

한국 EFL 학생들의 영어 순자음 인지

Identification of English Labial Consonants by Korean EFL Learners

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요약

기존의 유표성 이론에 따르면, 마찰음이 파열음보다 유표적이므로 발음하기 어렵다는 것은 잘 알려진 사실이다. 따라서 본 연구에서는 한국 EFL 학습자들이 발음하기 어려운 마찰음 [f, v]를 어떻게 인지하는지 살펴보기 위해서 영어 순자음 [p, b, f, v]를 판별하는 실험을 기획하였다. 40명의 한국 학생들이 영어 순자음이 들어간 임시어를 인지하는 테스트를 실행한 결과, 순자음의 운율적 위치가 인지 정확도를 결정짓는데 영향을 미침을 발견하였다. 특히 유표성 이론의 예상과 달리, 무성 마찰음 [f]의 정확도가 강제 뒤 모음사이의 위치를 제외한 모든 위치에서 높게 나왔다. 영어 순자음의 평균 인지 정확도는 강제 앞 모음사이 위치와 어두 초성에서 높은 반면에 어말 종성과 강제 뒤 모음사이 위치에서는 낮았다. 한국 학생들의 영어 순자음 인지에는 유표성 이론뿐 만 아니라 음향학적 두드러짐과 강세를 포함하는 청각적인 요소도 작용함을 보여주고 있다.

- 중심어 : □유표성 이론 □영어 순자음 □인지 판별 □테스트 □마찰음 □파열음 □무성음 □유성음 □운율적 위치 □어두 초성 위치 □어말 종성 위치 □강제 앞 모음사이 위치 □강제 뒤 모음사이 위치

Abstract

The perception of English labial consonants was investigated via experiment where 40 Korean EFL learners identified nonwords with the target labial consonants [p, b, f, v] in 4 different prosodic locations: initial onset position, intervocalic position before stress, intervocalic position after stress, and final coda position. The overall result showed that the proportion of perception accuracy of the target consonants was rather low, amounting to only 55%. There was also a positional effect since the accuracy rates for perceiving the four target consonants differed by position. Specifically, the average accuracy rate of the target consonant identification was higher in intervocalic position before stress (70%) and initial onset position (67%) than in intervocalic position after stress (45%) and final coda position (36%). Further, the accuracy rate for [f] is was high in all prosodic locations except intervocalic position after stress. The perception patterns were accounted for by the markedness and perceptual factors in conjunction with stress location.

- Keyword : □Markedness Theory □English Labial Consonants □Perception/Identification Test □Fricatives □Stops □Voiceless Consonant □Voiced Consonants □Prosodic Position □Initial Onset Position □Final Coda Position □Intervocalic Position Before Stress □Intervocalic Position After Stress

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I. Introduction

The labial place of English contains bilabial and labiodental places of articulation. English [p] and [b] are bilabial stops whereas English [f] and [v] are labiodental fricatives. It is commonly observed that English stop [p] and [b] are easier to pronounce than English fricative [f] and [v]. Thus, Korean EFL (English as a Foreign Language) learners frequently experience difficulty in producing the English labiodental fricatives. The difficulty posed to Korean learners seems to be due to the following two factors: inventory difference between Korean and English and markedness hierarchy among sounds.

As for the inventory difference between Korean and English, Korean does not have labiodental fricatives while English does. Then, Korean learners would have more difficulties in acquiring the English labiodental fricatives than the English labial stops. This is also predicted by the contrastive analysis hypothesis proposed by Lado (1957) [8].

Markedness hierarchy also predicts the degree of difficulty that language learners have with L2 sounds. Markedness theory originates from Trubetzkoy (1939/1969) and Jakobson (1941/1968) and has been further developed by many scholars such as Greenberg (1966), Chomsky & Halle (1968), and Eckman (1977) [2][3][5][7][9]. According to markedness theory, fricatives are assumed to be more marked than stops. Likewise, voiced sounds are assumed to be more marked than voiceless sounds. Further, positional markedness is also found by many scholars [1][4][6]. That is, final position (i.e., coda) is more marked than initial position (i.e., onset). Then, more marked sounds are expected to pose more difficulty in acquisition than less marked ones because markedness implies being more specific, less frequent, more limited, more complex, later acquired,

and difficult to produce.

II. Research Question

The research question in this study was to examine whether more marked sounds like English [f] and [v] were also more difficult for Korean EFL learners to perceive than less marked sounds like English [p] and [b]. English /f/ and /v/ are notorious for being hard to produce, so it is frequently mispronounced as Korean aspirated bilabial stop [p^h] and Korean unaspirated stop [p], respectively. Thus, an experiment was designed to investigate the perception of English labial consonants [p, b, f, v] by Korean learners in detail. Specifically, the following questions were raised in this study:

1. Can markedness theory predict the degree of difficulty in perceiving English labial consonants?
2. Can prosodic position affect the degree of perceptual difficulty for the English labial consonants?

III. Research Design

1. Stimuli

In order to investigate how Korean learners of English perceive English labial obstruents, 4 obstruents /p, b, f, v/ were combined with the low vowel /ɑ/. The target English obstruents and the low vowel sequences were located in 4 different prosodic contexts. The 4 different prosodic contexts were composed of initial onset position, final coda position, intervocalic position before stress and intervocalic position after stress. Thus, a total of 16 types were

made as non-words.

- (1) Stimulus classification by prosodic position
(When there are more than one syllables,
double vowels indicate a stressed syllable.

Place	Manner	CV	VC	VCV	WCV
bilabial	voiceless stops	pp	pp	pppp	pppp
	voiced stops	bb	bb	bbpp	bbpp
labio-dental	voiceless fricative	ff	ff	ffpp	ffpp
	voiced fricative	vv	vv	vvpp	vvpp

The 16 types of stimuli were spoken by 4 native speakers of American English. Two of them were male and the other two were female. The native speakers were asked to read the stimulus list. Thus, the 16 types of stimuli uttered by the 4 speakers amounted to a total of 64 tokens. The production of the 64 tokens by the native speakers were recorded in order to present the stimuli to Korean learners of English. The created stimuli were randomized so that the same type of a stimulus produced by the 4 different native speakers does not occur in a row.

2. Participants

Forty college student in a university in the metropolitan area of Seoul participated in this study. The participants are characterized as female predominant, consisting of 12 male students and 28 female students, with the mean age of 24.97 at the time of the experiment. The participants were drawn from the same division majoring in English language and literature. None of them was found to have spent time in English speaking countries previously. The participants had learned English for more than 10 years in Korea, beginning to receive English education around the age of 13. The proficiency level

of the participants would be evaluated as upper-intermediate because their major was English with more than 10 years of English education.

3. Procedures

The participants were asked to listen to a CD containing the randomized 160 non-word stimuli and to identify each stimulus. The identification test was a paper-and-pencil type. The participants were asked to choose the consonant of each stimulus they heard from a list of 15 alternatives on the answer sheet. The 15 alternatives were presented in IPA (International Phonetic Alphabet) symbols. The answer sheet also has the option of writing-in response (Other:) so that the listeners may write down what they heard when there was no correspondence between a stimulus and the choices. The 15 alternatives are given in the following table.

(2) Sample item

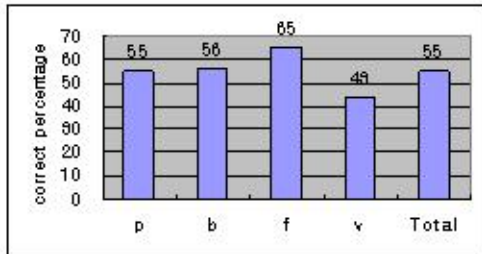
Keyword **t** **d** **θ** **ð** **f** **v** **s** **z** **p**
1. t d θ ð f v s z p
b **r** **l** **h** **w** **y** other ()

Each alternative was presented with a key word on the top of the answer sheet in order to exemplify the IPA symbol. Before beginning the perception test, several examples in different prosodic locations indicating which sound each IPA symbol corresponds to were introduced to the listeners. Also, the listeners were provided a familiarization session where 5 sample questions were played for practice to clarify the experimental procedure. All of the participants' answer sheets were collected and scored.

IV. Results and Discussions

In the analysis of the perception test, the proportion of accuracy of the stimuli was counted. The analysis out of 2560 tokens (4 consonants * 4 prosodic locations * 4 talkers * 40 listeners) showed that the number of correctly perceived tokens was 1396. Thus, the average accuracy rate amounted to only 55%. However, this average accuracy rate varied by consonant. Therefore, the correct percentage of each consonant were calculated as follows.

(3) Overall correct perception rate

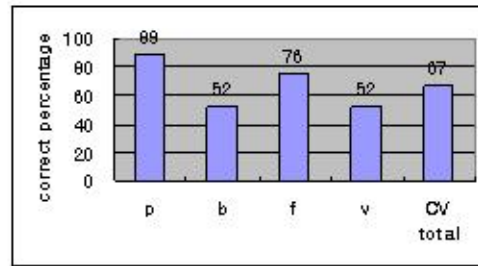


This result was surprising given the fact that the accuracy rate of the voiceless labiodental fricative [f] was higher than the bilabial stops [p] and [b]. In markedness theory fricatives are more difficult to learn than stops. Nonetheless, 65% of accuracy was obtained in perceiving [f], compared with 55% and 56% of accuracy in perceiving [p] and [b], respectively. However, the voiced labiodental fricative [v] showed the lowest accuracy rate of 43%, as expected. Thus, the accuracy rate for each consonant was examined again by position. The accuracy for each consonant along with the positional average rate is reported below.

When the proportion of correct identification of the stimuli was compared depending on prosodic locations, a positional effect was found since the accuracy rates of the four target consonants differed by position. Specifically, the participants showed an

average accuracy rate of 67% in initial onset position. However, 89% of the participants correctly perceived [p] in initial onset position, which is far higher than the average accuracy rate. Likewise, 76% of the participants correctly identified [f]. By contrast, only 52% of the participants correctly perceived the voiced [b] and [v].

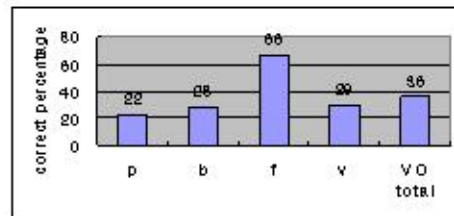
(4) Accuracy rate in initial onset position CV



In general, the listeners were more accurate in identifying the voiceless stimuli [p] and [f] than the voiced stimuli [b] and [v] in the initial onset position. Although the high accuracy rate for the voiceless fricative [f] was unexpected, the results still seemed to support universal markedness in that voiceless consonants were better perceived than their voiced counterparts.

In the final coda position the average accuracy rate was only 36%, which is quite low compared to 67% of the initial onset position. Accordingly, there was a positional effect between initial onset position and final coda position in identifying the target labial consonants.

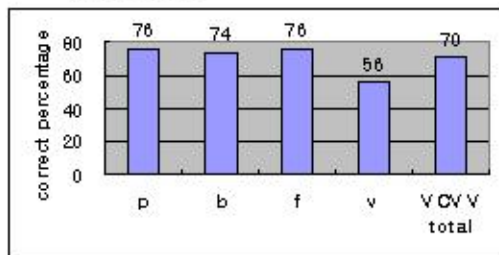
(5) Accuracy rate in final coda position VC



Regarding individual accuracy rates in the final coda position, the accuracy rate of [f] was far above the average rate, taking up 66%. By contrast, accuracy rates for the remaining stimuli [p], [b], and [v] took up 22%, 28%, and 29%, respectively. The identification of [p] (22%) was conspicuously low in the final coda position compared to the highest accuracy rate (89%) in the initial onset position. On the whole, the overall accuracy for each stimulus was significantly worse in the more marked final coda position than in the less marked initial onset position. This supported the positional markedness hypothesis because the targets in initial onset position were more correctly perceived than those in final coda position.

In intervocalic position before stress the listeners were good at identifying the stimuli. Thus, the average accuracy rate amounted to 70%.

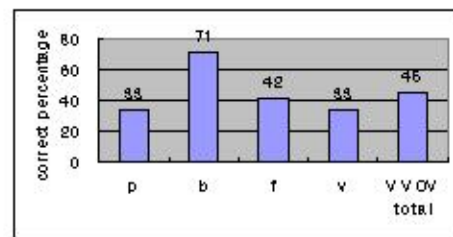
(6) Accuracy rate in intervocalic position before stress



All stimuli except [v] showed high accuracy: 76% of the listeners correctly perceived [p] and [f] and 74% of the listeners identified [b] target- appropriately. By contrast, only 56% of the participants correctly identified [v].

In intervocalic position after stress the average accuracy rate was low (45%) compared to intervocalic position before stress (70%).

(7) Accuracy rate in intervocalic position after stress



The accuracy rates were 33% for [p] and [v]. The accuracy rate for [f] was also low, taking up 42%. However, the accuracy for the stimulus [b] was evidently high since 71% of the listeners perceived it correctly. The lower accuracy rate in intervocalic position after stress than that in intervocalic position before stress conformed to the fact that unstressed position is less prominent than stressed position. Consequently, segments in unstressed position are predicted to be difficult to perceive.

V. Discussion and Conclusion

The overall result showed that the proportion of perception accuracy of the target consonants was rather low, amounting to only 55%. In addition, the overall result seemed not to follow the markedness hierarchy because the perception rate for the marked fricative [f] was the highest (65%).

There was a positional effect because the listeners were better at identifying English labial consonants in intervocalic position before stress (70%) and initial onset position (67%) than in intervocalic position after stress (45%) and final coda position (36%). In the initial onset position the voiceless stimuli were better identified than the voiced counterparts. In the final coda position the listeners had a great difficulty in identifying the stimuli except [f]. In the intervocalic

position before stress the listeners showed high accuracy rates for all stimuli except the stimulus [v]. In the intervocalic position after stress, the accuracy rates of the stimuli were relatively low compared to those in the intervocalic position before stress. However, the stimulus [b] showed the highest accuracy in this position.

The high accuracy rate for [f] seemed to be attributable to the prominent nature of the inherent noisiness of fricatives. Since fricative noise carries more auditory cues, they might be easy to perceive than stops in some cases. In sum, the perception pattern of English labial consonants cannot be determined by either markedness conditions alone or acoustic salience alone. Instead, conventional markedness and perceptual factors in conjunction with stress location can account for the perception patterns.

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