

The Intensity of Imperative Sentences in Javanese Language

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Abstract—Acoustic sound intensity is produced at the width of humans' airwaves. Loudness or sound intensity plays a substantial role in human's speech production. Intensity allows us to show the flow of tones as well as the contours of intonation in a speech. The intensity of speech in a language society also pertains to politeness. This article aims to determine the intensity of imperative sentences in Javanese society. The data focuses on exploring the intensity of imperative sentences spoken by groups of male and female subjects with different age criteria. To explain and answer the problems raised in this study, several steps or approaches were taken. An instrumental phonetic approach, as a method in studying humans speech (special concern on the imperative sentences form) is, therefore, used in this study. Furthermore, to calculate and realize the analysis, accurate measuring instrument, particularly computer and Praat's software program were employed. The intensity measurement and description, were carried out by adopting the IPO approach (Instituut voor Perceptie Onderzoek). The main activities carried out in acoustic study primarily concern this approach, among others: 1) speech production experiments, 2) speech acoustic analysis, and 3) speech perception experimental test.

Keywords—intensity, imperative sentence, gender, age groups, Javanese language

I. INTRODUCTION

Basically, sound is differentiated into three underlying characteristics, among others: the tone, intensity, and quality. Each of these characteristics is associated with a source in which waves can be produced. The tone depends on frequency of the wave, while intensity depends on amplitude of the wave, and so the quality depends on the waveform. Having the right combination of these three characteristics, a beautiful and intended sound will then be produced. On the other hand, the wrong combination of these three characteristics, the produced sound quality as similar as a noisy.

Sound intensity depends on magnitude of the wave amplitude. Intensity is a physical characteristic of a sound. The increased intensity leads to an increase sound volume. The volume, similarly, depends on the fundamental frequency and sound characteristics in addition to duration (time) of the sound (Lehiste, 1977, p.114). In sine waves, there is a close relationship between the amplitude and intensity. In this case the intensity or volume starts at the width of airwaves (Hayward, 2000, p. 43). Intensity may also show the flow of tone as well as the contours of intonation in a speech.

To easily comprehend, in this article terms are specifically limited to: *first*, the initial intensity (IA) is the basic loudness of a speech, the final intensity (IF) is the loudness found at the end of speech. *Second*, the highest intensity (IT) is the maximum intensity in a speech. On the contrary, the lowest intensity (IR) is the minimum intensity in a speech. The long intensity is calculated based on a distance range between highest intensity and the lowest. This article aims to reveal the Javanese language intensity spoken by groups of both male and female speakers in which classified according to their different age criteria.

II. LITERATURE REVIEW

A number of studies related to suprasegmental, among which were seriously studied by Halim (1984), Samsuri (1982), Ebing (1997), Sugiyono (2003), Rahyono (2003), Roosman (2003), Syarfina (2008), and Yustanto (2018). In addition to a number of other studies focusing on the Javanese language, is a study conducted by Rahyono (2003) and Yustanto (2018).

Javanese language holds a significant role as a communication means to fulfill daily needs of Javanese people in general. Having seen from the development and distribution of its use, Javanese language has been used in various provinces both in Java and outside the island (or even foreign countries as well), let's say in Suriname. The Javanese language is widely spoken which lead into emerging the differences in its actual use according to various geographical dialects or Javanese dialects.

Rahyono's study (2003) entitled *Intonasi Ragam Bahasa Jawa Keraton Yogyakarta Kontras Deklaratif, Interogatif, dan Imperatif* discusses the Javanese language intonation patterns of the Yogyakarta palace, in which through the study he has successfully divided the speech patterns into declarative, interrogative, and imperative modes of speech. This study intentionally merely explored that mode, however, it shall further identify acoustic features which contrasted to the three sentence modes. Yustanto's study (2018a) entitled *Struktur Prosodik Bahasa Jawa Kodya Yogyakarta dalam Dimensi Sosial dan Emosional* explain problems related to characteristics of prosody (duration and frequency) in declarative, imperative, and interrogative sentences of the Javanese language spoken in Yogyakarta, Central Java of Indonesia. Furthermore, in his paper entitled "Pitch Movement in Javanese Language Use: Lesson Learned from People across-Generations in Yogyakarta Municipality (Yustanto, 2018b)", Yustanto explains that both S-P, S-P-O and S-P-O-K sentences all experienced a decrease in tone at the end of the sentence. Among other studies on experimental phonetics on regional languages have not paid much attention on this case, thus, through this simple research it is expected to be able to encourage other researchers to produce their works on this matters.

III. METHOD

This study employed an instrumental approach namely a research approach is particularly used to address the accurate measuring instruments. The accurate measuring instrument used in this study is assisted with a software computer program of the Praat series 6.016. The measurement and description were undertaken by adopting of the IPO stages approach (*Instituut voor Perceptie Onderzoek*). The main activities carried out in acoustic research using this approach include: (a) speech production experiments, this is applied to obtain data in either speech or oral data from respondents, (b) speech acoustic analysis, carried out to process and identify the acoustic characteristics reflected in oral data, and (c) experiment testing speech perception, conducted to test validity of the data (t Hart et al., 2006, p.66).

The IPO theory process was initially begun from speech recording technique to obtain melodic speech curves. The method of obtaining the studied utterances is simply by undertaking recording activities to the respondents' voice through an instrument guide and they were given with sentence(s). From the speech, fundamental frequency measurement (F_0) was carried out. At this stage what is being accomplished is the simplification or stylization by removing the details of F_0 , which are deemed irrelevant in producing a close copy of the original speech. It is from this stylization that the initial (basic) tone intensity, the final intensity, the highest intensity, the lowest intensity, and the intensity range are obtained. Based on statistical summation using the SPSS program (Statistical Package for Social Science) will obtained the significance number of each analyzed data.

The data were obtained from the speech experimental production on the Javanese language imperative mode. The technique used in data collection was the purposive sampling technique. The respondents being contacted for the objectives of the study were the respondents classified into their gender variables (male and female) and age groups 17 years old - 24 years old, 25 years old- 49 years old, and 50 years old and over.

The data used in this study are prosodic characteristics of speech on the imperative mode of Javanese language. The data was collected by recording the respondents' use of Javanese language. The data was the imperative sentences with specific pattern of Subject-Predicate (S-P) *Dik ngombe* 'sister/brother drink' Subject- Predicate- Object (S-P-O) *Dik ngombe susu !* 'sister/brother, have a drink the milk!', dan Subject- Predicate- Object Adverbs (S-P-O-K) *Dik ngombe susu neng pawon !* 'sister/brother, have a drink the milk at the kitchen!

The numbers obtained from the results of stylization were then analyzed through statistical analysis. In part of seeking out significance of the statistical test, it is used the significance number. Statistical test results are the so called significant if the significance number is smaller or equal to 0.05. This figure shows that of the one hundred data analyzed, only 5% did not support it. In contrast 95% of the amount of data supports. The significance value of 0.05 indicates a significant difference, while the significance value of 0.01 is usually called very significant, very real, or very meaningful (Sudjana, 1989, p.230).

IV. RESULT AND DISCUSSION

In this discussion several hypotheses were proposed:

1. H_0 = There is no difference in intensity on the gender variables
 H_1 = There is a difference in intensity on the gender variables
2. H_0 = There is no difference in intensity on the age variable
 H_1 = here is a difference in intensity on the age variable

Information on the summation of initial intensity (IA), final intensity (IF), highest intensity (IT), lowest intensity (IR), and intensity range (JI) in desi Bell (dB) of imperative sentence can be seen in the following description.

Table 1 follows the number of significance based on statistical summations in the imperative sentence with S-P pattern.

Table 1: The significance of male and female’s imperative model of sentences with S-P pattern in IA, IF, IT, IR, and JI

	IA (dB)	IF (dB)	IT (dB)	IR (dB)	JI (dB)
Male	81.6514	78.0509	83.6377	58.2018	25.4359
Female	82.3371	75.9235	83.5612	65.3047	18.2565
Significance	0.676	0.232	0.906	0.035	0.038

The data in above table informs us that both female and male speeches in imperative S-P pattern reflects a significant difference in IR ($p = 0.035$), and in JI ($p = 0.038$). Significantly different because the p value at both points is smaller than 0.05. Thus H_0 at these three points is rejected. While in IA, IF, and IT female and male speeches were insignificantly different ($p > 0.05$). This is visually realized in the following chart.

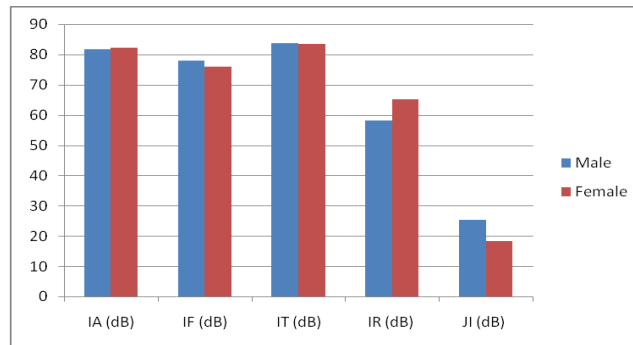


Figure 1: The comparison between male and female’s imperative model of sentences with S-P pattern in IA, IF, IT, IR, and JI

By applying similar method, we obtained significance values at initial intensity (IA), final intensity (IF), highest intensity (IT), lowest intensity (IR), and range intensity (JI) of the imperative S-P-O pattern. The summation of such results describeable on table 2.

Table 2: The significance of male and female’s imperative sentences with S-P-O pattern in IA, IF, IT, IR, and JI

	IA (dB)	IF (dB)	IT (dB)	IR (dB)	JI (dB)
Male	80.1283	75.4172	83.4878	56.4972	26.9906
Female	82.2590	76.8990	83.6540	58.0255	25.6285
Significance	0.172	0.407	0.839	0.627	0.627

The table above shows that male and female speech has initial intensity, final intensity, highest intensity, lowest intensity, and the same range of intensity. This is indicated by the value of the significance value above 0.05. This number of significance marks the absence of significant differences in the intensity of male and female speech. This review is visually described in the following chart.

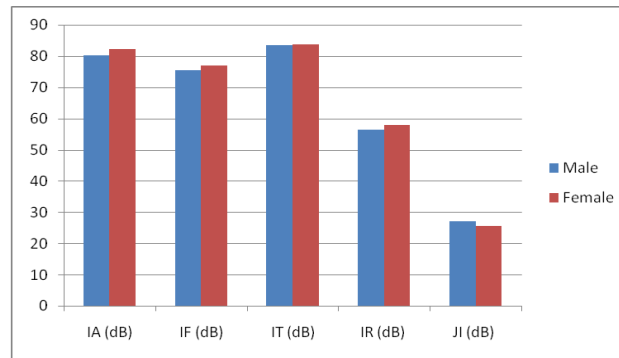


Figure 2: The comparison between male and female’s imperative sentences with S-P-O pattern in IA, IF, IT, IR, and JI

The significance value of initial intensity (IA), final intensity (IF), highest intensity (IT), lowest intensity (IR), and intensity range (JI) in the imperative sentence patterned S-P-O-K as described in below table 3.

Table 3: Significance of IA, IF, IT, IR, and JI imperative sentences with S-P-O-K pattern produced by male and female

	IA (dB)	IF (dB)	IT (dB)	IR (dB)	JI (dB)
Male	81.6579	71.9705	83.5742	53.4221	30.1521
Female	82.9568	73.4195	83.8037	60.1032	23.7005
Significance	0.161	0.504	0.761	0.014	0.015

The significance value below 0.05 in above table indicates a significant difference. This marks the refusal of H0 and accepts H1. This condition occurs in IR (p = 0.014) and JI (p = 0.015) imperative sentences of S-P-O-K spoken by men and women. On the other hand, IA, IF, and male and female IT speech have a significance value > 0.05, meaning that at this point H0 is accepted and H1 is rejected. The following figure illustrates comparison of the significance of the initial intensity (IA), final intensity (IF), highest intensity (IT), lowest intensity (IR), and intensity range (JI) of the S-P-O-K imperative sentence.



Figure 3: The comparison between male and female’s imperative sentences with S-P-O-K in IA, IF, IT, IR, and JI

Magnitudes of significance between the age groups' imperative sentence with S-P patterns in IA, IF, IT, IR, and JI, as displays in following table

Table 4: The significance between the age groups' imperative sentences with S-P pattern in IA, IF, IT, IR, and JI

	IA (dB)	IF (dB)	IT (dB)	IR (dB)	JI (dB)
17-24 years old	82.0329	74.7057	83.2000	60.0229	23.1771
25-49 years old	81.1474	78.1284	83.4505	58.9321	24.5184
50 years old and over	83.0792	76.9569	84.0469	65.4423	18.6046
Signification	0.571	0.372	0.601	0.218	0.314

From table 4, this can be further explained that there is no difference in the speech related to IA, IF, IT, IR, and JI considering all the significance magnitude of the threshold value is above 0.050. A comparative picture of speech relatization in this case is shown in Figure 4.

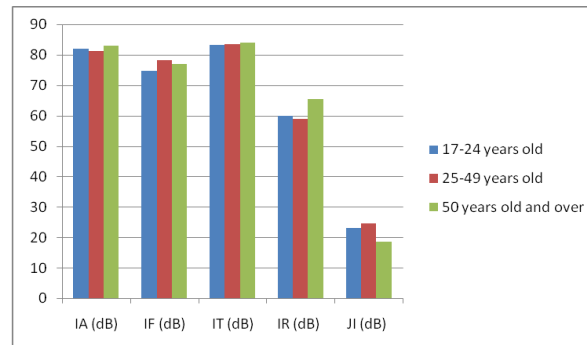


Figure 4: The comparison between the age groups' imperative sentences with S-P pattern in IA, IF, IT, IR, and JI

The following table shows significance values of the initial intensity (IA), final intensity (IF), highest intensity (IT), lowest intensity (IR), and intensity range (JI) of S-P-O imperative sentences.

Table 5: The significance between age groups' imperative sentences with S-P-O pattern in IA, IF, IT, IR, and JI

	IA (dB)	IF (dB)	IT (dB)	IR (dB)	JI (dB)
17-24 years old	83.9875	75.7238	84.3838	55.7125	28.6713
25-49 years old	79.3863	76.2906	83.0775	57.8031	25.2744
50 years old and over	81.8150	76.3607	83.6821	57.6364	26.0457
Signification	0.067	0.963	0.474	0.873	0.658

Information obtained from table 5 proves that all the numbers of significance is related to IA, IF, IT, IR, and JI are categorized as insignificant values. This means that the existing value exceeds the enacted significance threshold value of 0.05, which means that there is no difference (H_0 is accepted). While the results were all above 0.05. The following figure illustrates comparative language production which take place in IA, IF, IT, IR, and JI.



Figure 5: The comparison between the age groups' imperative sentences with S-P-O pattern in IA, IF, IT, IR, and JI

The summation of the results of significance number for IA, IF, IT, IR, and JI describeable on table 6.

Tabel 6: The significance between the age groups' imperative sentences with S-P-O-K pattern in IA, IF, IT, IR, and JI

	IA (dB)	IF (dB)	IT (dB)	IR (dB)	JI (dB)
17-24 years old	81.4257	68.4614	82.5271	52.6129	29.9143
25-49 years old	82.9700	73.9940	83.8993	56.9253	26.9740
50 years old and over	82.0719	73.3294	84.0000	58.4256	25.5744
Signification	0.460	0.163	0.336	0.332	0.531

From table 6 above, the expressed speech intensity is indifferent ($p > 0.05$). All points (IA, IF, IT, IR, and JI) in the homogeneity test are classified as homogeneous data ($p > 0.05$), therefore the next test was to observe Games-Howell's test. From this test it is known that there is no difference in each point. The comparison of each point interpretable as in the following figure.

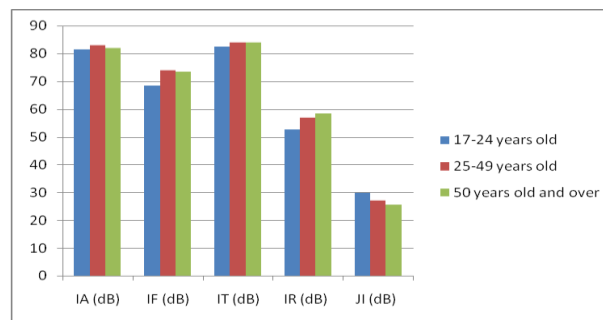


Figure 6: The comparison between the age groups' imperative sentence with S-P-O-K pattern in IA, IF, IT, IR, and JI

On the basis of such statistical analysis, it is known that male's sound pattern shows a greater range of intensity than the female. Intensity reflects differences between the highest and the lowest intensity. Male possess great intensity for biological reasons, since they were born with large body shape and stronger in stamina. Therefore, the male tend to speak in a louder voice or with a speech that reflects high intensity compared to the female's.

The statistical analysis results of the three age groups (ages 17-24 years, ages 25 - 49 years, and ages 50 years over) above, can be generally inferred that those groups share a tendency of expressing sentences with similar intensities. They interact with the same language. Thus, this age group express sentences with intensity that remains relatively well-maintained"

V. CONCLUSION

The results of intensity analysis in the case of imperative or command sentences, reflects command. It is known that language patterns of both S-P, S-P-O-and S-P-O-K sentences were spoken by male and female, all of which displayed substantial differences in terms of the intensity ranges use. The male intensity is greater than the female's. On the other hand, there is no difference in speech intensity in the age groups. The study of the Javanese language intensity needs to be undertaken as part of preserving the local language that gradually faces extinction. Having discovered the intensity pattern of Javanese language, Javanese speakers will consistently speak in Javanese on the basis of a correct and actual speech intensity.

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