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A segmental analysis of the Japanese negation verb variation: A phonological perspective

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Abstract
Within the field of Japanese linguistics, the topics on segmental analysis of verb variation have rarely been studied from the phonological perspective. On the other hand, verb modifications have been frequently observed to occur in oral communication. This study addresses a segmental analysis within the variation of Japanese negation verb from the phonological standpoint. It employed a qualitative descriptive approach with the data gathered from the Japanese animated series *Orange* (Hamasaki & Nakayama, 2016). Excerpts of the data were in the form of conversation fragments, which were analyzed using the articulatory phonetic identity technique. The analysis resulted in five found variations: -nai, -nnai, -nee, -nnee, and -ai deletion. The presence of sounds in the phonological environment caused phonological variation, which affected the internal structure of the verb. As a result, the phonological rules are applied to showcase the phonological process in the verb. It was also found that segmental processing does not necessarily reduce the amount of mora in verbs. Segmental processes, on the other hand, can change the mora structure without reducing the mora. Additionally, the current study shows vowel coalescence associated with the male speech in Japanese.

Keywords
segmental analysis; Japanese negation verb; phonology

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INTRODUCTION

For varying purposes, we communicate primarily in two forms (apart from signed languages). Those two are the written and spoken languages. Written language can be found in texts such as newspapers, magazines, books, and text messages. Generally, written discourse can be produced by following certain language rules. In other words, there are morphological and syntactic rules serving as the basic rules that take place in a written discourse. This convention implies that authors are commonly producing a written discourse which is in accordance with these linguistic rules combined with the grammatical cohesion of the language in use.

On the other hand, the differences in spoken language can be detected through sounds. In contrast to the use of written forms in the written language, sounds are the primary component of spoken language. The consonants and vowels are represented by sounds in this context. People can convey their intention and emotion by producing varied consonants and vowels in their utterances. Furthermore, According to Fromkin (2000), spoken language serves as a foundation for written languages. As a result, spoken language also influences written communication.

In everyday life, spoken language is widely used. However, each spoken expression has their dynamics in terms of its expression. This occurred as a result of the concept of changes in spoken

language (Dixon, 2012). As a consequence, spoken languages, rather than written ones, are evolving and producing new words.

The evolution and changes in a spoken language give rise to linguistic phenomena such as the emergence of words that deviate from their morphological rules. This is in line with the viewpoint expressed by Keraf (2006). Furthermore, Katou (2008) for instance, said that a vowel coalescence phenomenon could be found in the Japanese language, specifically in the Tokyo dialect. Based on that, it can be implied that the phenomenon of vowel coalescence in Japanese is indeed a phonological phenomenon. Therefore, the researcher conducted this research to examine this Japanese phonological phenomenon.

The present study was focused on the Japanese negation verb. From the standpoint of Japanese linguistics, the negation verbs are divided into two types, *-masen* and *-nai* (Nitta, 2010). The *-masen* negation is a formal negation type. On the contrary, *-nai*, is an informal negation type. These types have a correlation in terms of the degree of their formality in the Japanese language. The researcher selected *-nai* negation based on three logical considerations, (1) the discovery of the phenomenon and (2) Katou's (2008) argument on phonological phenomena in the Japanese spoken language. The below excerpt is an example:

(a) 翔：だって俺、朝起きれねえし。朝練とか無理だよ。
Kakeru: datte ore, asa okirenee shi. Asaren to ka muri da yo
Kakeru: after all I, morning cannot wake. Morning training for example impossible[COP SFP]
須和：先輩からも言われてんだよ。お墨付きだし。仮入部でもいいから。
Suwa: senpai kara iwaraten da yo. Osumitsuki da shi. Karinyuubu de mo ii kara
Suwa: senior from too were told[COP SFP]. Sign of approval. Trial period even though

Kakeru: 'After all, I could not wake up in the morning. That makes it impossible for me to participate in morning training'
Suwa: 'My senior told me to ask you to join (our club). They even gave a sign of approval. I do not mind if you join during the trial period.'

The expression of negation in example (a) above is marked by the verb *okirenee*. This word is derived from the lexeme *okiru* (起きる). When the morphological rules are applied to this example, this example displays a linguistic difference. In the Japanese morphological rules, negation verbs are identified by the presence of the lingual marker *-nai* as the suffix of the verb. It means that the lingual marker *-nai* serves a vital function in the Japanese negation verb. In contrast, the negation verb found in the example above is *-nee*. In this example, a new variation of negation verbs was created, that is, by the presence of the lingual marker *-nee*.

There have been several studies on Japanese negation verbs such as the research conducted by Nakazaki and Shirota (2020) and Sadler (2020). Nakazaki and Shirota (2020) conducted research on the process of inflection in Japanese verb and adjective negations. According to their findings, there are three types of inflectional negations of the Japanese verbs, i.e., the complete form, the conjunctive form, and the basic form. Sadler (2020) addressed the issue of Japanese verb negation from a pragmatic standpoint. The study discovered that such form expresses the speaker's feelings and invites other participants in the conversation.

There are also other studies on this topic (Kishimoto, 2013, 2018b; Matsuyoshi, 2014; Spencer, 2008). These studies have been conducted in regard to the Japanese negation form. These studies emphasize the morphology and syntax elements of negation markers but do not elaborate on the phonological element of the negation. Following that, the topic of Japanese negation was investigated from the standpoint of sociolinguistics by Nakata and Yamaguchi (2022; 2021). These two studies highlighted the use of negation in Mie Prefecture dialect and the use of negation in *kunai* and *nai* markers among Japanese young people. Similarly, another relevant study on the topic of negation has also been constructed by utilizing theories of style shift and politeness, i.e., in Ito (2013) and Kawaguchi (2010). Along with studies by Nakazaki and Shirota (2020), as well as Sadler (2020),

these previous studies did not take into consideration the phonology aspect, instead focusing relatively on the morphological inflection in terms of the negation form.

Based on these previous studies, it is visible that neither considered the phonological component of Japanese verb negation. Particularly, the verb's segmental elements. The researcher discovered a gap in the literature, notably regarding the segmental component of the phonology. As such, the novelty of this research lies in the analysis perspective. In addition, this research is hoped to provide new insight in the segmental structure of the Japanese negation verb from a phonological standpoint. This study aimed to analyze the segmental of the Japanese negation verb variation from the standpoint of its phonology.

RESEARCH METHOD

The current study was designed using descriptive qualitative approach. The researcher employed this approach to elaborate on the segmental elements of the Japanese negation verb variations. A phonological phenomenon in the Japanese language motivated the selection of this research objective. The data for this study were collected from the Japanese animated show *Orange* (Hamasaki & Nakayama, 2016). This show presents the protagonist and his friends through their high school years, corresponding to the "school" genre. As such, it was chosen as it provided phonological phenomena in a setting which resembles common daily life, i.e., in a way that offers casual dialogs representing those of real daily conversations.

This study is concerned with the instances of phonological variations which could benefit from the well-recorded lines in the show as they give way for more accurate identification of the data. For this reason, the animated show is utilized as the data source, considering the noise-free recording of the dialogs with its in-studio sound recording. This is unlike in the case of a live action show in which the line deliveries may be obscured by background noises as well as the less consistent nature of the recording device in that scenario which can be easily affected by the distance to the microphone. The Japanese verb negations within the anime are delivered in the style of everyday communication. The researcher identified the linguistics form, i.e., the *hanashikotoba*, which is a form of spoken discourse that can be found in Japanese everyday life (Yamada et al., 2017). In line with this, Ishiguro (2017) argued that products of popular culture, including *anime*, portray spoken discourse in the Japanese language. Thus, this anime is considered suitable as a data source in the current study due to linguistic correlation and anime recognition.

The research was divided into three stages: data collection, data analysis, and the display of the data analysis results. In the data collection stage, we used note-taking and ensured that the data collected were in the form of conversation fragments. To collect the data, the researchers observed this animated series by watching the entire episodes of the show. After the observation process ended, the collected data are in the form of conversation fragments. The researcher collected nearly 100 conversation fragments. Following that, the collected data were classified based on the form of the negation verbs, which results in five types: notable *-nai*, *-nnai*, *-nee*, and *-nnee*, and deletion of *-ai*.

The data samples were based on these classifications rather than by analyzing the entire data. At this point, we used one data for each classification. The main reason behind this decision was that each classification contained similar phenomena. For instance, sample data in the *nai* classification is relatively similar to other data in this classification. Moreover, one sample of data for each classification is considered representative due to the similar phenomena that were discovered as well as the balancing in each analysis. In the analysis stage, we used phonetic and phonemic transcription to complete the transcription. Second, in the data analysis method, we employ the articulatory phonetic identity technique. This technique is used because it is a technique that emphasizes sound production organs as its primary parameter (Muhammad, 2011).

Third, the method of displaying the results of data analysis is formally delivered by using brackets and slashes. The bracket is a symbol that refers to a phonetic phone and the slash refers to a phoneme (Zaim, 2014). These symbols were implemented to facilitate the phonetic identity technique in the analysis method. The implementation of these symbols can be seen in the phonetic and phonemic transcriptions in the presented data.

FINDINGS AND DISCUSSION

The current study discovered five types of negation verbs as seen in Table 1. These variants are marked by *-nai*, *-nnai*, *-nee*, *-nnee*, and the deletion of *-ai*. It is conclusive from the segmental variation that each variation has its own set of segmental characteristics, for example, the phenomenon of [ai] sound deletion or vowel coalescence in the *-nee* variation. As a result, the discussion is divided into five categories based on these segmental variations.

Table 1. Segmental Variations of Japanese Negation Verb

No.	Segmental Variations
1	Segmental of *-nai* variation
2	Segmental of *-nnai* variation
3	Segmental of *-nee* variation
4	Segmental of *-nnee* variation
5	Segmental of *-ai* deletion

In line with Table 1, further explanations are presented in the following sections of each Japanese negation verb classification.

a. Segmental of the *-nai* variation

Consider Excerpt 1 below.

(1) 菜穂：何**その**花**？**
Naho: nani sono hana?
Naho: what that flower
須和：翔**にやる**。
Suwa: kakeru ni yaru
Suwa: kakeru for doing
菜穂：翔**はそんなの**喜**ばないよ**。
Naho: kakeru wa sonna no yorokobanai yo
Naho: kakeru[TOP] such will not be happy[SFP]

Naho: 'what is that flower?'
Suwa: 'This is for Kakeru'
Naho: 'Kakeru will be happy because of that'

According to Excerpt 1, the negation form is represented by the verb *yorokobanai*. As indicated by the lexeme, the verb is derived from the *yorokobu* lexeme which means 'to be pleased.' Excerpt 1 demonstrates that the verb has been inflected into the negation form. There are two stages to the inflection process. First, the stem of the word as well as the sound ending with -u is changed into -a, resulting in the verb *yorokoba*. Second, the unfinished negation verb undergoes an inflection process known as affixation, which is distinguished by the addition of the verb suffix *-nai* at the end of the verb. This inflection implies two things: (1) the verb's meaning becomes negative, and (2) the process of inflection is a type of inflection consistent with Japanese morphology. According to Kishimoto (2018a), the presence of the *-nai* negation at the end of the verb characterizes the morphological inflection of Japanese verbs into the negation form.

In terms of its segmental phonology, the inflection has revealed a segmental change. The vowel segmentation within that context alternated between vowel segments of /u/ and /a/. Phonetic alternation was also caused by the segmental changes. The vowel /u/ is produced by the high and front tongue as well as the unrounded lips (Inozuka & Inozuka, 2007). The vowel /a/, on the other hand, is produced by the low and front tongue, along with unrounded lips. This characteristic asserted the difference in tongue positions for these two vowels. Therefore, they are phonetically and phonemically different.

The transformation of the structure of the verb mora is another effect of the entire inflection process. *Yokorobu* is a verb with mora [jo], [ɾo], [ko], and [bu] prior to the inflection process. After the inflection, it changes into *yorokobanai* with mora [jo], [ɾo], [ko], [ba], [na], and [i]. The presence of an initially absent vowel sound [a] in the mora [ba] and the addition of two new mora, i.e., the mora nasal [na] and the mora vowel [i] reflect the transformation of the mora structure.

b. Segmental of the *-nnai* variation

Consider Excerpt 2 below.

(2) 翔：部活やんないの？菜穂は
Kakeru: bukatsu yannai no? naho wa
Kakeru: club activites don't do[SFP]? Naho[TOP]
菜穂：ううん。
Naho: uun
Naho: no

Kakeru: 'Naho, you do not do club activities?'
Naho: 'No'

From Excerpt 2, we can see the phonological variation signified by the *yannai* verb. Yannai is a verb derived from the lexeme *yaru* that has the lexical meaning "to do (something)" (Yamada et al., 2017). This verb, then, inflects into the negative form. The negative inflection was caused by the high unrounded vowel [ɯ] in the final position of the verb transforming it to a low unrounded vowel [a]. From a phonetics standpoint, this vowel change indicates a difference in terms of frontness and highness of the tongue for these two vowels. A vowel [ɯ] is produced when the tongue is positioned in front of the oral cavity and in a high position. On the other hand, the vowel [a] is produced when the tongue is in a low position and located in the front position of the oral cavity. From this point, vowel changes have contained phonetic transformations regarding the vowels. Considering this process, the negation *-nai* was affixed to *yara* (*yannai*).

In contrast to the negation verb *yaranai*, Excerpt 2 shows that the negation verb is marked by *yannai*. This verb undergoes a phonological process. In this case, the phonological process in question is nasalization. Nasalization is a phonological process that occurs when a sound segment is influenced by another nasal sound in the environment (Crystal, 2008). In this case, the nasalization is displayed by the presence of the nasal sound [n] located in the medial position of the verb. Naturally, nasal sound does not exist in this environment. However, the alveolar flap sound [ɾ] received a phonetic influence from the next sound segment, notably the nasal sound. As a result, the alveolar flap sound changed into a nasal sound in the medial position of the verb. It means that, both phonetically and phonemically, they differ.

From a phonetics viewpoint, the segment [ɾ] is produced while the tip of the tongue touches the alveolar ridge in the oral cavity and is at the same time articulated by creating flap sounds. On the contrary, the segment [n] is produced in the same way as the segment [ɾ] but is different, namely in the articulated from in the nasal cavity. Then, this phonological process implies that the phonemes as well as the allophones are contradicted. Segment [ɾ] is a segment with an alveolar phoneme as well as an alveolar flap allophone. Whereas the segment [n] is along with the nasal phoneme and nasal alveolar allophone [n] as their phoneme and allophone. Thus, this nasalization is related to the regressive assimilation. Regressive assimilation is triggered by prior segments influenced by preceding segments (Siswanto et al., 2019). Moreover, this entire process of nasalization can be seen in Figure 1.

$$[ɾ] \rightarrow [n] \; / \; \_\_\_\#\_\_\_$$

Figure 1. Phonological Rule of *Yannai*

Figure 1 depicts the phonological rule of nasalization in the *yannai* verb. Phonological rules are set of rules that represent specific conditions occurring in a particular phonological process (Schane, 1973). Based on those phonological rules, the segment [ɾ] was realized as a nasal segment [n] in the verb's medial position. Hashtag symbols represent word boundaries in a phonological environment (Trask, 2006).

In addition, the nasalization in Excerpt 2 has an impact on the mora structure of the verb. By nature, the *yaranai* verb consists of four moras, namely [ja], [ɾa], [na], and [i]. Due to the nasalization going through the verb, the *yaranai* verb turns into *yannai* which also consists of four moras as well, [ja], [n], [na], and [i]. The nasalization process did not have an impact in terms of the number of moras. Still, this process had an impact on the structure of the moras. Mora [n] signified the nasalization arising in segment [ɾ].

c. Segmental of the *-nee* variation

Excerpt 3 below contains segmental of the *-nee* variation.

(3) 須和：はい翔君。行っといで。
Suwa: hai kakeru kun. Ittoide
Suwa: yes kakeru. go
あずさ：あたしコーラ
Azusa: atashi koora
Azusa: me cola
貴子：私アセロラ
Takako: watashi aserora
Takako: me acerola
翔：待って、覚えられねえ。
Kakeru: matte, oboerarenee
Kakeru: wait, cannot remember

Suwa: ‘Kakeru, please go and buy us drinks’
Azusa: ‘I will have a cola’
Takako: ‘I choose acerola’
Kakeru: ‘Wait, I cannot remember it at all’

The verb *oboerarenee* exhibits segmental -nee variation according to Excerpt 3 above. *Oboerarenee* is derived from the lexeme *oboeru*, which means "an experienced event and skill that one would not forget" (Yamada et al., 2017). The lexical meaning of this lexeme is "to remember." If we take into consideration the morphological form of the verb, we can identify the morphological process that has occurred. First, this verb changes into its potential form. The potential form is determined by the verb type. The verb *oboeru* is classified as a type two verb in this context. The type two verb is indicated by *-iru* and *-eru* at the stem structure of the verb (Nitta, 2010). Then the morphological rules are applied to the Japanese potential form. The *-eru* stem in the verb *oboeru* should be removed and be replaced with the -rareru stem (Irwin & Zisk, 2019). As a result, the signified of the verb *oboerareru* forms the potential form in this case.

The second process is a phonological process. Excerpt 3 shows the phonological process through the presence of segment [ee]. From a phonological viewpoint, this form is related to the coalescence phenomenon in phonology. Coalescence is a term used when two segments merge into one (Trask, 2006). Along with this definition, we can identify the coalescence phenomenon that has occurred in the vowel segment. The segment [ai] in the verb final position is changed into the segment [ee]. This particular phenomenon not only shows segmental changes but also signifies the properties of segmental changes. The segment /e/ has phonetic properties (high, low, and -back) (Kubozono, 2015). Thus, these properties are derived from this first segment, with [a] and [i] as the second segment. When two segments are fused into one, the coalescence segment has properties from both

the first and second segments prior to coalescence. Moreover, the vowel coalescence [ee] also implies another event that correlates with the speaker's gender. Shibatani (1990) stated that vowel coalescence [ee] in the Japanese language is used in men's informal speech. From Excerpt 3, the word *oboerarenee* within the utterance was articulated by Suwa, who is a male speaker in the conversation. It means that this event is inextricably linked to the speaker's gender.

Furthermore, prior to the formation of the segment [ee], the vowel segment was the mid-vowel phoneme /e/. However, the reason behind it is vowel lengthening. The vowel lengthening had an impact on the given vowel, which became a long vowel when articulated. The mid-vowel phoneme /e/ was lengthened to /ee/ at this point. Therefore, the verb *oboerarenee* has been constructed. Figure 2 below shows the phonological rules in *oboerarenee*.

[ai] → [e] / _____#
[e] → [+ long] / _____#

Figure 2. Phonological Rule of *Oborerarenee*

The phonological process of the verb *oboerarenee* is depicted in Figure 2. According to the figure, the *renboin* segment [ai] has first become the mid vowel segment [e]. In terms of more specific segments, segment [ai] has two moras, whereas segment [a] only has one mora. In fact, vowel coalescence has reduced the number of mora within the segment. Second, segment [e] is produced longer, as indicated by the + long notation in the phonological rules. Vowel coalescence and vowel lengthening both occurred in the verb's final position.

Additionally, phonological processing has triggered an alternation of mora structure in the verb. The verb *oboerarenai* consists of seven moras, [o], [bo], [e], [ɾa], [ɾe], [na], and [i]. However, the verb *oboerarenee*, on the contrary, has a structure of seven moras as well, namely [o], [bo], [e], [ɾa], [ɾe], [ne], and [e]. Along with the mora structure of the verb *oboerarenee*, the mora [ne] and [e] clearly represent the effect of the occurring phonological process. As a result, while the number of mora did not change, other elements may have changed.

d. Segmental of the *-nnee* variation

The next variation is segmental of *-nnee* variation as depicted in Excerpt 4 below.

(4) 翔：俺間違ない？道。
Kakeru: ore machigainai? Michi
Kakeru: me not wrong? Path
須和：そもそもさ、好きになるならないなんて選択じゃ決めらんねえよ！
Suwa: somosomo sa, suki ni naru naranai nante sentaku ja kimerannee yo
Suwa: after all[SFP], to like not become things like choice so cannot decide[SFP]

Kakeru: 'Am I taking the right path?'
Suwa: 'After all, you cannot decide it whether you like it or not'

Excerpt 4 presents a fragment of the conversation between Kakeru as the speaker and Suwa as the interlocutor. In Excerpt 4, Suwa used the verb *kimerannee* within his utterance. The verb *kimirannee* is derived from the lexeme *kimeru,* 'to choose something' (Yamada et al., 2017). This verb, *kimeru,* is classified as one of the transitive verbs in the Japanese language. Transitive verbs are verbs that describe the motion of a linguistic complement and have syntax structures, notably subject + complement + verbs in sentences (Nitta, 2010). Afterwards, a potential inflection takes place in the verb, which transformed *kimeru* into its potential form, *kimerareru*. Along with Excerpt 3, the present excerpt, again, shows an inflection into negation form. In this case, the potential form *kimirareru* become the negative potential form *kimirarenai*. The verb *kimirarenai* is a simple form in its morphological form. On a side note, the Japanese language, in terms of verb form, has levels

of morphological form, including plain form, and polite form. Negative inflection gives a negative meaning to the semantic field of the verb. Hence, the meaning of the verb *kimerarenai* is 'cannot choose something'.

Following the prior analysis, we can proceed to the next analysis, which is a segmental analysis. In the presented excerpts, phonological processes occurred within the verb, which led to segmental changes. The segmental changes are divided into three events, nasalization, vowel coalescence, and vowel lengthening. The nasalization process is influenced by surrounding sounds in the phonological environment. The nasal segment is primarily responsible for nasalization. Likewise, in the preceding segment, [ɾ] has been influenced predominantly by the nasal segment. The preceding segment changed due to the position of the nasal segment, which is located after the alveolar flap segment. Nasalization in the alveolar flap segment made that segment change into the nasal segment.

The motive behind present nasalization is coarticulation. According to (Yuzawa & Matsusaki, 2005), nasalization commonly occurs when a nasal sound influences another sound to change into a nasal sound. Second, vowel coalescence occurs in segment [ai], which is located in the verb-final position. Together with the preceding excerpt (Excerpt 3), this process resulted in a segmental change from [ai] to [e]. Vowel [a] is produced by the front-low tongue, and vowel [i] is articulated by the front-high tongue (Inozuka & Inozuka, 2007). By contrast, the vowel [e] is articulated by the front-central tongue. Again, there is no difference regarding the roundness of the lips. Thus, the coalescence process implies not only segmental changes but also phonetic changes. And lastly, segment [e] is lengthened by the speaker in the final position of the verb. By lengthening the segment, the vowel [e], which was originally a short vowel, is changed into a long vowel. Phonetically, a long vowel can be marked using a diacritic, i.e., a phonetic mark used to indicate word alternation (Knight, 2012). Particularly, a phonetician can insert a semicolon mark into a phonetic transcription in order to show that sounds should be alternated when sounded. The phonological process is presented in Figure 3 below.

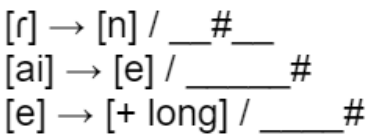

Figure 3. Phonological Rule of *Kimerannee*

If we compare the current phonological rules to Figure 2, it appears that the current phonological rules contain the previous rules, such as the nasalization rule, the vowel coalescence rule, and the vowel lengthening rule. Moreover, these rules imply that phonological processes could be complex in a single lexicon within an utterance. Furthermore, morphophonological processes might have impacted the segmental structure of the verb. We can have a close look at the mora structure. In the verb *kimerarannee*, the current verb consists of six moras, namely [ki], [me], [ɾa], [n], [ne], and [e]. Mora nasal [n] serves a function to represent nasalization that occurred in the alveolar flap segment; mora nasal [ne] signifies the phenomenon of vowel coalescence; and mora long vowel [e] expresses the lengthening process.

e. Segmental of the *-ai* deletion

Consider Excerpt 5 below.

(5) あずさ：あれ？今の上田先輩じゃん？
Azusa: are? Ima no ueda senpai jan?
Azusa:
翔：ああ。
Kakeru: aa
Kakeru: ah

菜穂：知ってるの？
Naho: shitteru no?
Naho: do you know[SFP]?
萩田：美人だからな。
Hagita: bijin dakara na
Hagita: beautiful[COP] because[SFP]

Azusa: 'Is not that senior Ueda?'
Kakeru: 'Ah'
Naho: 'Do you know her?'
Hagita: 'Because she is beautiful'

Morphologically, *jan* is derived from *janai*. *Janai* is a plain from which arises from plain copula *da*, topic marker *wa*, and negation verb *-nai*, this is in line with Tsujimura (2014). In the components itself, we can identify that *janai* has a negation meaning in it and that the negation came from the negation verb itself. Therefore, this verb has an inherent meaning. However, Excerpt 5 shows contrast in linguistic form. In this present case, Excerpt 5 displays a phonological phenomenon signified by the verb *jan*. Matsushita (2020) argued that *jan* is a contracted form of the verb *janai* in the Japanese spoken language. In regard to that, we could analyze the verb from a phonological standpoint. If we apply *janai* as the prior form, then we could track the phonological process that occurs within the verb. Based on segmental features, *renboin* [ai] has been deleted from the verb. In Japanese linguistics, *renboin* is a term to represents adjacent vowels in lexicons (Koizumi, 2014). Excerpt 5 illustrates that *renboin* [ai] is deleted in the verb-final position. Therefore, the verb losses this *renboin*. Again, a deletion process frequently takes place to preserve a syllable of parts from words (Burquest, 2001).

$$[ai] \rightarrow [\varnothing] \; / \; \_\_\_\_\_\#$$

Figure 4. Phonological Rule of *Jan*

For instance, Figure 4 shows the deletion process marked by the null symbol (Ø). It is a notation in phonological rules to describe a segment that has been deleted in a given environment (Odden, 2013). In Figure 4, the left side depicts a segment that will be deleted, and the right side depicts the location of the deleted segment. In this context, the segment [ai] is deleted while it is located in the verb-final position. As a matter of fact, the deletion process results in a transformation of the mora structure in the verb. Under these circumstances, the verb *jan* only consists of two moras, notably mora [ja] and [n].

CONCLUSION

While the negation verb in the Japanese language has been morphologically formed, several variations have been discovered and discussed in this paper. We discovered five variations of the Japanese negation verb: *-nai*, *-nnai*, *-nee*, *-nnee*, and the *-ai* deletion variations.

These different variations led to segmental changes, both phonetically and phonologically. Predominantly, phonological processes are divided into four categories: nasalization, vowel coalescence, vowel lengthening, and deletion. The surrounding segments have played significant roles in the phonological process. For instance, nasalization is triggered by the presence of a nasal segment in the phonological environment of a lexicon. Because the processes are motivated by coarticulation and the preservation of sound parts, they are relatively simple to articulate.

Since segmental processes of phonology have been constructed, we have also delivered formulas by writing phonological rules. A formal rule that represents the entire process could be created by formulating it. We also consider the impact of the phenomenon by analyzing its microstructure. Although phonological processes do not necessarily decrease the number of mora in the verb, it is important to recognize that mora represents the phonological process that has occurred.

In addition, the speaker's gender can also contribute to the construction of segmental variations of the Japanese negation verb. Vowel coalescence, in particular, implies a correlation between segmental changes and gender. This finding, at the same time, supports arguments from Shibatani (1990) demonstrating that Japanese men use /ee/ in informal speech.
The current study is expected to contribute to a sufficient explanation in terms of segmental variation in the Japanese negation verb. Future research is needed to investigate segmental phenomena in the Japanese language, particularly through a study that provides an in-depth analysis of the relationship between segmental variations and the speaker's gender.

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