

## Disfluencies in 5.1 to 6 year old Kannada speaking children

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### Abstract

*Speech samples of 20 Kannada speaking children were analyzed to identify the disfluencies. Frequency and types of disfluencies and the effect of gender on disfluencies were analyzed. Results showed that majority of the children had almost all the disfluency types. The most prominent disfluency type was sound repetitions. Also, boys, in general, showed greater percentage of disfluencies compared to girls.*

*Key words: Fluency, Disfluency, Dysfluency*

**Fluency**, according to ordinary usage, is the ability to speak a second language rapidly and continuously and without any particular effort or thought. The term fluency is derived from the Latin root "fluere". In communication, it refers to the smooth and easy flow of utterance. Technically, fluency is the effortless production of long, continuous utterances at a rapid rate. There are several definitions of fluency stated by different authors. Fluency refers to the general phenomenon of the flow or rate of speech, influenced by variables such as duration of individual sounds and syllables, duration of sounds and syllables in relation to adjacent sounds and syllables, duration of pauses, presence of stress contrasts and degree of co-articulation (Starkweather, 1980). Adams (1982) stated that fluency connotes the continuous, forward flowing and co-ordinated manner of speech. According to Myers (1988), fluency encompasses the synchrony of the speech processes and the continuity of thought and language, as well as the synergistic interaction between the speech and language components of the communication systems.

**Disfluency** has been defined by the American Speech-Language and Hearing Association (ASHA) Special Interest Division (SID) 4 as speech that exhibits deviations in continuity, smoothness, and ease of rate and effort (ASHA SID4, 1999). Terms disfluency or non fluency suggest disruptions in the timing and flow of non stuttered speech such as interjections and phrase repetitions that are often perceived as being part of the normal interruptions of speech. Hence, in very simple terms, one could consider disfluency as the opposite of fluency.

**Dysfluency**, however, signifies abnormality of fluency; it includes, but is not limited to stuttering (Wingate, 1984). Fluency is thus the basic referent from which contrasting words are constructed by adding to "fluency," the qualifying prefixes: "dis" (or "non") and "dys." **Stuttering** refers to "disorders in the rhythm of speech in which the individual knows precisely what he wishes to say, but at the time is unable to say it because of an involuntary, repetitive prolongation or cessation of a sound." (WHO, 1977).

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. This fact has resulted in several different ways in which disfluencies played a prominent role in theories of stuttering especially those pertaining to the inception of the disorder during early childhood. For example, difficulties in distinguishing normal from abnormal disfluencies, causing parents to erroneously diagnose interruptions in their children's speech as "stuttering" was at the heart of the diagnosogenic theory (Johnson, Boehmler, Dahlstrom, Darley, Goodstein, Kools, Neelley, Prather, Sherman Thurman, Trotter, Williams, & Young, 1959). Taking a different theoretical perspective, Shames & Sherrick (1963) proposed that selective reinforcement of initially normal disfluency was the essential element in operant learning processes presumed to eventuate in stuttering.

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Disfluencies have frequently been utilized in various practical applications. Yairi (1997) stated that disfluency counts have been the classic metric of the disorder for both clinical and basic research and have been employed as the dependent measure in numerous studies of stuttering. Clinically, the number of disfluencies, especially of certain types has been regarded as the most important index of stuttering severity (Van Riper, 1971). Analyses of disfluency have been weighted heavily in instruments of evaluation and diagnosis of early childhood stuttering, especially in differentiating between normal disfluency and incipient stuttering (Adams, 1977; Curlee, 1980; Pindzola & White, 1986; Campbell & Hill, 1987; Gorden & Luper, 1992, Ambrose and Yairi, 1999). Disfluency counts have also been used in formal and informal instruments designed to predict stuttering chronicity (Riley, 1981; Cooper & Cooper, 1985; Conture, 1990; Curlee, 1993). Over the years, researchers have investigated speech disfluencies of normally fluent young children. These studies have been successful in better understanding the expected speech behaviors of young children (Davis, 1939; Branscom, Hughes & Oxtoby, 1955; Eglund, 1955; Yairi & Clifton, 1972; Yairi & Jennings 1974; Haynes & Hood, 1977; Wexler, 1982; Wexler & Mysak, 1982; De Joy & Gregory, 1985; Carlo & Watson, 2003).

Although the descriptions of early speech disfluencies in young children have been extensive, these investigations are almost focused on disfluencies of speech of English speaking children from Anglo-European, African-American, Hispanic, and Spanish cultures. Because stuttering is a fluency disorder observed across languages and cultures (reviews by Van Riper, 1971; Bloodstein, 1995; Cooper and Cooper, 1998; Shapiro, 1999; Van Borsel, Maes and Fonlon, 2001, among others) understanding disfluencies in the speech of young children in culturally and linguistically diverse backgrounds is essential. In the Indian context, Indu (1990), Nagapoomima (1990), Yamini (1990) and Rajendraswamy (1991) proposed a fluency test each in different age groups in Kannada, a south Indian Dravidian Language. This was based on disfluency data of 12 children in the age groups of 3-4 (Nagapoomima), 4-5 (Indu), 5-6 (Yamini) and 6-7 (Rajendraswamy) years. Simple pictures, cartoons and pictures depicting Panchatantra stories were used in these tests. A total disfluency of greater than 25 – 30 % was considered to be abnormal. The percent disfluency is high because unlike in English where several iterations of sound/syllable are considered as one instance of repetition, the authors have calculated each iteration as one repetition. Thus in order to compare with the English studies, it is essential to employ the same methodology for calculating percent disfluency. Geetha, Karanth, Rao & Ravindra (2000) developed Disfluency Assessment Procedure for Children (DAPC) in Kannada. This consists of historical indicators, attitudinal indicators, behavioral (speech) indicators, articulation assessment and language assessment. Artificial Neural Network analysis indicated behavioral indicator to be a good predictor. A score of '0' on behavioral indicator was obtained in children with normal nonfluency and score ranging from 3 to 20 indicated stuttering. However, a clinician will not have problem classifying a child as having normal disfluencies if s/he has '0' disfluencies. Therefore, this index may not be of clinical use. Further, frequency and type of dysfluencies were measured in these two studies and not the duration. Thus, the dysfluencies in normal speaking Kannada children is not known. Given the influence of linguistic and cultural behaviors, attitudes and beliefs on fluency, (Watson & Keyser, 1994; Cooper & Cooper, 1998; Watson, 2001), one must be cautious in generalizing findings describing English speaking children to other linguistic and cultural groups. Also, an understanding of expected speech behaviours in normally fluent Kannada speaking children will be better able to differentiate more or less typical behaviors and identify stuttering within this population. Lastly, through cross-linguistic studies of fluent and disfluent speech, our understanding of fluency development in all young children, including those children who speak Kannada should be enhanced thus ascertaining the purpose of this study.

The period between 2 to 6 years is of great concern in studying disfluency patterns. Not only are children particularly disfluent during these ages (Muma, 1971), but also, the onset of stuttering is most frequently observed during this period of development (Johnson, 1959; Van Riper, 1971). Since the relationship between normally disfluent speech and early stuttering continues to be of theoretical interest (Yairi, 1981), researchers view the establishment of "normal expectations of disfluency" (Wexler & Mysak, 1982) for various preschool age groups as theoretically and diagnostically important. Research is needed to specify the number, type and duration of speech disfluencies that occur in the speech of children between 2 to 6 years. While several studies carried out in the past are of tremendous assistance, they still do not make clear what the central tendencies and variability of speech disfluencies are for 2 yr olds, 3yr olds and so forth. Without this information it is hard to assess

the extent to which a child suspected or known to be a stutterer deviates from his or her age norms or how closely an individual normally fluent child approximates them. Therefore, the purpose of the study was to describe the speech disfluencies in 5-6 year old Kannada speaking children. The objectives of the study were to investigate (a) number and type of speech disfluencies exhibited by 5.1-6 year old Kannada speaking children, and (b) to investigate the interaction of gender on the total percentage of speech disfluencies.

### Method

**Subjects:** Twenty children (10 boys and 10 girls) in the age range of 5.1-6 years participated in the study. Only native speakers of Kannada and children with no history of speech, language or hearing problems, no orofacial abnormalities and no neurological problems were taken. Children were screened for voice, articulation, fluency and language. Oral mechanism examination and hearing screening was carried out to rule out any abnormality.

**Material:** Material was developed for the study. Material included pictures, cartoons and pictures depicting Panchatantra stories.

**Procedure:** Speech samples were elicited and audio-recorded using the material and care was taken to ensure that the sample was no less than 5-minute duration of the child's talking. 500-word sample from each child was taken for the study. Conture (1990) noted that the sample size should be sufficient to permit averaging across several 100-word samples.

**Analyses:** The recorded samples were transcribed verbatim and the presence of the following disfluencies were analyzed, using the adaptations of classification systems described by DeJoy (1975), Yairi (1981), DeJoy and Gregory (1985), Campbell and Hill (1987) and Carlo and Watson (2003). Accordingly, various dysfluencies were described as follows.

1. Sound repetition (SR) - Repetition of a phoneme that does not stand alone as an intended syllable or word.
2. Single - syllable word repetition (SSWR) – Repetition of whole one syllable word.
3. Multi-syllabic word repetition (MSWR) - Repetition of words of more than one syllable.
4. Phrase repetition (PR) - Repetition of two or more words, with no revision or modification of content.
5. Interjection (I) - Insertion of sounds, syllables, words or phrases within an utterance. These insertions are not associated with the fluent or meaningful text and are not part of the intended message.
6. Revision(R) - Modification in the content or grammatical form of an utterance. Revision also includes changes in the pronunciation of a word.
7. Broken word (BW)- Momentary cessation of phonation within words.
8. Prolongations (P) - Audible prolongation of sounds within or at the end of words that are judged to be not intended.

The disfluencies were further classified as SLD (Stuttering like Disfluencies) and OD (Other Disfluencies) as stated by Young (1984) and Yairi and Ambrose (1992). Accordingly, Sound Repetitions, Single Syllable Word Repetitions, Broken Words and Prolongations were considered Stuttering-like Disfluencies (SLD). Although these types of disfluencies are also found in the speech of non stutterers, various investigators have reported that they are the most typical disfluencies in the speech of stutterers. Multi syllabic word repetitions, Phrase repetitions, Intejctions and Revisions were classified as Other Disfluencies (OD)

The percentage of disfluencies was calculated using the formula given below:

$$\% \text{ disfluency} = \frac{\text{Total number of disfluencies}}{\text{Total number of syllables}} * 100$$

Percentage of particular type of disfluency will be calculated as follows:

$$\% \text{ type of disfluency} = \frac{\text{Total number of particular type of disfluency}}{\text{Total number of syllables}} * 100$$

## Results

### Disfluency analysis (Group Data)

Frequency of individual disfluency types was computed. Group mean for total disfluency was 5.16 with a SD of 3.38. Several types of disfluencies were present in the group data. Sound repetitions (SR) and Multisyllabic word repetitions (MSWR) were present predominantly for the subjects with means and standard deviations of 1.71, 2.35 and 1.47, 1.02 respectively. The least occurring disfluencies were broken words with a mean of 0.02 and SD 0.06 followed by prolongations with mean of 0.06 and SD 0.09. Table 1 shows the mean and SD values for each of the eight disfluency types.

Type of disfluency	N	Mean	SD
TD	20	5.16850	3.385985
SLD	20	2.22100	2.451290
OD	20	2.92750	1.322620
SR	20	1.70900	2.347890
SSWR	20	0.40200	0.515110
MSWR	20	1.47150	1.024510
PR	20	0.39250	0.424350
R	20	0.68250	0.396460
I	20	0.38100	0.399020
BW	20	0.02000	0.061560
P	20	0.06000	0.094030

Table 1: Group mean values for the different types of dysfluencies in percent (TD-Total Disfluency)

T-test indicated significant difference between genders on Sound Repetitions ( $t(9) = 1.344$ ,  $p < 0.05$ ) and Stuttering like disfluencies ( $t(9) = 1.380$ ,  $p < 0.05$ ). No significant difference ( $p > 0.05$ ) was found between genders on any other individual type of disfluency and on other disfluencies. However, boys had more disfluencies than girls on all types of disfluencies except MSWR, PR and prolongations. Table 2 shows percent disfluencies in boys and girls.

Type of disfluency	Gender b/g	N	Mean	SD	t value
TD	b	10	5.86000	4.29992	1.02
	g	10	4.43700	1.58854	
SLD	b	10	2.96000	3.32640	1.380*
	g	10	1.48200	0.63780	
OD	b	10	2.90000	1.26167	-0.091
	g	10	2.95500	1.45763	
SR	b	10	2.40000	3.20830	1.344*
	g	10	1.01800	0.53220	
SSWR	b	10	0.42000	0.64940	0.152
	g	10	0.38400	0.37100	
MSWR	b	10	1.40000	1.10750	-0.303
	g	10	1.54300	0.98880	
PR	b	10	0.28000	0.27000	-1.199
	g	10	0.50500	.52830	
R	b	10	0.76000	0.49710	-0.869
	g	10	0.60500	0.26710	
I	b	10	0.46000	0.50820	-0.880
	g	10	0.30200	0.25310	
BW	b	10	0.04000	0.84330	1.500
	g	10	0.00000	0.00000	
P	b	10	0.04000	0.08433	-.949
	g	10	0.08000	0.10328	

Table 2: The mean and SD of disfluencies per 100 words identified in the speech of 20 5-6 year old children (b-boys, g-girls).

### Subject distribution in total disfluency

All the 20 children taken for the study exhibited MSWR (other disfluency) in their speech. Almost greater than 15 children showed all the other disfluency types. The types least noted in these children were broken words followed by prolongations (stuttering like disfluencies). Figure 1 shows the frequency of distribution of children across disfluency types.

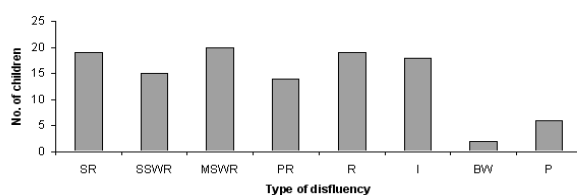


Figure 1: Frequency of distribution of children across disfluency types

### Discussion

Percent disfluency obtained in this study is very low compared to that obtained by Yamini (1990) in 5-6 years old Kannada speaking children. This is because Yamini (1990) had considered each iteration as one repetition. However in the present study, several iterations of sound / syllable repetitions were considered as one instance of repetition which is in accordance with several Western studies.

The results reveal that speech of 5-6 year old normal speaking children contains almost all the disfluency types. High proportions of SR and MSWR found in this study support earlier findings by Egland (1955) and Yairi & Clifton (1972). The findings, however, are not in congruence with those obtained by Yamini (1990) who found that syllabic repetitions occurred relatively lesser in 5-6 year old

children. Moreover, the discrepancy between the results of this study and the earlier studies could be due to variability in the amount and types of disfluencies by young children as reported by a number of investigators (Haynes & Hood, 1977; Yairi, 1981; Wexler & Mysak, 1982; DeJoy & Gregory, 1985).

Also no significant gender differences were obtained in this study for percentage of total disfluencies. This finding supports the earlier studies which have found no statistically significant differences in the total number of speech disfluencies or in most disfluency types exhibited by English speaking boys and girls (Kools & Berryman, 1971; Haynes & Hood, 1977; Yairi, 1981, 1982; Yairi & Lewis, 1984; Ambrose & Yairi, 1999; and Spanish speaking children (Carlo and Watson, 2003). In this study however significant sex differences were obtained for sound repetitions only, which is considered as an immature type of disfluency and found predominantly in the younger pre school years (Haynes and Hood, 1977, DeJoy and Gregory, 1985, Ambrose and Yairi, 1999). This supports the hypothesis that girls mature faster than boys. Also significant gender differences were also obtained for Stuttering Like Disfluencies (SLDs) with boys showing significantly higher percentage of SLDs than the girls. This shows that boys are at a greater risk for stuttering than girls.

### Conclusions and implications

The results of this study provide primitive normative values of dysfluencies in 5-6 year old Kannada speaking children. The study thus provides a base for determining normative disfluency scores in other Indian languages.

Further work can be undertaken to probe into the duration and grammatical aspects of disfluencies and clustering or grouping of disfluencies in 5-6 year old Kannada speaking children. Also employing bigger sample of children is warranted to provide clear-cut normative cut off scores for the different types of dysfluencies.

### References

- Adams, M.R. (1977). A clinical strategy for differentiating the normally nonfluent child from the incipient stutterer. *Journal of Fluency Disorders*, 2, 141-148.
- Adams, M.R. (1982). Fluency, Nonfluency and Stuttering in children. *Journal of Fluency Disorders*, 7, 171-185.
- Ambrose, N.G., & Yairi, E. (1999). Normative disfluency data for early childhood stuttering. *Journal of Speech, Language and Hearing Research*, 42, 895-909.
- American Speech-Language-Hearing Association Special Interest Division 4: Fluency and Fluency Disorders. (1999, March). Terminology pertaining to fluency and fluency disorders: Guidelines. *Asha*, 41 (Suppl. 19), 29-36.
- Bloodstein, O. (1995). *A handbook on stuttering* (5<sup>th</sup> ed.). San Diego: Singular Publishing Group.
- Branscom, M., Hughes, J., & Oxtoby, E. (1955). Studies of non-fluency in the speech of preschool children. In W. Johnson & R. Leutenegger (Eds.), *Stuttering in children and adults* (pp. 157-180). Minneapolis: University of Minnesota Press.
- Campbell, J., & Hill, D. (1987). *Systematic disfluency analysis*. Chicago: Northwestern University.
- Carlo, E.J. & Watson, J.B. (2003). Disfluencies of 3- and 5- year old Spanish- speaking children. *Journal of Fluency Disorders*, 28, 37-53.
- Conture, E. (1990). *Stuttering* (2<sup>nd</sup> ed.). Englewood Cliffs, NJ: Prentice Hall.
- Cooper, E., & Cooper, C. (1985). *Cooper personalized fluency control therapy handbook* (Rev.). Allen, TX: DLM Teaching resources.
- Cooper, E., & Cooper, C. (1998). Multicultural considerations in the assessment and treatment of stuttering. In D. E. Battle (Ed.). *Communication Disorders in multicultural populations* (2<sup>nd</sup> Ed. Pp. 247-274). Boston: Butterworth- Heinemann.

- Curlee, R. (1980). A case selection strategy for young disfluent children. In W. Perkins (Ed.). *Strategies in stuttering therapy*. New York: Thieme- Stratton.
- Curlee, R. (1993). Identification and management of beginning stuttering. In R. Curlee (Ed.), *Stuttering and related disorders of fluency*. New York: Thieme Medical Publishers.
- Davis, D. M. (1939). The relation of repetitions in the speech of young children to certain measures of language maturity and situational factors: Part I. *Journal of Speech Disorders*, 4, 303-318.
- DeJoy, D. A. (1975). An investigation of the frequency of nine individual types of disfluency in relationship to age and syntactic maturity in nonstuttering males, three and one half years of age and five years of age. Unpublished doctoral dissertation, Northwestern University, Evanston, IL.
- DeJoy, D.A., & Gregory, H.H. (1985). The relationship between age and frequency of disfluency in preschool children. *Journal of Fluency Disorders*, 10, 107-22.
- Egland, G. O. (1955). Repetitions and prolongations in the speech of stuttering and non stuttering children. In W. Johnson & R. Luetenegger (Eds.), *Stuttering in children and adults* (pp. 181-188). Minneapolis: University of Minnesota Press.
- Geetha, Y.V., Karanth, P., Rao A., & Shetty K.R (2000). Classification of Childhood Disfluencies using Neural Networks. *Journal of Fluency Disorders*, 25(2), 99-117.
- Gordon, P., & Luper, H. (1992). The early identification of beginning stuttering I: Protocols. *American Journal of Speech Language Pathology*, 1(3), 43-53.
- Haynes, W.O., & Hood, S.B., (1977). Language and disfluency variables in normal speaking children from discrete chronological age groups. *Journal of Fluency Disorders*, 2, 57-74.
- Indu, V. (1990). Some aspects of fluency in children (4-5 yrs). In M. Jayaram & S.R. Savithri (Eds.). Research at AIISH, Dissertation Abstracts: Volume II, pp. 171-173.
- Johnson, W. (1959). *The onset of stuttering: Research Findings and Implications*. Minneapolis: University of Minnesota Press.
- Johnson, W., Boehmler, R., Dahlstrom, W., Darley, F., Goodstein, L., Kools, J., Neelley, J., Prather, W., Sherman D., Thurman, C., Trotter, W., Williams, D., & Young, M. (1959). *The onset of stuttering*: Minneapolis: University of Minnesota Press.
- Kools, J., and Berryman, J. (1971). Differences in disfluency behavior between male and female non stuttering children. *Journal of Speech and Hearing Research*, 14, 125-130.
- Muma, J. (1971). Syntax of preschool fluent and disfluent speech: A transformational analysis. *Journal of Speech and Hearing Research*, 14, 428-441.
- Myers, F.L. (1988). Cluttering: A synergistic approach. Paper presented at the second International Oxford Dysfluency Conference, Oxford, England.
- Nagapoornima, M. (1990). Disfluencies in children (3-4 years). In M. Jayaram & S.R. Savithri (Eds.). Research at AIISH, Dissertation Abstracts: Volume II, pp. 171-173.
- Pindzola, R.H., & White, D.T. (1986). A protocol for differentiating the incipient stutterer. *Language, Speech, and Hearing Services in Schools*, 17, 2-15.
- Rajendraswamy. (1991). Some aspects of fluency in children (6-7 years). In M. Jayaram & S.R. Savithri (Eds.). Research at AIISH, Dissertation Abstracts: Volume III, pp. 6-7.
- Riley, G. (1994). Stuttering severity instrument for children and adults (3<sup>rd</sup> ed.). Tigard, OR: C. C. Publications.
- Riley, G.D. (1981). *Stuttering Prediction Instrument*. Tigard, OR: CC. Publications.
- Shames, G., & Sherrick, H. (1963). A discussion of nonfluency and stuttering as operant behavior. *Journal of Speech and Hearing Disorders*, 28, 3-18.
- Shapiro, D. (1999). Stuttering intervention: A collaborative journey to fluency freedom. Austin, TX: Pro- Ed.

- Starkweather, C.W. (1980). Speech fluency and its development in normal children. In *Speech and Language: Advances in Basic Research and Practice*, New York: Academic Press. Inc.
- Van Borsel, J., Maes, E., E., & Foulon, S. (2001). Stuttering and bilingualism: A review. *Journal of Fluency Disorders*, 26, 179-205.
- Van Riper, C. (1971). *The Nature of Stuttering*. N.J: Prentice- Hall.
- Watson, J. B. (2001). Enhancing cross- cultural competence in the assessment and treatment of stuttering. In H. Bosshardt, J.S. Yaruss, & H. Peters (Eds.), *Fluency disorders: Theory, research, treatment and self-help* (pp. 625-629). Nijmegen: Nijmegen University Press.
- Watson, J. B., & Keyser, H. (1994). Assessment of bilingual/ bicultural children and adults who stutter. *Seminars in speech and Language*, 15(2), 149-164.
- Wexler, K.B. (1982). Developmental disfluency in 2-, 4- and 6-yr old boys in neutral and stress situations. *Journal of Speech and Hearing Research*, 25, 229-34.
- Wexler, K.B., & Mysak, E.D., (1982). Disfluency characteristics of 2-, 4-, and 6- year-old males. *Journal of Fluency Disorders*, 7, 37-46.
- Wingate, M.E. (1984). Definition is the problem, *Journal of Speech and Hearing Disorders*, 49, 429- 431.
- World Health Organization (1977). *Manual of the international statistical classification of diseases, injuries and causes of death (Vol. 1)*. Geneva: author.
- Yairi, E. (1981). Disfluencies of normally speaking two-year old children. *Journal of Speech and Hearing Research*, 24, 490-495.
- Yairi, E. (1982). Longitudinal studies of dysfluencies in two- year old children. *Journal of Speech and Hearing Research*, 25, 155-160.
- Yairi, E. (1997). Disfluency characteristics of early childhood stuttering. In R. Curlee & G. Siegel (Eds.). *Nature and treatment of stuttering: New directions*, pp.181-188. Boston: Allyn & Bacon.
- Yairi, E., & Ambrose, N. (1992). A Longitudinal Study of Stuttering in Children: A Preliminary Report. *Journal of Speech and Hearing Research*, 35, 755-760.
- Yairi, E., & Clifton, N. F. (1972). Disfluent speech behavior of preschool children, high school seniors and geriatric persons. *Journal of Speech and Hearing Research*, 15, 714-719.
- Yairi, E., & Jennings, S. (1974). Relationship between the disfluent speech behavior of normal speaking boys and their parents. *Journal of Speech and Hearing Research*, 17, 94-98.
- Yairi, E., & Lewis, B., (1984). Disfluencies at the onset of stuttering. *Journal of Speech and Hearing Research*, 27, 155-59.
- Yamini, B.K. (1990). Disfluencies in children (5-6 years). In M. Jayaram & S.R. Savithri (Eds.). *Research at AIISH, Dissertation Abstracts: Volume II*, pp. 171-173.
- Young, M. (1984). Identification of stutterers and stuttering. In R.F. Curlee & W. Perkins (Eds.), *Nature and treatment of stuttering* San Diego: College-Hill.
- Zebrowski, P.M. (1995). The topography of beginning stuttering. *Journal of Communication Disorders*, 28, 75-91.

#### Acknowledgements

This study is an outcome of the doctoral research of the corresponding author. The authors would like to thank Dr. Vijayalakshmi Basavaraj, Director, All India Institute of Speech and Hearing for granting permission to carry out this study.