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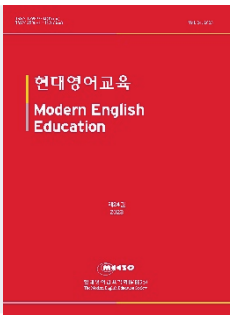

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Improving English Pronunciation Accuracy among Korean Adult Learners

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Abstract
This study investigates the effectiveness of a short-term pronunciation program for Korean learners of English, exploring the effects of such a program for pronunciation improvement, as well as for motivation. Possible benefits of group and inductive learning are also examined for learning outcomes and motivation. Initial and post-surveys probed participants' self-efficacy, motivation, and relevant personality factors. Pretest and post-test recordings were rated by experienced raters for pronunciation accuracy. In between were three classroom sessions involving group exercises on particular vowels, consonants, and aspects of prosody, such as lexical stress, rhythm, and linking. The sessions involved group learning, with some groups also experiencing more inductive style lessons. The results showed some modest improvement in pronunciation, as well as in self-efficacy, despite the limited time frame of the program. Some motivational factors and one personality factor (openness to new experiences) were correlated with their improvements. The more inductive style approach had no effect on outcomes, at least over the short term of this study. Implications for pronunciation pedagogy will be discussed, e.g., for interactive learning, and instruction oriented toward affective factors.

INTRODUCTION

Perception and production of English sounds are notoriously challenging for East Asian learners of English as a foreign language (EFL). English pronunciation can be particularly challenging for Korean adult learners, due to differences between English and Korean phonology, and the lack of sufficient attention to EFL pronunciation instruction in Korea. Despite its importance, modern pronunciation teaching techniques have received limited attention in the East Asian context. Pedagogical studies have typically examined the use of phonological awareness training, explicit instruction, and practice methods to target particular phonemes, focusing on teaching pronunciation rules, phonological awareness training, and

corrective training for target phonemes. However, approaches like communicative instruction, interactive techniques, and inductive learning methods for pronunciation remain relatively under-studied. Also, research on other non-linguistic factors that can influence learning outcomes has been largely neglected, such as the role of intrinsic motivation and self-efficacy in pronunciation learning, which have garnered attention in other contexts but remain less explored in the Korean context. Given the high-pressure language learning environment in Korea, more research is needed on instructional strategies that address the specific needs of Korean learners.

Therefore, this study examines the impact of a short-term pronunciation intervention program on the development of English pronunciation skills, and explores the potential benefits of combining explicit instruction, practice activities, group learning, and inductive learning in a classroom setting. Inductive learning refers to presenting examples or data from which students attempt to discover a target pattern or principle under the guidance of the instructor. Through this process, students may learn more effectively than from explicit instruction (e.g., Bransford, Brown & Cocking, 1999). This research aims to provide insights for instructors and curriculum developers in need of effective strategies to improve English pronunciation proficiency among Korean learners. This short-term study can lead to longer-term pronunciation training programs for learners who were never taught the principles of English pronunciation. Another rationale for the short time frame of the study is that the most pronunciation training that some Korean learners receive might be a short unit in a university EFL course, like those typically required for first-year students at Korean universities. This study also attempts to explore possible connections between learners' motivation, sense of self-efficacy, and pronunciation learning, as these are under-explored areas in applied linguistics research in pronunciation.

LITERATURE REVIEW

The general areas of difficulty for Korean learners are well known, such as syllable duration, rhythm, and unfamiliar English vowels and consonants. Specific vowel difficulties include problems with word-medial vowels (S.-J. Kim, 2003), relying on vowel duration rather than quality for tense and lax vowels (J.-E. Kim, 2017; J.-Y. Lee, 2009), and overly long reduced vowels (Kwon, 2007). With consonants, some struggle with final palatal codas (Yeon, 2003), the approximant /ɹ/ (Jun, 2004), the /j/ glide (M.-H. Cho et al., 2001), and various consonant clusters (Chung, 2013; Lim, 2021; Seo, 2021). Less proficient learners tend to insert epenthetic vowels in clusters, or clip fricative portions of clusters (Choi, 2016; Lim, 2021).

Koreans' pronunciation may differ from native speaker prosody, including variations in stress patterns, stress placement, and not reducing vowels in unstressed syllables. These differences have been found in acoustic studies (e.g., J. Kim et al., 2007), which also show that Koreans tend to use longer unstressed syllables, and nuclear stresses with shorter vowel durations and higher fundamental frequencies (O.-Y. Kim, 2007). Differences in segmental and suprasegmental articulation can impact perceptions of accent, intelligibility, and comprehensibility. One study (Sereno et al., 2016) reported that for Korean speakers, segmental factors influenced ratings for accent, comprehensibility, and intelligibility, while intonation primarily affected intelligibility; another study (Kang et al., 2010) found that suprasegmental aspects accounted for half of the variance in oral proficiency and comprehensibility ratings.

Various studies of the effectiveness of pronunciation training for Koreans have typically focused on explicit instruction with articulatory training, or perceptual training on phonemic awareness, i.e., phoneme distinctions. These studies have generally found positive effects of such methods, especially for segmentals.

Explicit pronunciation instruction involves explicit guidance on segmentals, stress patterns, intonation, and pronunciation rules, often via drills, read-aloud and repetition exercises, and practice with a trained pronunciation instructor, with the hope of providing learners the tools to improve on their own. The focus is often on articulatory training and correct phonetic articulation of segmentals. Various studies have shown some benefits of such methods, and even for traditional rule-based instruction. In one college course, teaching specific pronunciation rules for segmentals over one semester was found to have some effectiveness, particularly for a few patterns such as vowel reduction, but less so for other rules (J. H. Kim & Yoo, 2021). Formal instruction with perceptual training for the /l/ – /ɹ/ distinction led to modest short-term improvement, mainly for coda positions (Han, 2002). Explicit teaching of segmentals and intonation to younger learners with pronunciation-focused activities led to improvement in L2 accentedness and accuracy (J. Jang & Lee, 2015). While Koreans typically exhibit slower English rhythm with more intrasentential pauses, explicit instruction did mitigate some of these rhythmic issues (Choe, 2022).

Perceptual training or phonological awareness training involves teaching learners an awareness of target phonemes and phonemic contrasts, e.g., via minimal pair exercises, syllable segmentation, rhyme recognition, and sound blending. One study with perceptual training alone for final palatal consonants found that Koreans improved their perception of palatal

codas, with slight improvements in pronunciation of final palatals (Huensch & Tremblay, 2015). In a similar study (Huensch, 2016), Koreans were trained to distinguish final simple coda consonants, leading to improvements in speaking; they generalized their improvements to more complex codas, but not to grammatical endings like -ed.

A few small studies have examined articulatory and phonemic training together or in small-scale comparisons, with Koreans. Segmental training alone with sound drills, and phonemic training alone with minimal pairs, were effective for some fricatives, liquids and vowels (S.A.S. Lee & Sancibrian, 2013), but those trained in phonemic contrasts showed greater improvement with vowels. Similarly, articulation training for one group, and phonemic contrast training for another group, for English fricatives and affricates, led to improved pronunciation of those sounds (Schmidt & Meyers, 1995). A combination of articulatory and practice techniques and phonemic instruction over one semester reportedly led to significant improvements with various segmentals, prosody, and intelligibility (Fritz & Sikorski, 2013). Both articulatory training and phonemic awareness training can thus be effective approaches for helping Koreans to improve their pronunciation.

Little research has been conducted with other teaching methods, such as communicative and interactive practice methods, feedback methods, or inductive methods of presenting and teaching target sound patterns. Yet some evidence shows benefits of such relatively novel methods. In a test of limited communication-oriented instruction (Yu, 2021), college students in a pronunciation program received pronunciation training and performed picture description tasks, which led to improved pronunciation for consonants, stress, intonation, and rhythm, but not for vowels. In a study using discourse strategies (Gooch et al., 2016), college students were taught the /ɹ/ phoneme via articulatory training, and engaged in practice with an instructor who used clarification prompts (e.g., “Could you say that again?”) and corrective recasts to elicit responses and provide corrective feedback. Recasts were more helpful for improved production of /ɹ/ in more controlled situations, while prompts led to better production in controlled and spontaneous production of /ɹ/. A method described as priming effects in dialogue (J. Hwang et al., 2015) involved Koreans naming objects in dialogues with native English speakers, where they heard and then had to pronounce words with sounds that do not exist in Korean (/æ/ and final voiced codas) so that the native speakers could understand them. The correct pronunciation was reportedly primed by the native conversational partner, and after some initial difficulties, the Koreans made phonetic adaptations to make themselves understood, and thereby improved their pronunciation. This of course works in an ideal environment, where a Korean can interact personally with a qualified speaker, which is often unavailable to L2 learners within Korea. Finally, EFL pronunciation studies have not examined the effects of inductive learning of pronunciation, e.g., presenting target sounds and having students in groups discern sounds or sound contrasts. However, much education research has shown the cognitive benefits of inductive or discovery-based learning for its cognitive engagement and learning outcomes (see, e.g., Bransford, Brown & Cocking, 1999).

Motivation

Intrinsic motivation refers to the motivation to engage in an activity for its own sake, rather than for external rewards or incentives. Research indicates that it can play a significant role in promoting successful language learning. Studies have shown that learners who are intrinsically motivated to improve their pronunciation are more likely to engage in activities that promote pronunciation development, such as self-study, practice, and feedback seeking (Ushioda & Dörnyei, 2009). They also tend to be more persistent in the face of challenges and setbacks, and are more likely to achieve their goals (Gardner & MacIntyre, 1993). In educational psychology, a commonly used model of motivation is Self-Determination Theory (SDT) (Ryan & Deci, 2000), which specifies three subcomponents that comprise intrinsic motivation. Intrinsic motivation is possible when one feels a sense of autonomy (and thus, engages in a pursuit by choice and out of interest), mastery or improvement (gaining a sense of improvement and learning), and connectedness with others (social relationships or potential for connection). The sense of achievement or mastery also relates to self-efficacy, or the sense that one can effectively learn and improve in a specific learning task. Learning that promotes autonomy, interaction, and interest leads to more meaningful learning experiences, and better learning outcomes, and this holds in Korean contexts as well (H. Jang et al., 2009; Reeve & Lee, 2014). Without these criteria being met, motivation toward learning pursuits is extrinsic, e.g., due to social pressure or for external rewards. External motivation, according to SDT, might be externally regulated, or fully extrinsic, or internally regulated, such that one has partially internalized or identified with the external goals or motivators, but the criteria for intrinsic motivation are still lacking, and the motivators are still extrinsic.

However, little research exists on Koreans’ motivation or attitudes toward English pronunciation. A few studies show that students may be less motivated toward learning pronunciation, due to unrealistic goals, and a lack of meaningful pronunciation instruction. For example, survey studies of Korean university students show a lack of confidence about English pronunciation, a lack of effective learning strategies, and anxiety toward English speaking and pronunciation (C. H. Kim & Kim, 2016); and despite the perceived importance of English pronunciation, they were more concerned with their

accents and sounding native-like than improving intelligibility or comprehensibility (Bissett & Ma, 2015). They also reportedly view bilingual proficiency as a criterion for successful English learning, and those with higher English test scores may rate their English proficiency more harshly (Y.-G. Cho, 2013). Unrealistic attitudes seem symptomatic of an extrinsic motivation toward English pronunciation. Since motivation problems may pose challenges for learners, this study attempts to examine the motivational effects of a pronunciation program with an interactive learning experience.

The Present Study

The following research questions are thus proposed and explored: (1) Can a short-term pronunciation intervention program help with improving English L2 pronunciation? (2) Can group learning or inductive learning in a short-term pronunciation training program facilitate pronunciation improvement? (3) Does a relationship exist between intrinsic motivation and L2 pronunciation improvement? (4) Can a short-term pronunciation training program improve intrinsic motivation or efficacy?

METHOD

This study aims to address some gaps in our understanding of the role of motivation in pronunciation learning, and the effectiveness of short-term pronunciation training. This study attempts to address these questions by examining whether a short-term pronunciation intervention program can lead to improvements in segmentals or prosody among Korean adult learners. A combination of articulatory and phonemic training is used, since past research has shown the effectiveness of both approaches. Teasing apart their effects is not the main concern for this study, where these can complement each other. The study also examines the potential benefits of inductive learning within a group learning environment, in order to examine any facilitory effects of this instructional approach on pronunciation acquisition. The influence of intrinsic motivation on L2 pronunciation improvement is also examined, given the important role of learners' internal drive and enjoyment in language learning. This study aims to inform the design of effective pronunciation training programs for Korean adult learners.

Participants

At a university in Busan, Korea, 45 Korean students were recruited as participants through an online university bulletin board (39 females, 6 males; mean age: 18.8, median age: 19; 42 first-year students, one second-year student, and two third-year students, representing various majors). None had spent significant time abroad, i.e., studying or living abroad, or extensive travelling in English-speaking countries; all had studied English in primary and secondary school and private academies.

Procedure and Materials

Participants first filled out an initial online survey, with questions on demographics, and self-ratings for their English skills (general English ability, listening, and speaking) as a proxy for self-efficacy ratings. The survey also contained the following psychological inventories, in English and translated into Korean: (1) the Activity Feelings States (AFS) scale, a 13-item inventory of intrinsic motivation, which was developed as a measure of intrinsic motivation within the SDT framework (Reeve & Sickenius, 1994), with subscales for autonomy, achievement, and relational aspects of motivation, and adapted here to probe motivation toward learning English; (2) the Situational Motivational Scale (SIMS), a 16-item inventory that gauges extrinsic as well as intrinsic motivation (Guay et al., 2000), with questions adapted to probe motivation toward studying English (it further distinguishes between fully extrinsic and internalized or "identified" extrinsic motivation); and (3) the Ten Item Personality Measure (TIPI), a brief ten-item measure of the Five-Factor Model personality traits (openness, conscientiousness, extroversion, agreeableness, and neuroticism) (Gosling et al., 2003). These measures were included to assess motivational and personality factors that might affect speaking ability and pronunciation learning (Dewaele, 2012). After the initial survey, each student came to the researcher's office to record speech samples, for the pretest. Each student read aloud minimal pair words, minimal pair sentences, and a reading passage, and answered several open-ended questions; each recording was about seven to ten minutes.

The participants were randomly assigned to two instructional conditions: Condition A, with articulatory and phonemic training, with group activities; and Condition B, with the same training and activities, but with a more inductive presentation

of target sounds. Participants attended three class sessions of 50-60 minutes each. Session one dealt with vowels; session two dealt with consonants, and session three dealt with prosody. For each session, students received a booklet with examples and practice materials. Session one focused on the lax vowels /æ/ versus /ɛ/, /ɪ/ versus /i/, and /eɪ/ versus /ɛ/. Session two dealt with the palatals /ʃ/, /ʒ/, /ʤ/, /ʧ/, how they contrast with each other, and avoiding epenthetic vowels after these consonants in coda position. Session three dealt with linking (liaison) and lexical stress articulation. The practice materials included (1) more controlled activities like minimal word pairs and sentences, limericks, practice dialogues, short poems, and tongue twisters, and (2) quasi-communicative tasks, such as open-ended discussion questions and picture description tasks. The sessions were taught by the researcher, a linguist and a native English speaker from North America.

For Condition A, the target sounds were presented and explained with minimal pairs, sample sentences, and explanations of articulation and phonemic contrasts. The participants then practiced the controlled activities and tasks in groups. The activities include minimal pair words and sentences, sample sentences, practice dialogues, tongue twisters, limericks, and simple communicative activities such as picture description tasks. For Condition B, the target sounds were presented with the same examples from the prepared booklets, but the participants had to discuss the examples in groups to guess or infer the phonemic distinctions from the examples (e.g., minimal pair words and sentences, and short dialogues), how the target phonemes differ, and/or how the target sounds are made. For the consonants, a video was also played, showing the mouth close up for a native speaker (NS) and a Korean non-native speaker (NNS) pronouncing words with palatal consonants.[1] The instructor then engaged the participants in whole-class discussion to lead them to infer how the target sounds are made before providing explicit explanations of the contrasts and articulation. Then they engaged in group practice with controlled activities and tasks, just as in Condition A. The lesson activities are shown in Table 1.

TABLE 1
Sessions and Activities

Session	Target Sounds	Control Condition A	Inductive Condition B
1. Vowels	/æ/ cf. /ɛ/ /ɪ/ cf. /i/ /eɪ/ cf. /ɛ/	Minimal pair words and sentences for initial practice. Explanation of phonemic differences. Group practice activities: sample dialogues, limericks, short poems, tongue twisters, picture identification tasks, map discussion task (places they would like to visit, with place names provided with target sounds).	Minimal pair words and sentences provided; participants asked to infer contrasts. Then guided explanation of contrasts by instructor (explanation focused on getting participants to identify differences before providing full explanation). Group practice activities: sample dialogues, limericks, short poems, tongue twisters, picture identification tasks, map discussion task (places they would like to visit, with place names provided with target sounds).
2. Consonants	Palatals: /ʃ/, /ʒ/, /ʤ/, /ʧ/ Avoiding epenthetic coda vowels	Minimal pair words and sentences for initial practice. Explanation of phonemic differences. Video showing NS and NNS to illustrate articulation. Group practice activities: sample dialogues, limericks, tongue twisters, reading passages with target sounds.	Minimal pair words and sentences provided; video shown of NS and NNS articulation; participants asked to infer differences. Guided explanation of contrasts. Group practice activities: sample dialogues, limericks, tongue twisters, reading passages with target sounds.

[1] The recording was made of the researcher pronouncing words with the target sounds, and a paid volunteer, a Korean students pronouncing the same sounds (who did not participate in the study), to demonstrate the more laminal pronunciation of the Korean palatal consonants, versus the more retroflex pronunciation of the English palatal equivalents.

Session	Target Sounds	Control Condition A	Inductive Condition B
3. Prosody	Lexical stress articulation, some stress and rhythm patterns, linking (liaison)	Definitions of some key terms were provided in the booklet (content word, stress, intonation, etc.). Sample dialogues were given and practiced, which illustrated possible miscommunication due to mispronounced stress patterns. Well known examples of misheard song lyrics were provided. Some stress patterns of multisyllabic words were explained. Group practice with short poems, dialogues, and songs. Participants were asked in groups to discuss some discussion questions about their attitudes about English.	Definitions of some key terms were provided in the booklet (content word, stress, intonation, etc.). Sample dialogues were provided, which illustrated possible miscommunication due to mispronounced stress patterns. Students were asked to infer causes of misunderstandings in the dialogues. Well known examples of misheard song lyrics were provided. Guided inductive explanation of rhythm and stress patterns. Group practice with short poems, dialogues, and songs. Participants were asked in groups to discuss some discussion questions about their attitudes about English.

After the last session, each participant filled out a post-survey, with the same self-efficacy questions, the AFS and SIMS inventories, some evaluation questions about the program, judgment-of-learning questions about their own learning, and questions about their perceptions of English pronunciation. They then came in for a speaking posttest, with the same type and amount of minimal pair words, sentences, reading passages, and open-ended questions. They were then compensated for their participation.

Data Collection and Analysis

Three experienced native-speaking IELTS raters (who live in Korea and have experience in evaluating Koreans) were recruited to rate the pretest and posttest recordings. The recordings were provided as anonymized sound files, and the raters were blind raters, in that they did not know that they were rating pretest and posttest recordings. The raters rated the pretest and posttest recordings for overall pronunciation accuracy, and as well as for vowel and consonant accuracy, overall prosody, syllable length and rhythm, intonation, fluency, and comprehensibility. These criteria attempt to capture other features like accentedness and intelligibility, and are drawn from a study of native speaker ratings of Japanese learners of English (Saito et al., 2016). Interrater reliability was assessed via Intraclass Correlation, which is similar to a Cronbach's alpha, but more suitable for interrater reliability (Hallgren, 2012). The raters' ICCs were 0.617 for the prestest scores and 0.706 for the posttest scores, indicating moderate reliability.

Results

The data were analyzed in the R statistical package (R version 4.2.3, in Fedora Linux), by means of generalized linear models (GLM, via R glm). The Gaussian distribution (with an identity link) was found to yield the best test statistics (AIC and BIC), in which case R glm reports *t*-tests and *p*-values for the independent variables. Ratings by native speaker raters were first compared between pretest and posttest audio recordings, and ratings from each rater for each participant were entered separately in the model, following Suzukida and Saito (2022), as this mitigates the effects of individual rater preferences or biases. A significant but slight improvement was seen in overall pronunciation accuracy ratings, and a marginal improvement for consonant accuracy, as seen in Table 2. However, no significant effects were found for the following: vowel accuracy, overall prosody, intonation, syllable length, stress articulation or placement, fluency, or comprehensibility. Thus, modest overall improvement was seen over a one-month period.

TABLE 2
Pretest and Posttest Ratings

Factor	Pretest Mean	(*SD*)	Posttest Mean	(*SD*)	*t*-test	*p*
General accuracy	5.20	0.47	5.37	0.52	-3.32	0.001**
Accuracy: Consonants	5.28	0.48	5.39	0.59	-1.85	0.067 [.]

Notes. Judges' pronunciation ratings are on a nine-point IELTS scale (where, e.g., 9 = expert or native-like, 7 = good, 5 = competent, and 3 = extremely limited). *Significant at <.05; **Significant at <.01; [.] = marginal; ns = not significant; for all factors, df = 134.

To further examine factors that would explain or correlate with improvement in overall pronunciation accuracy ratings, various factors were examined (namely, language background, all the motivation factors from the SIMS and AFS scales, Big Five personality factors from the TIPI inventory, inductive versus normal treatment condition, and efficacy ratings). Odds ratios (θ) were also calculated, which provides an estimate of the likelihood and degree of an effect on outcomes (somewhat like the GLM equivalent of an effect size).[2] The only factors that significantly correlated with the pretest/posttest ratings differences were the personality factor of openness, the social relatedness subscale of the AFS motivation inventory, and externally regulated motivation in the SIMS scale. Other factors showed no correlation, including self-efficacy or ability self-ratings, and most surprisingly, treatment condition (regular group work versus more inductive group work). Cognitive openness to new experience seemed to facilitate accuracy improvement here, though the effect was fairly small, as the odds ratio was positive but close to 1.0. The more externally driven form of extrinsic motivation (in the SIMS inventory) had a somewhat negative effect, such that extrinsically motivated learners were less likely to improve. This accords with the general tendency for external motivation to lead to less meaningful and less successful learning. However, the social connectedness component of motivation in the AFS inventory, strangely, had a rather slight but negative effect on outcomes. This is difficult to explain. Perhaps the lessons were not sufficiently engaging for socially motivated individuals, or perhaps those individuals were somehow less focused on applying what they had learned. More research is needed to clarify this. The results with odds ratios are shown in Table 3 (again, with *t*-values as reported by R glm for a Gaussian distribution with an identity link).

TABLE 3
Factors in General Accuracy Improvement

Factor	Estimate	SE	*t*	Odds (θ)	*p*
AFS Motivation: Relatedness	-0.091	0.045	-2.042	0.91	0.043*
TIPI: Openness	0.084	0.038	2.215	1.09	0.029*
SIMS: External regulated motivation	-0.139	0.066	-2.107	0.87	0.037*

Notes. Participants' self-ratings are on a seven-point scale (7 = native-like, 6= near-native, 1 = low)

The self-ratings, when analyzed separately, provide some idea about their sense of self-efficacy, since between the pretest and posttest surveys, small but significant improvements were seen in some self-ratings. A slight decrease in intrinsic motivation was indicated by the SIMS scale, but not the AFS scale, and the AFS and SIMS subscales indicate no other significant changes. It is not clear if the participants experienced a slight decrease in intrinsic motivation as they realized the complexities of English pronunciation due to the program. It is possible that the time period is too short for meaningful results for motivation, since motivation tends to be more stable over time and requires time and effort to change. The factors with significant pretest and posttest differences are shown in Table 4. The following items were non-significant between the initial and post-surveys: English background or efficacy; AFS intrinsic motivation; SIMS intrinsic motivation; SIMS identified external motivation; Big Five personality traits; and treatment condition (teaching condition A or B). Small but significant improvements were seen in self-ratings for overall English ability, speaking, and listening.

[2] If θ = 1.0, then the odds are that an independent variable (IV) has no effect on a dependent variable (DV; if θ > 1.0, this indicates how likely the IV leads to an increase in the DV measure, with a higher number indicating a greater likelihood or effect on the DC; if θ < 1.0, this indicates how likely the DV decreases, with a lower number indicating a greater negative effect or likelihood).

TABLE 4
Initial and Post-survey Self-ratings

Factor	Pretest Mean	(*SD*)	Posttest Mean	Change	(*SD*)	*t*-test	*p*
Efficacy: General	3.13	1.18	3.47	+0.34	1.27	-2.62	0.012*
Efficacy: Speaking	2.64	1.23	3.09	+0.45	1.18	-3.08	0.004**
Efficacy: Listening	3.27	1.39	3.87	+0.60	1.27	-3.99	0.0002**
SIMS: Intrinsic Motivation	4.62	1.41	4.25	-0.37	1.36	2.92	0.005**

Notes. Participants' self-ratings are on a seven-point scale (7 = native-like, 6= near-native, 1 = low). *Significant at <.05; **Significant at <.01; [.] = marginal; ns = not significant; for all factors, df = 44.

The judgment of learning questions and related questions were posed in the post-survey after all the training sessions, and so these cannot be compared with any previous survey items. Qualitatively, though, they show some sense of improvement. The scores for understanding of specific areas on pronunciation are not high, and this might explain a slight drop in intrinsic motivation, if they came to realize from the lessons how complex and different English pronunciation is compared to their first language. Responses to questions 4-5 indicate slightly improved understanding, and responses to the other questions indicate modest confidence or efficacy in improving English pronunciation. The questions and results are summarized in Table 5.

TABLE 5
Judgment of Learning

	Question	Mean	*SD*	Med.	Min.	Max.
1.	How much have you learned from these lessons?	5.1	1.2	5.0	2.0	7.0
2.	How much do you think your pronunciation has improved?	4.4	1.2	4.0	1.0	7.0
3.	How well do you remember what you learned?	4.7	1.4	5.0	1.0	7.0
4.	Before these lessons, how well did you understand English pronunciation, overall?	1.5	0.9	1.5	-0.1	4.2
5.	After these lessons, how well do you understand English pronunciation, overall?	4.7	1.3	5.0	1.0	7.0
6.	After these lessons, how well do you understand English vowels?	4.4	1.2	4.0	1.0	7.0
7.	After these lessons, how well do you understand English consonants?	4.4	1.2	4.0	1.0	7.0
8.	After these lessons, how well do you understand English rhythm?	4.5	1.3	5.0	1.0	7.0
9.	How confident do you feel about your ability to improve your English pronunciation?	4.3	1.5	4.0	1.0	6.7

Notes. Responses are on a seven-point Likert scale (1 = none or not at all; 7 = very much or very well). Reported here are the mean, standard deviation, median, minimum, and maximum values.

Open-ended questions were included in the post-survey to ask their opinions about the program and their feelings toward English pronunciation. Responses to the open-ended questions about perceived obstacles mentioned the difficulty of English rhythm (15 respondents) and of segmental or oral articulation (14), L1 and L2 differences (2), unfamiliar IPA symbols (2), lack of confidence (1), and the difficulty of the materials or class sessions (2). Responses to open-ended questions about the program indicate that they appreciated learning about sound contrasts (6), rhythm and prosody (9), segmental articulation (6), improving their confidence (2), guidance from a native English instructor (6), participatory and group activities (6), learning new details about English pronunciation that they had never learned before (8), the chance to speak and practice in class (6), the materials and explanations (3), and the overall learning experience (10).

DISCUSSION

For the first research hypothesis regarding the effectiveness of a short-term intervention program, the results were mixed. The posttest results showed modest gains only for general pronunciation accuracy, likely due to the short time frame. The second hypothesis regarding the effectiveness of group learning and inductive learning seems to be partly confirmed. The training sessions involved much group or pair discussion and interaction, which likely contributed to the positive learning outcomes. However, the more inductive treatment condition had no effect on outcomes in this experiment. The third hypothesis concerning motivation and pronunciation improvement was partly confirmed, as motivation had a small correlation with learning outcomes. The fourth question regarding the effectiveness of a short-term pronunciation program for improving intrinsic motivation or efficacy was partly confirmed, with modest short-term improvement.

Pronunciation Improvement

A slight improvement was found for general pronunciation accuracy, according to the native speaker pretest and posttest ratings of participant recordings. Despite the positive impact on the participants' overall ability to pronounce more accurately, no significant improvement was found in the specific subscales for vowels, consonants, prosody, or intelligibility. Thus, the participants' improvement may be too general and too modest to show up in the specific subscales. The complexities of English segmentals and suprasegmentals pose challenges that require much more time and instruction than a short training program. The more inductive teaching condition had no effect on outcomes here, and again, that may be due to the short time period involved. Further research with, e.g., a semester-long program is needed for better learning outcomes and to better study the relevant factors involved.

The survey results indicate that participants experienced slight improvements in their overall sense of self-efficacy for English learning, speaking, and listening skills. This suggests that the short-term training program positively influenced participants' confidence in their ability to learn and improve their pronunciation skills. A small improvement was also in the intrinsic motivation subscale of the SIMS inventory (but not in the AFS inventory, perhaps because the SIMS is a more comprehensive inventory). The limited improvement in motivation here is not surprising, given the short time period involved of the program. Motivation is a complex construct that can be influenced by various factors, including the learners' individual characteristics and the instructional context. Intrinsic and extrinsic motivation tend to be stable over time, and time and effort are usually required to bring about motivational changes. Also, since the participants were self-selected and volunteered for this study, their motivation, anxiety levels, or sense of efficacy may have all been relatively healthy to begin with, and may not have varied enough to bring about any noticeable effects on learning outcomes over one month.

External motivation (according to the SIMS scale) had a slightly negative effect on improvement, as extrinsic motivation is associated with more superficial learning and suboptimal learning strategies (H. Jang et al., 2009; Reeve & Lee, 2014). The seemingly small but negative influence of social intrinsic motivation on outcomes is difficult to explain, and requires further research. The personality trait of openness was positively correlated with improved pronunciation accuracy. Openness refers to cognitive openness to new experiences, new ideas, and new learning. It is not surprising that this would help students to learn new pronunciation concepts and skills, and some past research has shown that some personality traits like openness can affect learners' success in L2 language learning and aptitude (Biedroń, 2011). For a better understanding of sociocognitive and personality factors, more research over longer time periods is also needed with other psychological and learning inventories.

Further Research and Materials Development

No benefit was found for a more inductive style of presenting target sounds in this study, though, again, that may be due to the short study duration. Further research is needed to examine the effectiveness of a longer-term program with inductive methods for improving pronunciation, motivation, or efficacy. This study did not specifically compare interactive group versus non-interactive learning, and a comparison of these approaches for pronunciation in the Korean context deserves future study as well. The benefits of communicative language teaching have been well researched, showing it to be effective for promoting intrinsic motivation in a Korean educational context (Pae & Shin, 2011). The above survey results indicated that the participants enjoyed the social, interactive approach, which is one of the inherent benefits of communicative and interactive teaching methods. This study did not compare the use of combined instruction in articulation and phonemic contrasts versus those techniques in isolation, but future research is needed to compare these methods used in isolation and together. More work is also needed on developing specific techniques and materials for specific segmentals and prosodic

features within communicative and interactive frameworks. Koreans who have spent time abroad tend to learn more accurate pronunciation, intonation and comprehensibility, as they interact with native speakers and imitate their pronunciation (E. Hwang, 2008), and this indicates the value of interactive and communicative pronunciation learning. A number of other techniques also deserve further research and pedagogical development, e.g., using videos to demonstrate the articulation of target sounds; miscue analysis (Goodman & Marek, 1996); interactive problem solving and discovery learning methods (Bransford et al., 1999); and methods for providing interactive feedback (J. Lee et al., 2015).

These findings highlight the need for more research on pronunciation training, motivation, and self-efficacy, and the effectiveness of longer-duration programs in promoting intrinsic motivation. Understanding the interplay between motivation and pronunciation learning is crucial for developing effective pedagogical approaches that can enhance learners' long-term motivation, engagement and progress in acquiring accurate pronunciation skills. One limitation of this study is that participants' abilities to perceive and distinguish phonemes and suprasegmental features was not tested, so it is unknown if their perceptual abilities improved. Probing perceptual abilities might be useful, especially when (as one reviewer pointed out), some time may be required for articulatory improvement to emerge. Further research testing both productive and perceptive abilities is thus needed.

Pedagogical Recommendations

Relatively few students in Korea learn pronunciation systematically, and for some, their main exposure may come from a university EFL course. Data on the amount of pronunciation teaching in Korean university EFL courses are not available, but if it is included in a course, it might comprise only a short unit (based on this author's experience in university EFL; again, hard data on this are unavailable). The one-month program with three in-class sessions and printed materials would be comparable to a pronunciation unit in an EFL course. However, these study results indicate that the benefits of a short training program or single unit are rather limited. Those who are motivated and interested might gain some tools to improve on their own, if they are so inclined. Learners might develop a slightly better sense of efficacy toward English oral skills, though it is unclear how long this effect would last (more study on this is needed). But the effects on pronunciation accuracy may be very limited, and may be too limited to impact their accentedness, fluency, comprehensibility, and intelligibility. A short unit or training program may make it difficult to implement more inductive methods, or to see any results from it. In the class sessions for this study, for example, the inductive teaching took more time, and requires more guidance from a qualified instructor. If inductive methods do have merit (and this requires more research to ascertain), then a longer time frame would be needed. Some previous studies found positive outcomes, even using more traditional methods, when spread out over a whole semester (e.g., Kim & Yoo, 2021). Thus, pronunciation instruction may be more effective when spread out over a semester, or if it is integrated into an entire course, and reinforced and developed over time.

For those teaching pronunciation, the following recommendations are suggested by these results and related studies. To improve intrinsic motivation, efficacy, and a cognitive orientation of openness to new experiences, teachers can use materials and create activities that are interactive and engaging, and that provide opportunities for learners to use English in a meaningful way. This would include communicative practice activities, which of course require some time, effort, and creativity, due to the relative lack of suitable communicatively oriented pronunciation materials. Theories of motivation and personality factors (e.g., Big Five, SDT), and the communicative and interactive learning paradigms, also highlight the important role of social learning. Accordingly, teachers can attempt to a supportive and positive learning environment, with group activities, and where learners receive helpful and positive feedback on their pronunciation, to increase their self-efficacy and intrinsic motivation. To develop a sense of autonomy and mastery, students can be taught techniques for self-directed learning outside of class, such as leisure consumption of authentic English media materials at an appropriate level, practice techniques like shadowing (repeating after a speaker from media materials), pronunciation learning strategies, and metacognitive strategies (e.g., Victori & Lockhart, 1995). Metacognitive strategies include specific and realistic goal setting, self-monitoring, self-regulation, effective cognitive learning techniques, and rehearsal techniques.

Finally, more materials are needed for sound patterns that pose difficulties for Koreans, including segmentals, consonant clusters, assimilation patterns, lexical stress patterns, and other prosodic features. Such pronunciation materials also need to be made available for teachers and students, including freely available materials to non-native English instructors, and to students for self-study.[3] Ideally, such materials could be made freely available online. Hopefully, follow-up research can be conducted that can lead to novel methods, activities, and instructional materials to be shared with the public.

[3] As some applied linguists have warned (Derwing & Munro, 2009; Thomson, 2012), a number of accent reduction courses and websites charge learners for their programs. These are often profit driven, not taught by teachers with appropriate linguistic training, and sometimes even teach unhelpful methods.

CONCLUSION

The current study investigated the effectiveness of a short-term pronunciation intervention for Korean learners of English, and the potential benefits of group learning for learning outcomes, pronunciation accuracy, and motivation. This study is limited, of course, by the short duration, the limited number of variables that could be isolated and compared, and the self-selected nature of the participants, who already had some interest and motivation toward learning English pronunciation. Much more research is needed with more general learning environments, such as students in college language courses with more diversity in interests and motivation, and more investigation of the various linguistic, pedagogical, affective, and cognitive variables that are discussed above.

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