for whatever reason, prepubescent children are better equipped to acquire a native-like accent than are older learners when language is acquired under relatively normal conditions.

The finding that those subjects who arrived in Canada after puberty were judged to
have heavier accents than those who arrived before puberty can perhaps be best explained by Krashen's distinction between rate of acquisition and the eventual attainment. As discussed in Chapter II, long-term studies dealing with subjects who have had several years of exposure to English show that subjects who arrive in a foreign country as children eventually attain a higher level of proficiency than those who arrive as adults. Although laboratory studies have proven that adults have an initial advantage in mimicking new sounds, they lose this advantage later. Even though children learn more slowly, they eventually catch up with and surpass older learners (Krashen, Long and Scarcella, 1982). In a cross-sectional study such as this one, it is not possible, of course, to test the reasons for adults' loss of their initial advantage. However, this finding confirms that the children have a long-term advantage over adults in attaining a native-like accent and it opens grounds for speculation.

It is unlikely that the reason is physiological, i.e., that the musculature of the speech apparatus simply becomes less flexible, since adults can achieve perfect pronunciation under laboratory conditions. For the same reason, one cannot accept the critical period hypothesis discussed in Chapter II. If there really existed a "critical period" for language acquisition, as claimed by Lenneberg who also noted that foreign accents could not be overcome easily after puberty, then adults would not be expected to do better than children under any circumstances.

The explanation might lie in the differences in the nature of the tasks in child and adult learning. Specifically, younger learners acquire a more concrete language than do adults, and they have less to learn. Adults, on the other hand, learn a more
abstract language once they get past the elementary stages. While child learners' attention to the language may be to the whole rather than to any of its parts, adults are more likely to be analytical in their approach to language learning. Adults are aware of the units of language - the sentences, the words, and the sounds, to a degree that children are not and they are aware of the difficulty of the task of language learning. In other words, adults’ increased analytic ability and their awareness of the difficulty of the task may inhibit the kind of wholistic or synthetic, as opposed to analytic learning which might make the pronunciation easier to master.

It has also been suggested that adults have less motivation to achieve a native-like skill because having better control of other aspects of the language, such as morphology, syntax, and vocabulary, they are less reliant on correct pronunciation to communicate effectively. There is likely another factor which becomes more significant the older the learner gets, and that is the relationship between language and self. It has been suggested that a person’s speech is very much a part of his identity, and that giving up a foreign accent means giving up the sign, the outward manifestation of being Japanese, Chinese, Spanish - or even Eastern Canadian or New Yorker. Related to this is the observation than an Anglophone with a flawless French accent and a vocabulary of 100,000 words would be a very impressive non-native speaker of French. But if mistaken for a Francophone, the same speaker would be thought to be uneducated or dull-witted since most native speakers of French have a vocabulary from two to five times as large.

3) The length of residence (LOR) in an English speaking country did not
contribute to the degree of foreign accent.

This is another surprising finding contrary to Asher and Garcia's 1969 study. Even though Oyama had found no LOR effect in her study with Italian subjects, she had very little variation in the number of years her subjects had spent in the United States. This finding of the present study could also be explained by a sampling error. Perhaps there would be a LOR effect had there been enough variation among the subjects in that aspect. Subjects' length of residence in Canada or other English speaking country ranged from two months to 37 years, with only one subject in each of the 20-29 and 30+ years categories, whereas there were 23 subjects in the 0-9 and four subjects in the 10-19 years category.

4) Native language contributed significantly to the degree of foreign accent.

The finding that the judges found some languages harder to understand than others is not readily interpretable without further research. It is interesting to note, however, that Chinese speakers were judged to have "lighter accents" than the Spanish speakers. Considering that Spanish is closer to English than Chinese is, one would presume that Spanish speakers would be judged to have better accents than the Chinese. After all, Spanish speakers would be expected to have less trouble with English pronunciation since their languages are related to English, and Chinese speakers enjoy no such advantage. On the other hand, Vancouver judges are likely more familiar with Chinese accents than with Spanish, given the high percentage of the Vancouver population which speaks Chinese. Having been previously exposed to great many Chinese-English accents, the judges may have been less likely to consider
them foreign.

A close look at Table III shows that, on the whole, these Spanish speakers arrived in Canada at a later age than did the Chinese speakers. That is another very important factor to be taken into consideration. Since age of arrival is a highly significant variable, and because there is only one subject, from each of the other ten language backgrounds, who had arrived in Canada at different ages, it is not possible to determine which native languages are statistically significant in predicting the degree of foreign accent.

This study attempted to shed more light on the nature of IL phonology by focussing on four moderating variables: effects of age of arrival, length of residence, native language, and two linguistic environments. The main result of the study was that there was no significant difference between the two tasks. Although the lack of variation between linguistic contexts does not mean that the notion of variable rule should be abandoned or even seriously questioned, this result raises questions about the issue of stress.

A. DIRECTIONS FOR FUTURE RESEARCH

Tarone (1979) claimed that IL is progressively more permeable in increasingly more formal situations to the superordinate rule system: TL. Dickerson (1977) showed that nature of the task produces systematic style shifting in IL phonology and concluded, for example, that the correct production of target /r/ occurred most frequently in careful speech. Schmidt (1977) observed that the TL form /θ/ which occurs in the
more careful IL style is also a prestige variant of the NL. Beebe (1980) also saw that the learners were using prestige NL variants to an increasing degree in their careful IL style. Without careful phonetic analysis of the data for the present study, it would not be possible to reach any similar conclusions. While such analysis is outside the scope of this study, it would be interesting to attempt to corroborate or refute, the judges’ ratings in this manner. Actually, such an analysis would shed light on the acoustic cues used by English speakers in perception of foreign accent. If, for example, the judges report no difference despite the existence of clear phonetic differences (of the type reported by Dickerson, Schmidt,...), then the evidence would point to other factors influencing perception of foreign accent. If, on the other hand, there were no phonetic differences at the segmental level, we would have to consider carefully whether there are factors in the subjects’ educational experience or in the experimental situation which neutralize the distinction or whether there truly is no distinction between contexts. In any case, replication with additional Canadian subjects is desirable.

This study has raised as many questions as it has answered. It was expected, based on the previous studies, that there would be a similar type of style shifting between the tasks of oral reading and retelling of a personal experience. However, there was no significant difference between these two linguistic contexts. Further research is needed in order to find out whether or not other linguistic or situational contexts have an effect on foreign accent. In the case of reading tasks, the paragraphs must be selected more carefully, making sure that they are free of possible bias. As mentioned earlier, the passage used for this study contained the mention of a rather controversial country, and possibly induced bias.
It is also important for a study such as this to take potentially confounding factors into account. Subject's ability in English is not simply a function of age of arrival and number of years in Canada, nor is it a function of his/her native language. The extent to which English has been used in the new country, as well as attitudes towards the country and its inhabitants must also be taken into account. In what range of contexts do subjects themselves speak English? Do they have jobs which require contact with English speakers? Or are they largely confined to a home environment in which English is seldom spoken (often the case of married women who are not employed outside the home)? These are also very important questions to keep in mind in the future.

Although a hypothesis was made about the effect of native languages on the judges' decisions about the degree of foreign accent, there was no effort to control the NL background of the subjects. As a result, there were too many empty cells and no possibility of finding out which native languages were statistically significant. The same type of sampling error was true for the condition of "length of residence in an English speaking country": LOR. There was not enough variation and there was no effect. In Asher and Garcia's 1969 study, there was a strong LOR effect which was not confirmed in Oyama's 1976 study. Oyama did not find any LOR effect and claimed that the two studies did not really contradict each other since the values used by Asher and Garcia were low (one to eight years) whereas Oyama's were much higher (five to 15 years). The LOR of the subjects in this study ranged from zero to 37 years, but there was still no effect. Future studies must be very accurate in their sampling of subjects.
The age of arrival factor is confirmed to be significant once again. Even though there still is no hard evidence as to why learners who arrive at the target country at an earlier age have a much better chance of acquiring a native-like accent, the effects of cognitive, social, psycholinguistic and motivational factors must be investigated.

It is hoped that future research will clarify these questions and provide more missing pieces to the puzzle.
VI. BIBLIOGRAPHY


Nemser, W. 1971b. *An Experimental Study of Phonological Interference in the*


APPENDIX A

PERSONAL INFORMATION SHEET

Subject identity number:
First name: Native language:
Year of first arrival in Canada or other English speaking countries:
Language of instruction before arriving in Canada:
Age:
For most people the holiday season is a time of joy and family reunions. For me it is a time of mixed emotions - for I have been away from my family and friends in Iran while studying in the United States for the past 12 years. Rather than wallow in my loneliness, I have tried each Christmas to learn a little more about its religious and temporal importance to my American friends.

Looking beyond the impersonal prefabricated decorations of shopping districts, the commercial oversell on TV, and the annual frenzy of consumption, I have caught glimpses of warmth and reverence that still give this time of year its true meaning and significance.