

## ***The Role of Explicit Instruction in the Development of L2 Phonology***

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This research was motivated by seeming skepticism on the part of teachers about the efficacy of explicit pronunciation instruction. A study was conducted to investigate whether explicit knowledge of the English phonetic system on the learners' part helps them in their phonological development. Sixty-six students at a women's university in Tokyo were chosen as the experimental group, while sixty students in another department at the same university were selected as the control group. The experimental group received extensive pronunciation instruction for a year, while the control group received no specific attention on pronunciation. At the end of the year, both groups were evaluated on their reading of a prepared passage and their explicit knowledge of the English phonetic system. The results show that the experimental group did better in their reading of the passage, as well as in the rest of the test, than the control group, despite the fact that the control group had a higher TOEIC average. Multiple regression analysis shows that learners' explicit knowledge is one of the strongest predictors of how well students do on the passage reading, suggesting the merits of explicit pronunciation instruction.

In a major study of the learning preferences of adult ESL learners, Willing (1985) showed that learners rated pronunciation practice to be one of the

most important classroom activities. Adult learners know instinctively that pronunciation is an integral part of communicative competence, and that if they are to effectively conduct communication in English, they must develop an “intelligible” pronunciation. Learners’ intuition is also empirically supported. A study by Hinofotis and Bailey (1980) indicates that there is a threshold level of pronunciation for nonnative speakers of English, and that if they fall below this threshold level, they will not be able to communicate well no matter how good their control of other aspects of the English language might be. Beebe (1978) also reports that native speakers often derisively view nonnative speakers’ pronunciation errors as sounding comical, cute, incompetent, not serious, childish, etc.

**TABLE 1**  
**Pronunciation Instruction Received at Junior High School and High School**

	not at all	very little	some	a lot
1. Did you learn how to pronounce English consonants and vowels in junior high school?	18.0%	60.2%	21.1%	0.8%
2. Did you learn how to pronounce English consonants and vowels in high school?	11.7%	70.3%	14.8%	0%
3. Did you learn phonetic symbols in junior high school?	32.8%	50.8%	12.5%	0%
4. Did you learn phonetic symbols in high school?	18.8%	60.2%	20.3%	0%
5. Did you learn stress, rhythm, intonation, sound changes in natural speech in junior high school?	23.4%	52.3%	30.5%	0%
6. Did you learn stress, rhythm, intonation, sound changes in natural speech in high school?	13.3%	62.5%	21.1%	0%

N = 126

Very few English programs in the Japanese school system, however, seem to answer learners’ needs for pronunciation practice. A survey taken in 2004 of 126 first-year students at Showa Women’s University shows that about 80% of the respondents received either no or very little pronunciation

instruction in junior high school and high school (See Table 1). Lack of training in English phonology seriously affected their pronunciation; when sixty-six of those surveyed had their pronunciation evaluated upon entry to university, only one student's pronunciation was good enough to be rated as "mostly intelligible."

Nonnative teachers' lack of confidence in their ability to teach pronunciation could well be one of the reasons why pronunciation is neglected in the English classroom in Japan, as suggested by Usuda (2000), but doubts among teachers about the effectiveness of explicit pronunciation instruction also seem to contribute largely to the apparent disinterest. Pennington writes there is a long-standing prejudice against teaching pronunciation as "useless, as it will have no effect on performance" (1998, p. 323). Some studies conducted in the 1960s and 1970s failed to show any effect of explicit instruction on the acquisition of L2 phonology. In his study of 61 non-native speakers of English, for example, Suter (1976) found no relationship between the time spent in formal training in English pronunciation and how accurate the subjects' pronunciation was.

This belief is also supported by a seemingly large amount of anecdotal evidence. Many educated Japanese, whose English is otherwise quite proficient, speak with such a strong accent that they have trouble getting themselves understood in speaking. Many of our colleagues in the EFL teaching situation often complain that even after extensive practice in pronunciation in class, students do not seem to show any visible improvement when speaking. Researchers such as Scovel (1991) go so far as to say that adults cannot achieve perfect or target-like pronunciation in a second language. Even though attaining a perfect native-like pronunciation must not be the goal of any pronunciation class, the question about whether pronunciation can be taught effectively in the classroom context lingered, and led many programs to pay less attention to pronunciation or drop it all together (Morley, 1991). Lack of understanding on the teachers' part about how adult learners actually acquire L2 phonology and what kind of approach is more conducive to phonological acquisition also added to the problem. Some recent research,

however, has started to shed some light on the question of teachability of phonology and other issues of importance in pronunciation teaching.

## **PAST RESEARCH**

Several studies looked at the effectiveness of training on very limited aspects of oral production, and reported positive effects. A study by de Bot and Mailfert (1982) showed that explicit instruction in intonation resulted in statistically significant improvement in the production of English intonation patterns by Dutch EFL learners. Champagne-Muzar, Schneiderman and Bourdages (1993) studied 34 beginning-level learners of French at the University of Ottawa and found that 12 sessions of explicit instruction resulted in improvement of both discrimination and production of French phones, intonation patterns and rhythm. In a study of 66 undergraduate Spanish students, Elliot (1997) also found that explicit instruction led to significant improvement in student pronunciation, while input alone yielded no improvement.

Bongaerts (1999) offered an interesting insight by reporting that all the learners in his studies who had attained a native-like accent had received extensive explicit pronunciation instruction, hinting that adult learners may not be able to improve their pronunciation significantly without the aid of explicit instruction.

The results of other studies which assessed the effects of explicit instruction on more global oral production, however, are mixed. Macdonald, Yule and Powers (1994) compared the pronunciation of vocabulary items in spontaneous speech by 23 adult Chinese ESL learners grouped into four different conditions (traditional drilling activities; self-study with tape recordings; interactive activities; and no-intervention). They found that only the self-study group showed any significant improvement. Derwing, Munro and Wiebe (1998) compared the effects of three types of instruction (segmental accuracy; general speaking habits and prosodic factors; and no specific pronunciation instruction) on the speech of ESL learners. They found that

both segmental group and prosodic group showed significant improvement in the reading of prepared sentences, but only the prosodic group evidenced improvement in extemporaneous narratives. A study by Ueno (1998) also compared the effects of two instructional treatments (segmental accuracy and suprasegmental aspects) on 86 Japanese EFL learners, but did not find any significant results in production ability.

Some researchers looked into how explicit instruction translates itself into better oral production. Schneiderman, Bourdages and Champagne (1987) studied 12 learners of French at the University of Ottawa in order to test one of the common assumptions among teachers that discrimination ability is related to production ability and that training in discrimination leads to improved production ability. They failed to find a statistically significant relationship between perception and production of the French sound system. In their study of Japanese ESL learners' ability to perceive and produce /r/ and /l/, Sheldon and Strange (1982) reported that perception did not necessarily precede production. Their finding indicates that learners' knowledge of how to articulate English sounds could lead to better pronunciation, without learners first being able to perceive them. Our previous study (Kashiwagi & Snyder, 2003) looked into the relationship between Japanese EFL learners' metalinguistic knowledge about English phonology, their aural perception and their pronunciation, and found a statistically significant correlation among the three. Our study also found some evidence to suggest that perception did not precede production. The results of other studies are conflicting (Goto, 1971; Meader, Flege, & MacKay, 1997; Sanders, 1977).

## **PURPOSES AND RESEARCH QUESTIONS**

Though a recent body of research has given us valuable information regarding the effects of explicit instruction, very little dealt with the question of whether an extensive well-rounded pronunciation course in an EFL classroom context can lead to better global pronunciation – a question which

most teachers would want to be answered. In addition, no clear answer has been offered as to how explicit instruction actually manifests itself in improved oral production. Studies on the questions of perception vs. production are still inconclusive. There is also little empirical data on the question of how better metalinguistic knowledge about English phonology such as articulatory positions of phones, the rules of sound changes in natural speech, rhythm, and intonation patterns as a result of explicit instruction is related to better pronunciation or aural perception.

A study was conducted to answer the following two questions: 1) does an extensive, well-rounded pronunciation specific class in a Japanese college result in improvement of global pronunciation? 2) how are learners' metalinguistic knowledge, perception abilities and pronunciation related?

## **THE STUDY**

### **Subjects**

Sixty-six first-year students at the Department of Contemporary Liberal Arts at Showa Women's University (the experimental group) and 60 first-year students at the Department of English Communication at the same university (the control group) were selected for the study. All the subjects had gone through six years of English education in the regular Japanese school system; none of them had experienced an extensive overseas stay. The average TOEIC score for both groups, measured at the end of the 2003 academic year, was 385 (SD 100), showing that a majority of them are at Level D (capable of minimum communication in everyday conversation) in the Proficiency Scale provided by the Educational Testing Service.

### **Procedure**

The study was conducted in the 2003 academic year. The experimental

group had a one-year pronunciation specific course (26~28 90-minute sessions) as part of their required EFL program, which had three more 90-minute EFL classes per week dealing with listening, speaking, reading, writing and grammar. The control group had eight 90-minute required English classes per week during the same period, which also dealt with listening, speaking, reading, writing and grammar, but did not receive any specific pronunciation instruction.

In the pronunciation class, the experimental group received extensive pronunciation instruction including explicit explanation of the articulatory positions of both English consonants and vowels, practice both in drill-type activities and in more communicative interactions, discrimination exercises, more global listening activities, peer feedback and self-monitoring exercises. A typical lesson (90 minutes) might start with explanations by the instructor about particular phonemes in Japanese (5-10 minutes), whole-class practice in unison after teacher model (5-10 minutes), followed by more practice in pairs and small groups with the instructor circulating and offering feedback (10-20 minutes). More communicative exercises in either pairs or small groups would ensue (10-20 minutes). Listening exercises, both of simple discrimination type and more communicative nature, are done in almost all the lessons (20-30 minutes). No rigid routine was set up, however; instead, a varied approach was favored in an attempt to make the classes more interesting and challenging.

The course also had a heavy focus on suprasegmental aspects, which were explained explicitly and practiced in a variety of activities. Phonetic symbols were taught explicitly and used extensively in the course to reinforce learning. *Pronunciation Plus* (Hewings & Goldstein, 1998) was chosen as the course material, heavily supplemented by *Mother Goose Jazz Chants* (Graham, 1994) and authentic materials.

Both groups were evaluated at the end of the 2003 academic year on their pronunciation (global and segmental), their knowledge of the English phonology (segmental and suprasegmental) and their perception of English sounds (segmental and suprasegmental), as indicated below.

## The Role of Explicit Instruction in the Development of L2 Phonology

- 1) Global Pronunciation: In order to avoid the risk of evaluators being influenced by factors other than pronunciation itself such as fluency and overall proficiency, the subjects were asked to read a prepared passage. Before they read the passage, they were given time to study the text, look up the phonetic transcription of words in a dictionary, if necessary, and practice. In addition, a native speaker model was played for them to listen to. All this was done to ensure that the subjects be given the opportunity to draw on both their perception abilities and their metalinguistic knowledge, if they wanted to, in their preparation for the reading. Their reading was recorded in a language laboratory. The tapes were mixed and were rated blind by three independent raters on a scale of 1 to 7 with 1 indicating unintelligibility and 7 indicating near-native speech (See Appendix).<sup>1</sup> All the raters were experienced EFL instructors with more than 10 years of teaching experience and knowledge of the English phonology. Their inter-rater reliability was .87 (Cronbach's Alpha).
- 2) Segmental Pronunciation: For the purpose of this study, seven vowels, /ɑ/ /æ/ /ɒ/ /ɔ:/ /oʊ/ /ɑ: r/ /ə: r/ , were selected which present particular difficulty to Japanese learners. The subjects read five different examples of four minimal pairs ( /ɑ/ vs. /æ/, /ɑ/ vs. /ɒ/, /ɔ:/ vs. /oʊ/, /ɑ: r/ vs. /ə: r/ ) and were recorded in a language laboratory. They were given points when they could correctly produce both vowels in a given minimal pair. Prior to the reading, a native speaker model was given. The four minimal pairs were also presented in phonetic symbols. The recording was rated by the same three raters as in Global Pronunciation. Their inter-rater reliability was .93 (Cronbach's Alpha).
- 3) Segmental and Suprasegmental Knowledge: After the reading was finished, the subjects were tested on their metalinguistic awareness. In the segmental part of this test, they were asked to explain how the previously-mentioned seven vowels are produced by selecting the correct descriptions of articulatory positions. They also answered in which words in the test passage the seven vowels appeared by matching the correct phonetic symbol with the underlined parts. In the suprasegmental part of the test, they indicated where sound

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<sup>1</sup> The evaluation criteria were adapted from Speech Intelligibility Index (Morley, 1991)

changes (liaison, assimilation, deletion, etc.) occurred in the test passage, and which word received sentence stress. The reliability estimate for Segmental Knowledge was .77, and .82 for Suprasegmental Knowledge (Spearman-Brown Spilt-Half).

- 4) Segmental and Suprasegmental Perception: The subjects were evaluated on their perception of both English segmentals and suprasegmentals after the reading. For the segmental part, they were tested to see whether they could aurally discriminate the same four minimal pairs which were used in Segmental Pronunciation. The suprasegmental part had them listen to a dialog spoken at natural speed by a native speaker, and complete the transcript, parts of which where sound changes occurred had been made blank. The reliability estimate for Segmental Perception was .90, and .91 for Suprasegmental Perception (Spearman-Brown Spilt-Half).

After the evaluation tests, a survey was taken to find out how much pronunciation instruction the subjects had received in junior high school and high school, and how they viewed explicit pronunciation instruction in a college English class. They were also asked in an open-ended question what they were doing in order to improve their pronunciation. TOEIC was also given at the end of the 2003 academic year to measure the subjects' English proficiency.

The results were examined and statistically analyzed, using *Statistical Product and Service Solutions Windows 7.5 Version* (SPSS inc., 1996)

## **RESULTS AND DISCUSSION**

### **Comparisons between the Experimental and Control Groups**

The results of the above-mentioned survey found no significant differences between the two groups in their answers on how much pronunciation instruction they had received in junior high and high school. A look at their

TOEIC scores showed that the overall English proficiency of the control group was significantly higher than the experimental group, probably as a result of more exposure to English. However, the experimental group outperformed the control group in all of the evaluation tests (See Table 2 & Table 3), even though they were at a slightly lower level of English proficiency. This provides some evidence that one year of explicit pronunciation instruction resulted in the experimental group's being better than the control group in not only their metalinguistic knowledge and perception, but also their production both segmental and global.

**TABLE 2**  
**Comparison of TOEIC Scores**

	N	Mean (SD)	<i>t</i> -value
Experimental Group	66	363.88 (96.21)	
Control Group	54	411.67 (98.21)	2.69**

\* =  $p < .05$

\*\* =  $p < .01$

**TABLE 3**  
**Comparison of Evaluation Tests**

Evaluation		Mean (SD)	<i>t</i> -value
Global Pronunciation (evaluated on 1-7 scale)	Experimental	3.40 ( .64)	4.32**
	Control	2.91 ( .63)	
Segmental Pronunciation (total = 40)	Experimental	34.09 (10.12)	5.17**
	Control	24.14 (11.51)	
Segmental Knowledge (total = 32)	Experimental	22.01 ( 4.50)	3.64**
	Control	19.19 ( 4.20)	
Suprasegmental Knowledge (total = 51)	Experimental	34.89 ( 6.69)	3.50**
	Control	30.65 ( 6.57)	
Segmental Perception (total =120)	Experimental	95.53 (12.71)	5.84**
	Control	82.58 (12.13)	
Suprasegmental Perception (total = 28)	Experimental	15.91 ( 5.48)	3.68**
	Control	12.63 ( 4.44)	

\* =  $p < .008$

\*\* =  $p < .002$

(Bonferroni adjustment was made to the alpha level)

A closer look at the differences between the two groups in the score

distribution of Global Pronunciation provides further information (See Table 4).

**TABLE 4**  
**Comparisons in Score Distribution**

Average Rating	Experimental Group	Control Group	Chi-Square
4	14 (20.9%)	4 (6.7%)	15.00**
3	44 (65.7%)	31 (51.7%)	
2	9 (13.4%)	25 (41.7%)	

\* =  $p < .05$       \*\* =  $p < .01$

4 = Speech is mostly intelligible. While speech is still rather choppy and marked with accent, listeners can understand most of it if they concentrate on the message.

3 = Speech is reasonably intelligible but parts of the speech are still difficult to understand even with effort. Speech is marked with pronounced accent and choppy delivery.

2 = Speech is often unintelligible even with great listener effort.

(For the complete evaluation criteria, see Appendix)

The score distribution shows that more than 40% of the control group was rated below 3 (reasonably intelligible), which could be considered the basic communicative threshold, as opposed to only 13.4% of the experimental group. About one fifth of the experimental group scored 4 (mostly intelligible) and higher, while less than 7% of the control group reached that level.

## **Relationships between Global Pronunciation and Other Variables**

### *Correlation*

Correlation analyses were performed to explore the relationships between the subjects' pronunciation, knowledge and perception, using Pearson's correlation coefficients (See Table 5 & 6).

In both groups, there is a fairly strong correlation between Global Pronunciation and Segmental Pronunciation, suggesting that pronunciation of English segmentals can significantly affect overall intelligibility. There are statistically significant correlations between Segmental Pronunciation, Segmental Knowledge and Segmental Perception. A closer look at how the subjects performed in the

evaluation tests gives further information about how these three interact. Of the 127 subjects, 32 received perfect scores when pronouncing the five /ɑ/ vs. /æ/ minimal pairs. Of the 32, only 8 had perfect scores when discriminating the same minimal pairs (See Table 7), suggesting that perception, though significantly correlated with production, does not necessarily precede production.

**TABLE 5**  
**Correlation Matrix: Experimental Group**

	GP	SP	SK	SSK	SPc	SSPc
Global	1.000					
Pronunciation (GP)						
Segmental	.632**	1.000				
Pronunciation (SP)						
Segmental	.425**	.413**	1.000			
Knowledge (SK)						
Suprasegmental	.196	.147	.262*	1.000		
Knowledge (SSK)						
Segmental	.272**	.402**	.303*	.276*	1.000	
Perception (SPc)						
Suprasegmental	.446**	.199	.321**	.027	.029	1.000
Perception (SSPc)						

\* =  $p < .05$

\*\* =  $p < .01$

**TABLE 6**  
**Correlation Matrix: Control Group**

	GP	SP	SK	SSK	SPc	SSPc
Global Pronunciation (GP)	1.000					
Segmental	.765**	1.000				
Pronunciation (SP)						
Segmental Knowledge (SK)	.404**	.358**	1.000			
Suprasegmental	.475**	.367**	.292*	1.000		
Knowledge (SSK)						
Segmental Perception (SPc)	.284**	.352**	.438**	.390**	1.000	
Suprasegmental	.468**	.195	.228	.327**	.349**	1.000
Perception (SSPc)						

\* =  $p < .05$

\*\* =  $p < .01$

A possible explanation could be that knowing consciously how to produce the sounds led to better production and perception, while better perception and production in turn positively affected each other. The fact that the perception scores varied quite widely among the subjects also hints at large individual differences in how they learned to produce the sounds. Some may have a good “ear” and be able to mimic the sounds while others may have to rely more on their conscious knowledge of articulatory positions to pronounce the sounds.

**TABLE 7**  
**Perception Scores of High Performers in /ɑ/ vs. /æ/ Reading**

	Minimum	Maximum	Average	SE
Perception Score (total = 30)	7	30	23.47	5.91

n = 32

Global Pronunciation showed statistically significant correlations with almost all the other variables in both groups, except for Suprasegmental Knowledge in the experimental group, which did not evidence any correlation with many of the variables. In both groups, Segmental Perception showed only a weak correlation with the other variables.

### *Regression*

In order to further examine the data, stepwise multiple regression analyses were run to find out which of the four factors (Segmental Knowledge, Suprasegmental Knowledge, Segmental Perception, Suprasegmental Perception) could best predict Global Pronunciation (See Table 8 & 9). In the regression analyses, Segmental Pronunciation was taken out of the equation, as we are primarily interested in how learners’ knowledge and perception affect their overall intelligibility. We set Global Pronunciation as the dependent variable and the four factors mentioned above as independent variables for the analyses.

**TABLE 8**  
**Stepwise Multiple Regression Analysis: Experimental Group**  
**(Dependent Variable: Global Pronunciation)**

Step	Variables Entered	Cumulative R	Cumulative R Square	Beta	<i>t</i>
1	Suprasegmental Perception	.478	.228	.379	3.54**
2	Segmental Knowledge	.580	.337	.344	3.21**

\*\* =  $p < .01$                       \* =  $p < .05$

**TABLE 9**  
**Stepwise Multiple Regression Analysis: Control Group**  
**(Dependent Variable: Global Pronunciation)**

Step	Variables Entered	Cumulative R	Cumulative R-Square	Beta	<i>t</i>
1	Suprasegmental Knowledge	.474	.225	.299	2.50*
2	Suprasegmental Perception	.575	.331	.312	2.67*
3	Segmental Knowledge	.623	.388	.252	2.18*

\*\* =  $p < .01$                       \* =  $p < .05$

Stepwise multiple regression analyses show that for the experimental group, Suprasegmental Perception and Segmental Knowledge account for 34% of the Global Pronunciation variance. For the control group, Suprasegmental Knowledge, Suprasegmental Perception and Segmental Knowledge explain 39% of the Global Pronunciation variance. Segmental Perception was excluded as the predictor in both groups, providing evidence that abilities to discriminate segmentals may not be as important as the other variables in improving pronunciation. The small R-Square value was expected, as factors other than what was selected as the independent variables in the present study influence the overall impression of intelligibility, such as consonants, intonation patterns, voice quality, psychomotor mastery, affective constraints, etc.

As expected, Segmental Knowledge is one of the predictor variables for the experimental group, providing some evidence for a causal link between metalinguistic awareness of English segmentals and the overall intelligibility.

What is of interest is that Segmental Knowledge is also found to be one of the best predictors for the control group, even though they did not receive explicit instruction. Whether through self-study or whatever instruction they had received prior to college, the subjects in the control group also seemed to possess metalinguistic knowledge to varying degrees and it presumably positively affected their Global Pronunciation.

Interestingly, Suprasegmental Knowledge was selected as the predictor variable only for the control group. No significant correlation was found between Suprasegmental Knowledge and Global Pronunciation for the experimental group. Even though the experimental group scored higher in the Suprasegmental Knowledge test, their knowledge apparently had not yet translated itself into actual production.

A possible explanation can be attempted, using McLaughlin's information processing model (McLaughlin, 1987, 1990). The model defines the acquisition of a second language as the acquisition of complex cognitive skills and claims that learning means a shift from controlled to more automatic processing of these skills. It can be construed that much of what the experimental group knows about English suprasegmentals still has to be accessed through a slow controlled process. Because a controlled process is constrained by the limitations of short-term memory, it could break down when learners have to process multiple tasks simultaneously such as when reading a passage aloud. The control group, even though they had comparatively less knowledge about suprasegmentals than the experimental group, had apparently automatized the process more than their experimental counterparts.

The differences observed for the experimental group between Segmental Knowledge and Suprasegmental Knowledge could also be explained by the information processing model. The former was presented first in the pronunciation course, while the latter was not introduced until much later in the term. Given more time, the process of activating knowledge of English segmentals had become automatic through more practice, and the subjects were able to pronounce English segmentals without overloading their processing capacity when reading the passage, while suprasegmental features still required a lot

of their attention to be delivered.

Suprasegmental Perception was a predictor variable for both groups. The Beta values (.379 for the experimental group; .312 for the control group) also show that Suprasegmental Perception carries more weight than any other variable in predicting Global Pronunciation. The results could be simply interpreted as meaning that better perception abilities for suprasegmental features led to better production through mimicking, which in turn positively impacted Global Pronunciation. However, other data indicate that there may be another possible explanation.

Suprasegmental Perception shows the strongest correlation among all the variables with TOEIC scores (Pearson's  $r = .454^{**}$ ) (See Table 10). This suggests that this part of the test did more than just measure the subjects' simple perception abilities. The task of transcript completion requires listeners not only to attend to the aural input, but also to draw on higher-level cognitive skills such as prediction and guessing, quickly processing such information as background knowledge, structural and lexical cues. As such, it reflected the subjects' English proficiency, just as cloze test scores are believed to be good indices for general reading comprehension (Oller, 1979).

**TABLE 10**

**Correlations between TOEIC and Other Variables**

	GP	SP	SK	SSK	SPc	SSPc
TOEIC	.314**	.128	-.008	.054	.076	.454**

\*\* =  $p < .01$  \* =  $p < .05$

GP = Global Pronunciation, SP = Segmental Pronunciation, SK = Segmental Knowledge  
SSK = Suprasegmental Knowledge, SPc = Segmental Perception, SSPc = Suprasegmental Perception

English proficiency could have affected the subjects' pronunciation as follows. As some researchers propose (Eskey, 1988; Hirai, 1999; Tsui & Fullilove, 1998), proficient readers/listeners are those for whom such lower-level skills as quickly identifying lexical and structural forms have been automatized, and who can spare their limited processing capacity to other processes. The results of the present study suggest that when reading a

prepared passage, more proficient subjects, being relatively freer from lower-level bottom-up processing, were able to attend to pronunciation more, and rendered a more intelligible reading of the passage, while less proficient subjects had their attention locked in the lower-level decoding processes and were left with very limited memory capacity to deal with pronunciation, which was still a very conscious process and needed a lot of attention. There is also a significant correlation between Global Pronunciation and TOEIC (Pearson's  $r = .314^{**}$ ), providing some more evidence for this argument.

These results may also be simply interpreted as meaning good learners put in more effort in improving their pronunciation, just as they did for other English skills. But even if this simple explanation is true, it is still evidence that conscious learning and effort on the learners' part lead to better pronunciation.

### The Survey

As mentioned earlier, the survey did not find any significant differences between the two groups in their answers to how much pronunciation instruction they had in junior high and high school (For this part of the survey questions, see Table 1). However, two items in the survey resulted in significant differences as shown below (See Table 11).

**TABLE 11**  
**Survey Answers**

Question	Not at all	Little	Some	A lot	Chi
Do you think pronunciation instruction is necessary in English classes? (experimental)	0	1	27	40	8.01*
(control)	0	0	35	19	
Are you trying consciously to improve your pronunciation? (experimental)	5	31	26	2	17.03**
(control)	12	36	6	0	

\*\* =  $p < .01$  \* =  $p < .05$

More learners in the experimental group think pronunciation instruction is

necessary, and more in the experimental group are consciously trying to improve their pronunciation. The answers to the open-ended question on what they are doing to improve their pronunciation show that while listening to native-speaker speech is the preferred method of practice for both groups, more learners in the experimental group use more conscious approaches, such as practicing consciously, checking phonetic transcription, etc.

**TABLE 12**  
**Answers to the Open-Ended Question:**  
**“What are you doing currently to improve your pronunciation?”**

	Experimental	Control	Chi-Square
through songs	10	3	20.19*
listening to CD and tapes	8	10	
reading English books	0	2	
listening to the radio	3	0	
watching TV and movies	5	0	
imitating the teachers	5	3	
practicing consciously	22	7	
checking the position of the tongue and mouth in the mirror	5	3	
checking phonetic transcription	4	0	
trying to link words	6	0	

\*\* =  $p < .01$    \* =  $p < .05$

## CONCLUSION

The results of the present study suggest that an extensive, well-rounded pronunciation course leads not only to better metalinguistic knowledge and aural perception abilities on the part of learners, but also to better global pronunciation.<sup>2</sup> Even though lack of pre-test data may leave some room for

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<sup>2</sup> The experimental group was evaluated on their reading of the test passage upon entry to university, and their average rating was 2.96, approximately the same rating as the control group showed in the study.

argument, the data presented in this paper does provide some valuable evidence for the effects of pronunciation instruction in college English classrooms. In a previous study, we carried out a pre/post-test regimen with a smaller group. We found that there was a significant gain in overall pronunciation ability after the students completed the pronunciation course. Moreover, the students' knowledge showed a statistically significant correlation with their overall ability in the post-test, while there was no such correlation in the pre-test. (Kashiwagi & Snyder, 2004) Still, we would concede that it is necessary to do a study with both a control group and a pre/post-test regimen, if logistically possible, to be able to make a stronger claim.

Improvement in overall intelligibility is often difficult to observe. In the present study, for example, 9 subjects (13.4%) in the experimental group were still rated below 3 on the 1 to 7 scale, even after one year of instruction. 3 on our evaluation scale indicates "reasonable intelligibility" and could be considered the basic communicative threshold. The experimental group also rated a mere .5 better on average than the control group in their overall intelligibility. Some teachers and researchers may look at this result and conclude that pronunciation instruction is not a very wise way to spend limited class time. In fact, this difficulty in finding any visible improvement in learners' pronunciation was the reason that has led many teachers to give up pronunciation instruction to begin with.

We must understand, however, that the development of L2 phonology is a very slow process, which could take years of patient practice. We must also remember that the goal of any pronunciation course is not to make learners sound like native speakers, but "to enable learners to surpass the threshold level so that their pronunciation will not detract from their ability to communicate (Celce-Murcia, Brinton & Goodwin, 1996, p. 8). In this regard, we believe that a one-year pronunciation course, 85% of whose students rated above the communicative threshold at the end, is hardly described as an ineffective use of time.

Analyses of relationships between different variables show that metalinguistic knowledge including the knowledge of phonetic transcription has an impact

on production, indicating the merits of explicit pronunciation instruction in improving pronunciation. Ability to discriminate English segmentals, however, does not seem to have as much bearing as other variables on the subjects' overall intelligibility. Other data in the study also suggest that ability to discriminate segmentals does not necessarily precede production, either, providing further evidence that too much emphasis on perception, at least at the segmental level, may be misguided. These findings have important pedagogical implications, as they suggest that learners may not just pick up pronunciation through aural exposure to a native speaker model, but that they may benefit more from explicit knowledge about English phonology than has been believed. Some studies also suggest aural exposure alone may not lead to better production (Bongaerts, 1999; Elliot, 1997).

The study also shows that the ability to perceive suprasegmental features is the strongest predictor for the subjects' performance in reading a passage. It could indicate that a better ability to perceive suprasegmentals leads to better production, by enabling learners to mimic a native speaker model, but other explanations using the information processing model are also offered. In the constraint of this study, where the task is reading a prepared passage, not speaking spontaneously, English proficiency seems to factor in the subjects' pronunciation in a significant way, suggesting that pronunciation does not improve independently of other English skills. It is not clear whether English proficiency plays as equally important a role as in this study when learners speak spontaneously. This question needs further investigation.

Empirical data show that development of intelligible pronunciation is crucial to learners' communicative competence (Beebe, 1978; Hinofotis & Bailey, 1980). Unfortunately, however, not enough emphasis is being placed on pronunciation instruction in Japanese English classrooms. Lack of sufficient empirical data has also meant that even those who consider pronunciation instruction an invaluable part of their English program have had to rely mostly on their intuitions and anecdotal evidence. We hope that the results of this study as well as future research in this field will provide teachers with more insight into the development of L2 phonology, and more effective

instruction options. We also strongly hope that more empirical evidence of the efficacy of classroom pronunciation instruction will encourage teachers to incorporate more pronunciation instruction into their teaching.

### **SUGGESTIONS FOR FUTURE STUDIES**

Even though the present study provided some evidence of the effectiveness of a pronunciation-specific course and the positive relationships between metalinguistic knowledge, perception and production, it still has some limitations. Time limitations and logistical difficulties made it very difficult for us to conduct a pre-test in the study. Though the evidence presented in this paper does provide some valuable information, comparisons of pre-test and post-test data would have made it more conclusive.

Also, the subjects in the study were evaluated on their reading of a prepared passage in order to avoid the risk of evaluators being influenced by other factors than pronunciation such as their overall proficiency and fluency, but there is some concern about whether pronunciation shown in the reading of a prepared text can be retained when the subjects engage in spontaneous speech, in which more attention must be paid to meaning (Celce-Murcia, Brinton & Goodwin, 1996). Further research is needed to investigate the effects of pronunciation instruction in spontaneous speech. More long-term investigations into the effects of instruction are also needed to see whether the subjects improve their pronunciation even further with more practice or lose their pronunciation through attrition.

Of further interest to us are the nine subjects in the experimental group who still rated below the communicative threshold even after one year of instruction. Looking into their affective factors, psychomotor skills, motivation, learning styles and other areas may reveal some valuable information as to why some adults never acquire intelligible pronunciation.

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## APPENDIX

### Evaluation Criteria, adapted from Speech Intelligibility Index (Morley, 1991)

1. Speech is basically unintelligible; only an occasional word/phrase can be recognizable.

2. Speech is often unintelligible even with great listener effort.
3. Speech is reasonably intelligible but parts of the speech are still difficult to understand even with effort. Speech is marked with pronounced accent and choppy delivery.
4. Speech is mostly intelligible. While speech is still rather choppy and marked with accent, listeners can understand most of it if they concentrate on the message.
5. Speech is largely intelligible. While the differences from NS norm are still evident, they do not impede greatly with comprehension. Delivery is quite smooth.
6. Speech is intelligible. While the differences from NS norm are still there, they do not impede with comprehension. Delivery is natural and smooth.
7. Near-native speech.