International Journal of Research in Engineering and Science (IJRES)
ISSN (Online): 2320-9364, ISSN (Print): 2320-9356
www.ijres.org Volume 10 Issue 7 ǁ July 2022 ǁ PP. 519-524

Dialectical Variation For Vowels In Typical Malayalam Speaking Children

Dr. Satish Kumaraswamy, Jomin Joseph, Rakshitha S

Date of Submission: 05-07-2022 Date of acceptance: 19-07-2022

I. INTRODUCTION

Speech a skilled, complex human neuromotor function requires proper orchestration of articulators co-ordinated in time and space

(Gracco, 1994). Speech which is accomplished effortlessly by most of the persons requires a synchrony of over 70 different muscles of the respiration laryngeal and supra laryngeal speech mechanics. (Gracco,1990). Speech is the vocalized form of human communication. It is a complex, highly skilled motor act, the refinement and stabilization of which continues well into adolescent years (Kent, 1976).

Prosody plays a very important role in understanding speech. It is important to convey the proper message to the listener. Sometimes speech without prosody is meaningless. Prosody refers to the temporal patterns of undulation in tone, tempo and loudness which constitute the "tone' of the spoken message. Prosodic features share regularly in carrying meaning.

Culture is a cultivated behaviour; that is the totality of the persons learned, accumulated experience which is socially transmitted, or more briefly, behaviour through social learning. Hence a culture has a vast influence on an individual's language which is evident as the specific intonation patterns; vocabulary and distribution of grammatical and phonological elements are observable along the parameters of different regions, community, and religion known as dialects.

Prosody depends on dialects. Each dialect has different stress, intonation and rhythm variations. Dialectical variations are of an interest to speech language pathologists for a long time. There are at least five main regional dialects of Malayalam and a number of communal dialects. Many words have been borrowed from Sanskrit's. There are 37consonants and 16 vowels in the script.

Clopper and Tamati (2014) analysed Effects of local lexical competition and regional dialect on vowel production. Results revealed a significant interaction between regional dialect and local lexical competition on the acoustic distance within each vowel pair

Jacewicz and Fox (2011) studied regional dialect variation in the vowel systems of typically developing 8- to 12-year-old children and the result showed systemic vowel changes, significant monophthongization of vowels and greater formant movement in diphthongs and acoustic results provide evidence for regional distinctiveness in children's vowel systems.

Vaheed and Subba Rao (2011) compared the acoustic characteristics of vowels in adult Malayalam speaking individuals with different dialects. The result indicated that the regional varieties are of most important in the study of vowels. Differences were seen between as well as within speech communities.

Zachariah and Kumaraswamy(2013) reported acoustic characteristics of retroflex in adult Malayalam speaking individuals with different dialects and the results indicates that significant values across all parameters and result were mentioned as having high significant difference.

Dialectical studies will enrich the culture. Malayalam is classified as a south Dravidian language which consists of at least five main regional dialects and a number of communal dialects. In India the study on regional dialect variation in the vowel systems are not frequent.

Acoustic comparison of confused vowels may be more useful in studying intelligibility of normal and disordered speech than in measuring vowel space area. This study helps to create a baseline for analyzing and comparing various voice characteristics of vowels in typical Malayalam speaking children across different dialects.

Awan and Bressmann (2015) investigated nasalance in speakers from six different dialectal regions and found that the effect sizes for dialect were moderate in strength and accounted for approximately 7%-g% of the variation in nasalance. Increased differences in nasalance tended to occur between speakers from distinctly different geographical regions, with the highest nasalance across all passages observed for speakers.

Jacewicz and Fox (2015) investigated Intrinsic fundamental frequency of vowels is moderated by regional dialect. This paper provides evidence from regional variation in American English that FO difference between high and low vowels is, in part, controlled and varies across dialects. The sources of this FO control are socio-cultural and cannot be attributed to differences in the vowel inventory size. The socially motivated enhancement was found only in prosodically prominent contexts.

Jacewicz and Fox (2014) studied how linguistic knowledge interacts with indexical knowledge in older children's perception under demanding listening conditions created by extensive talker variability. And the results showed that identification rates were higher for responses to talkers from the same dialect as the listeners and for female speech.

Listeners were sensitive to systematic positional variations in vowels and their dynamic structure (formant movement) associated with generational differences in vowel pronunciation resulting from sound change in a speech community.

Fridland and Kendall (2014) investigated in Durational and spectral differences in American English vowels: dialect variation within and across regions results point to a positive correlation between spectral overlap and vowel duration for Northern and Western speakers, suggesting that both F1/F2 measures and durational measures are used for disambiguation of vowel quality. The findings also indicate that, regardless of region, a durational distinction maintains the contrast between the low back vowel classes, particularly in cases of spectral merger. Surprisingly, Southerners show a negative correlation for the vowel shifts most defining of contemporary Southern speech, suggesting that neither spectral position nor durational measures are the most relevant cues for vowel quality in the South.

Copper and Tamati (2014) studied the Effects of local lexical competition and regional dialect on vowel production, Results revealed a significant interaction between regional dialect and local lexical competition on the acoustic distance within each vowel pair. Local lexical contrast led to greater acoustic distance between vowels, as expected, but this effect was significantly enhanced for acoustically similar dialect-specific variants. These results were independent of global neighbourhood density, suggesting that local lexical competition may contribute to the realization of sociolinguistic variation and phonological change.

Wagner and Clopper (2014) investigated in Children's perception of dialect variation. Results showed that children could successfully categorize only with a Home Vs. Second-Language dialect contrast, but could reliably link cultural items with either a Home Vs. Second-

Language or a Regional Vs. Second-Language dialect contrast. These results demonstrate five- to six-year-old children's developing perceptual skill with dialect, and suggest that they have a gradient representation of dialect variation. Wright and Souza (2012) examine the effect of regional accent variation on vowel identification. And the results showed acoustically that local vowels differed from standardized vowels, and distance varied across vowels. Perceptually, there was a robust effect of accent similarity such that identification was reduced for vowels at greater distances from local values. Indian studies on language development are very limited. Most of the studies include Masters Dissertation with a few Doctoral and postdoctoral research studies.

Zachariah and Kumaraswamy (2013) did compared acoustic characteristics of retroflex in adult Malayalam speaking individuals with different dialects and the results indicates that significant values across all parameters and result were mentioned as having high significant difference.

Vaheed and Subba Rao (2011) compared the acoustic characteristics of vowels in adult Malayalam speaking individuals with different dialects. The result indicated that the regional varieties are of most important in the study of vowels .Difference were seen between as well as within speech communities.

Punnose (2011) did a study to on auditory acoustic characteristics of the rotes in Malayalam. Result of the auditory and acoustic analysis showed that the two rhotics differed mainly in their tongue configuration (laminal and advanced Vs. apical and retracted) resonance characteristics (clear Vs. dark) and surrounding vowel quality (advanced and closer Vs. retracted and open) F2 was found to be the most robust distinguishing acoustic cue.

II. NEED OF THE STUDY

Dialectical studies will enrich the culture. Malayalam is classified as a south Dravidian language which consist at least five main regional dialects and a number of communal dialects. In India the study on regional dialect variation in the vowel systems are not frequent.

Acoustic comparison of confused vowels may be more useful in studying intelligibility of normal and disordered speech than in measuring vowel space area.

The present study helps to create a baseline for analyzing and comparing various voice characteristics of vowels in typically developing Malayalam speaking children across different dialects.

AIM OF THE STUDY

The aim of the study was to report the dialectical variation for vowel in typical Malayalam speaking children in age range of 8-12 years.

III. METHODOLOGY

The aim of the study was to report the dialectical variation in typically developing Malayalam speaking children in the age range of 8 to12 years.

SUBJECTS

60 typical Malayalam speaking school going children in the age range of 8-12 years where further grouped as 20 from Trivandrum, 20 from Thrissur and 20 from Kasargod belonging to urban areas were participated in the present study.

INCLUSION CRITERIA

- Malayalam as first language
- Age range of 8-12 according to school register
- Attending Malayalam medium school

EXCLUSION CRITERIA

Subjects with no history of speech, language, neurological and hearing abnormality.

RECORDING ENVIORNMENT

The entire session was audio recorded using PRAT software
(VERSION 5:3.56) Boersama & Weenink (2007) through an external microphone attached to a standard laptop. The recording environment was quiet room in the school building.

DATA COLLECTION

Each individual was asked to read out the words with vowels in the medial position which were presented graphically. When the speaker made a mistake, the interviewer interrupted the computer program and asked the speaker to repeat the task. The appropriate response made by the speaker was recorded in the software.

ANALYSIS

To get an impression of the specific effect of the speaker's regional background, the parameters like F0, F1, F2, F3, F4, HR, litter and Shimmer in each vowel of the audio recorded samples were analysed and tabulated.

IV. RESULTS AND DISCUSSION

In the present study, acoustic measures of parameters like F0, F1.F2, F3, F4, HR, Jitter and Shimmer of vowels were obtained from 60typically developing Malayalam speaking children in the age range of 8-12 years from three different regional dialects of Kerala Multiple cross comparisons were done among different groups. The results indicate that the regional varieties of language are of most important in the study of vowels.

	Place		
	TVM-Thrissur	TVM-Kasargod	Thrissur-kasargod
	p value	p value	p value
/a/	.003	.829	.000
/a:/	.002	.649	.000
/i/	.006	.935	.000
/u/	.001	.291	.001
/u:/	.000	.234	.001
/e/	.003	.499	.009
/e:/	.699	.144	.000
/o/	.019	.433	.001
/o:/	.030	.607	.002
/^/	.008	.402	.019
/ai/	.011	.589	.020
/au/	.025	.978	.033
/ei/	.017	.449	.000
/ua/	.024	.387	.001

From the above table 1, the FO values for vowels was compared between Trivandrum, Thrissur and Kasargod. Dialectal significant result was obtained for le:/(p=0.19), /^/(p=0.011), /ai/(p=0.025), /au/ (p=0.017), /ei/(p=0.015) and /ua/ (p=0.017). And high significant result was seen for /a/ (p=0.003), /a:/(p=0.002), /1/(p=0.006), /i:/(p=0.001).
/u/ (p=0.000) and /u:/(p=0.003) And no significant difference was seen for le/ (p=0.066) and /o/ (p=0.30).

Comparison between Thrivandrum and Thrissur
From the above table, when scores were compared across Thrivandrum Vs Thrissur, vowels yielding high significant scores are /al (p-0.003), /a:/ (P-0.002), /1/(p-0.006), /1:/(p-0.001), /u (p-0.000)and/u:/(p=0.003).
Where as significant scores were seen for ¡N/(p=0.011), /au/(p=0.017), /ei/(p=0.015), /ua/(p=0.017), /e/(P-0.066),lai/(p=0.025), /e:/(P-0.019) and /o:/ (P=0.008).

Comparison between Trivandrum and Kasargod
From the above table, when scores were compared across Trivandrum Vs Kasargod. There was no significant scores was seen for /a/ (p=0.829), /a:/ (p=0.646), /i/ (p=0.935), /i:/ (p=0.291), /u/ (p=0.234),/u:/ (p= 0.499), /e/(p=0.144), /ei/ (p=0.433), /o/ (p=0.000), /o:/ (p=0.402),/N/ (p=0.589),/ai/(p=0.978),/au/(p=0.449),/ei/(p=0.387)/ua/(p=0.344).

Comparison between Thrissur and Kasargod
From the above table, when scores were compared across
Trivandrum Vs Kasargod, vowels yielding high significant scores were/al (p=0.000), /a:/ (p=0.000), /i/ (p=0.000), /1:/ (p=0.001), /hu/(p=-0.001), lau/(p=0.000), /ei/(p=0.001), /ua/(p=0.002), /e/(p=0.000), /e:/ (p=0.001)and /o/(p=0.002) were as significant scores were seen for /^ (p=0.020)./4:/(p=0.009), /0:/(p=0.019), /a/ (p=0.033) and /0:/(pF0.019).

	Place		
	TVM-Thrissur	TVM-Kasargod	Thrissur-kasargod
	p value	p value	p value
/a/	.001	.009	.083
/a:/	.003	.372	.000
/i/	.892	.516	.978
/u/	.055	.037	.372
/u:/	.066	.646	.279
/e/	.040	.871	.042
/e:/	.000	.685	.000
/o/	.705	.122	.017
/o:/	.000	.204	.000
/^/	.002	.449	.000
/ai/	.000	.185	.006
/au/	.001	.006	.685
/ei/	.224	.516	.588
/ua/	.042	.935	.003

From the above table 2, the F1values for vowels was compared between Trivandrum, Thrissur and Kasargod. Dialectal significant result was obtained for /u:/(p=0.40), /ei/(p=0.042) and /ua/ (p=0.045). And high significant result was seen for /a/ (p=0.001), /ai:/(p=0.003), /e/(p=0.000), /o/(p=0.000), /o:/(p=0.002), / (p=0.000) and /ai/(p=0.001). And no difference was seen for /i/(p=0.892), /i:/(p=0.055), significant
/u/ (p=0.066), /e:/(p=0.705) and /ua/ (p=0.045).

Comparison between Trivandrum and Thrissur
From the above table 2, when scores were compared across Trivandrum Vs Thrissur vowels yielding high significant scores like /al (p-0.001), /a:/ (p=0.003), /e/(P=0.000), /o/ (p=0.000), /0: / (p=0.002), /^/(p=0.000) and/ai/(p=0.001) where as significant scores were seen for /i/(p=0.055),/u/ (p=0.066), /u:/(p=0.040), /ei/(p=0.042), /ua/ (p=0.042). Whereas no significance were seen for i/(p=0.892), e:/ (p=0.70S) and /au/(p=0.224).

Comparison between Trivandrum and Kasargod
From the above table 2, when scores were compared across Trivandrum Vs Kasargod, vowels yielding high significant scores like /a/ (p=0.009) and /ai/(p=0.006).
Whereas significant score was seen for/:/(p=0.037). Where as no significance were seen for/a:/ (p=0.372),/i/(p=0.516), /u/ (p=0.646),/u:/ (p=0.871), /e/ (p=0.685), /e:/(p=0.123),/o/ (p=0.204), /o:/ (p=0.449), /^ (p=0.185), /au/ (p=0.516), /ei/ (p=0.705)and /ua/(p=0.935).

Comparison between Thrissur and Kasargod

From the above table 2, when scores were compared across Thrissur Vs. Kasargod vowels yielding high significant scores like /a:/(p=0.000),/e/(p=0.000), /o/(p=0.000), /o:/(p=0.000), //(p=0.006) and /ei/(p=0.003). Whereas significant score was seen for /a/ (p=0.083), /u:/ (p=0.042) and /ua/(p=0.025). Where as no significance were seen for /i/(p=0.978),
/u/ (p=0.372), /e:/ (p=0.117), /ai/ (p=0.685), and /au/(p=0.588).

V. DISCUSSION

The present study was conducted to know the regional dialect variation of vowels in typically developing Malayalam speaking children at the age range of 8-12 years from 3 different dialects of Kerala such as TRIVANDRUM, THRISSR and KASARGOD. The results showed that there is a significant difference between each vowel among three different dialects.

Different acoustic parameters such as FO, F1, F2, F3, F4, HUN, Jitter and Shimmer of all Malayalam vowels in the medial position were analysed All the parameters across different dialect as well as pair wise comparison across different dialects were also analysed. Results indicated that most of the acoustic parameters were highly significant and some were significant and very few showed no significant difference.

Pair wise comparison shows more significant difference across Thrivandrum- Thrissrur,

Thrivandrum-Kasargod and Thrissur Kasargod. These results indicate that the dialectical varieties of language are of most importance in the study of vowels. This study strengthens the assumption that the variation in the different dialects is perceived in the vowels. The result showed differences between as well as within speech communities.

Overall, it seems that dialectical differences were found for all parameters such as FO, F1, F2, F3, F4, H/N, Jitter and Shimmer. The result indicated that, the vowels of Malayalam show more regional variation in all the three areas. Also there was sufficient regional variation present in the measurements of the formant frequencies to allow community.

These studies have provided the field of speech perception with new insights from disciplines like sociolinguistics, whose concentration is linguistic variation and change; showing the importance of the long ignored phonetic variability and bringing a new approach to speech perception. Talkers are judged as members or intrude of a dialects community depending on the speech characteristics they do or do not share. Thus, the study of the perception categorization of dialect variation permits us to learn more about how members of a speech community perceive, classify and distinguish their own dialect from different ones as well as which dialects they are able to distinguish as different or similar to their own.

VI. SUMMARY AND CONCLUSIONS

This study describes the variation of the acoustic characteristics of vowels in three different regional varieties across Kerala. A language's vowel system is better characterized when its description includes regional verities. It is known that languages differ in the extent to which they use temporal information to distinguish vowels. Numerous studies have shown that listeners are sensitive to durational differences, and under certain circumstances a change in vowel duration alone can alter the identity of a vowel. Simply listening to people talk makes it clear that much of the variation in dialects is perceived in the vowels. Therefore a logical place to look for acoustic difference among dialects is in vowel spaces. In recent years it has become generally accepted that language's vowel system is better characterized when its description include regional than when it includes only a single idealized set of acoustic-phonetic characteristics. Many aspects of speakers' voice will influence the listeners perception such as dialect.

Results revealed consistent variation due to region of origin, particularly with respect to the production of vowels. Dialects are one of the challenging aspects in the area of assessment in speech Language Pathology. This study provides an insight to the area of assessment.

Further research can be focussed on creating norms of acoustic characteristics of different speech sounds in various regional dialects.

These studies have provided the field of speech perception with new insights from disciplines like sociolinguistics, whose concentration is linguistic variation and change; showing the importance of the long ignored phonetic variability and bringing a new approach to speech perception. Talkers are judged as members or intrude of a dialects community depending on the speech characteristics they do or do not share. Thus, the study of the perception categorization of dialect variation permits us to learn more about how members of a speech community perceive, classify and distinguish their own dialect from different ones as well as which dialects they are able to distinguish as different or similar to their own.

Limitation of the present study

The small sample size was taken, the subjects were selected only from urban area and the stimulus used was only the vowels in the medial position.

Future implications

- To include more number of subjects as well as to include various dialectal communities.
- Dialectical variation for vowels in initial, medial and final positions as well as for consonants can be studied extensively.
- Comparison can be made between rural and urban population.

REFERENCES

[1]. 'Awan, S.N., and Bressmann, T. (2015). Dialectical Effects on Nasalance: A Multicenter: Cross-Continental Study. Journal of Speech, Language, and Hearing Research, 58, 69-77.
[2]. Clopper, C. G., and Tamati, N. (2014). Effects of local lexical competition and regional dialect on vowel production. Journal of Acoustic Society of America, 136(1), 1-4.
[3]. Jacewicz ,E., and Fox, R. A.(2010) .Regional Dialect Variation in the Vowel Systems of Typically Developing Children. Journal of
[4]. Speech Language, and Hearing Research, 54, 448-470.
[5]. Jacewicz, E., and Fox, R. A. (2015). Intrinsic fundamental frequency of vowels is moderated by regional dialect. Journal of Acoustic Society of America, 138(4), 405-10.
[6]. Punnose.R. (2010).An auditory and acoustic study of liquids in Malayalam. Newcastle University, 1-301.
[7]. Vaheed, M.R. (2009). Comparison of acoustic characteristics of vowels in adult Malayalam speaking individuals with different dialects. Unpublished Dissertation, University of Mangalore.
[8]. Wagner, L., and Clopper, C.G. (2014). Children's perception of dialect variation. Journal of Child Language, 41(5), 1062-84.
[9]. Zachariah, D. (2011) .Comparison of acoustic characteristics of retroflex in adult Malayalam speaking individuals with different dialect. Unpublished Dissertation, University of Mangalore.
[10]. Boersama., and Weenink, D. (2007). PRAAT (VERSION: 5.3.56) Institute of phonetic sciences University of Amsterdam.

Online references Retrieved from:

Introduction about speech retrieved from
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4056257/
Language spoken retrieved from http://www.languageinindia.com/
Language history retrieved from
http://onlinelibrary.wiley.com/doi/10.1111/j.1468-
2303.2011.00 574.x/abstract
Language Variation and External Influence retrieved from
http://www.ciil-lisindia.net/Malayalam/Malay va