Pause Duration in Typical Speaking Malayalam Children

Kevin Sabu, MASLP, Dr. Satish Kumaraswamy, and Ferly Felix, MASLP
Dr. M.V. Shetty College of Speech and Hearing, Mangalore University
kevinsabu0000@gmail.com

==
Language in India www.languageinindia.com **ISSN 1930-2940 21:11 November 2021**
Kevin Sabu, MASLP, Dr. Satish Kumaraswamy, and Ferly Felix, MASLP
Pause Duration in Typical Speaking Malayalam Children   i
Language in India www.languageinindia.com ISSN 1930-2940 Vol. 21:11 November 2021

CHAPTER 1

INTRODUCTION

Speech as a complex highly skilled motor act of which the complexity and stabilization will continue to adolescent years. It comprises three components that are voice, articulation and fluency. (Kent, 1976)

Speech is the expression of ideas and thoughts by means of articulate vocal sounds or the faculty of thus expressing ideas and thoughts.

//http.wikipedia.com//

Fluency according to ordinary usage, is the ability to speak a second language rapidly and continuously and without any effort or thought. The term fluency is derived from the Latin for "fluere" describes what the listener perceives when listening to someone who is truly adopted at producing speech.

American Speech and Hearing (ASHA, 1999) Special Interest Division (SID) 4 defined Disfluency as Speech that exhibits deviations in Continuity, smoothness and ease of rate and effort.

Speaking Fluency is also an important component of communication competence because the ability of Speaking fluently can help the speaker to produce continuous speech without comprehension difficulties for the listener and to maintain the communicative ideas. Disruptions in the forward flow of speech may consist of:

- Repetitions: repeating of a syllable, sound, word, or phrase (e.g., "li-li-li-like this").

- Prolongations: holding onto a sound for an extended period of time (e.g., "llllike this").

- Blocks: no sound is produced then a "burst" of tension is released when the speaker if able to vocalize (e.g., "----like this").

- Interjections: extra words (e.g., "um,uh,like").

- Revisions: Speech is revised during and utterance (e.g., "I have to go…I need to go to the

1

store").

Pauses refer to silent intervals in the flow of speech and they may be voluntary, circumstantial, meditative or involuntary. Except Silent prolongation the remaining three types of pauses are not distinctive of stuttering (Wingate,1964). Similarly involuntary interjections can be identified either as an audible prolongation (a--) or repetition (-uh-uh-uh'). Presence of pauses and other hesitations can make a speaker disfluent but not necessarily a stutterer. There are two types of pauses.

Filled pauses and **Unfilled pauses** is an articulation by the speaker that may be encountered between utterances but is not to be mistaken for a lengthened sound within a word. The duration of filled pauses diminishes rapidly from kindergarten to second grade and then continues to diminish more gradually during the rest of the school years. Un introvel of silence in speech that is a pause not filled by hesitation form is unfilled pause. (Connel and Sabin, 1975). Silent pauses include intervals of silence within stretches of speech. However, not all silent intervals necessarily count as hesitation phenomena. Many of these silent pauses are simply juncture pauses (e.g., corresponding in writing) or pauses for articulatory reasons.

There are evidences to show that the child's speech becomes more and more continuous from age two (Yairi,1981)Kindergarten children's speech is two percent more disfluent than that of high school children (Connel and Sabin,1975) But there is a discontinuity that school children show (Starkweather,1987).

Sabin, Clemmer, O'Connell and Kowal (1979) indicated a sharp decrease in pause frequency and duration from kindergarten to 2nd grade and another, gentler decrease from 6th to 8th grade. Such results align nicely with age-dependent increases in speech rate age-dependent decreases in segmental durations and of course with the general increases in cognitive processing and language abilities that occur during childhood. He also added that the largest developmental difference in pausing occurs between kindergarten (5 and 6 years old) and 2nd grade (7 and 8 years old).

Cooper and Paccia-Cooper (1980) agreed with the assumption that silent pauses reflected time needed to plan upcoming language, they also noted that the pausing (and lengthening) were affected by preceding linguistic structure.

2

Nagapoornima (1990) studied the disfluencies in 12 Kannada speaking normal children between the age range of 3-4 years. Results indicated that these subjects had maximum number of unfilled pauses, followed by filled pauses, parenthetical remarks, repetitions and false starts. The disfluencies were more for the picture description task and they occurred more in initial position, except for parenthetical remarks, which were seen more in storytelling task and in the medial position. Disfluencies were also found to be more before content words especially nouns.

Redford (2013) suggest that differences in child and adult pausing reflect differences in child and adult language but not in the cognitive resources allocated to language production.

Verbal fluency is necessary for optimal communication and for normal social and occupational functioning. The information obtained from word fluency has been used to understand the vocabulary size, lexical knowledge, speed of lexical access in both healthy and disordered adults and children. Thus, there is a need of studying fluency in various language.

3

CHAPTER 2

REVIEW OF LITERATURE

The term fluency, derived from the Latin word "fluere" meaning to flow (Guillot, 1999).

Fluency means the non-stuttered and forward flow of verbal utterances in terms of both content and production (Starkweather, 1987). Most people experience instances of disfluency in their speech that would not be considered stuttering. Normal disfluencies reflect a temporary stage of language learning and communication development. Distinguishing between disfluencies that are normal and those that represent the danger of incipient stuttering is a critical skill for speech-language pathologists. Interruptions in the flow of speech commonly referred to, as disfluencies are the most obvious features of stuttering. Further, disfluent events are obligatory signs of stuttering and have been the most frequently used parameter to describe, define and measure the disorder. Disfluencies, however, are also found in the speech of speakers who are not regarded as exhibiting stuttering.

Regardless of age, gender, ethnic background, socioeconomic status, religion or creed, human speech is usually fluent. Speech disruptions occur in the steady flow of spontaneous discourse; these include silent pauses and vocal hesitations (Connell and Sabin, 1975). *Silent pauses* are the periods of time when no phonation is being made during spoken discourse. In research on speech disruptions, silent pauses typically refer to the silent intervals that are equal to or greater than 250ms (Eisler, 1968). Silent intervals of fewer than 250 ms are considered to serve an articulatory rather than cognitive function in speech production and are not counted as silent pauses.

Classification of disfluencies given by Johnson(1961).

1. **Interjection of sounds, syllables, words or phrases**: Refers to extraneous utterances in the flow of connected speech, such as sounds("um","uh",words ("well","okay"), or phrase ("let me see", "excuse me"). They may be considered as essentially sound filled pauses, for they constitute a temporal interval in the flow of a speech sequence to which they are not integral. Though these occur in normal speech also. In stutterers, these have

4

the character of a prolongation or an elemental repetition. It may also occur at inappropriate places and at grammatically unlikely loci.

2. **Part-word repetitions**: -These included repetitions of syllables and sounds. Ruh-Ruhrun p-p pens etc. Are examples of part word repetitions.

3. **Word repetitions**: This category includes repetition of words, including those of one syllable Saw-saw, but-but etc.

4. **Phrase repetitions**: This refers to repetitions of two or more words I.e. a word string. e.g. He gave -he gave this.

5. **Revisions**:-These kinds of dysfluencies represent changes in pronunciation,

wording, grammatical structure or content of what is said. e.g. He do-he does not know.

6. **Incomplete phrases**: - This is one in which the thought or context is not completed and this is neither considered as an instance of phrase repetition. e.g,- she was and after she got there he came.

7. **Broken words**: - This type of fluency disturbance is exemplified in the sentence. This can be considered as an instance of silent prolongation, occurring within a word rather than between words.

8. **Prolonged sounds**: This is used to refer to extension of sounds beyond its appropriate duration. Temporal length is thus the essential dimension for discriminating these. These are very often associated with visual or auditory cues.

Western Studies

McDaniel, McKee and Garrett (2010) measures non-fluency patterns in elicited utterances of varied syntactic type. We describe and interpret several regularities in these patterns for two groups of children ('young': three-five-year-olds; and 'older': six-eight-year-olds) and an adult comparison group. The evidence indicates a strong correspondence of adult and child responses to structural complexity, both in terms of global fluency measures and in terms of more detailed indicators of planning load. Children are also reported to pause more frequently at clause boundaries than elsewhere in a sentence.

5

Korvick (2010) studied on the effects of the pause procedure on classroom engagement and suggests that the introduction of the pause procedure during the lecture/discussion portion of upper level nursing classes at a small, private, liberal arts university will have no effect on cognitive load.

Tanaka, Sakamoto and Suzuki (2011) analyzed on the interaction between pause duration and speech-expansion in spoken language comprehension and it is stated that higher sentence intelligibility was obtained with a relatively short time expansion (i.e., 100 ms) when the pause between phrases was long enough (i.e., 300 and 400 ms) in both younger and older listeners. By inserting a pause between phrases, participants can use more time for higher cognitive processes.

Redford (2013)suggest that differences in child and adult pausing reflect differences in child and adult language, not in the cognitive resources allocated to language production.

Marklund, Lacerda and Schwarz (2014) compares parental pause and utterance duration in conversations with Swedish speaking children at age 1;6 who have either a large, typical, or small expressive vocabulary, as measured by the Swedish version of the McArthur-Bates CDI which states that pause duration varies with the vocabulary size of the children, and as a result durational aspects of the language environment to which the children are exposed also varies. Parents of children in the large vocabulary size group respond faster to child utterances than do parents of children in the typical vocabulary size group, who in turn respond faster to child utterances than do parents of children in the small vocabulary size group.

Hedenqvist, Persson, Robert and Eklund (2015) investigated on the prevalence of disfluencies in a group of 55 (25F/30M) Swedish children with typical speech development, and within the age range 6;0 and 6;11. Results showed that girls produced significantly more unfilled pauses, prolongations and sound repetitions, while boys produced more word repetitions. However, no correlation with lexical development was found.

Rosa (2018) done a descriptive analysis on how student translators and professional translators managed the pauses in a translation process. It was found that student translators took the longest pauses in the drafting phase spent to solve the

6

problems related to finding out the right equivalent for the ST words or terms and to solve the difficulties encountered in encoding their ST understanding in the TL; meanwhile, professional translators took the longest pauses in the post-drafting phase spent to ensure whether their TT had been natural and whether their TT had corresponded to the prevailing grammatical rules of the TL.

Brundage and Rowe (2018)investigated the typical disfluency rates at 30 months old in a large group of simultaneous bilingual children and also investigate the relationships between disfluency rates and linguistic complexity (mean length of utterance in words [MLU-W]), vocabulary diversity (VocD), and speaking rate (utterances per unit time).The study states that the typical disfluency rates of a large group of simultaneous Spanish–English bilingual children at 30 months of age reported to be lower than those monolingual children of similar ages.

Matzinger, Ritt and Fitch (2020) investigated whether non-native speakers pause 'with a foreign accent'. They recorded native English speakers and non-native speakers of German or Serbo-Croatian with excellent English reading out an English text at three different speech rates, and analyzed their vocal output in terms of number, duration and location of pauses. Overall, all non-native speakers were identified by native raters as having non-native accents, but native and non-native speakers made pauses that were similarly long, and had similar ratios of pause time compared to total speaking time. Furthermore, all speakers changed their pausing behavior similarly at different speech rates. The only clear difference between native and non-native speakers was that the latter made more pauses than the native speakers. Thus, overall, pause patterns contributed little to the acoustic characteristics of speakers' non-native accents, when reading aloud.

Silvén, Lehtiö and Eggers (2020) studied the speech disfluencies of 54 typically fluent Finnish-speaking children: 14 children randomly selected from a longitudinal study (age levels 2, 3, and 4 years), and 40 children from a cross-sectional study (age levels 6, 7, 8, and 9 years). No significant within-age effect was found for the total frequency of disfluencies or disfluency types among the 2- to 4-year-olds. Across the 6- to 9-year-olds, between-group differences were found for the total frequency and type of disfluencies.

7

Indian Studies

Ram and Savithri (2007) analyzed to identify the disfluencies such as Frequency and types of disfluencies and the effect of gender on disfluencies. Results showed that majority of the children had almost all the disfluency types. The most prominent disfluency type was sound repetitions.

James (2011) studied on nature of disfluencies in typically developing Malayalam speaking children with the age range of 3-6 years and the results revealed that speech of 3–6-year-old normal speaking children contains almost all the dis fluency types. High proportions of silent pauses, sound or syllable interjections, whole word interjections and whole word and part word repetitions are the most frequent disfluencies occurred in short story narration, song recitation and general conversation.

Abraham, Janet, Arya and Kumaraswamy (2015) studied on the difference in filled and unfilled pause duration in typically developing Malayalam speaking children across the age group of 6-8years in tasks including conversation and picture description. The study states that there is not much variation in the filled pause duration whereas the unfilled pause showed a consistent general progression across the age group for conversation task. In picture description task, there was no significant difference for the filled and unfilled pause duration across the age group.

James and Gopinath (2015) has developed a model for analyzing the factors that affect pause duration in Malayalam languages and the preceding and succeeding phrase length effect on pause duration. The results showed that the position of the pause influence pause duration and also the duration of preceding and succeeding phrase has an effect on pause duration.

Ram and Savithri (2015) studies on the pause patterns present in storytelling style speech based on the modes of discourse: narrative, descriptive and dialogue to capture the story-semantic information. Analysis of pause patterns are carried out for children stories in Hindi language. We analyzed the pause patterns and classified pauses into three different categories: short, medium and long pauses for each mode of discourse. A three stage data-driven method is proposed to predict the position and duration of the pauses. The subjective evaluation connotes that the subjects have perceived an improvement in speech quality in terms of storytelling style.

Rathika, Kanaka, John and Rajashekar (2012) states that pauses had the maximum percentage across all the age group. There is a decrease in trend been observed among pauses where as the age increases there is a decline in filled and unfilled pauses produced.

Joseph (2015) investigated 1) the frequency of disfluencies, and types of disfluencies exhibited by 3 – 5 year old typically developing Telugu speaking children, 2) whether age, gender or speech elicitation tasks have any impact on disfluencies. : The study suggests that disfluencies are greater as age increases (from 3 to 5 years old). Males showed the highest values of total disfluencies than females. Picture description task is more disfluent than other two speech elicitation tasks. Among the disfluencies, the pause has the highest frequency of occurrence regardless of age or gender.

Sarkar and Rao (2015) studied on the three stage data-driven pause prediction model to learn the pause pattern present in storytelling style speech based on three discourse modes. The CART models are evaluated both by conducting objective and subjective measures where the perceptual evaluation indicates that the proposed method is effective in imposing pauses in synthesized speech utterance.

Jeena (2019) studied on the pause prediction during synthesis of speech and devised a new approach and an IPU - based TTS system is proposed for Indian languages, based on this a new approach to pause prediction during synthesis is devised an IPA based TTS system is proposed for indian language

Pachaiappan, Sowmya and Remya (2020) studied on identifying pattern of disfluencies in school going Tamil and English medium children. The study state that the mean percentage of occurance of disfluencies were found to be more in English medium children when compared to Tamil medium children.

9

NEED FOR THE STUDY

Research evidences done on early speech disfluencies across the indian subcontinent (Nagapoornima, Indu and Yamini, 1990; Rajendraswamy, 1991; Sharma,1991; Joby, 1998; Paulene and Bhoominathan,2008), there data are diverse. Since stuttering and other fluency disorders are observed universally across culture and languages, there is a need to study the development trends in fluency in children belonging to culturally and linguistically diverse backgrounds. The study may provide a tool in future for differentiate between normal non fluency and developmental stuttering in children.

Verbal fluency is necessary for optimal communication and for normal social and occupational functioning. The information obtained from word fluency has been used to understand the vocabulary size, lexical knowledge, speed of lexical access in both healthy and disordered adults and children. Thus, there is a need of studying fluency in various language.

CHAPTER 3

METHOD

Aim of the study

The present study aimed at analyzing the difference in filled and unfilled pause duration in typical children speaking Malayalam across the age group of 10-15years for tasks like conversation and picture description.

Objectives of the study:

1. To investigate whether any variation for duration in filled and unfilled pauses across 10- 15years during conversation and picture description.

2. To study the changes in filled and unfilled pauses across age group for conversation and picture description.

Participants

A total of 45 children further divided into three groups i.e 15 (10-11.11 years), 15 (12-13.11years) and 15 (14-15.11 years). All the children were native speakers of Malayalam and had no history of Speech, Language, hearing and/or neurological conditions.

Procedure

The recording was carried out in a natural well illuminated environment and the responses were audio recorded. Children were made to sit comfortably on the chair with one feet distance from the recorder placed on the table. Two different tasks (Picture description and Conversation) were recorded to understand the pause duration in children.

Analysis

The recorded speech samples was analyzed for Pause duration and values were tabulated and analyzed statistically using Paired 'T' test and Bonferroni test for significance.
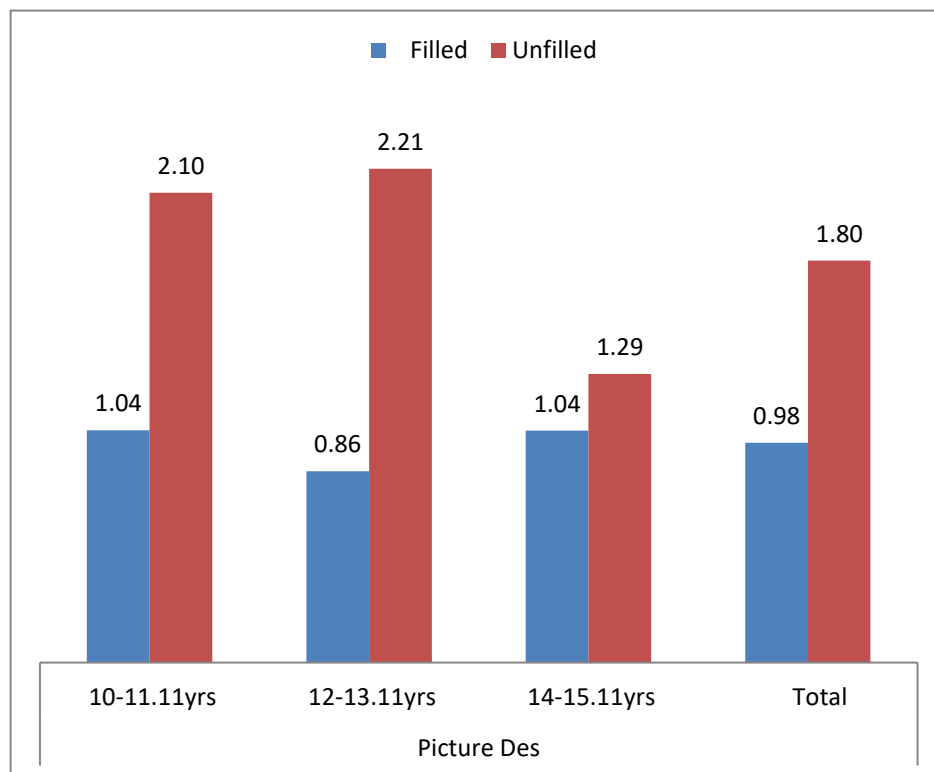
CHAPTER 4

RESULTS AND DISCUSSION

The aim of the present study was to analyze the duration of filled and unfilled pause in typical children of 10-15 years. The data was analyzed and the results are discussed below.

Picture Description

Figure 4.1:

Shows the statistical values for Filled and Unfilled pauses in Picture description task.

Table 4.1:

Shows the statistical values for Filled and Unfilled pauses in Picture description tasks.

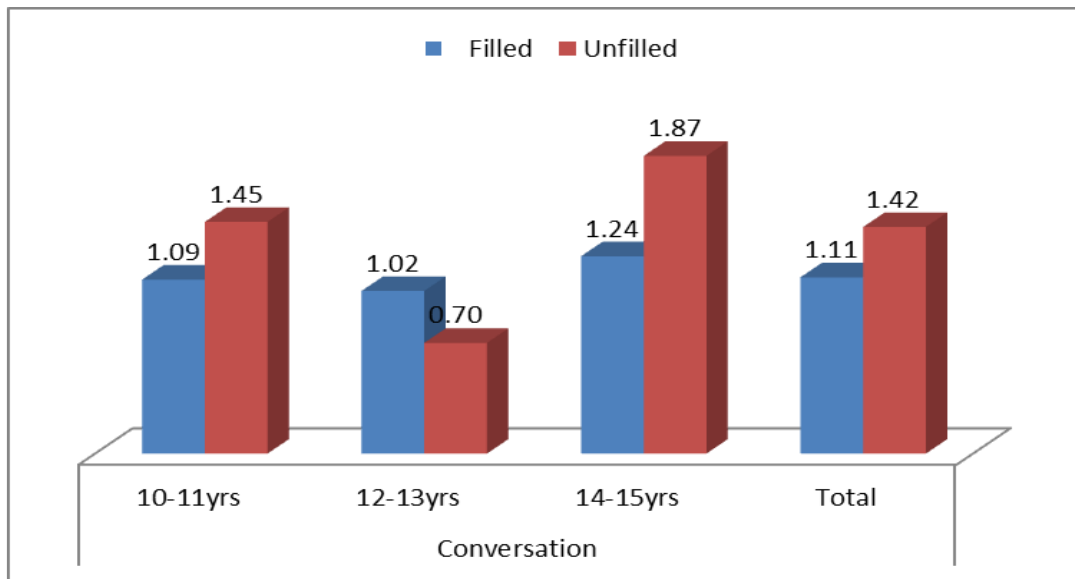| Parameter			N	Mean	Std. Deviation	95% Confidence Interval for Mean		ANOVA test p value	
						Lower Bound	Upper Bound		
Picture Des	Filled	10-11.11yrs	18	1.04	0.59	0.75	1.33	0.300	NS
		12-13.11yrs	20	0.86	0.37	0.69	1.03		
		14-15.11 yrs	29	1.04	0.37	0.90	1.18		
		Total	67	0.98	0.44	0.88	1.09		
	Unfilled	10-11.11yrs	25	2.10	1.68	1.41	2.80	0.041	SIG
		12-13.11yrs	21	2.21	1.94	1.33	3.09		
		14-15.11yrs	32	1.29	0.72	1.03	1.55		
		Total	78	1.80	1.50	1.46	2.14		

NS – Non Significant, SIG- Significant

From the above table 4.1 and figure 4.1its clearly evident that unfilled pauses were more seen in all 3 groups of population. When data was statistically analyzed across the group significant difference (p=0.04) was observed for unfilled pauses and no significant difference (p=0.300) were noted for filled pauses.

Conversation

Figure 4.2:

Shows the statistical values for Filled and Unfilled pauses in Conversational task.

Table 4.2:

Shows the statistical values for Filled and Unfilled pauses in Conversational task

Parameter			N	Mean	Std. Deviation	95% Confidence Interval for Mean		ANOVA test p value	
						Lower Bound	Upper Bound		
Conversation	Filled	10-11.11yrs	18	1.09	0.62	0.79	1.40		
		12-13.11yrs	14	1.02	0.48	0.74	1.30	0.586	NS
		14-15.11yrs	11	1.24	0.39	0.98	1.50		
		Total	43	1.11	0.52	0.95	1.27		
	Unfilled	10-11.11yrs	13	1.45	0.44	1.19	1.72		
		12-13.11yrs	11	0.70	0.71	0.22	1.17	0.002	HS
		14-15.11yrs	17	1.87	1.04	1.33	2.41		
		Total	41	1.42	0.92	1.13	1.71		

NS – Non Significant, HS- Highly Significant

From the above table 4.2 and figure 4.2 it can be seen that unfilled pauses were more produced by all the 3 groups. The analysis of the samples showed a high significance difference for unfilled pauses (p= .002) as compared to filled pauses which showed no significance (p= 0.586) statistically.

Table 4.3:

Shows the comparison values of both Filled and unfilled pauses in Conversational and Picture description task

Parameter			N	Mean	Std. Deviation	95% Confidence Interval for Mean Lower Bound	Upper Bound	ANOVA test p value	
10-11.11 yrs	Conversation		18	1.09	0.62	0.79	1.40	0.081	NS
		Filled							
		Unfilled	13	1.45	0.44	1.19	1.72		
	Picture Des		18	1.04	0.59	0.75	1.33	0.014	Sig
		Filled							
		Unfilled	25	2.10	1.68	1.41	2.80		
12-13.11 yrs	Conversation		14	1.02	0.48	0.74	1.30	0.184	NS
		Filled							
		Unfilled	11	0.70	0.71	0.22	1.17		
	Picture Des		20	0.86	0.37	0.69	1.03	0.004	HS
		Filled							
		Unfilled	21	2.21	1.94	1.33	3.09		
14-15.11 yrs	Conversation		11	1.24	0.39	0.98	1.50	0.067	NS
		Filled							
		Unfilled	17	1.87	1.04	1.33	2.41		
	Picture Des		29	1.04	0.37	0.90	1.18	0.094	NS
		Filled							
		Unfilled	32	1.29	0.72	1.03	1.55		

NS – Non Significant, HS- Highly Significant, SIG - Significant

Upon comparing of data across the age group for conversation and picture description, significant difference (p=0.014) was seen for 10-11.11 years age group and High significant difference (p=0.004) was noted for 12-13.11years age group for unfilled pauses. No significant difference was seen for other age group for either tasks i.e, picture description and conversation

DISCUSSION

The purpose of the study was to analyze pause duration in 10-15 years typical children speaking Malayalam focusing on filled and unfilled pauses in general conversation and picture description task. From the results it can be seen that the unfilled pauses had more variation compared to that of filled pauses across the age groups.

In picture description task, significant difference was seen for unfilled pauses and no significant difference was noted for filled pauses across the age group.

In the conversation task, high significant difference was noted for unfilled pauses and no significant difference was seen for filled pauses across age groups.

The cross comparison of data across age groups and tasks (picture description and conversation) Significant difference was seen for filled and unfilled pauses for picture description, (10-11.11 years) High significant difference(12-13.11years) was seen for filled and unfilled pauses in picture description, and other age groups showed no significant difference for both tasks. The present study is in accordance with Abraham, Janet and Kumaraswamy (2015), when they says that there is no much variation in filled pause but much variation as same for unfilled pauses.

CHAPTER 5

SUMMARY AND CONCLUSION

Verbal fluency is necessary for optimal communication and for normal social and occupational functioning. Pauses refer to silent intervals in the flow of speech and they may be voluntary, circumstantial, meditative or involuntary. There are two types of pauses, filled pauses or unfilled pause that are studied. Research evidences from the review of literature shows speech disfluencies across the languages and culture. The present study aimed to analyze the pause duration in 10-15 years typical children speaking Malayalam, 45 children who were further divided into 3 groups form the data base. The general conversation and picture description task were recorded and further analyzed for filled and unfilled pause duration. The statistical results reveal that much variation was seen for unfilled pauses rather than filled pauses across the age group and the present study is in accordance with the study done by Abraham, Janet, Arya and Kumaraswamy (2015) were they said that more variations present in unfilled pauses rather than filled pauses.

CHAPTER - 6

REFERENCES

Abraham, A., S., Kumaraswami, S.; George, J. & Arya, G., S. (2015), Pause Duration in Typically Developing Malayalam Speaking Children. *Language in India*; Vol. 15(6), 9-22

Akihiro, T., Shuichi, S. &Yoˆiti, S. (2011), Effects of pause duration and speech rate on sentence intelligibility in younger and older adult listeners,*Acoustical science and technology*; 32(6), 264-267

American Speech-Language-Hearing Association Special Interest Division 4: Fluency and Fluency Disorders. (1999), Terminology pertaining to fluency and fluency disorders retrieved from *https://pubmed.ncbi.nlm.nih.gov/10188303/; 41*(19), 29-36

Anjana B., R. & Savithri S., R. (2007), Disfluencies in 5.1 to 6 year old Kannada speaking children, *Journal of All India Institute of Speech And Hearing*; 26(1), 3-8

Clara, H., Frida, P. & Robert, E. (2015) Disfluency incidence in 6-year old Swedish boys and girls with typical language development retrieved from *https://www.researchgate.net/publication/, 290911649*

Cooper, W. & Paccia C., J. (1980), Syntax *and Speech. Cambridge*, MA: Cambridge University Press

Dana, M., Cecile, M. & Merrill, F., G. (2010), Children's sentence planning: Syntactic correlates of fluency variations. *Journal of Child Language;* 37, 59-94.

Goldman, E., F. (1968), *Experiments in Spontaneous Speech. Psycholinguistics:* Academic Press, New York

Gulliot, M. (1999), *Fluency and its teaching*, Clevedon: Multilingual Matters

19

James, T. (2011), *Disfluencies in 3-6 years old typically developing Malayalam speaking children*, Unpublished Dissertation Submitted to Mangalore University

Jansson, V., Silvén, M., Lehtiö, I. & Eggers, K. (2021), Speech disfluencies in typically developing Finnish-speaking children - preliminary results, *Clinical Linguist & Phonetics*; 35(8):707-726;

JEENA, J. P. (2019), *Transcription correction and rhythm analysis for applications in text-to-speech synthesis for Indian languages*, unpublished doctoral thesis IIT Madras.

Jesin, J. &Deepa, G. (2015), Modeling pause duration for Malayalam language, *International Conference on Audio, Language and Image Processing;*434-438, 7009831.

Joby, A. (1998), *Fluency development in Malayalam speaking of 3-5 years*. Unpublished Dissertation Submitted to University of Mysore

Johnson, W. (1961), Measurements of oral reading and speaking rate and disfluency of adult male and female stutterers and non- stutteres.*Journal of Speech and Hearing Disorder;* 7, 1-20

Kent, R. D (1976), Anatomical and Neuromuscular Maturation of the Speech Mechanism: Evidence from Acoustic Studies. *Journal of Speech Language and Hearing Research*, 19(3), 421

Kowal, S., Connell, D. & Sabin, E. (1975), Development of temporal patterning and vocal hesitations in spontaneous narratives. *Journal of Psycholinguistic Research;* 1975(4),195–207.

Lynda, M., K. (2010), *The effects of the pause procedure on classroom engagement.Shareok,advancing*, Oklahoma scholarship, research and institutional memory.

Marklund, U., Marklund, E., Lacerda, F.& Schwarz, I. C. (2014), Pause and Utterance Duration in Child- Directed Speech in Relation to Child Vocabulary Size. *Journal of Child Language*; 42(5),1158–1171

Melissa, A., R. (2013), A Comparative Analysis of Pausing in Child and Adult Storytelling, *Applied Pshycolingustics*; (3), 569–589

Nagapoornima, M. (1990), *Disfluencies in Kannada speaking children of 3- 4 years*, Unpublished Dissertation Submitted to University of Mysore.

Pachaiappan, C., Sowmiya, G. &Cherkuri, R., S. (2020), Identifying Pattern of Disfluencies in School Going Tamil and English Medium Children, *International Journal of Health Sciences and Research;* 10(7), 2249-9571

Parakranth, S., & K., S., Rao (2015) Data-driven pause prediction for synthesis of storytelling style speech based on discourse modes, *International Conference on Electronics, Computing and Communication Technologies*; 1-5, 10.1109

Paulene, S., S. & Bhoominathan, P. (2008), Disfluencies in 3-4 year old Tamil Speaking Children.*The Journal of the Indian Speech and Hearing Association*; 22, 114- 120

Rajendraswamy (1991), *Some aspects of fluency in children of 6-7 years*, Unpublished Dissertation Submitted to University of Mysore

Rathika, R., Kanaka, G., Sunila, J. &Rajashekhar B. (2012), Disfluencies in Typically Developing Tamil Speaking Children between 4 - 8 Years *Language in india;*12(11), 1930-2940

Redford, A. M. (2013); A Comparative Analysis of Pausing in Child and Adult Storytelling.*Applied Psycholinguistic*s; 34 (3), 569-589

Sabin, E., Clemmer, E., Connell, D. &Kowal, S. (1979), *Apausological approach to speech development. In: Siegman A, Feldstein S, editors. Of speech and time: temporal speech patterns in interpersonal contexts.* Hillsdale, NJ: Lawrence Erlbaum, 35–55

Sharma, A., K. (1991), *Disfluencies in Hindi speaking children of 6-7 years*. Unpublished Dissertation Submitted to University of Mysore

21

Shelley, B. and Hannah, R. (2018) Rates of Typical Disfluency in the Conversational Speech of 30-Month-Old Spanish–English Simultaneous Bilinguals, *American journal of speech language pathology;*27(3S):1287

Starkweather, C.W. (1987), *Fluency and stuttering. Englewood Cliffs*, NJ: Prentice Hall

Theresa, M., Nikolaus, R. & Tecumseh F., W. (2020), Non-native speaker pause patterns closely correspond to those of native speakers at different speech, *Plos one*; 0230710

Ulrika, M., Ellen, M., Francisco, L.& Iris, C., S. (2014), Pause and utterance duration in child-directed speech in relation to child vocabulary size,*Jounal of child language*; 42(5), 1158–1171

Wingate, M., E. (1984), Definition is the problem, *Journal of Speech and Hearing Disorders*; 49, 429-431

Wikipedia, Retrieved from //https.Wikipidea. com//

Yamini B., K. (1990), *Disfluencies in children (5-6 years).* In Jayaram M and Savithri SR. Research at AIISH, Dissertation Abstracts: 6-7

APPENDIX

1) PICTURE DISCRIPTION

2) CONVERSATION

Examiner: Hello, Peru entha?

Participant1: XYZ..

Examiner:Veedevida, enthokeaanne hobbies?

Participant1:Veedkottayam, Hobbies ahh..,…..Cooking ,Dancing,pne….,Drawing

23