CHI'E Vol. 12 (2) (2024)

Chi'e: Jurnal Pendidikan Bahasa Jepang

Terindeks Sinta 3

https://journal.unnes.ac.id/journals/chie/index

Phonological Process of Word-Final Consonant Sounds in Indonesian Learners by Japanese Speakers (Case Study of Japanesia Online Course Students)

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Article Info

Article History:
Received August 2024
Approved October 2024
Published October 2024

Keywords:
Generative phonology; distinctive features; consonant sounds; Indonesia learner

Abstract

This study aims to analyze the phonological processes and contributing factors affecting the pronunciation of final consonant sounds by native Japanese speakers learning Indonesian. The research employs the theory of generative transformational phonology, using distinctive features to address the research questions. A qualitative descriptive approach was adopted, utilizing data from the Japanesia course's online class videos on YouTube, collected through observation and note-taking techniques. The analysis identifies three main phonological processes in Japanese learners' pronunciation of Indonesian final consonants: sound substitution (e.g., [n] to [ŋ] and [l] to [r]), elision of [h], and addition of sounds such as [u] following [r] and [s], as well as aspirated [h] after [t] and [k]. These phonological adjustments reflect the absence of certain Indonesian sounds in Japanese, prompting learners to adapt pronunciations to their native phonological system. Furthermore, the Japanese language's predominant open syllable structure (CVCV) generally excludes word-final consonants aside from nasals, contributing to these adaptations.

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E-ISSN 2685-6662
P-ISSN 2252-6250

INTRODUCTION

Language learners often modify sounds when pronouncing words in the target language, a tendency also observed among Japanese learners of Indonesian (Adnyani et al., 2021; Widodo et al., 2023). Indonesian and Japanese differ in their syllable structures: Indonesian includes both open and closed syllables, with structures such as VC, CV, CVC, CCV, CCVC, and CCVCC (Muslich, 2008; Putrayasa & Susandhika, 2022). In contrast, Japanese syllable structure primarily consists of open syllables like CV, CCV, and CVV, with nasal uvular /ŋ/ and the moraic obstruent /Q/ occurring in syllable- and word-final positions (Li, 2019; Putrayasa & Susandhika, 2022; Tjandra, 2004). These structural differences present challenges for Japanese learners when pronouncing Indonesian words with closed syllables. This study observes changes in final consonant pronunciation by students in the Japanesia online course, as demonstrated below.

Indonesia Language	**Japanesia Students**
'*Makan*' [maka**n**]	[maka**ŋ**]
'*Rumah*' [ruma**h**]	[ruma]

From this phenomenon, the author found that Japanese learners of Indonesian tend to change the final consonant sound of words, such as the word '*makan*' which should end in alveolar nasal consonant /n/ turned into velar nasal /ŋ/, then the word '*rumah*' with glottal fricative sound /h/ which is missing at the end of pronunciation. Some of these error phenomena often appear when learners pronounce vocabulary with consonants at the end of words, so the author is interested in analyzing more in these phenomena with the study of generative phonology.

This study uses a generative transformation approach, especially generative phonology with the application of the theory of distinctive features using the reference book from Schane (1973) and Yulianto (2018). Generative phonology is an advanced study of structural phonology discovered by Chomsky and Halle which examines sounds in language with a more in-depth analysis of structural phonology regarding how phonological rules in cognitive grammar also aim to explain how a sound is produced through the phonological process of its distinctive features (Al-Hindadwi, 2018; Kenstowicz & Kisseberth, 1981).

Phonological process according to Yulianto (2018) and Schane (1973) including the process of substitution, assimilation, syllabic structure process, and neutralization. Then to answer how the phonological process occurs, it can be explained using the theory of generative phonology from its distinguishing features. According to Schane (1973) and Yusuf (1998), a segment or component in the analysis of phonological studies is the smallest unit that cannot be divided again. Each component has certain characteristics and properties that can distinguish between other components. The distinguishing feature is called a distinctive feature (Katamba, 1989; Kenstowicz & Kisseberth, 1981; Yulianto, 2018).

Yulianto (2018) says that in generative phonology, the distinctive feature of a component are based on several features including (1) main class features consisting of consonantal, syllabic, sonorant, and nasal; (2) the way of articulation including continuous, delayed release, stridency, aspiration, voiced and lateral; (3) the region or place of articulation consists of anterios, coronal, high, low, and back. From these distinguishing features, the rules will be described based on the theory of generative phonology. The rules can generally be described as follows.

$$A \longrightarrow B / Y\_\_\_X$$

Based on the rules above, it can be observed that sound A changes into sound B because it is in the environment between sounds Y and X. The change in sound from A to B undergoes a phonological change with distinctive features as explained earlier. Whether the change is due to the presence of sonorant sounds, a low place of articulation, or due to other causes. The feature rule is what the author will use in this research.

Research on Indonesian language errors by Japanese people has been analyzed with other studies by Adnyani (2021) and Lisa & Andajani (2023). Both studies analyzed Japanese Indonesian language errors in word pronunciation patterns, word formation, and sentence construction. The results found by Lisa and Andajani (2023) that there

are errors of change, omission, and addition of phonemes in word pronunciation errors. In morphological errors, it was found that there were affix omissions, incorrect use of affixes, morphs that changed and morph abbreviations.

Adnyani (2021) research results shows that the most common type of language interference is phonological interference, followed by lexical errors and grammatical errors. In short, Japanese phonological interference with Indonesian pronunciation is more common than lexical errors and grammatical errors.

Furthermore, previous research with phonlogical studies that analyzed Japanese speakers errors when pronouncing Indonesian was studied by Prihatiningtyas & Apriliya (2015), Azella (2023), Saskiya & Tresnasari (2022), and Rachmawati & Khasanah (2022). These studies focus on analyzing phonological errors structurally with data sourced from Japanese YouTubers.

The findings of the four studies generally show the errors of addition, subtraction, and substitution of sounds. Such as the confusion of the nasal sounds /m/, /n/, /ŋ/, the confusion of the sound /ə/ with /u/, the difficulty in pronouncing dead syllables, the substitution of the sound /l/ with /r/. Based on the research of Azella & Rahman (2023), the existence of errors in the field of phonology that occur is something that is common among novice foreign speakers.

More specifically, research on Indonesian sound errors by Japanese in the context of vowel and consonant sounds has been conducted by Widodo et al. (2023), and Nurfitriani & Putra (2021). Widodo et al's research is a contrastive study spoken by Laotian men and Japanese women with data anlysis using contrastive theory. Nurfitriani & Putra (2021) research focused on BIPA level A1 (beginner) students.

The research aims to find out the interference that occurs in the students, the factors that cause interference, and the solution to Japanese to Indonesian interference that occurs in BIPA students from Japan at PT Sakai Mulia Koken Indonesia. The results showed that onterference occured in the form of phoneme deletions, and phoneme beheadings in the subjects studied. Research by Widodo et al. (2023), and Nurfitriani & Putra (2021) focuses on the study of structural phonology, while this research focuses on generative phonology.

Research on the appilacion of distinctive feature theory has been carried out by other studies, namely Effendi (2019). The author's research with Effendi has similarities in analyzing sound changes in Japanese people who learn Indonesian. However, the difference between the author's research and Effendi's (2019) research lies in the focus of analysis which is narrowed down to consonant sound changes that appear at the end of words, because in Effendi research the changes in consonant sounds at the end of the words were not thoroughly discussed.

In addition, the subject of Effendi's research is Genki, who is a YouTuber, while the subjects that the author analyzes are 4 Japanese students from the intermediate class (chukyuu) in the Japanesia online class video. The difference in subjects is expected to be able to see in more detail the tendency of Japanese speakers when pronouncing consonant sounds at the end of words in Indonesian.

Based on the research that has been studied by previous researchers, there are differences and renewals in this study. The author found a gap that the analysis of consonant that appear at the end of words with generative phonology approach is still rarely analyzed. In addition, the subject of this study is native Japanese speakers who attended an intermediate level Indonesian language course (choukai) which is different from previous studies.

We assumes that by analyzing the topic of consonant sounds that appear at the end of words with distinctive features will produce different results, one of which is an innovation in the field of generative phonology. The approach using generative phonology is expected to make it easier for the author to examine phonological changes in more detail, which is different from structural theories that only examine words without looking at the pronunciation process of the changing sounds. The research questions in this study is to analyze the phonological processes that occur in consonant sounds that appear at the end of the Indonesian words by Japanese speakers and analyze the factors behind the occurrence of phonological processes.

METHODS

This study employs a qualitative descriptive method, aimed at naturally describing observed phenomena without statistical calculation (Azwardi, 2018; Sudaryanto, 1993). Specifically, this research

investigates the phenomenon of Indonesian sound pronunciation by Japanese speakers. The study's subjects consist of four intermediate-level (chuukyuu) Indonesian language learners enrolled in Japanesia, an online course for Japanese speakers learning Indonesian.

Established in 2016, Japanesia offers three language proficiency levels—beginner (shokyuu), intermediate (chuukyuu), and advanced (jookyuu)—and frequently uploads online class recordings to its YouTube channel (@japanesiachannel/streams). Through these videos, the researcher identified instances of pronunciation errors by Japanese learners of Indonesian, particularly in the final consonant sounds of words.

Data were collected using the listening method with a note-taking technique (Mahsun, 2017). The researcher reviewed Japanesia's YouTube videos of reading classes posted from August to November 2023, using note-taking to document relevant data, which was subsequently transcribed into phonetic symbols. Pronunciations were then compared to the standard pronunciations in the online Indonesian phonetic dictionary, fonbi.my.id.

For data analysis, the study employed the distributional method (Sudaryanto, 1993), where language itself serves as the analytical tool. The collected data were analyzed based on Chomsky's transformational generative phonological theory as presented by Schane (1973) and Yulianto (2018). Data were categorized by type of phonological process, and phonological rules were formulated to explain the observed sound changes.

RESULTS AND DISCUSSION

Based on the results of the data analysis, the author found several phonological processes that exist in Indonesian learners from the Japanesia online course class. The presentation of the results of data analysis will be explained below.

1. Substitution

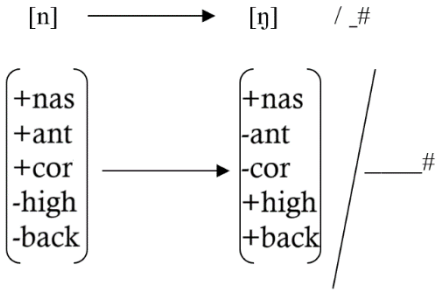
The substitution process is a phonological process in which the sound in a word changes to another sound because it meets the sound before or after it (Yulianto, 2018). The author found substitution changes in the study including the following.

1.1 **Sound [n] becomes [ŋ]**

Indonesian Pronunciation	**Pronunciation of Japanesia Students**
'*Depan*' [dəpa**n**]	[dəpa**ŋ**]
'*Dipimpin*' [dipimpi**n**]	[dipimpi**ŋ**]
'*Bahan*' [baha**n**]	[baha**ŋ**]
'*Tahun*' [tahu**n**]	[tahu**ŋ**]
'*Pegangan*' [pegaŋa**n**]	[pegaŋa**ŋ**]

From the data, it can be seen that the [n] sound which is an alveolar nasal sound at the end of the word is substituted into a velar nasal sound [ŋ] when pronounced by the Japanesia course students. This phenomenon occurs because Japanese nasal sounds generally have a uvular nasal sound [N] with allophones [ŋ], [n], [m], and [ɲ] (Koizumi, 1993).

These sounds in Japanese have special conditions in their pronunciation. Generally, the [N] sound is pronounced when it meets the previous vowel sound, but Japanese learners who are learning Indonesian when trying to pronounce the [n] sound, the mother tongue carries the uvular [N] sound which is pronounced from the uvular articulation region so it shifts to the velar sound [ŋ] to approach the [n] sound. Here are the rules for knowing the distinguishing features of the phonological process that occurs.



From this rule, Indonesian learners in the Japanesia course tend to pronounce the [n] sound at the end of the word into the [ŋ] sound. Both sounds are nasal sounds so they have similarities in the main class features but in the terms of place of articulation features, the [n] sound and [ŋ] sound have four different places of articulation.

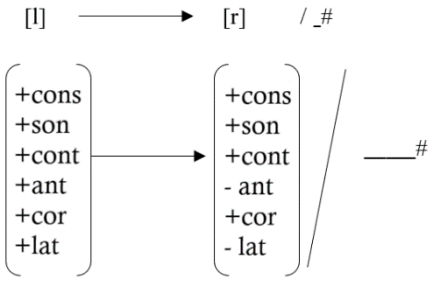
The sound of [n] is a coronal sound where the sound is produced by narrowing the position of the mouth and the front tongue is raised until it sticks to the gums so that the sound is also included in the anterior sound.

Meanwhile, the sound of [ŋ] does not have coronal and anterior sound features because the position of the tongue is different from the [n] sound and the position of the tongue blocks the air coming out of the back. In addition, the difference can be seen from the high and back sound of [ŋ] where the sound is produced with the position of the tongue body raised backwards to the esophageal cavity.

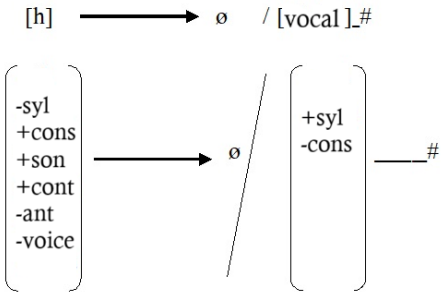
1.2 The sound [l] becomes [r]

Indonesian Pronunciation	Pronunciation of Japanesia Students
'*Tinggal*' [tiŋga**l**]	[tiŋga**r**]
'*Mustahil*' [mʊstahi**l**]	[mʊstahɪ**r**]
'*Pukul*' [pukʊ**l**]	[pukʊ**r**]
'*Terkumpul*' [tərkumpu**l**]	[tərɯkumpu**r**]

Based on the table, it can be observed that the sound [l] is replaced by the sound of [r] when pronounced. This is because there is no [l] sound in Japanese, so when it is pronounced, it tends to make [r] sound (Sutedi, 2009). The explanation of the sound change can be seen in the distinctive features below.



In the rule, sound [l] and sound [r] have similarities in the main class features of consonantal and sonorant sounds. At the place of articulation, both sounds are similar in coronal sounds, but have differences in anterior sounds. The sound [l] has anterior where the sound is produced by narrowing of the center as the source around at the front of the base of the gum. In addition, the two sounds have difference based on how they are articulated. Where the [l] sound is pronounced in a lateral way, while the [r] sound is a nonliteral sound.



2. Change in Syllable Structure

The process of syllable structure is a phonological process that affects the distribution of consonant and vowel sounds in a word (Schane, 1973). The distribution can be in the form of sound insertion, deletion, or merging of sounds. The types of syllable structure found in the analysis of the data collected by the author can be seen below.

2.1 Elision of the Sound [h]

Indonesian Pronunciation	Pronunciation of Japanesia Students
'*Tengah*' [təŋa**h**]	[təŋa]
'*Ramah*' [rama**h**]	[rama]
'*Oleh*' [ole**h**]	[ore]
'*Sampah*' [sampa**h**]	[sampa]
'*Lurah*' [lura**h**]	[lɯra]

The author found elision of the glottal fricative sound [h] when pronounced at the end of the word. This is because Japanese does not have a glottal fricative consonant sound [h] so when pronouncing it, learners adjust it by deleting the sound when pronounced. In addition, the syllabic structure in Japanese in generally CVCV or consonant-vowel where the vowel sound generally comes after the consonant sound (Sutedi, 2009). To find out the changes, the following is an explanation of the distinctive features that occur.

Based on these rules, it can be observed that the glottal fricative sound [h] has the distinguishing features [-sil], [-kons] which means semivowel sounds, it also has the sounds [+son] and [+kont]. When pronounced by Japanesia students, the glottal fricative [h] is missing. This is because the [h] sound

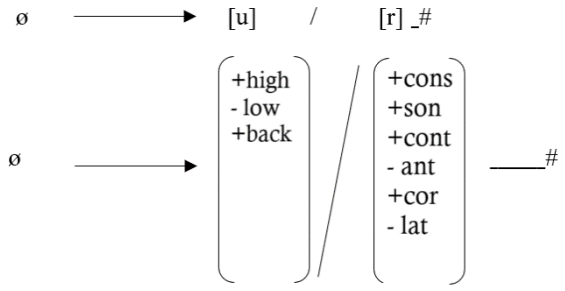
meets the previous vowel sound. Vowel sounds that have no obstruction of articulation tools when pronounced, affect the semivowel sound of glottal fricative [h] when learners pronounce it.

2.2 Insertion of Vowel [u]

2.2.1 Insertion of the Sound [u] After the Sound [r]

Indonesian Pronunciation	Pronunciation of Japanesia Students
'*Mendengar*' [məndəŋa**r**]	[məndəŋa**ru**]
'*Hampir*' [hampi**r**]	[hampi**ru**]
'*Didaur*' [didau**r**]	[didau**ru**]
'*Makmur*' [maʔmu**r**]	[maʔmu**ru**]
'*Timur*' [timu**r**]	[timu**ru**]

Based on the representative data presented above, it can be seen that Japanese Indonesian learners always add the sound [u] after the sound [r]. This phenomenon is due to the fact that Japanese has a CVCV (consonant-vowel) syllable structure (Tjandra, 2004). While Indonesian has a syllable structure with a consonant sound at the end of the word. Because of the mother tongue, Japanesia students tend to add vowel sounds [u] at the end of words when pronouncing Indonesian words. The rule of distinctive features can be seen in the following explanation.

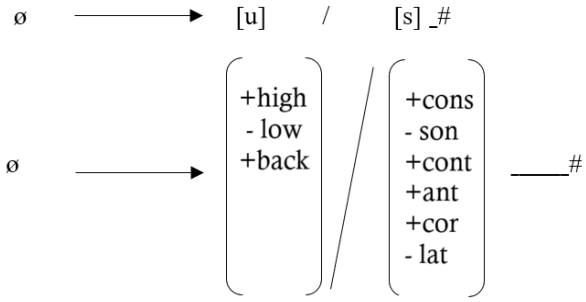


The rule shows that the vowel sound [u] has a distinctive feature that is pronounced with [+high], [-low], [+back]. The [u] sound appears when it meets the previous alveolar trill sound [r]. Alveolar trill sounds themselves also have disnguishing features including the existance of main class features [+kons] and [+son], features of the way of articulation [+kont] and features of the coronal place of articulation [+cor].

2.2.2 Insertion of Sound [u] After Sound [s]

Indonesian Pronunciation	Pronunciation of Japanesia Students
'*Turis*' [turi**s**]	[turi**su**]
'*Sekretaris*' [seʔrətarı**s**]	[seʔrətarı**su**]
'*Petugas*' [pətuga**s**]	[pətuga**su**]
'*Krisis*' [kurisi**s**]	[kurisi**su**]
'*Tewas*' [tewa**s**]	[tewa**su**]

The author observes the tendency of Indonesian learners from the Japanesia course to often add the vowel sound [u] after the [s] sound. The factor of the phonological process is the same as the previous [r] sound, where there is no consonant sound [s] at the end of the word in Japanese other than nasal sounds. Here are the rules of the phonological process.



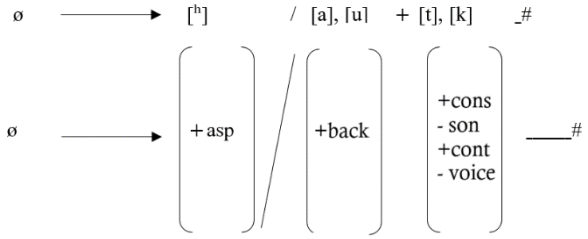
In this rule, it is the same as before where the vowel sound [u] has a distinguishing feature that is pronounced with [+high], [-low], [+back]. The sound appears when it meets the previous alveolar fricative sound [s]. Alveolar fricatiove sounds have distinguishing features including the presence of consonant main class features [+cons], coronal [+kor] and anterior [+ant] articulation places features and continuous articulation method features [+cont].

2.3 Insertion of Aspiration Sound [^{h}]

Indonesian Pronunciation	Pronunciation of Japanesia Students
'*Obat*' [oba**t**]	[oba**t^{h}**]
'*Tersebut*' [tərsəbɯ**t**]	[tərsəbɯ**t^{h}**]
'*Sempit*' [səmpi**t**]	[səmpi**t^{h}**]
'*Cepat*' [cəpa**t**]	[cəpa**t^{h}**]

'*Termasuk*' [tərmasʊ**k**]	[tərmasʊ**k^{h}**]
'*Sebanyak*' [səbaɲa**k**]	[səbaɲa**k^{h}**]
'*Plastik*' [plastɪ**k**]	[plastɪ**k^{h}**]

Based on the representative data, the author sees the addition of the aspiration sound [^{h}] after the voiceless plosive sound. These sounds include alveolar plosive [t] and velar plosive [k]. The addition of these sounds occurs because syllabics in Japanese are generally CVCV. According to Sutedi (2009) and Putrayasa & Susandhika (2022), although it has another syllabary, namely VCCVC, when there is a consonant sound at the end of the word, it generally only occurs in nasal sounds. In addition, according to Tjandra (2004) the sounds of /p/, /t/, and /k/ are generally aspirated sounds so that the mother tongue habit is carried by Japanese-speaking Indonesian learners. The phonological process rules of these sounds can be seen below.



The rule above shows the addition of the aspiration sound [^{h}] when it meets the previous voiceless plosive [t] and [k]. The rule shows that the distinctive feature of the aspiration sound is based on the way it is articulated. While the features of the sound [t] and [k] have in common the features of the main class of consonantal [+cons], continuous [+cont] and voiceless [-sound] articulation. The addition of the aspirated sound is because before the sound [t] or [k] there are vowel sounds [a] and [u].

The two vowels have the same distinctive feature which is pronounced at the back, so when they meet the sound [t] or [k] afterwards, learners have difficulty stopping the pause after the sound [t] or [k] is pronounced. Because of this, the aspirated sound [^{h}] appears afterwards.

CONCLUSION

The analysis reveals three primary types of phonological processes in the pronunciation of final consonants in Indonesian words by native Japanese speakers in the Japanesia course: substitution of sounds ([n] to [ŋ] and [l] to [r]), deletion of [h], and addition of sounds, including [u] after [r] and [s], as well as aspirated [h] after [t] and [k].

Regarding the factors contributing to these processes, the absence of certain Indonesian sounds in Japanese prompts learners to adjust their pronunciation according to Japanese phonology. Additionally, the open syllable (CVCV) structure of Japanese, which generally lacks word-final consonants except nasals, further influences these adaptations.

Future studies are encouraged to expand on this research by investigating other final consonants, such as [b] in *sebab* and [p] in *lenyap*. Expanding the data collection to field studies would also help capture a broader range of phonological adjustments, given the current study's reliance on limited data from online class videos.

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