International Conference on Business Economics, Social Sciences & Humanities

VARIATIONS IN THE PRONUNCIATION OF [ɸɯ] IN SUNDANESE SPEAKERS

Gerri Aliansyah Hermawan
UNIERSITAS KOMPUTER INDONESIA, BANDUNG, INDONESIA
Anisa Arianingsih
UNIERSITAS KOMPUTER INDONESIA, BANDUNG, INDONESIA

ABSTRACT

This study aims to find out the variation of Japanese [ɸɯ] sound pronunciation when pronounced by speakers with Sundanese background. The theory that the author uses to find out the answer to the problem formulation is the theory of acoustic phonetics and articulatory phonetics. This study used a qualitative descriptive research method. The respondents of this study are Sundanese speakers divided into two parts, namely 3 men and 3 women. The results of this research are Sundanese speakers have 4 variations when pronouncing the sound [ɸɯ], namely Bilabial Fricative sound with Imperforate vowel [ɸɯ], Bilabial Fricative sound with Round vowel [fu], Bilabial Plosive sound with Round vowel [pu], Bilabial Fricative sound with Unrounded vowel [fɯ], and Bilabial Fricative sound with Unrounded vowel [ɸu]. Bilabial Plosive sound variation [pu] occurs in Sundanese speakers who have basic ability, Bilabial Fricative sound variation [ɸu], [fu], [fɯ] occurs in Sundanese speakers who have intermediate ability, Sound variation [ɸɯ] occurs in Sundanese speakers who have advanced ability.

Keywords: Phonetics, [ɸɯ] Sound, Sound Variation, Sundanese Language, Bilabial Fricative

INTRODUCTION

Onseigaku or Phonetics is one of the fields of linguistics that studies sounds in language. Phonetics is the study of constructing sound waves (acoustic), receiving language sounds and referring to the hearer (auditory), and also the process of producing language sounds describe from viewpoint of articulation (articulatory) (Hammarström, 1984). But keep in mind that each language has its phonetics (Ting, 2011). This will certainly be a problem for non-Japanese speakers who are learning Japanese.

When studying Japanese, there are problems that often arise in the learning process, namely pronunciation errors. Prodanovska-Poposka (2017) said that pronunciation is an important goal for establishing effective communication. In addition, pronunciation errors can affect the level of fluency and can hinder communication in matters of work, education, etc. because speakers with poor pronunciation cannot be understood even if their grammar is perfect. One of the reasons for errors in pronunciation is the mother tongue factor. Mother tongue interference is the main cause of learning difficulties and errors in foreign language teaching (Hadiyani, 2014).

Lott (1993) defines mother tongue interference as errors made by second or foreign language learners that are caused by their mother tongue. Apart from that, Voros (2020) said that mother tongue interference is a linguistic phenomenon where speakers use the linguistic characteristics and standards of a particular language and apply them to another language to communicate.

Derakhsan and Karimi (2015) argue that many previous researchers have argued that mother tongue interference is an obstacle to second language acquisition. For example, Fatemi, Sobhani, Abolassan (2012) investigated differences in oral consonant groups in first and second languages, and showed that if the structures of the first and second languages are different, learners experience difficulties in L2 pronunciation because they encounter unfamiliar phonological rules.

When learning Japanese for the first time, of course, we will see how to read Japanese letters using the Romaji version. For example, when we learn the letter「ふ」, we all know that the letter when written in the Romaji version is written /fu/. The letter「ふ」is included in Bilabial with the symbol [ɸ], which is the sound produced when the breath comes out between the upper lip and lower lip (Matsushita, 2020). However, Sundanese does not have the [ɸ] sound but only has the [p] sound, which is still included in Bilabial.

This type of study has been done by other researchers. Balinese speakers have several variants in pronouncing the [ts] sound, namely replacing it with [s], [ç], [ts] (Lestari, Suparwa, and Simpen, 2018). This variation occurs due to changes that occur in the way and point of articulation that is pronounced close to the [s] and [ç] sounds found in Balinese.

Mispronunciation of [tʃu]つ by Indonesian speakers occurs because there is no such sound in Indonesian. Therefore, Indonesian speakers replace it with a similar sound like [su]す which is a fricative sound (Pratiwi, Dahidi, and Haristiani, 2016).

The difference between Lestari, Suparwa, and Simpen's study and the author's study is the difference in respondent criteria. In addition, the difference with the study conducted by the author is that Pratiwi, Dahidi, and Haristiani focus on the pronunciation of the [tʃu] sound by Indonesian speakers, while the author focuses on the [ɸu] sound in Sundanese speakers. Based on this hypothesis, the author intends to research to know what pronunciation variations occur when Sundanese speakers pronounce the Japanese Bilabial Fricative [ɸɯ] sound.

LITERATURE REVIEW

Vowel sounds are usually classified based on the position of the tongue and the shape of the lips (Faznur and Nuramidah, 2016), for example, the vowel [ɯ]. In pronouncing the vowel [ɯ], the lips are opened slightly and the position of the lips is not moved forward. While the position of the back of the tongue rises towards the ceiling. The classification of vowels in Japanese is as below (Dahidi and Sudjianto, 2017).

Table 1: List of vowels in Japanese by Sudjianto and Dahidi (2017)

No.	Tongue Movement	Lip Shape	Tongue Position
1.	[a] / あ	Unrounded	Middle
2.	[i] / い	Unrounded	Front
3.	[ɯ] / う	Unrounded	Back
4.	[e] / え	Unrounded	Front
5.	[o] / お	Rounded	Back

Consonants in Japanese are classified into two categories: Articulating method with six parts: Plosive, Frictive, Africative, Nasal, Flap, and Lateral, whereas Articulation points with nine parts: Bilabial, Labio-dental, Dental, Alveolar, Alveolar-palatal, Palatal, Velar, Faringal, and Glotal (Matsushita, 2020).

Table 2: List of Consonants in Japanese by Matsushita (2020)

Point Articulation	Articulating method					
	Plosive	Fricative	Africative	Nasal	Flap	Lateral
Bilabial	p, b	ɸ		m		
Labio-dental		f, v				
Dental		θ, ð				
Alveolar	t, d			n	ɾ	l, r
Alveolar-palatal		ʃ, ʒ, s, z	tʃ, dʒ, ts			
Palatal	ɲ	Ç		ɲ		
Velar	k, g			ŋ		
Faringal		ħ, ʕ				
Glotal	ʔ	h, ɦ				

Furthermore, Consonants in the Sundanese language are divided into two: Articulated ways with 5 parts, which are Plosive, Frictive, Lateral, Trill, and Nasal, while Articulating points with 6 parts: Bilabial, Dental Alveolar, Palatal, Velar, Laringal, Glotal (Faznur and Nurhamidah, 2020). The classification of Sundanese consonants is as follows.

Table 3: List of Consonants in Sundanese by Faznur and Nurhamidah (2020)

Point Articulation	Articulating method				
	Plosive	Frikatif	Lateral	Getar	Nasal
Bilabial	p, b			m	m
Dental-alveolar	t, d	s	l	r	n
Palatal	c	j			ñ
Velar	k, g				ŋ
Laringal		h			

Unlike Japanese, Sundanese has more vowels than Japanese. Vowels in Sundanese consist of 7 sounds, namely. /a/ [a], /i/ [i], /u/ [u], /é/ [ɛ], /o/ [o], /eu/ [ö], and /e/ [c]. Apart from that, Sundanese vowels are also classified into several parts (Faznur and Nurhamidah, 2020).

Table 4: List of vowels in Japanese by Faznur and Nurhamidah (2020)

No.	Tongue Movement	Lip Shape	Tongue Position
1	/a/ [a]	Unrounded	Middle
2	/i/ [i]	Unrounded	Front
3	/u/ [u]	Rounded	Back
4	/é/ [ɛ]	Unrounded	Middle
5	/o/ [o]	Rounded	Back
6	/eu/ [ö]	Unrounded	Middle
7	/e/ [c]	Rounded	Middle

Apart from that, various types of pronunciation of the sound [ɸɯ] occur in native Japanese speakers. Ruddell explained that there are 4 categories when Japanese speakers pronounce the sound [ɸɯ], namely [f], [ɸ], and [ ] (Ruddell, 2013).

In Japanese, there is no sound [f]. Therefore, Japanese speakers who pronounce it by changing it to the sound [f] are people who have mastered English. In the sound spectrogram [f] 2 patterns occur, (1) noise that occurs suddenly, and (2) a spectrogram that tends to be dirtier at frequencies 13000hz to 20000hz, which indicates that at this frequency [f] has noise with higher frequency.

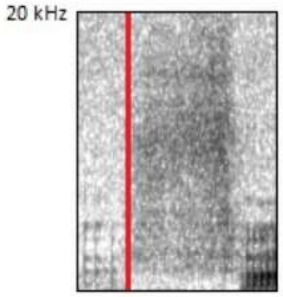

Figure 1: Sound pronunciation spectrogram [f]

Source: Ruddell (2013)

In contrast to the sound [f], the frequency that occurs at 7000hz to 20000hz when pronouncing [ɸ] tends to be lower. Apart from that, at a frequency of around 1700Hz, there is a formant band that symbolizes the anticipation of lip rounding in the next vowel sound. The presence of this formant band shows that there is movement of the lips caused by partial closure of the lips when pronouncing the sound [ɸ].

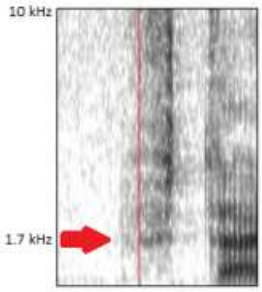

Figure 2: Sound pronunciation spectrogram [ɸ]

Source: Ruddell (2013)

The sound [h] is a sound that does not contain much friction and there is a formant band at a frequency of 1000Hz to 2000Hz. This shows anticipation for pronouncing the vowel [ɯ] after it. Apart from that, the noise that occurs in this sound tends to be less, indicating that there is only friction that occurs due to the lips.

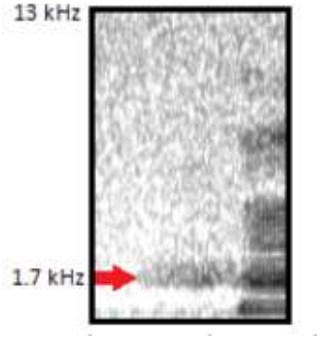

Figure 3: Sound pronunciation spectrogram [h]
Source: Ruddell (2013)

METHODOLOGY

In this study, a qualitative descriptive research method was used. The respondents in this study were all Japanese Literature Students at the Indonesian Computer University. After that, the selection was carried out using Purposive Sampling. After carrying out the selection process, 6 Sundanese speakers were obtained which were divided into two groups, namely 3 men and 3 women.

The steps that the author took were to create an instrument that would be read by respondents. The instrument is a Japanese word that contains the sound [ɸɯ] at the beginning, middle, and end of the word. These words were taken from the website https://nihongokyoshi-net.com. After that, the author recorded the respondent's voice using the iPhone XS microphone and then analyzed it using Praat software.

DISCUSSION

The sound [ɸɯ] at the beginning of a word when pronounced by Sundanese speakers can be seen in the following spectrogram.

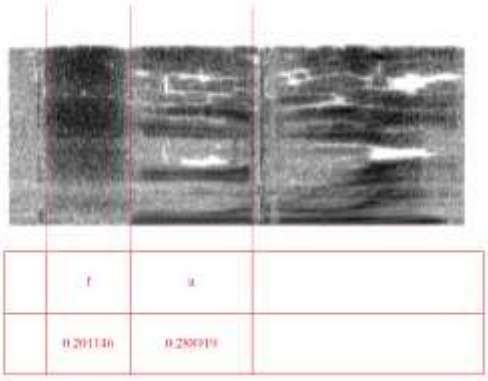

Figure 4: Sound pronunciation spectogram [fu] in Sundanese speakers

Based on Figure 4 above, the waveform at seconds 0.099 for 0.201146 at frequencies 7000Hz to 20000Hz is a random wave. These waves occur due to airflow turbulence, thus forming the fricative sound [f]. After that, the formant band does not appear at 0.099 seconds for 0.201146 between the frequencies 1000hz to 2000hz which

indicates that there is a lip rounding phenomenon or rounding of the lips on the vowel [u]. Respondents pronounce this sound by exhaling air from the lungs and experiencing friction between the lower lip and upper teeth and then slightly rounding the lips. If you look at the dirty spectrogram at frequencies 7000hz to 20000hz which is caused by air friction and the absence of formant bands at frequencies between 1000hz to 2000hz, this indicates that the respondent pronounces it as a Labio-dental fricative sound [fu]. This is because Sundanese speakers have not mastered Japanese pronunciation correctly but can master Indonesian pronunciation well because the consonant [f] does not exist in Sundanese, but is found in Indonesian. So, Sundanese speakers pronounce [ɸɯ] with a sound that is close to that sound, namely [fu].

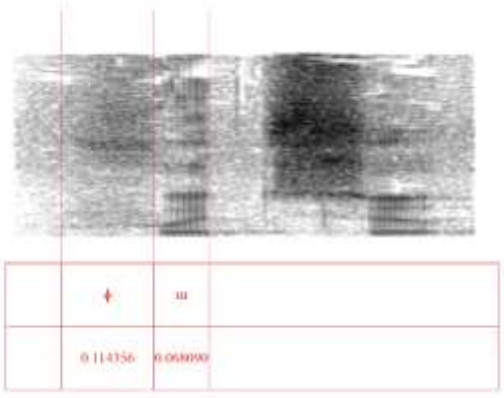

Figure 5: Sound pronunciation spectogram [ɸɯ] in Sundanese speakers

Figure 5 is the pronunciation of the sound [ɸɯ] by Sundanese speakers. If you look at the spectrogram, there is a random wave at seconds 0.114356 to 0.068090 at a frequency of 7000Hz to 20000Hz. This is due to turbulence resulting in the formation of fricative sounds. After that, there is a thin formant band that appears at a frequency of 1000Hz to 2000Hz which symbolizes the closing of the lips at the end of the consonant sound and the beginning of the vowel sound. Respondents pronounce this sound by removing air from their lungs and exhaling it without rounding and slightly closing their lips. If you look at the spectrogram above, the waves produced when pronouncing consonants are not too dirty and the noise is not high. After that, the formant band can be seen at frequencies 1000Hz to 2000Hz. This symbolizes that this respondent can pronounce the sound [ɸɯ] in this word correctly.

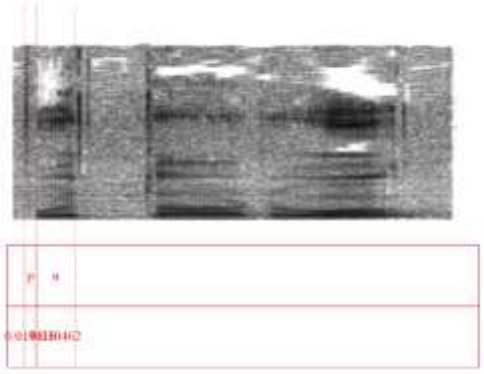

Figure 6: Sound pronunciation spectogram [pu] in Sundanese speakers

Another example is the bilabial sound [ɸɯ] but it is pronounced with a slow or burst articulation by the respondent. In the spectrogram above, there is an explosion that occurred marked by a black line at a frequency of 7000Hz to 20000Hz vertically at 0.028175 seconds and was followed by a random wave with a very short duration. This means that this sound is not fricative. After that, between seconds 0.028175 to 0.003462, there is no trace of F1. F1 is also related to the vibration of the vocal cords (Lestari, Suparwa, and Simpen, 2018). So, it can be ascertained that the respondent pronounces with a silent burst articulation. The respondent pronounces it by holding the air current in the mouth and releasing the air then rounding the lips. If you look at the explanation above, this respondent cannot pronounce [ɸ] correctly and replaces it with the sound [p]. The author assumes that this respondent cannot master Indonesian pronunciation well. So, instead of replacing it with the sound [f], which is the sound most similar to [ɸ], the respondent replaces it with the sound [p], which he has mastered the pronunciation of. Apart from that, the formant band also does not appear at a frequency of 1000Hz to 2000Hz so the phenomenon of lip rounding can occur and produce the sound [pu].

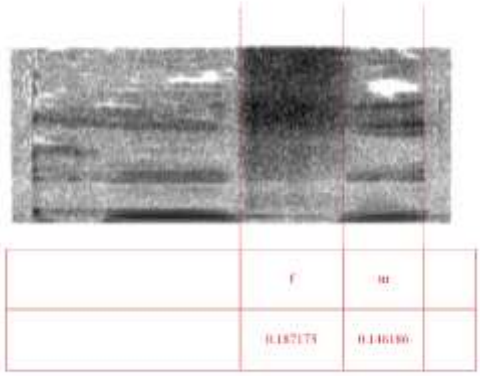

Figure 7: Sound pronunciation spectogram [fɯ] in Sundanese speakers

In Figure 7 it can be seen that at 0.187173 seconds the random wave produces a dirty spectrogram at a frequency of 7000Hz to 20000Hz. This is due to turbulence that occurs between the lower lip and upper teeth. After that, there is a formant band at a frequency of 1000Hz to 2000Hz which symbolizes the anticipation of forming the next vocal. However, the band formant is connected to the previous vocal sound. This indicates that the position of the lips has been slightly closed since the beginning of pronouncing the consonant, but the air is still rubbing against the lower lip and upper teeth so that the spectrogram at frequencies from 7000Hz to 20000Hz remains dirty. Respondents pronounce it by exhaling from their lungs and experiencing friction with slightly closed lips and upper teeth. If you look at the explanation above, this respondent just couldn't pronounce the sound [ɸ] so he replaced it with the closest sound, namely [f]. After that, because the formant band can be seen, the respondent forms their lips correctly to pronounce [ɯ].

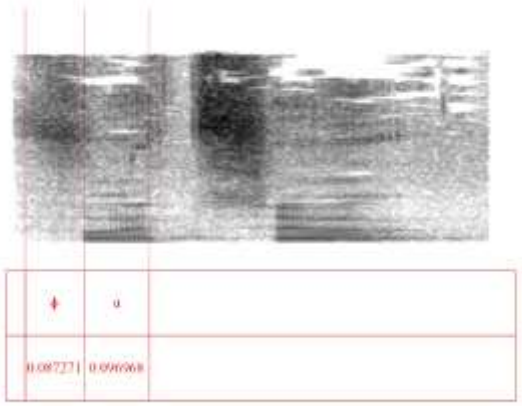

Figure 8: Sound pronunciation spectogram [ɸɯ] in Sundanese speakers

Figure 8 shows in the spectrogram that at 0.087271 seconds at a frequency of 7000hz to 20000hz there are random waves whose positions are spread out and do not accumulate in just a few places. This is a characteristic of the fictive sound. However, the formant band is not visible so lip rounding occurs when pronouncing the vowel. The respondent exhales air and passes through both lips and after that, the lips experience slight lip rounding. If you look at the explanation above, Sundanese speakers cannot form the same lips as Japanese speakers because the sound [ɯ] does not exist in Sundanese or Indonesian. So, this Sundanese Speaker pronounces it with the vowel in Sundanese, namely [u].

Based on the consonant list that the author has explained in the literature review section, there are Sundanese speakers who replace the sound [ɸɯ] with sounds found in other languages (Matsushita, 2020). One of the respondents pronounced [ɸɯ] with a different point and way of articulation, namely [pu] because it is the most similar sound. This change occurred from initially pronouncing the Bilabial Fricative to the Bilabial Inhibited. However, other respondents changed the pronunciation of [ɸɯ] to [fu], [fɯ], [ɸu]. Even though Sundanese has vowels with the sound [u], in the case of respondents who pronounce it with [fu], [fɯ], the author assumes that they use the pronunciation method from Indonesian, considering that speakers of Indonesian are a language that must be mastered if they live in Indonesia. If you look at the spectrogram, the signs that emerge from each pronunciation are very similar to those in [ɸɯ] sound spectogram theory (Ruddell, 2013). The sound [f] makes the spectrogram dirtier than the sound [ɸ] because the turbulence that occurs is very strong when pronouncing the sound [f]. Apart from that, the spectrogram for those who pronounce [ɯ] has a prominent formant band at frequencies 1000Hz to 2000Hz due to lip movements.

CONCLUSION AND RECOMMENDATION

In this research, it is known that Sundanese speakers have variations in pronouncing the Japanese Bilabial Fricative [ɸɯ] sound. These variations are divided into 5 variants, namely [ɸɯ], [fu], [pu], [fɯ], and [ɸu]. The author concludes that PBS who pronounce it with Inhibited Bilabial [pu] have basic abilities and those who pronounce it [ɸu], [fu], [fɯ] have intermediate abilities. Meanwhile, the sound [ɸɯ] is pronounced close to Japanese speakers and has advanced abilities. This variation occurs due to the absence of this sound in Sundanese and Indonesian.

To find out variations in other bilabial fricative sounds [ɸ] and [f], research is needed that examines not only the acoustic signal but also the actual shape of the lips. Apart from that, more respondents are also needed. By doing this, we can understand it more accurately and perhaps the resulting variations will also be more diverse.

REFERENCES

Dahidi, A., & Sudjianto. (2004). Pengantar Linguistik Bahasa Jepang. Jakarta: Kesaint Blanc.

Derakhshan, A., & Karimi, E. (2015). The Interference of First Language and Second Language Acquisition. Theory and Practice in Language Studies.

Fatemi, M. A., Sobhani, A., & Abolhasani, H. (2012). Difficulties of Persian learners of English in pronouncing some English consonant clusters. World Journal English Language.

Faznur, L. S., & Nurhamidah, D. (2020). KOMPARASI FONEM BAHASA SUNDA DAN BAHASA INDONESIA DALAM BUKU TEKS. Universitas Muhammadiyah Jakarta. DOI: https://doi.org/10.24853/pl.2.2.105-114

Hadiyani, A. (2014). ANALISIS KESALAHAN PELAFALAN BUNYI BAHASA JEPANG PADA PENUTUR BAHASA SUNDA. Universitas Pendidikan Indonesia.

Hammarström, G. (1984). Articulatory, acoustic or auditory description?. STUF - Language Typology and Universals. https://doi.org/10.1524/stuf.1984.37.16.309

Lestari, N. P. C., Suparwa, I. W., & Simpen, I. N. (2018). Variasi Pelafalan Bunyi Afrikat Bahasa Jepang oleh Penutur Berlatar Belakang Bahasa Bali. Universitas Udayana. https://doi.org/ 10.24843/ling.2018.v25.i01.p07

Lott, D. (1983). Analysing and counteracting interference errors. ELT journal. https://doi.org/10.1093/elt/37.3.256

MatsusitaKazuyuki. (2020). Niongo no Hatsuon. Kyouritsu Communications.

Pratiwi, R. E., Dahidi, A., & Haristiani, N. (2016). ANALISIS KESALAHAN PELAFALAN HURUF KONSONAN TSU DALAM BAHASA JEPANG TERHADAP PENUTUR BAHASA INDONESIA. Universitas Pendidikan Indonesia. https://doi.org/10.17509/japanedu.v1i2.3294

Prodanovska-Poposka, V. (2017). A STUDY OF PROPER PRONUNCIATION AS A FACTOR OF SUCCESSFUL COMMUNICATION. CBU INTERNATIONAL CONFERENCE ON INNOVATIONS IN SCIENCE AND EDUCATION. https://doi.org/10.12955/cbup.v5.1024

Ruddell, S. (2013). An acoustic study of the Japanese voiceless bilabial fricative. San Francisco State University.

Vörös, O. (2020). Interferenciajelenségek kognitív hátteréről. In Benő, A. & Péntek, J. (Eds): Kognitív és pszicholingvisztikai szempontok a nyelvi érintkezések vizsgálatában. Anyanyelvápolók Erdélyi Szövetsége.

Yuk, T. (2011). BUNYI KONSONAN BAHASA INDONESIA DAN BAHASA MANDARIN: ANALISIS KONTRASTIF. Universitas Kristen Maranatha. https://doi.org/10.33633/lite.v7i2.1351

ABOUT THE AUTHORS

Gerri Aliansyah Hermawan, email: gerri.63820020@mahasiswa.unikom.ac.id

Gerri Aliansyah Hermawan is a final-year student currently pursuing a Bachelor's degree in the Japanese Literature study program at the Universitas Komputer Indonesia. She has a research interest in Japanese Linguistics, especially Phonetics.

Anisa Arianingsih is a lecturer in the Japanese Literature Study Program at the Universitas Komputer Indonesia. She teaches Kaiwa (Japanese Speaking), Japanese for Tourism, and Japanese Linguistics. She has a research interest in Japanese Education and Japanese Linguistics, especially Second Language Acquisition, Psycholinguistics, and Phonetics Phonology.