FACTORS ACCOUNTING FOR ATTAINMENT IN FOREIGN LANGUAGE PHONOLOGICAL COMPETENCE

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ABSTRACT

This paper reports research which first examines the limits in attainment of phonological competence of foreign language learners who have not resided in a target language community, and second, attempts to identify factors which explain variance in this competence. Samples from 67 participants were rated. The results showed that EFL learners were able to attain a near-native like pronunciation for all but sentences. The factors which explained individual difference in pronunciation attainment were self rated musical ability, attitudes toward learning pronunciation, length of time spent learning the language and strategy use.

Keywords: Attainment, SLA, phonological competence, pronunciation.

1. INTRODUCTION

Much of the research to date has demonstrated that the age of arrival in a society where the target language is used is the most important factor explaining variance in second language phonological competence. (e.g. [3], [8], [12], [14], and [18]). These results have been used as evidence to support the critical period hypothesis ([6] and [13]). However, most of these studies concentrated only on immigrant communities. Other studies focused on individual language learners such as [9], [15] or [17], have demonstrated that factors other than age account for variance in second language phonological competence. This study sets out to replicate these regression studies by investigating the pronunciation of learners who have not yet gone overseas and thus do not have an age of arrival.

Another question addressed in this study is the extent to which learners who have not resided in a target language community can attain a foreign language phonology. [6]'s critical period hypothesis predicts that learners who start learning a second language as adults are unable to attain native-speaker like levels of pronunciation. However, several studies (see for example, [4], [5], [8], [9], and [11]) have described individual learners who have managed to acquire native-speaker like pronunciation, thus demonstrating that this level of ability is attainable. These studies have largely been of people who have lived for long periods in the target language community, (with the exception of [1] and [2] who found FL learners trained in pronunciation were able to attain native-like standards).

This paper also attempts to determine possible limits in the acquisition of a foreign pronunciation system for learners who have not resided in the target language community. This leads us to our two research questions.

- Can foreign language learners who have not resided in the target language community attain native-like pronunciation?
- What are the factors which account for variance in second language phonological competence?

2. METHODOLOGY

2.1. Participants

The participants in this study were 84 paid volunteers from two Japanese universities where the students are of above-average English proficiency. Volunteers from one university applied as a result of a flyer sent out to all its students. In the second university volunteers were solicited from one of the researcher's classes. All participants were compensated for their time. 13 were then excluded from the data, based on the fact that they had lived in the target language community for longer than 12 months. 4 others had their data excluded because of incomplete information, leaving a total of 67 participants.

In addition to the Japanese students, a sample of 15 native speakers (paid volunteers) was included.

2.2. Instruments

Pronunciation samples and other information were elicited from the participants described above by way of pronunciation tasks and questionnaires. The tasks included speaking 26 text-based words, 12 picture-based words, 8 sentences, a paragraph and a free talk session. The vocabulary items were selected based on the segments which appeared in them, the complexity of the consonant clusters and syllables, and the number of syllables in the word. The words chosen came from the most frequent 2000 words according to the General Service List (West in order to ensure that they were known words. The 12 pictures illustrated words selected on the same frequency principle, and included only concrete nouns which could be easily identified from the photographs. The paragraph was selected from a text-book.

Three written questionnaires were prepared. The first was written for the purpose of the study. It asked about personal details and experience and language learning attitudes and beliefs. In all, the questionnaire had 38 items. The second and third questionnaires attempted to psychometrically measure motivation and strategy use [10]. The motivation survey consisted of 24 items and the strategy survey had 33 items.

2.3. Procedure

The data were collected, then evaluated. The collection took place in a studio at one university and in the teacher's office in the other and trequired 30 minutes for each student. The pronunciation tasks took 10 minutes each, and were recorded on a Sony DAT recorder with a condenser microphone. The questionnaires required 20 minutes to complete.

Then data was separated into written-words (26 samples), picture-words (12 samples), sentences (8 samples), paragraph (1 sample) and free conversation. Five fluent, grammatically error free amples of speech were chosen from each participant's free conversation.

They were then uploaded into the program SuperLab (ver. 4) for rating. This software was programmed to present each word, sentence, paragraph, and conversation sample randomly. The raters were two experienced English teachers who had lived in Japan for several years and taught at Japanese universities. They were asked to indicate the degree to which the sample was 'good pronunciation' on a five point scale. The inter-rater reliability was .76.

2.4. Analysis

The ratings for each of the sample types were converted to z-scores and averaged, producing five rated scores for each participant (vocabulary, pictures, sentences, paragraph and free conversation). A sixth total rating was added by averaging the first five rating scores.

The first research question asked what final level of attainment is possible for Japanese students who have been overseas for twelve months or fewer. The question was answered by calculating the average and standard deviation of the total native speaker ratings. If the total evaluation came within two standard deviations of the mean ($z < 2.0$) then speakers were judged as near-native in pronunciation.

The second research question attempted to determine what factors were responsible for variation in pronunciation. This was answered by using a multiple regression step-wise analysis. The variables were correlated with the total pronunciation rating and those which demonstrated a significant correlation were entered into the regression analysis at $p < .05$ and removed when $p > .10$.

3. RESULTS

3.1. The limits of acquisition

The results for the first research question are as follows. The average for all the native speaker evaluations was 1.12 and there was a standard deviation of 0.27. The z-scores for the participants and how they relate to the native speaker mean and standard deviation are displayed in Table 1. These comparisons demonstrate that four of the Japanese volunteers, participants 29, 60, 62 and 66 were able to achieve ratings within two standard deviations of the native speakers' pronunciation mean. Participant 62 had apparently not spent any time in an English speaking country. However, further examination revealed that she had spent several years living in Norway and attending an American School. So we cannot discount the possibility that this was the equivalent of a long stay in a target language community. The remaining three participants demonstrated that their performance on the pronunciation tasks was rated within the acceptable range for the native

speakers (see Table 2). Further analysis shows that these near-native speakers were unable to achieve this level on every task (Table 1). All of the participants failed to reach native speaker-like ratings for the sentences, and one was not able to attain this standard for the paragraphs.

Table 1: Near-native participant's (29, 60, 66) z-scores for the five pronunciation tasks.

	Words	Pict.	Sen.	Par.	Free
29	-1.11	-1.66	-3.67	-1.98	-1.04
60	-0.53	-0.89	-2.45	-3.62	-0.14
66	-1.76	-1.18	-3.85	-1.10	-1.02

3.2. Factors predicting variance in pronunciation

The second research question identifies variables which account for the variance in the final pronunciation ratings. Initially, the 26 measured variables correlated with the total pronunciation ratings. These produced eight significant correlations as shown in Table 2. They were with the number of years spent studying English (years), the existence of native speaker friends, self-rated listening ability, self rated singing ability, 'integrative motivation' [10], the first and seventh strategy factors and finally attitude (the extent of belief that near-native competency is necessary to be accepted into the native speaking community). An additional four participants were removed from the analysis at this point as data for them was missing for at least one of these variables. This left a total of 63 participants.

Table 2: Correlations between total pronunciation ratings and independent variables.

Dependant Variable	R	P
Years studying English	0.28	0.02
Native speaking friends	0.26	0.04
Good musical ear	0.38	0.01
Singing ability	0.41	0.01
Motivation Factor 1	0.29	0.02
Strategy Factor 1	0.33	0.01
Strategy Factor 7	0.31	0.01
Attitudes and Beliefs	0.39	0.01

These eight variables were then entered into the stepwise regression analysis. The results produced a four variable model which, combined, correlated with pronunciation, r = .61) and explained 32 percent of the total variance in pronunciation (see Table 3). The first model[a] entered the self-judged singing ability ($r^2 = 0.17$). The second model[b] added the belief that near-native competency is necessary to be accepted into the native speaking community. This increased the explanatory power (r^2 change = 0.09). The third model[c] included the number of years of study and explained another five percent of the variance (r^2 change = 0.05). Finally the fourth model[d] added the first strategy factor which added a further five percent of explanatory power to the model (r^2 change = 0.05). The remaining four variables no longer reached significance after the variance due to the first four measures above were removed.

Table 3: Stepwise multiple regression analysis results for total pronunciation rating.

	r	R^2	r^2 change	F change	p
a.	0.42	0.17	0.17	12.86	0.001
b.	0.51	0.26	0.09	7.36	0.009
c.	0.56	0.32	0.05	4.75	0.033
d.	0.61	0.37	0.05	4.33	0.042

Model a. Predictors: (Constant), GS

Model b. Predictors: (Constant), GS, Att.

Model c. Predictors: (Constant), GS Att., Years

Model d. Predictors: (Constant), GS, Att, Years, SF1

4. DISCUSSION

The results demonstrated that four participants reached a very high level of pronunciation after comparatively little time spent in the target language culture. Three learners were able to attain total pronunciation ratings within two standard deviations of the native speaker mean. One of these learners had yet to spend any time at all in a target language community. This is certainly a formidable achievement. We cannot claim, however, that any of the three learners were able to attain native-like levels of attainment.

The fact remains that for most of the measures these learners were shown to be capable of attaining high levels. It is important to note, also, that it is possible that this is not the ultimate level of attainment for these speakers. [16] found continued improvement in pronunciation is possible for Japanese EFL learners

This study also attempted to identify some variables which could distinguish between the pronunciation of good and poor learners. The multiple regression analysis identified four independent variables. The first and the most important was the participants' judgment of their

own singing ability. Singing talent has been linked to the ability to mimic pronunciation by [3]. Accurate mimicry has also been linked to pronunciation accuracy by [15] and [18]. Thus it is possible that this measure is representing an underlying mimicking ability. [7] has demonstrated that this skill was not improved by musical training, and so there is a chance that it is innate and cannot be altered by education.

The second variable identified is the belief that a poor accent could prevent effective participation in the target language community. This belief goes against current language teaching tenets which hold that native-speaker pronunciation is not necessary.

The length of time spent in English study was identified as the third factor explaining variance in pronunciation ability. It was longer than five years for all participants though that is not representative of actual contact time. Five years immersion cannot be considered as the same as five years in an EFL environment. It is still possible that as these participants study further, the age at which they commenced studying the language (age of onset) may become a more important variable. They should improve with further study.

The final variable is a composite of pronunciation learning strategies which require the participant to focus on the accuracy of their pronunciation during production, pay attention to feedback and input and copy the pronunciation models available on tapes and from teachers. This variable is similar to the fourth variable identified by [15] as 'the strength of concern for accuracy'. This is the sole variable the learner has conscious control over and. is able to manipulate

5. CONCLUSION

This study has demonstrated that it is not necessary for English-as-a-foreign language learners to travel overseas and live in a target language community to achieve very high levels of pronunciation.

Strategy use, one of the four variables explaining the pronunciation attainment of these learners (singing ability, a social necessary attitude, length of study and strategy use), can be taught in the language class room as a means to improve pronunciation. Of the others, singing ability is possibly innate and the length of time spent studying is under the control of the individual learner.

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