Lampungnese Anger Intonation

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Abstract

Misinterpretation of intonation can generate communication difficulties or even problems. Non-native speakers frequently mistook Lampungnese neutral speech uttered by native speakers for rage speech, as one example of misunderstanding tone. The purpose of this study was to find a solution to the problem. The IPO approach was used in this work, with three key activities: speech generation, speech acoustic analysis, and perceptual test experiments. The data consisted of segmentally similar recordings of Lampungnese neutral and angry speech. The utterance was made up of three sentence patterns that were each repeated four times by four native speakers. Furthermore, the data were examined to determine the acoustic difference between the two speeches as well as the acoustic parameter that gave the Lampungnese neutral speech an angry perception. The results of the investigation revealed that Lampungnese neutral and angry speech were distinguishable by pitch, with angry speech having a higher pitch. Following that, two tests were conducted: (1) raising the pitch of Lampungnese neutral intonation and (2) reducing the pitch of Lampungnese rage intonation. Finally, the experimental results revealed that pitch is the acoustic characteristic that represents the speaker's anger emotion. According to the findings, higher pitch implies the angry emotion.

Keywords: anger, acoustic utterance, Lampungnese.

Introduction

Lampungnese neutral intonation (without emotional influence) has higher pitches than Indonesian neutral intonation, according to Reranta & Laksman-Huntley (2022). This encourages nonLampungnese nonnative speakers to believe that Lampungnese are always furious when they talk, because higher pitch usually denotes an angry speech (Paeschke & Sendlmeier, 2000). Furthermore, the shape of Lampungnese Neutral Intonation initially rises to the summit. In concordance, the contour shape leads nonnatives to the same conclusion as stated above. Furthermore, the contour moves faster than the Indonesian. According to Yildirim (2004), rage intonation is often faster than neutral intonation. The stigma of 'Lampungnese is fierce' emerges as a result of the acoustic feature of the Lampungnese neutral intonation, as mentioned by Awlyaa (2020) and Hasan (2017). Both also mentioned that actually, Lampungnese are very peace-loving, friendly, and tolerant. In addition, Hidayat (2014) declared that they also like to get along with other ethnic groups.

I Intonation is Physical intonation is the ensemble of various pitches in a speech uttered created by varying periodicity in the vibrations of the vocal cords, while linguistic intonation is a suprasegmental or prosodic element that influences the perception of listeners and can create a different meaning of speech from its lexical and structural meaning (Sidauruk, 2017; t'Hart, Collier, & Cohen, 1990; Yousri, 2014; Zsiga, 2016). According to the definition, intonation conveys meaning. Furthermore, the conveyed meaning does not take into account the syntax and lexeme of a sentence (Hayes, 2012, Jeong (2018). This is consistent with Jeong (2018), who argued that meaning is established not by "what is said," but by "how it is said." In linguistic terms, intonation represents a sentence's shape, such as positive, negative,

interrogative, or imperative (Sugiyono, 2007). Sugiyono (2007) also stated that if a syntactical positive sentence is pronounced with an interrogative tone, it will be regarded as an interrogative sentence. While innation conveys emotion in paralinguistic terms, such as angry or happy speech (Nolan, 2014; Prieto & Borràs-Comes, 2018; Rodero, 2011).

A listener can determine the meaning or goal of a speaker's speech using the paralinguistic indication. However, paralinguistic meaning interpretation must be done correctly. If a listener incorrectly interprets the meaning, a misunderstanding occurs, potentially leading to unsuccessful communication (Gunlogson, 2003). Ineffectiveness can also lead to conflict, as Juariyah (2012) discovered in her research. Furthermore, the intonation system of one language or dialect may differ from the intonation system of another (Bolinger, 1972). Listeners, on the other hand, sometimes interpret the meaning by using their own intonation system rather than the speaker's. As a result, the dispute (Juariyah, 2012) and stigmatization of Lampungnese in the first paragraph occur. To avoid misunderstanding, the speaker and listener must use the same illocution. In agreement, the same illocution can be achieved by understanding the intonation system of a language or dialect. To save knowledge about the suprasegmental element, investigations on intonation systems in any language are required.

As stated in the first paragraph, nonnatives of Lampungnese frequently regard Lampungnese as fierce people because their acoustic feature of neutral speech is similar to that of nonnatives' angry speech. The nonnative language in this example relates to the Bahasa Indonesia intonation system, which is widely used in Indonesian and was suggested by Sugiyono (2007). Some intriguing questions arise in the thoughts of the current scholars, such as "How do angry Lampungnese speak?" and "Do they speak in higher pitches than their neutral pitch?" "If they do, how high the pitch is?" , as well as "Do they speak in lower pitches than their neutral pitch so their intonation system is unique?" . These inquiries prompted the researchers to look into the Lampungnese intonation system to determine the acoustic properties of Lampungnese rage intonation. Moreover, this can also find the acoustic parameters that indicate the anger based on Lampungnese.
Based on the discussion above, this research has two problem formulations as below:

1. What are the acoustic characteristics of Lampungnese anger intonation?
2. Which acoustic parameter plays an important role in constructing anger in an intonation of Lampungnese?

This work will add to the reference of linguistic study, particularly in the field of phonetics and Lampungnese. It can also be used to help people learn more about both debate topics. Furthermore, this elucidates why nonnatives regard Lampungnese as a fierce people. Lampungnese intonation has only been studied twice so far. opening, as noted in the opening paragraph, it is done by Redika and Huntley (2022). The second study was conducted by Reranta (2021), who investigated the acoustic properties of Lampungnese declarative and interrogative intonations.

Theory and Method

Reranta and Laksman-Huntley (2022) are the authors of the second study. Lampungnese neutral intonations in the forms of subject-predicate, subject-predicate-object, and subject-predicate-object-complement were explored and experimented with in this study. Some findings have been discovered as a result of both initiatives. To begin, the intonations regularly flow in five places, designated P1, P2, P3, P4, and P5, in an up-down-up-down pattern, as seen below:

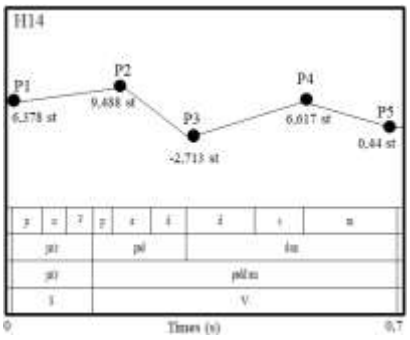


Figure 1 Lampungnese Neutral Intonation Prototype with S+V pattern

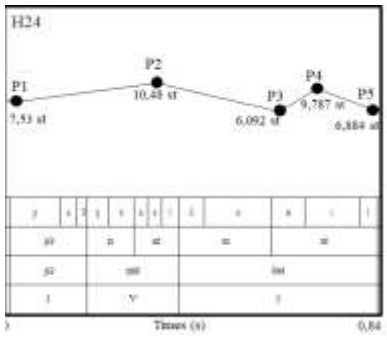


Figure 3 Lampungnese Neutral Intonation Prototype with S+V+O pattern

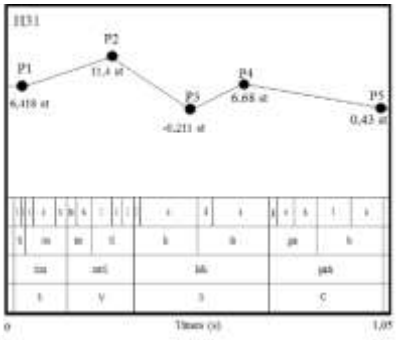


Figure 3 Lampungnese Neutral Intonation Prototype with S+V+O+C pattern

Adopted from Reranta and Huntley (2022)

From Figures 1, 2, and 3, Lampungnese Neutral Intonation in three forms of the sentence has acoustic characteristics as below;

No	Element	Sentence Form		
		S+V	S+V+O	S+V+O+C
1	Initial Pitch	6,378 st	7,53 st	6,418 st
2	Final Pitch	0,44 st	6,884 st	0,43 st
3	Highest Pitch	9,488 st	10,48 st	11,4 st
4	Lowest Pitch	-2,713 st	6,092 st	0,211 st
5	Range of Pitch	12,201 st	4,388 st	11,189 st
6	Contour Form	Declination	Declination	Declination
7	Duration	0,7 s	0,84 s	1,05 s
9	Longest Syllable	Last Syllable	Last Syllable	Last Syllable

Table 1 Lampungnese Neutral Intonation Acoustic Characteristic
Adopted from Reranta and Laksman-Huntley (2022)

In this research, the findings above will be taken as a comparison for Lampungnese Anger intonation.

Mozziconacci (2002) created the idea of angry intonation, which says that emotions can be communicated by pitch, pitch range, and contour. According to Paeschke and Sendlmeier (2000), angry intonation has a specific character, as they reach the top of the tone quickly, with sharp peaks and dips in tone and a higher pitch than neutral. Furthermore, according to Yildirim (2004), furious speech is uttered faster than neutral speech.

The IPO technique, or Institute voor Perceptie Onderzoek, developed by the Institute for Perception Research in Eindhoven (t'Hart et al., 1990), was used in this study. According to Heryono (2019), the IPO technique can accurately count acoustic constituents. As a result, the approach is divided into three steps: (1) data generation, (2) acoustic characteristic analysis, and (3) perception tests. The data for this study were Lampungnese speech recordings in the API dialect, which was chosen since it is the majority dialect in Lampungnese (Badan Pusat Statistik 'Central Bureau of Statistics', 2000).

The participants in this study are four native Lampungnese speakers (initials E, I, H, and T), who are also participants in Reranta and Laksman-Huntley (2022). Three factors influenced their decision to participate in this study. First, they maintained the condition in which they performed in the prior research, thus their Lampungnese originality is still reliable.

The second method, which uses the same speakers, will offer a more accurate comparison because both neutral and angry speech are produced by the same vocal cord. To match the comparison, the participants uttered the same lines that Reranta and Laksman-Huntley (2022) used. These are S+V, S+V+O, and S+V+O+C structural pattern sentences, as seen below:

1. *Nyak* (S) *pedom* (V)
   I sleep
   'I sleep'
2. *Nyak* (S) *ngunut* (V) *duit* (O)
   I look for money
   'I look for money'
3. *Tiyan* (S) *mutil* (V) *lada* (O) *ganta* (C)
   they pick pepper now
   'They work to harvest pepper now'

Similar to Reranta and Laksman-Huntley (2022), were contextualized in dialogs to make native speakers upset. To collect data, each speaker was asked to act as character B, who delivered the target sentences, with one of the authors acting as character A. The recording was repeated four times to compare the data acquired from each subject to subjects who had consistent intonation in each structure pattern. The recording was done with a Samson C01 condenser microphone, a Focusrite Solo Gen3 soundcard, and an Asus A412DA laptop. The technology was found suitable for home recordings and has previously been utilized in previous research. 48 recording data (4 subjects x 3 structure patterns x 4 repeat) were acquired from the four participants during the recording process and saved as waveforms, the full frequency range audio format.

The collected data was then coded to facilitate data selection. The code was made up of four symbols: the starting subject, the type of emotion, A for anger, the sequence of the discourse, and the repeat order. Consider the number HA13. After that, the data was styled to remove unnecessary pitch (t'Hart et al. (1990)) and segmented by sound voice. Following that, the data was classified based on the subject and conversational sequence. People with consistent intonation for all phrase patterns were picked from each class of dialog order. Subject H was chosen as the subject with the most constant tone across all sentence forms as a consequence of this technique. As a result, his recordings advanced to the next stage.

The following step was the perception test. This step necessitated the cooperation of twenty non-native Lampungnese speakers ranging in age from 20 to 40. They were born in Lampung and cannot speak in any language other than Indonesian. In this perceptual exam, each of the four native speakers read each dialog pattern four times. The four sentences provided by subject H in each classification were then analyzed by the nonnative responders. They were asked whether or not they thought each recording was objective. The recordings were played back using the same equipment used in the prior study, a Behringer MS16 flat monitor speaker. To obtain individual perception, this perceptual test was performed independently. As a result, the recording with the most correct answers in each phrase pattern was selected as the prototype of intonation to be researched in order to carry out the acoustic character. The Praat 6.1.50 software was used for all sound analysis methods in this investigation.

The perception test results were then compared to the findings of Reranta and Laksman-Huntley (2022) to determine the acoustic difference between neutral and furious intonation. The contrast was then evaluated using Paeschke and Sendlmeier's (2000) and Yildirim et al.'s (2004) concept of angry speech intonation. The commonalities in the hypotheses were then interpreted as an auditory characteristic that constructs the furious emotion in a speech.

Furthermore, two experiments were done on 20 non-native Lampungnese speakers to investigate their consideration, which included speech manipulation and perceptual tests, to quantify the comparison. Finally, the outcomes of the experiment were compared to the findings, which were then used to conclude.

Findings and Discussion

The data generation, stylization, segmentation, data comparison, and perceptual test methods were used to establish the selected intonation prototype for each phrase pattern. HA11, HA23, and HA34 were the dates. The acoustic properties are depicted below.

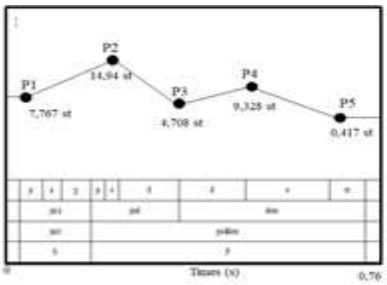


Figure 4 Lampungnese Anger Intonation Prototype with S+V pattern

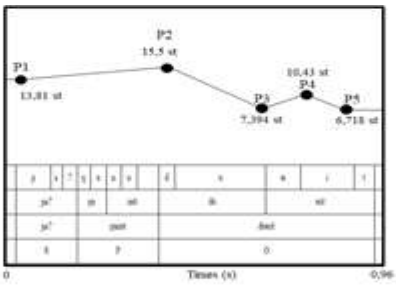


Figure 5 Lampungnese Anger Intonation Prototype with S+V +O pattern

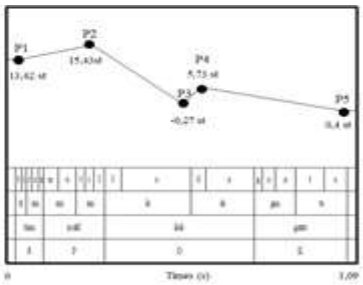
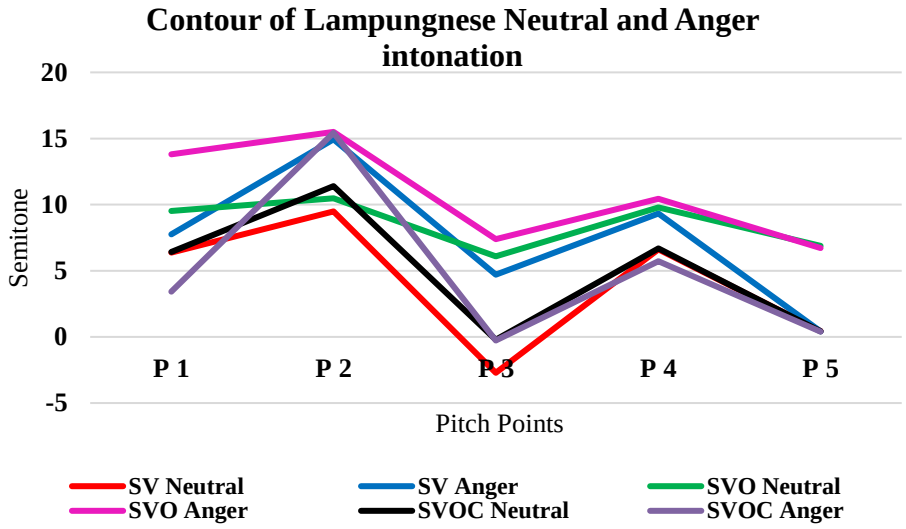


Figure 6 Lampungnese Anger Intonation Prototype with S+V+O+C pattern

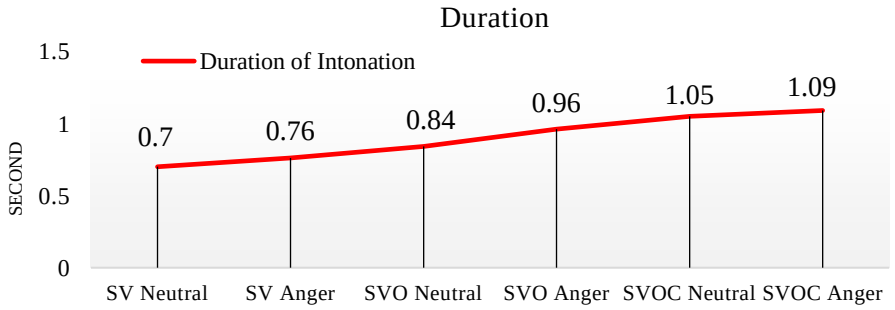
The other acoustic parameters of Lampungnese rage intonation are divided to the table and images below to facilitate observation of the acoustic characteristics:

Table 2 Lampungnese Anger intonation Acoustic Characteristic

No	Element	Sentence Form		
		S+V	S+V+O	S+V+O+C
1	Initial Pitch	7,767 st	13,81 st	13,42 st
2	Final Pitch	0,417 st	6,718 st	0,4 st
3	Highest Pitch	14,94 st	15,5 st	15,43 st
4	Lowest Pitch	4,708 st	7,394 st	-0,27 st
5	Range of Pitch	15,411 st	8,782 st	15,16 st
6	Contour Form	Declination	Declination	Declination
8	Longest Syllable	Last Syllable	First Syllable	Second Syllable



Graphic 1 Contour of Lampungnese Neutral and Anger intonation



Graphic 2 Duration of Lampungnese Neutral and Anger

According to the findings above, Lampungnese neutral and angry intonation differ in pitch, with anger intonation pitch being higher. In terms of duration, the second and third comparisons revealed that rage intonation lasts longer than neutral intonation. This finding contradicts the findings of Yildirim et al (2004). However, the difference is minor, lasting no more than 0.12 seconds, and it was not discovered in the initial comparison. As a result, length cannot be considered as factor that contrasts both emotional intonations. Furthermore, the intonation contour of all prototypes flows in the same direction, that is, up-down-up-down. In short, the only difference between Lampungnese neutral and rage intonation is pitch height. This is consistent with Paeschke and Sendlmeier's (2000) theory.

Based on the discussion above, two hypotheses were developed: (H1) Lampungnese neutral and anger intonation differ in pitch height, with anger intonation being higher, and (H2) Pitch and contour intonation are two acoustic parameters that give nonnative speakers an anger impression on Lampungnese neutral intonation. These hypotheses would then be tested to see if they were accepted or rejected.

Experiments

As stated in the technique chapter, two tests were carried out to prove H1 and H2. Acoustic manipulation of the SV phrase was used in these experiments. The neutral intonation will then be represented by the code HA11, as applied by Reranta and Laksman-Huntley (2022), while the anger intonation will be represented by the code HA11. Because of time, money limitations, and location constraints, not all data was altered. Furthermore, some earlier studies

did manipulation on specific data alone and it was sufficient to prove hypotheses because the actual conclusion was taken in the chapter of finding. The purpose of this experiment was

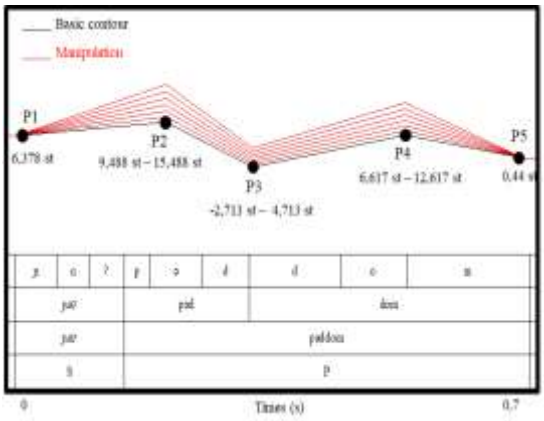


Figure 7 Lampungnese Neutral Intonation Manipulation

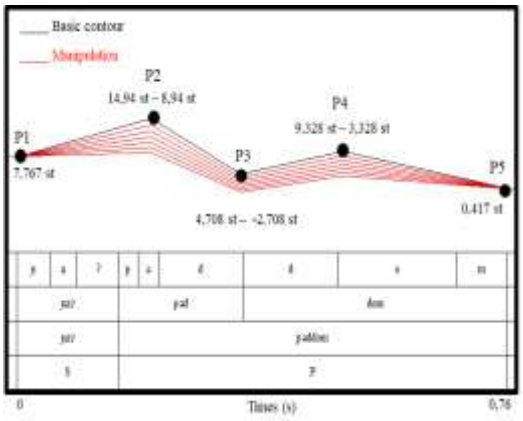
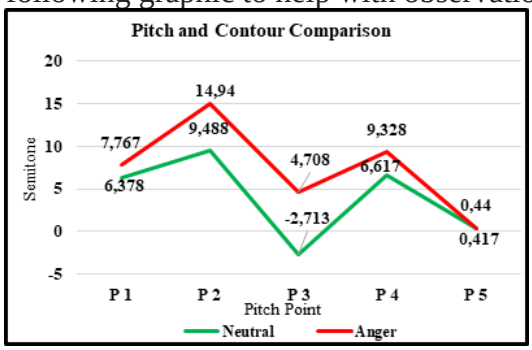


Figure 8 Lampungnese Anger Intonation Manipulation

solely to confirm or deny the conclusion. Perceptual reactions were the predominate response in each manipulation in this experiment.

Experiment 1

The first experiment involved changing various pitch points in both Lampungnese neutral and rage intonations. As previously stated, when pitch on contour HA11 and HA11 are compared, the pitch of the HA11 is greater than that of the HA11. The pitch comparison of them can be shown on the following graphic to help with observation.



Graphic 3 Pitch and Contour Comparison of Lampungnese Neutral and Anger Intonation

The table above shows that P2, P3, and P4 on both intonations have a considerable contrast. As a result, the three pitch points were changed. Manipulation in HA11 was accomplished by elevating them to resemble the rage intonation. P2, P3, and P4 in HA11 were all reduced. As a result, their shapes in the three pitch points are identical. Each pitch point was raised one semitone until it reached the same pitch tone as the other intonation contours during manipulation. If the respondent could detect the pitch even with a tiny change, manipulation with one semitone was an expectation. Finally, each emotional intonation has six altered contours. These are the outcomes of the manipulations.

Following the manipulation. Perceptual experiments were performed to determine whether or not changing pitch affected perception of intonations. If the perception changes, it indicates that pitch is a suprasegmental feature that contrasts both emotional intonations. Furthermore, the threshold between both intonations would be carried out in this experiment.

Following the perceptual test, the respondents' responses to the following manipulations were gathered. This is the outcome of the perceptual exam.

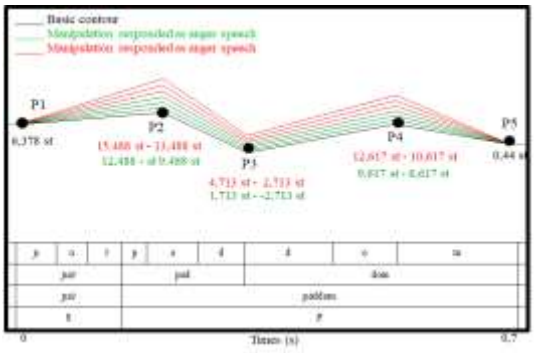


Figure 9 Response to Lampungnese Neutral Intonation Manipulation

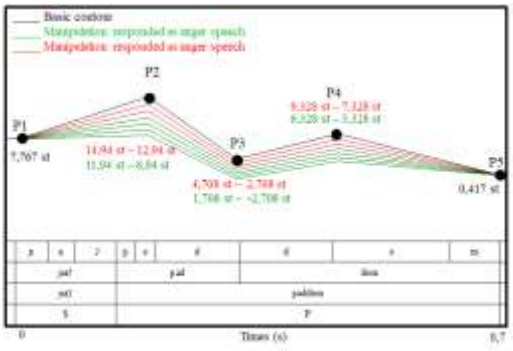
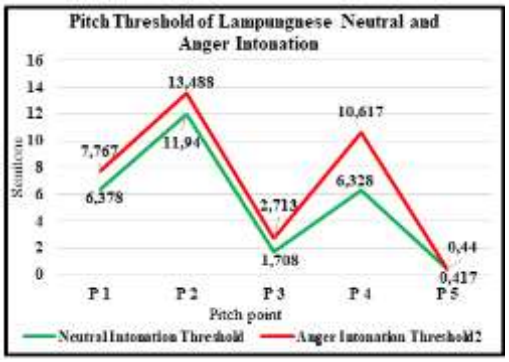


Figure 10 Response to Lampungnese Anger Intonation Manipulation

The figures above depicted respondents' reactions to the manipulations. Figure 9 shows how raising the pitch in neutral intonation impacted perception. When P2, P3, and P4 were elevated, neutral intonation was interpreted as angry intonation. When the manipulation's P2 is 13,488 st, P3 is 2,713 st, and P4 is 9,617 st, it is considered angry intonation. This suggests that pitch is the suprasegmental element in intonation that influences emotion. According to the results of the test, rage intonation has a higher pitch than neutral intonation. Figure 10 also revealed a similar effect. In the diagram, manipulation causes respondents' perceptions to shift. perception. According to the results, rage intonation is regarded natural intonation when P2, P3, and P4 are dropped to 12,94 st, 2,708 st, and 7,328 st, respectively. P2 and P3 were in the same pitch height according to both intonation perceptions. Meanwhile, P4 had a remote location due to manipulation limitations that did not allow for additional variation manipulation that focused solely on P4. However, this experiment revealed that pitch is a suprasegmental feature that distinguishes Lampungnese neutral and rage intonation. This result indicates that H1 is acceptable. Below is a chart illustrating both intonation thresholds to help with comprehension.



Graphic 4. Pitch Threshold of Lampungnese Neutral and Anger Intonation

Experiment 2

Experiment 2 was created to provide an answer to H2. According to H2, differential pitch height and contour form are two auditory factors that give nonnative speakers an angry

sense of Lampungnese neutral intonation. As a result, the manipulations were carried out by altering the Lampungnese neutral intonation pitch and contours based on Sugiyono's (2007) Indonesian neutral intonation. First, all Lampungnese intonation pitches, P1, P2, P3, P4, and P5, were decreased. The lowerness was determined by the contrast between both beginning pitches. The initial pitch in Indonesian is 0.55 st. The pitch would serve as a model for this adjustment. Seven adjustments were used to enrich the pitch. Second, manipulation was accomplished just by lowering P2 in Lampungnese neutral intonation. This was due to P2 being the pitch that formed the first tone flow. By Sugiyono (2007), P2 in Lampungnese intonation would be decreased twenty times to rich contour with down tone as in Indonesian intonation. These manipulations are shown below.

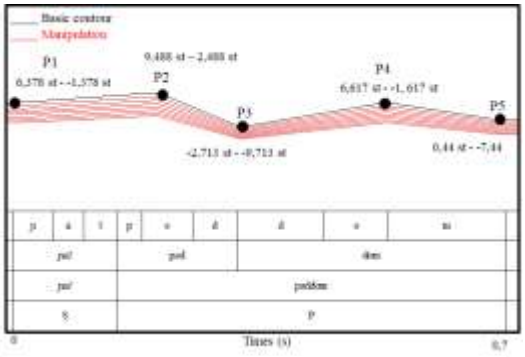


Figure 11 Lampungnese Neutral Intonation All Pitch Manipulation

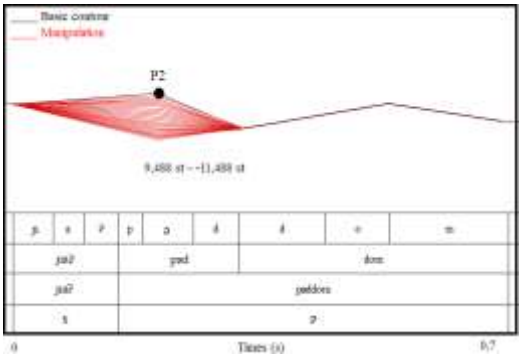


Figure 12 Lampungnese Anger Intonation Contour Manipulation

Following the acquisition of those modification files, a perceptual test was conducted to ascertain whether or not respondents' perceptions were altered when the intonations were altered. If their perception changed after the initial manipulation, it meant that pitch height as an acoustic characteristic that gave nonnatives angry intonation on Lampungnese neutral intonation. Similarly, if their perception altered for the second manipulation, it indicated that the intonation contour plays the role of conveying anger.

Following the test, responses were gathered. The reactions to both interventions are listed below.

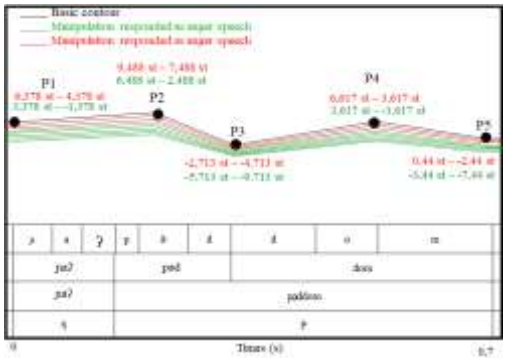


Figure 13 Response to Lampungnese Neutral Intonation All Pitch Manipulation

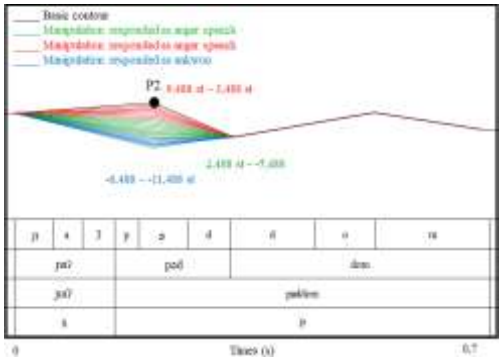


Figure 14 Response to Lampungnese Anger Intonation Contour Manipulation

Responses above showed how pitch height and contour form affect the perception of nonnatives toward the Lampungnese neutral speech. From figure 13, all pitch lowered which constructed lower contour was responded as neutral speech by Indonesian when its initial pitch is 3,378 st. In line, when P2 was lowered was precepted as neutral speech by Indonesian when the contour form had down initial tone flow, exactly when P2 tone as high as 2,388. Those

perceptions declared that pitch height and contour form of Lampungnese neutral speech are two acoustic parameter which give anger impression to the nonnatives. This support the H2.

Conclusion

Intonation is a crucial suprasegmental factor in the construction of speech meaning. As a result, the intonation system of a language can differs from one another. The intonation mechanism for producing emotional speech, for example, differs between Indonesian and Lampungnese. As a result, the Lampungnese neutral speech is misinterpreted by Indonesians. In this scenario, Indonesians interpreted the speech as an expression of rage. Finally, they perceived Lampungnese to be always angry when they spoke. According to this study, the sole variation between Lampungnese neutral and fury intonation is pitch height, which is higher in anger. Other auditory parameters, such as duration and contour, have little contrast. Because there is only one different auditory characteristic, the nonnative may become confused in distinguishing between the two discourses. Furthermore, the phenomenon occurred because two acoustic parameters in Lampungnese neutral speech are similar to anger speech intonation in general: pitch height, which is higher than in Indonesian neutral speech, and contour form, which goes to the peak quickly.

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