A Comparative Study of Rate of Speech in Different Dialects in Malayalam [Kannur, Eranakulam, Palakkad]

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Abstract: *Speech is the most efficient and frequently used mode of language expression. Speech rate is assumed to reflect the speed at which an individual executes articulatory movements for speech production. Speech rate is typically estimated from samples of connected speech spoken spontaneously or read. Rate of speech is an important variable in the assessment and treatment of fluency disorder. It can be affected by a number of factors which include gender, age, language, dialects, psychological aspects and physical aspects. It may also depend upon the culture and linguistic structure. Language encodes the values and norms in a given society. The relationship between language and culture is deeply rooted. A dialect represents a distinct variation of a major language that is spoken by an identifiable subgroup of those people using that language. The variation might be phonological, lexical, or grammatical. Malayalam is a Dravidian language in India, spoken by peoples in the state of Kerala with a number of Dialect. Dialects in Malayalam can be broadly classified into three. They are Travancore dialect, Central dialect, Northern dialect. In Malayalam there are five main regional dialects and many number of communal dialects. Each dialect has different variation in stress, intonation and rhythm. The variations in language can affect rate of speech. The aim of study was to compare the speech rate in different dialects of Malayalam between the age-range of 15-55years. The result indicated significant difference in the rate of speech across the three dialects. The result of the present study, profiles the average rate of speech of young adults and older adults which can be used for the assessment and diagnosis for fluency disorders.*

Keywords: Rate of speech, Dialectal Variation, DDK, Oral Reading, Picture Description, Speech rate meter

1. Introduction

Speech is the most efficient and frequently used mode of language expression. Speech is a set of verbal codes; the commonest codes are spoken words. Words are combined in specific way to convey meaning. Speech is produced with the help of speech mechanism structures like tongue, jaw, lips, etc. in a complex coordination with the nervous system. Speech based on the language is useful. Otherwise it may sound meaningless. [RAO, Subba T A, (1992)]. Fluency is an important factor of speech and it is the effortless production of long, continuous utterances at a rapid rate (Starkweather 1981)

Speech rate is assumed to reflect the speed at which an individual executes articulatory movements for speech production (Crystal & House, 1982, 1990; Fonagy & Magdics, 1960; Gracco & Abbs 1988). Speech rate is typically estimated from samples of connected speech spoken spontaneously or read. The sample is analyzed acoustically and the resulting unit of measure is either words per minute (wpm) or syllables per minute (spm). The spm measure is thought to represent a more precise estimate of speaking rate because connected speech sample often contain words of varying syllabic length (Carrol, 1967; Pimsleur, Hancock. & Furey, 1977)

Rate of speech data are useful for identifying and treating speech timing disorder (Hall, K.D., Amir, O., &Yairi, E.1999)Rate of speech is an important variable in the assessment and treatment of fluency disorder. It can be affected by a number of factors which include gender, age, language and dialects, psychological aspects and physical aspects.It may also depend upon the culture and linguistic structure. Language encodes the values and norms in a given society. The relationship between language and culture is deeply rooted. Culture is the product of the human mind and it is defined, propagated and sustained through language. The regional differences within these cultural domains are likely to be reflected in dialect differences.

A dialect represents a distinct variation of a major language that is spoken by an identifiable subgroup of those people using that language. The variation might be phonological, lexical, or grammatical. Malayalam is a Dravidian language in India, spoken by peoples in the state of Kerala with a number of Dialect. Dialects in Malayalam can be broadly classification into three. They are,

1) Travancore dialect.
2) Central dialect.
3) Northern dialect.

In Malayalam there are five main regional dialects and number of communal dialects. Each dialect has different variation in stress, intonation and rhythm. The variations in language can affect rate of speech.

Savithri and Jayaram (2004) investigated the rate of speech across Dravidian language and result showed that Malayalam has higher rate of speech as compared to Kannada, Telugu and Tamil.

George and Kumaraswamy (2016) studied dialectal variation for vowels in typical Malayalam speaking children. The result showed that there is significant difference between each vowel among three different dialects.

Zachariah and Kumaraswamy (2013) compared acoustic characteristics of retroflex on adult Malayalam speaking individual with dialects. Result revealed that significant values across all parameters and result were mentioned as having high significant difference.

Ganesh and Karanth (2004) compared rate of speech in adolescent Malayalam speakers between three age groups (10-12, 13-15 and 16-18 years) The result indicated that speech rate varied significantly across the ages for DDK and result reading passage.

Prem and karanth (2003) did a comparative study of rate of speech in south Indian languages. The result indicated that for the tasks, reading passage and picture description, Telugu speaking subjects were faster and for DDK Malayalam subjects were faster.

The studies in Dialectal variation on speaking rate in Malayalam are very rare, even though dialect is an important variable that affect rate of speech. The current study is to compare the rate of speech in different dialects of Malayalam (KANNUR, ERNAKULAM, PALAKKAD) between the ages 15-55 years to develop a normative value and for arriving at decision of normal versus abnormal rate.

2. Methodology

Aim
The aim of study was to compare the speech rate in different dialects of Malayalam between the age-range of 15-55years.

Subjects
The present study was conducted on a group of normal Malayalam speaking adolescents, young adults and adults in the age ranges 15-55 years.

Inclusion Criteria
The subject should be native speaker of Malayalam between the age-range 15-55 years, should be medically fit.

Exclusion Criteria
The subject with significant history of Speech, Language, Fluency, Neurological and Hearing abnormality.

Procedure
The tasks used to draw the samples are:
Task1: Oral reading
Task 2: Picture description

Task 3: Diadochokinetic rate

Oral Reading: A standardized Malayalam passage was used to elicit reading samples from the subjects. The subjects were instructed to read the passage

Picture Description: A standardized picture, which shows a number of events was used and subject were asked to describe the picture presented to them.

Diadochokinetic Rate: The subjects were instructed to utterance the syllables /pa/, /ta/, and /ka/ in combination asked fast possible for 5 second. The total number of syllable counted and the number of syllable produced in 1 second, where then calculated by dividing the total number syllable by 5. The entire samples were recorded using an app called speech rate meter.

3. Results and Discussion

The current review aimed to compare the rate of speech in various dialects of Malayalam. Kannur, Palakkad and Ernakulum were the dialects taken to compare the rate of speech .For the given three speech tasks, the rate of speech was determined in 60 grown-ups in the age group of 20-55years.The study was basically carried out to develop a normative value for rate of speech between the ages 20-55 for arriving at decisions of normal versus abnormal rate.

The given speech tasks included oral reading, picture description and DDK. Rate of speech was determined as far as syllables each second. Table 1 to 9 shows the rate of speech for various tasks in three dialects. Average rate of speech was calculated to get a normative data for each dialect.

ANOVA was utilized to track down the significant difference for rate of speech between various dialects. Paired't'test was performed, since in oral reading, DDK and in picture description significant difference was found.in paired 't' test, the rate of speech was compared between pairs of two dialects. The comparison was made between Ernakulam versus Kannur, Kannur versus Palakkad, Palakkad versus Ernakulum.

A) Comparison of rate of speech between different dialects.
To compare the rate of speech and to find the significant difference ANOVA was done.

Table 1: Showing f value and significance among languages for three tasks.

Kannur / Palakkad / Ernakulam		Table value	"F" value	Significance
Rate of speech	Oral reading	4.45	5.03	"F" calculated > F(0.5) $p < 0.05$ (Significant)
	DDK	4.45	11.68	"F" calculated > F(0.5) $p < 0.05$ (Significant)
	Picture description	4.45	14.29	"F" calculated > F(0.5) $p < 0.05$ (Significant)

The above table indicates that for reading task, picture description, DDK, there is significant difference for different dialects. Hence, paired `t´ test were done to find out significant difference between pairs of two dialects.

B) Comparison of rate of speech between pairs of dialects

Table 2: Showing 't' test 'p' values and significance between pairs of languages for oral reading

Comparison between dialects (Rate of speech)	Variables	"t" test	Table value	Significance
Kannur / Palakkad	Oral reading	2.367	2.021	Significant (p < 0.05)
Ernakulam / Kannur	Oral reading	0.763	2.021	Not significant (p > 0.05)
Palakkad / Ernakulam	Oral reading	1.399	2.021	Not significant (p > 0.05)

The result of paired t test for oral reading indicate that there is significant difference in rate of speech between Kannur and Palakkad and no significant difference between Ernakulum and Kannur, Palakkad and Ernakulum

Table 3: Showing 't' test 'p' values and significance between pairs of languages for DDK

Comparison between dialects (Rate of speech)	Variables	"t" test	Table value	Significance
Kannur / Palakkad	DDK	0.657	2.021	Not significant (p > 0.05)
Ernakulam / Kannur	DDK	0.657	2.021	Not significant (p > 0.05)
Palakkad / Ernakulam	DDK	0	2.021	Not significant (p > 0.05)

The result of paired t test for DDK indicate that there is no significant difference in rate of speech across different dialects

Table 4: Showing 't' test 'p' values and significance between pairs of languages for picture description

Comparison between dialects (Rate of speech)	Variables	"t" test	Table value	Significance
Kannur / Palakkad	Picture description	5.493	2.021	Significant (p < 0.05)
Ernakulam / Kannur	Picture description	0.146	2.021	Not significant (p > 0.05)
Palakkad / Ernakulam	Picture description	4.234	2.021	Significant (p < 0.05)

The result of paired t test for picture description indicate that there is significant difference in rate of speech across Kannur and Palakkad, Palakkad and Ernakulum, there is no significant difference between Ernakulum and Kannur .Among them Kannur and Palakkad found to be highly significant.

4. Discussion

The current study was aimed to study and compare rate of speech and also to find out the normative data for the age group 20-55 years in different dialects of Malayalam. The result indicates that speech rate varied significantly across the ages for oral reading and picture description. High significant differences were obtained for picture description and significant difference was obtained for DDK**.** The present study indicate that each dialect have different speaking rate. The result support the study done by Prem and Rao (2003) as there is a marked difference in rate of speech in different south Indian language.

5. Conclusion

Rate is the speed of speaking words per minute. Speech rate is typically estimated from samples of connected speech spoken spontaneously or read. It can be affected by a number of factors like age, gender, emotional state, dialects etc. The study was aimed to compare the rate of speech in Kannur, Palakkad and Ernakulum in order to develop a normative data for adults in the age range of 20-55years were selected. The tasks given were reading passages, DDK and picture description. The samples were recorded to measure the time and to count the number of words and syllable spoken using an app called speech rate meter. The rate of speech was highest for the task picture description followed by the task oral reading, the normative value of rate of speech range between 4-10 syllables per second. The result indicated significant difference in the rate of speech across the three dialects. The result of the present study, profiles the average rate of speech of young adults and older adults which can be used for the assessment and diagnosis for fluency disorders.

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