

Rate of Speech/Reading in Dravidian Languages

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Savithri. S. R.

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Rate of Speech/Reading in Dravidian languages

Introduction

Fluency is the effortless production of long, continuous utterances at a rapid rate (Starkweather, 1981). The rate at which speech is produced is an important aspect of fluency. Writers attempting a description of stuttering have most often not included material on normal fluency, even though a substantial scientific literature on the rate, rhythm and timing of normal adult speech has long existed. Descriptions of children's fluency development have referred only to the frequency and type of discontinuities. But it is not just the continuity of speech that signals fluency. The rate of speech, the length of utterances, consistency in the duration of elements, and the overall quantity of speech are also signs of the facility with which speech is produced. With increased age, these signs show developmental change, signaling development of fluency.

Rate of speech is an important variable in the evaluation and treatment of fluency disorders. It is well known that the rate of speech correlates negatively with the severity of stuttering (Bloodstein, 1944; Sander, 1961) because frequent and/or long duration stutters result in reduced speech output. However, a deliberate reduction in the rate of speech has a beneficial effect on the frequency of stutters (Adams, Lewis & Besozzi, 1973; Johnson & Rosen, 1937) and, therefore, nearly all stuttering treatment approaches include rate reduction as one of their goals. Rate control is also a treatment target in cluttering (Daly, 1986). In addition, rate of speech is an important factor in the perceptual evaluation of normalcy of speech following treatment of stuttering (Ingham & Packman, 1978). Extremely slow rate of speech even if completely devoid of dysfluencies, is

perceived as unnatural by listeners. There is some preliminary evidence that the rate of speech of parents may be an important factor in incipient stuttering (Meyers & Freeman, 1985; Stephenson-Opsai & Bernstein Ratner, 1988).

The rate of speech primarily depends on the speed of articulatory movement and the degree of coarticulatory overlap. It also depends on the linguistic structure and culture. Rate of speech can be measured in two ways. One is a measure of the number of syllables per unit time. The second is words per minute. The word is more of an information unit than a speech production unit. Consequently, words per minute is a measure of the amount of information a speaker is producing. It is related to but not the same as the rate at which syllables are produced. The more syllables a word contains, the more rapidly each syllable in the word is produced (Klatt, 1973). Word duration and utterance duration seem to depend on the amount of information contained in the utterance, but syllables per second seems independent of content, as long as the sample is to contain a large variety of syllables.

It is important for the practicing clinician to know about these changes, for the assessment of stuttering and cluttering should be made by comparing the client's fluency with the level of fluency that would be expected for a normal person of the same age.

Surprisingly, however, there are few empirically derived guidelines available for clinical measurement of rate and for setting goals for rate (Ingham & Cordes, 1997). Adult speakers of English speak at an average rate of 5 to 6 syllables per second (Walker & Black, 1950). When rate is measured in words per minute, most of the variation is attributable to the duration and frequency of pauses. When these pauses are excluded, the variability of speech rate is much

reduced (Goldman-Eisler, 1968). The normal rate of speech is 80-180 words per minute. However, one can consider a rate of up to 280 words per minute as normal provided the intelligibility is not affected. This is supported by reports that speech could be compressed up to 275 wpm mechanically with little loss of comprehension, but comprehension declines rapidly at higher speeds.

Rathna, Subba Rao & Bharadwaj (1979) reported 361 syllables per minute and 104 words per minute in spontaneous speech and 427 syllables per minute and 94 words per minute in reading in Kannada. Venkatesh, Purushothama & Poornima (1983) investigated rate of speech in 64 Kannada speakers in the age range of 17-66 years. They reported 282 syllables per minute in adult Kannada speakers. Rathna et. al. took 1-minute sample and Venkatesh et. al. took males, females, urban, rural, literate and illiterate population and recorded conversation. Samples in both these studies are not adequate and do not represent any specific population. Also, pauses were not eliminated in these studies.

Some studies have investigated differences between genders. Johnson (1961) reported higher range and docile values for adult females than for adult males in two spontaneous speech tasks and one reading task. In contrast, Lutz & Mallard (1986) found that the adult male subjects talked and read at a faster rate than the adult female subjects in their study. However, statistical tests were not performed in either study to determine whether the differences in rate between males and females were significant. In a study of rate of children, Haselager, Slis & Rietveld (1991) reported that the boys did not significantly differ from girls in the rate of production of spontaneous speech. It is not known whether the findings of Haselager et. al. would also apply to young adults. It is important, for clinical purposes, to determine whether statistically significant differences exist between adult males and females in the rate of reading and discourse.

Values of approximately 200 SPM or 150 SPM are frequently used in setting goals for rate of speech (Perkins, 1973; Boberg & Kully, 1985) because mean rates of adult discourse tend to converge around these values (Luchsinger, 1965).

Answers to basic questions such as the size of the sample necessary to obtain a reliable measure of rate and the variability or stability of rate in different tasks typically used to measure rate in clinical settings are not known. Castello & Ingham (1984) suggest that a 2-minute sample of uninterrupted speech be used to determine the rate during the evaluation of stuttering. Johnson, Darley, & Spriesterbach (1963) recommend that a 3-minute sample of spontaneous speech and a 300-word reading passage be used to determine rate; however, there is little objective data in support of these recommendations.

There is also an uncertainty concerning the unit of speech appropriate for the computation of rate. Expression of rate in syllables per minute (SPM) appears to be generally favored over the computation involving words per minute (WPM) because the length of syllables, whether measured in phonemes or in units of time tends to be less variable than length of words (Ingham, 1984; Umeda & Quinn, 1980; Costello & Ingham, 1984). However, there is little empirical evidence to support the view that SPM is a more valid measure of speech rate than WPM, particularly in clinical situations where a certain amount of variability in speech rate is expected and accepted.

Though the rate of speech is an important parameter it has not been studied extensively in the Indian context. As the linguistic structure of Dravidian and Indo-European languages differ, it is probable that the rate of speech also differs. Also, most rate control therapies don't consider age as criteria to set goals

for rate of speech. It is hypothesized that age and language have significant affect on rate of speech. In this context, the present project aims at *establishing normative data on rate of speech in Kannada, Tamil, Telugu, and Malayalam in subjects ranging in 10 decades*. The end results brought out from this project can be utilized as normative data. This can be used as a reference or standard to measure rate of speech in clients with fluency disorders.

Method

Subjects: Four hundred and one normal subjects in four languages - Kannada, Tamil, Telugu, and Malayalam - participated in the study. All subjects were literates and were from urban population. Informed consent was obtained from subjects prior to collection of speech samples. Table 1 shows subject details.

| Age range/ Language | Kannada | | Telugu | | Tamil | | Malayalam | |
|------------------------|------------|----|--------|----|-------|----|-----------|----|
| | M | F | M | F | M | F | M | F |
| Age | | | | | | | | |
| 3-3.11 | 5 | 5 | | | | | | |
| 4-4.11 | 5 | 5 | | | | | | |
| 5-5.11 | 5 | 5 | | | 2 | 2 | | |
| 6-6.11 | 5 | 5 | | | 3 | 5 | | |
| 7-10 | 5 | 5 | | | 5 | 5 | | |
| 11-15 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 16-20 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 21-30 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 31-40 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 41-50 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 51-60 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 61-70 | 5 | 5 | 3 | 3 | 5 | 5 | 5 | 5 |
| 71-80 | 5 | 5 | 1 | 0 | 5 | 5 | 5 | 5 |
| 81-90 | 5 | 1 | 2 | 0 | 0 | 1 | 5 | 5 |
| 91-100 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 |
| Total | 70 | 66 | 36 | 33 | 50 | 53 | 46 | 47 |
| Total | 401 | | | | | | | |

Table 1: Details of subjects.

Material: Cartoons (4-6 years), pictures depicting Panchatantra stories (7-10 years), and standardized reading passages were used to elicit spontaneous speech/reading. Pictures of cartoons and Panchatantra stories were taken from Indu (1992) Yamini (1992) and Rajendra Swamy (1995). Passages in four languages were developed by the experimenters. There were 304, 306, 414, and 307 words in Kannada, Telugu, Tamil, and Malayalam passages, respectively. Reading passages are given in Appendix I.

Procedure: Children in the age range of 4-10 years were instructed to describe the cartoons and story, and adults read the passage at a comfortable pitch and loudness. All samples were audio-recorded and were digitized at 16,000 Hz

sampling frequency. Pauses, if any, were removed from the waveform using Cool Edit software. Each syllable and word was highlighted using the waveform and the duration was measured using the software. The number of syllables per second (SS), syllables per minute (SPM) and words per minute (WPM) were calculated by using the following formulas:

SS — Total number of syllables / Total time taken (seconds).

SPM - Total number of syllables / Total time taken (minute).

WPM = Total number of words / Total time taken (seconds) * 60.

Statistical analysis: ONE-WAY ANOVA was done to compare the rate of speech across age, gender, and language, and MANOVA was used to examine the interaction effects.

Results and discussion

Kannada

The results indicated an increase in SS, SPM and WPM from 3 years to 40 years and decrease in SS, SPM and WPM in the age group of 41-90 years. Table 2 shows the mean and range of syllables per second (SS), syllables per minute (SPM) and words per minute (WPM) from 3 to 90 years in Kannada speaking subjects. Figures 1 to 3 show SS, SPM, and WPM across age groups.

| Age | | SS | SPM | WPM |
|----------------|-------------|-------------|------------|------------|
| 3-3.11 | Mean | 4.9 | 291 | 129 |
| | SD | 1.3 | 78 | 34 |
| 4-4.11 | Mean | 4.2 | 252 | 91 |
| | SD | .79 | 48 | 17 |
| 5-5.11 | Mean | 4.2 | 254 | 120 |
| | SD | 1.3 | 79 | 37 |
| 6-6.11 | Mean | 4.3 | 261 | 92 |
| | SD | 0.84 | 50 | 18 |
| 7-10 | Mean | 4.1 | 250 | 85 |
| | SD | 0.65 | 41 | 14 |
| 11-15 | Mean | 5.7 | 343 | 104 |
| | SD | .83 | 48 | 14 |
| 16-20 | Mean | 7.0 | 425 | 127 |
| | SD | .96 | 58 | 17 |
| 21-30 | Mean | 6.5 | 386 | 116 |
| | SD | .96 | 70 | 21 |
| 31-40 | Mean | 7.2 | 434 | 131 |
| | SD | .31 | 19 | 6 |
| 41-50 | Mean | 6.8 | 410 | 124 |
| | SD | .87 | 53 | 16 |
| 51-60 | Mean | 6.9 | 415 | 124 |
| | SD | .62 | 37 | 11 |
| 61-70 | Mean | 6.9 | 404 | 125 |
| | SD | .73 | 52 | 12 |
| 71-80 | Mean | 6.4 | 390 | 118 |
| | SD | .85 | 51 | 15 |
| 81-90 | Mean | 5.6 | 337 | 102 |
| | SD | .97 | 58 | 17 |
| Average | Mean | 5.3 | 318 | 104 |
| | SD | 2.20 | 133 | 40 |

Table 2: Mean and SD of rate of speech in Kannada speakers.

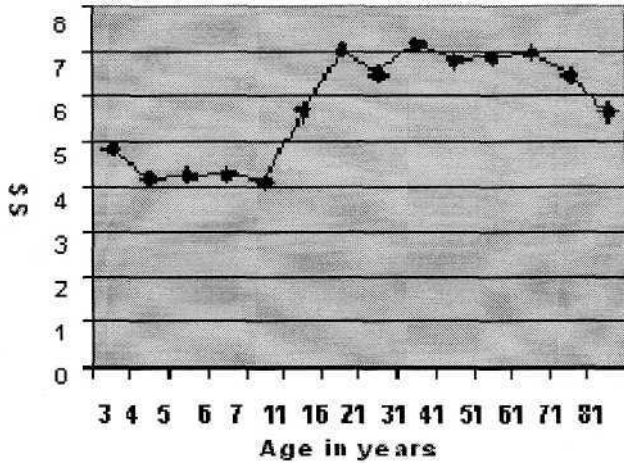


Figure 1: Syllables per second (SS) in Kannada speaking subjects 3-90 years.

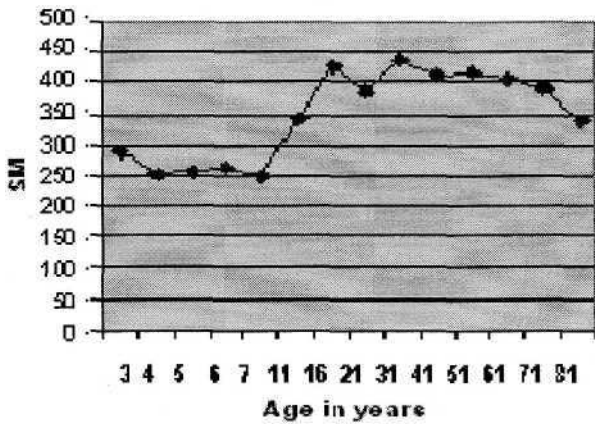


Figure 2: Syllables per minute (SPM) in Kannada speaking subjects 3-90 years.

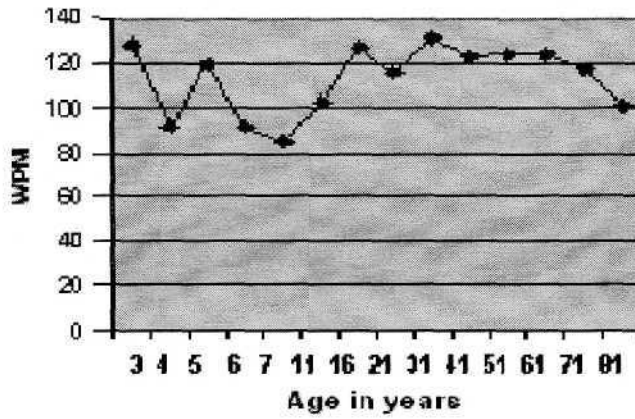


Figure 3: Words per minute (WPM) in Kannada speaking subjects 3-90 years.

ONE-WAY ANOVA indicated significant difference between age groups {SS = [F (14, 121) = 16.70, p < 0.01], SPM = [F (14, 121) = 15.665, p < 0.01], WPM - [F (14, 121) = 5.718, p < 0.01]}. Tables 3 to 5 show results of the Duncan's post-hoc test. Values in the same column are not significantly different.

| Age Group | 1 | 2 | 3 | 4 |
|-----------|--------|--------|--------|--------|
| 3-3.11 | 4.2358 | | | |
| 4-4.11 | 4.2031 | | | |
| 5-5.11 | 4.2358 | | | |
| 6-6.11 | | | | |
| 7-10 | | | | |
| 11-15 | | 5.7000 | 5.7000 | |
| 16-20 | | | | 7.0300 |
| 21-30 | | | 6.4900 | |
| 31-40 | | | | 7.1800 |
| 41-50 | | | | 6.7900 |
| 51-60 | | | | 6.8640 |
| 61-70 | | | | 6.9540 |
| 71-80 | | | 6.4400 | 6.4400 |
| 81-90 | | 5.6200 | | |

Table 3: Results of Duncan's post-hoc test for SS (Kannada).

| Age Group | 1 | 2 | 3 | 4 | 5 |
|-----------|----------|----------|--------|--------|--------|
| 3-3.11 | 290.9821 | | | | |
| 4-4.11 | 252.1879 | | | | |
| 5-5.11 | 254.1461 | | | | |
| 6-6.11 | | | | | |
| 7-10 | | | | | |
| 11-15 | | | 343.10 | 343.10 | |
| 16-20 | | | | | 425.10 |
| 21-30 | | | 385.50 | 385.50 | 385.50 |
| 31-40 | | | | | 434.20 |
| 41-50 | | | | | 410.41 |
| 51-60 | | | | | 415.10 |
| 61-70 | | | | | 403.60 |
| 71-80 | | | | 389.80 | 389.80 |
| 81-90 | | 337.3400 | 337.34 | | |

Table 4: Results of Duncan's post-hoc test for SPM (Kannada).

| Age Group | 1 | 2 | 3 |
|-----------|----------|----------|----------|
| 3-3.11 | | | 128.6358 |
| 4-4.11 | 91.3535 | | |
| 5-5.11 | | 119.7360 | 119.7360 |
| 6-6.11 | 92.3000 | | |
| 7-10 | 84.5000 | | |
| 11-15 | 103.6844 | 103.6844 | |
| 16-20 | | | 127.3501 |
| 21-30 | | 116.2539 | 116.2539 |
| 31-40 | | | 131.0137 |
| 41-50 | | | 123.6824 |
| 51-60 | | | 124.1360 |
| 61-70 | | | 124.8651 |
| 71-80 | | 117.7516 | 117.7516 |
| 81-90 | 101.7867 | 101.7867 | |

Table 5: Results of Duncan's post-hoc test for WPM (Kannada).

Telugu

SS, SPM, and WPM increased till 30 years and declined there after. Table 6 shows mean and SD of SS, SPM, and WPM. Figures 4 to 6 show mean SS, SPM, and WPM across age.

| Age | | SS | SPM | WPM |
|---------|------|------|-------|-------|
| 11-15 | Mean | 7 | 431 | 123 |
| | SD | 1.25 | 132 | 37 |
| 16-20 | Mean | 7 | 439 | 125 |
| | SD | 0.61 | 36 | 10 |
| 21-30 | Mean | 8 | 466 | 133 |
| | SD | 0.58 | 36 | 10 |
| 31-40 | Mean | 6 | 384 | 116 |
| | SD | 0.95 | 54 | 23 |
| 41-50 | Mean | 7 | 389 | 117 |
| | SD | 1.04 | 75 | 20 |
| 51-60 | Mean | 6 | 392 | 110 |
| | SD | 1.04 | 69 | 18 |
| 61-70 | Mean | 6 | 336 | 96 |
| | SD | 0.99 | 60 | 17 |
| 71-80 | Mean | 5 | 309 | 89 |
| | SD | 0.19 | 11 | 4 |
| 81-90 | Mean | 5.14 | 309 | 88.82 |
| | SD | 0.19 | 11.31 | 3.85 |
| Average | Mean | 6.4 | 384 | 111 |
| | SD | 0.76 | 53.81 | 15.87 |

Table 6: Mean and SD of rate of speech in Telugu speakers.

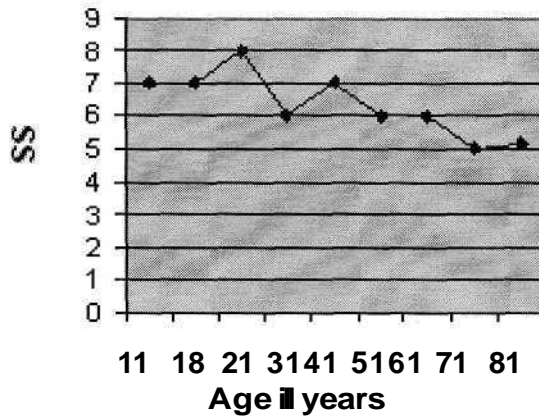


Figure 4: Syllables per second in Telugu speakers.

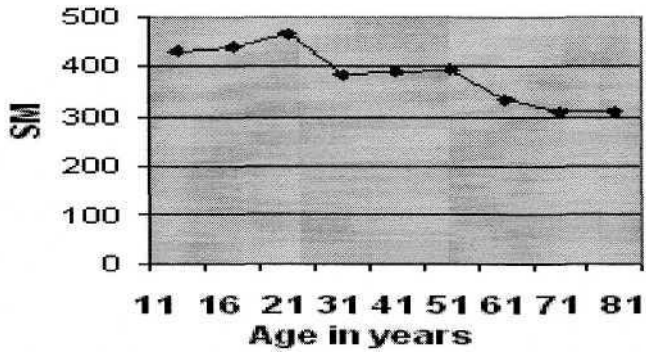


Figure 5: Syllables per minute in Telugu speakers.

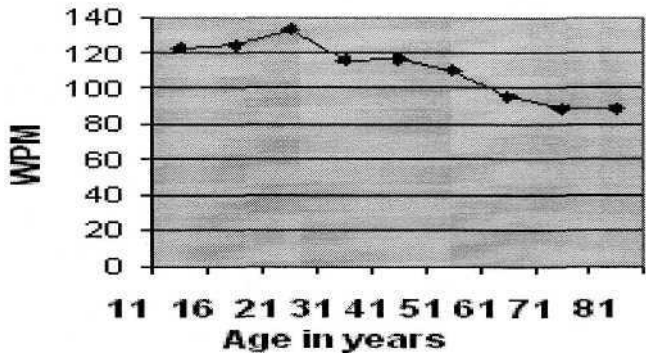


Figure 6: Words per minute in Telugu speakers.

ONE-WAY ANOVA indicated significant difference between age groups {SS = [F (8, 73) = 4.832, $p < 0.01$], SPM = [F (8, 731) = 2.495, $p < 0.05$], WPM = [F (10, 91) = 2.285, $p < 0.05$]}. Tables 7 to 9 show results of the Duncan's post-hoc test. Values in the same column are not significantly different.

| Age Group | 1 | 2 | 3 | 4 |
|-----------|--------|--------|--------|--------|
| 11-15 | | 6.2460 | 6.2460 | |
| 16-20 | | | 6.9700 | 6.9700 |
| 21-30 | | | 7.4060 | 7.4060 |
| 31-40 | | | | 7.7100 |
| 41-50 | | 6.3750 | 6.3750 | |
| 51-60 | | | 6.8970 | 6.8970 |
| 61-70 | | 6.4230 | 6.4230 | |
| 71-80 | 5.5990 | 5.5990 | | |
| 81-90 | 5.1400 | | | |

Table 7: Results of Duncan's post-hoc test for SS (Telugu).

| Age Group | 1 | 2 | 3 |
|-----------|----------|----------|----------|
| 11-15 | | | 441.1000 |
| 16-20 | | 421.0000 | 421.0000 |
| 21-30 | | | 438.7000 |
| 31-40 | | | 466.1000 |
| 41-50 | 384.3000 | 384.3000 | 384.3000 |
| 51-60 | 389.4000 | 389.4000 | 389.4000 |
| 61-70 | 391.9000 | 391.9000 | 391.9000 |
| 71-80 | 337.3000 | 337.3000 | |
| 81-90 | 309.0000 | | |

Table 8: Results of Duncan's post-hoc test for SPM (Telugu).

| Age Group | 1 | 2 | 3 |
|-----------|----------|----------|----------|
| 11-15 | | | 126.0180 |
| 16-20 | | 120.3800 | 120.3800 |
| 21-30 | | 125.2300 | 125.2300 |
| 31-40 | | | 133.1500 |
| 41-50 | 116.0610 | 116.0610 | 116.0610 |
| 51-60 | 116.6800 | 116.6800 | 116.6800 |
| 61-70 | 110.1630 | 110.1630 | 110.1630 |
| 71-80 | 96.4930 | 96.4930 | |
| 81-90 | 88.8200 | | |

Table 9: Results of Duncan's post-hoc test for WPM (Telugu).

Tamil

SS, SPM, and WPM increased from 5 years to 80 years. However, there was no consistent linear increase in rate of speech. Table 10 shows mean and SD of SS, SPM, and WPM. Figures 7 to 9 show mean SS, SPM, and WPM across age.

| Age | | SS | SPM | WPM |
|---------|-----------|--------|----------|----------|
| 5-5.11 | Mean | 4.9950 | 299.4675 | 113.9975 |
| | SD | 1.0360 | 62.3379 | 23.7109 |
| 6-6.11 | Mean | 4.6484 | 278.9059 | 86.0060 |
| | SD | 1.0709 | 64.2550 | 19.8293 |
| 7-10 | Mean | 6.6920 | 401.5178 | 123.8661 |
| | SD | 1.6674 | 100.0455 | 30.8635 |
| 11-15 | Mean | 4.5113 | 271.7749 | 94.6891 |
| | SD | .3627 | 21.8501 | 7.7201 |
| 16-20 | Mean | 6.5238 | 383.5347 | 133.0958 |
| | SD | .7114 | 53.0329 | 18.4800 |
| 21-30 | Mean | 6.5044 | 390.8467 | 135.6623 |
| | SD | 1.2267 | 73.5010 | 25.4697 |
| 31-40 | Mean | 5.4654 | 326.3887 | 113.5195 |
| | SD | 1.1116 | 67.7142 | 23.5099 |
| 41-50 | Mean | 5.9058 | 352.6335 | 122.4497 |
| | SD | .8357 | 49.1482 | 17.2613 |
| 51-60 | Mean | 5.4330 | 326.3735 | 114.8765 |
| | SD | .8551 | 51.5573 | 20.3268 |
| 61-70 | Mean | 5.6564 | 339.9639 | 118.0024 |
| | SD | 1.0284 | 61.8869 | 21.4296 |
| 71-80 | Mean | 5.9033 | 353.8821 | 123.3533 |
| | SD | .9218 | 54.2288 | 18.5347 |
| Average | Mean | 5.7169 | 342.1399 | 117.0508 |
| | SD | 1.2058 | 72.3806 | 24.6119 |

Table 10: Mean and SD of rate of speech in Tamil speakers.

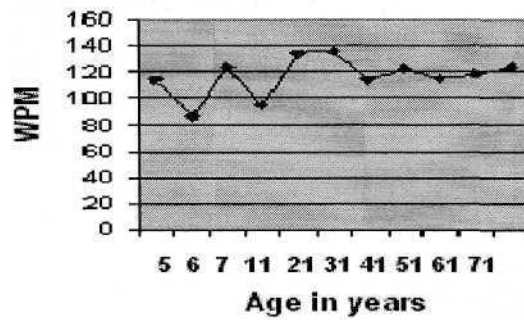
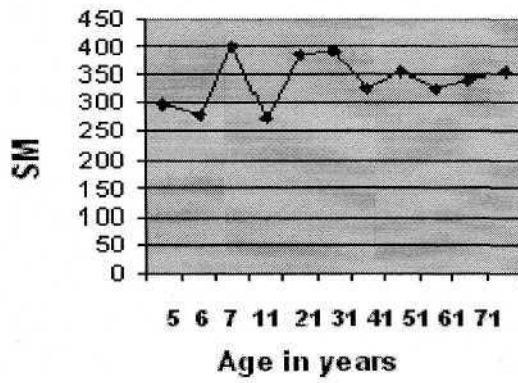
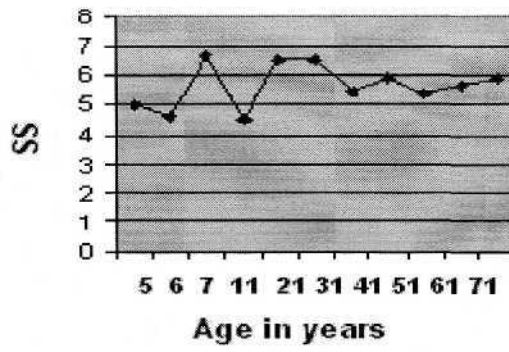


Figure 9: Words per minute in Tamil speakers.

ONE-WAY ANOVA indicated significant difference between age groups {SS = [F (10, 91) = 4.719, p < 0.01], SPM = [F (10, 91) = 4.398, p < 0.01], WPM = [F (10, 91) = 4.459, p < 0.01]}. Tables 11 to 13 show results of the Duncan's post-hoc test. Values in the same column are not significantly different.

| Age Group | 1 | 2 | 3 | 4 | 5 |
|-----------|--------|--------|--------|--------|--------|
| 5-5.11 | 44950 | 44950 | 44950 | | |
| 6-6.11 | 4.6484 | 4.6484 | | | |
| 7-10 | | | | | 6.6920 |
| 11-15 | 4.5113 | | | | |
| 16-20 | | | | 65238 | 6.5238 |
| 21-30 | | | | 6.5044 | 6.5044 |
| 31-40 | 5.4654 | 5.4654 | 54654 | 54654 | |
| 41-50 | | | 5.9058 | 5.9058 | 5.9058 |
| 51-60 | 5.4330 | 5.4330 | 5.4330 | 5.4330 | |
| 61-70 | | 5.6564 | 5.6564 | 5.6564 | 5.6564 |
| 71-80 | | | 5.9033 | 5.9033 | 5.9033 |

| Age Group | 1 | 2 | 3 | 4 | 5 |
|-----------|----------|----------|----------|----------|----------|
| 5-5.11 | 299.4675 | 299.4675 | 299.4675 | | |
| 6-6.11 | 278.9059 | 278.9059 | | | |
| 7-10 | | | | | 401.5178 |
| 11-15 | 271.7749 | | | | |
| 16-20 | | | | 383.5347 | 383.5347 |
| 21-30 | | | | 390.8467 | 390.8467 |
| 31-40 | 326.3887 | 326.3887 | 326.3887 | 326.3887 | |
| 41-50 | | | 352.6335 | 352.6335 | 352.6335 |
| 51-60 | 326.3735 | 326.3735 | 326.3735 | 326.3735 | |
| 61-70 | | 339.9639 | 339.9639 | 339.9639 | 339.9639 |
| 71-80 | | | 353.8821 | 353.8821 | 353.8821 |

Table 12: Results of Duncan's post-hoc test for SPM (Tamil).

| Age Group | 1 | 2 | 3 |
|-----------|---------|----------|----------|
| 5-5.11 | | 113.9975 | 113.9975 |
| 6-6.11 | 86.0060 | | |
| 7-10 | | | 123.8661 |
| 11-15 | 94.6891 | 94.6891 | |
| 16-20 | | | 133.0958 |
| 21-30 | | | 135.6623 |
| 31-40 | | 113.5195 | 113.5195 |
| 41-50 | | | 122.4497 |
| 51-60 | | 114.8765 | 114.8765 |
| 61-70 | | | 118.0024 |
| 71-80 | | | 123.3533 |

Table 13: Results of Duncan's post-hoc test for WPM (Tamil).

Malayalam

SS, SPM, and WPM increased from 11 years to 30 years and decreased steadily from 31 years to 100 years. Table 14 shows mean and SD of SS, SPM, and WPM. Figures 10 to 12 show mean SS, SPM, and WPM across age.

| Age | | SS | SPM | WPM |
|---------|------|--------|----------|----------|
| 11-15 | Mean | 7.9082 | 474.4926 | 115.2427 |
| | SD | .8486 | 50.9189 | 12.3654 |
| 16-20 | Mean | 8.8040 | 528.9257 | 128.2894 |
| | SD | 1.2238 | 71.3538 | 17.7127 |
| 21-30 | Mean | 9.2600 | 557.9370 | 135.4231 |
| | SD | .9902 | 61.7733 | 14.9202 |
| 31-40 | Mean | 8.2000 | 492.1712 | 119.4511 |
| | SD | .6055 | 35.5242 | 8.5534 |
| 41-50 | Mean | 7.9000 | 476.6454 | 115.6346 |
| | SD | 1.2275 | 80.9450 | 19.7229 |
| 51-60 | Mean | 7.9390 | 482.6940 | 117.1112 |
| | SD | 1.0498 | 66.8788 | 16.1906 |
| 61-70 | Mean | 7.8170 | 447.6767 | 109.9117 |
| | SD | .5858 | 66.2682 | 12.4797 |
| 71-80 | Mean | 7.0350 | 421.1902 | 102.3253 |
| | SD | 1.6478 | 99.4643 | 23.9974 |
| 81-90 | Mean | 6.6160 | 397.8133 | 96.4343 |
| | SD | .8643 | 51.8349 | 12.7868 |
| 91-100 | Mean | 4.2800 | 257.4613 | 62.6108 |
| | SD | .7302 | 43.9912 | 10.7018 |
| Average | Mean | 7.8240 | 468.6865 | 113.8287 |
| | SD | 1.4037 | 87.6557 | 21.0098 |

Table 14: Mean and SD of rate of speech in Malayalam speakers.

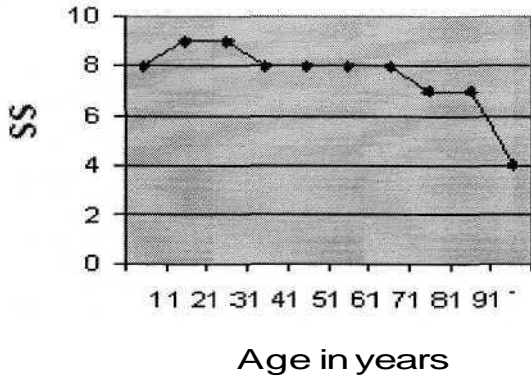


Figure 10: Syllables per second in Malayalam speakers.

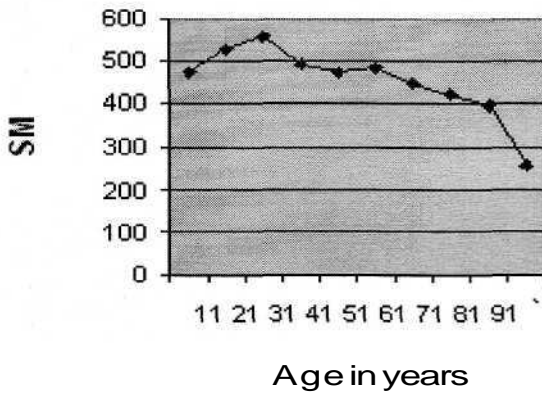


Figure 11: Syllables per minute in Malayalam speakers.

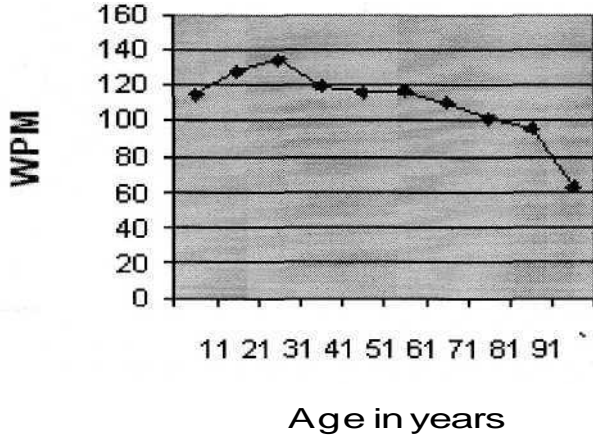


Figure 12: Words per minute in Malayalam speakers.

ONE-WAY ANOVA indicated significant difference between age groups conditions {SS = [F (9, 83) = 9.173, p < 0.01], SPM = [F (10, 91) = 8.241, p < 0.01], WPM = [F (10, 91) = 8.606, p < 0.01]}. Tables 15 to 17 show results of Duncan's post-hoc test. Values in the same column are not significantly different.

| Age Group | 1 | 2 | 3 | 4 | 5 |
|-----------|--------|--------|--------|--------|--------|
| 11-15 | | | 7.9082 | 7.9082 | |
| 16-20 | | | | 8.8040 | 8.8040 |
| 21-30 | | | | | 9.2600 |
| 31-40 | | | 8.2000 | 8.2000 | 8.2000 |
| 41-50 | | | | 7.9000 | 7.9000 |
| 51-60 | | | | 7.9390 | 7.9390 |
| 61-70 | | | | 7.8170 | 7.8170 |
| 71-80 | | | | 7.0350 | 7.0350 |
| 81-90 | | 6.6160 | | | |
| 91-100 | 4.2800 | | | | |

Table 15: Results of Duncan's post-hoc test for SS (Malayalam).

| Age Group | 1 | 2 | 3 | 4 | 5 |
|-----------|----------|----------|----------|----------|----------|
| 11-15 | | | 474.4926 | 474.4926 | |
| 16-20 | | | | 528.9257 | 528.9257 |
| 21-30 | | | | | 557.9370 |
| 31-40 | | | 492.1712 | 492.1712 | 492.1712 |
| 41-50 | | | 476.6454 | 476.6454 | |
| 51-60 | | | 482.6940 | 482.6940 | |
| 61-70 | | 447.6767 | 447.6767 | | |
| 71-80 | | 423.1902 | 423.1902 | | |
| 81-90 | | 397.8133 | | | |
| 91-100 | 257.4613 | | | | |

Table 16: Results of Duncan's post-hoc test for SPM (Malayalam).

| Age Group | 1 | 2 | 3 | 4 | 5 |
|-----------|---------|----------|----------|----------|----------|
| 11-15 | | | 115.2427 | 115.2427 | |
| 16-20 | | | | 128.2894 | 128.2894 |
| 21-30 | | | | | 135.4231 |
| 31-40 | | | 119.4511 | 119.4511 | 119.4511 |
| 41-50 | | | 115.6346 | 115.6346 | |
| 51-60 | | | 117.1112 | 117.1112 | |
| 61-70 | | 109.9117 | 109.9117 | | |
| 71-80 | | 102.3253 | 102.3253 | | |
| 81-90 | | 96.4343 | | | |
| 91-100 | 62.6108 | | | | |

Table 17: Results of Duncan's post-hoc test for WPM (Malayalam).

Comparison of languages

The results indicated that Malayalam speakers had highest syllables per second and syllables per minute compared to speakers of other three languages. Tables 18 to 20 and figures 13 to 15 depict comparison of SS, and SPM in 4 languages.

| Age range | K | Te | Ta | Ma |
|-----------|---|----|----|----|
| 3-3.11 | 5 | | | |
| 4-4.11 | 4 | | | |
| 5-5.11 | 4 | | 5 | |
| 6-6.11 | 4 | | 5 | |
| 7-10 | 4 | | 7 | |
| 11-15 | 6 | 7 | 5 | 8 |
| 16-20 | 7 | 7 | 6 | 9 |
| 21-30 | 6 | 8 | 7 | 9 |
| 31-40 | 7 | 6 | 5 | 8 |
| 41-50 | 7 | 7 | 6 | 8 |
| 51-60 | 7 | 6 | 5 | 8 |
| 61-70 | 7 | 6 | 6 | 8 |
| 71-80 | 6 | 5 | 6 | 7 |
| 81-90 | 7 | 5 | | 7 |
| 91-100 | | | | 4 |
| Average | 6 | 6 | 6 | 8 |

Table 18: Syllables per second in 4 languages (K = Kannada, Te = Telugu, Ta = Tamil, M = Malayalam).

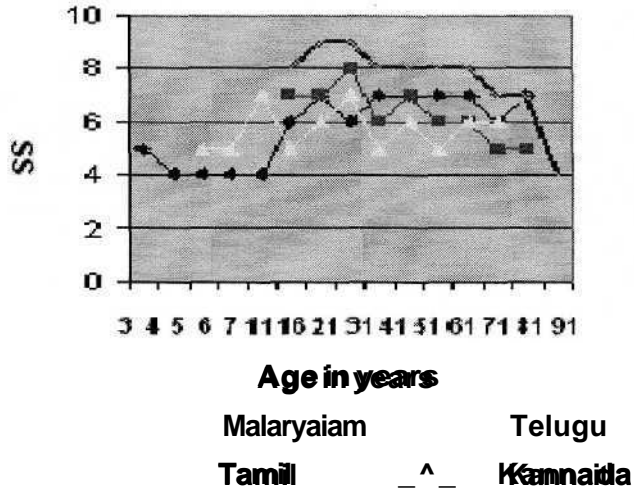


Figure 13: Syllables per second in four languages.

| Age range | K | Te | Ta | M |
|----------------|------------|------------|------------|------------|
| 3-3.11 | 291 | | | |
| 4-4.11 | 252 | | | |
| 5-5.11 | 252 | | 299 | |
| 6-6.11 | 261 | | 278 | |
| 7-10 | 250 | | 402 | |
| 11-15 | 343 | 431 | 272 | 474 |
| 16-20 | 425 | 439 | 384 | 529 |
| 21-30 | 385 | 466 | 391 | 558 |
| 31-40 | 434 | 384 | 326 | 492 |
| 41-50 | 410 | 389 | 353 | 477 |
| 51-60 | 415 | 392 | 326 | 483 |
| 61-70 | 403 | 336 | 340 | 448 |
| 71-80 | 390 | 309 | 354 | 423 |
| 81-90 | 337 | 309 | | 398 |
| 91-100 | | | | 257 |
| Average | 346 | 384 | 342 | 469 |

Table 19: Syllables per minute in 4 languages (K = Kannada, Te = Telugu, Ta = Tamil, M = Malayalam).

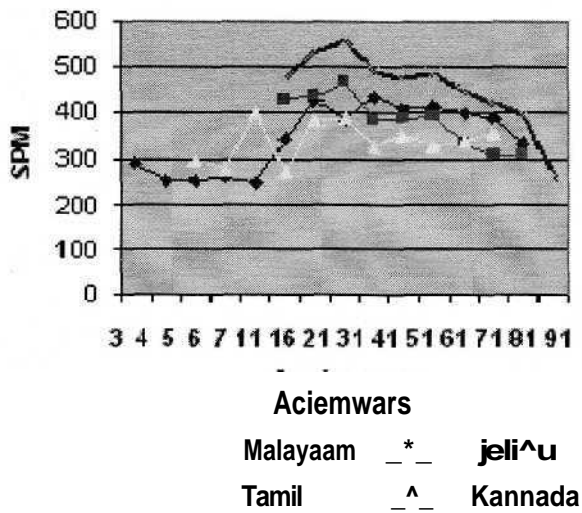


Figure 14: Syllables per minute in four languages.

Tamil speakers had higher words per minute compared to speakers of other 3 languages. Table 20 and figure 17 show WPM in 4 languages.

| Age range | K | Te | Ta | M |
|-----------|-----|-----|-----|-----|
| 3-3.11 | 129 | | | |
| 4-4.11 | 91 | | | |
| 5-5.11 | 120 | | 114 | |
| 6-6.11 | 92 | | 86 | |
| 7-10 | 85 | | 124 | |
| 11-15 | 104 | 123 | 95 | 115 |
| 16-20 | 127 | 125 | 133 | 128 |
| 21-30 | 116 | 133 | 136 | 135 |
| 31-40 | 131 | 116 | 114 | 119 |
| 41-50 | 124 | 117 | 122 | 116 |
| 51-60 | 124 | 110 | 115 | 117 |
| 61-70 | 124 | 96 | 118 | 110 |
| 71-80 | 118 | 89 | 123 | 102 |
| 81-90 | 102 | 89 | | 96 |
| 91-100 | | | | 63 |
| Average | 113 | 111 | 117 | 114 |

Table 20: Words per minute in 4 languages (K = Kannada, Te = Telugu, Ta = Tamil, M = Malayalam).

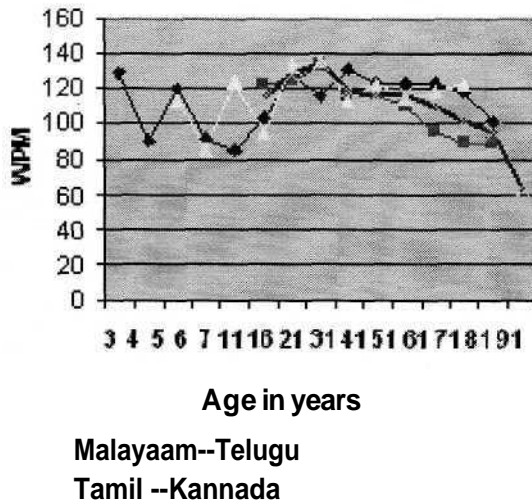


Figure 15: Words per minute in four languages

The differences between languages can be attributed to differences in syllable structure. Table 21 shows the syllable types and percent occurrence of such syllables in 4 Dravidian languages. The data is extracted from the reading passages used in this study. Unlike in Kannada, consonants occur in word-final position in Telugu, Tamil and Malayalam. Higher occurrence of V type of syllables and lower occurrence of CCV type of syllables in Malayalam compared to Kannada and Tamil seems to contribute to higher syllables per second in Malayalam.

| Syllable type | Kannada | Telugu | Tamil | Malayalam |
|---------------|---------|-----------|-------|-----------|
| V | 6.3 | a2 | 4.8 | 7.3 |
| CV | 73 | 67 | 54 | 74 |
| CCV | 21 | 22 | 0.4 | 3.6 |
| CVC | | 1.6 | 38 | 13.4 |
| CCVC | | 0.5 | | 0.2 |
| CCCV | | 0.2 | | |
| VCC | | | 0.1 | 0.2 |
| VC | | | 2.7 | 1.1 |
| CVCC | | | 0.3 | 0.2 |
| Total | 100 | 100 | 100 | 100 |

Table 21: Percent syllable type in 4 Dravidian languages.

MANOVA showed significant difference between languages {S - [F (3,325) = 85.323, p < 0.001], SPM - [F (3,325) =64.822, p < 0.001]} on syllables per second and syllables per minute. No significant differences between languages on WPM were evident. Also, no significant gender difference was observed. Table 22 shows results of post-hoc Duncan's test for significant difference between languages. Results indicate no significant difference between Tamil and Kannada and significant difference between Telugu and other languages, and Malayalam and other languages (SS and SPM). Values in the same column are not significantly different.

| | N | Subset 1 | | |
|-----------|-----|----------|----------|----------|
| | SS | | | |
| Language | | 1 | 2 | 3 |
| Tamil | 103 | 5.6720 | | |
| Kannada | 136 | 5.7771 | | |
| Telugu | 82 | | 6.6651 | |
| Malayalam | 93 | | | 7.8240 |
| | SPM | | | |
| Tamil | 103 | 339.4596 | | |
| Kannada | 136 | 346.7957 | | |
| Telugu | 82 | | 406.2927 | |
| Malayalam | 93 | | | 468.6865 |

Table 22: Results of Duncan's test on significant difference between languages.

The results indicated differences in rate of speech across Dravidian languages. The average rate of reading in Kannada, Telugu, and Tamil are in consonance with the earlier studies by Walker & Black (1950), Rathna et. al. (1979), and Venkatesh et. al (1983). However, Malayalam seems to be an exception with higher rates o|SS and SPM.

One of the criteria for successful treatment outcome in fluency disorders is a speech rate within normal limits. This is to ensure that a reduction in stuttering is not achieved by abnormally slowing down speech rate that might adversely affect speech naturalness. A major basis of this study was that speech rate data available in the

literature is not appropriate for formulating target rates in rate control therapies because rate of speech / reading depends on age and language. A rate at the lower boundary of 95% confidence interval for mean may be appropriate for setting goals in rate control therapies. That is the rate as prescribed in Appendix II may be set as a goal in rate control therapy depending upon the age and language of the subjects.

Summary and conclusions

Rate of speech is an important variable in the evaluation and treatment of fluency disorders. It is well known that the rate of speech correlates negatively with the severity of stuttering because frequent and/or long duration stutters result in reduced speech output. However, a deliberate reduction in the rate of speech has a beneficial effect on the frequency of stutters and, therefore, nearly all stuttering treatment approaches include rate reduction as one of their goals. Rate control is also a treatment target in cluttering. In addition, rate of speech is an important factor in the perceptual evaluation of normalcy of speech following treatment of stuttering. Extremely slow rate of speech even if completely devoid of dysfluencies, is perceived as unnatural by listeners. It is important for the practicing clinician to know about these changes, for the assessment of stuttering and cluttering should be made by comparing the client's fluency with the level of fluency that would be expected for a normal person of the same age.

Surprisingly, however, there are few empirically derived guidelines available for clinical measurement of rate and for setting goals for rate. Values of approximately 200 SPM or 150 SPM are frequently used in setting goals for rate of speech (Perkins, 1973; Boberg & Kully, 1985) because mean rates of adult discourse tend to converge around these values (Luchsinger, 1965). However, rate of speech depends on age, gender and language and therefore a common rate can't

be set as a goal in rate control therapy for various age groups and languages. But, there is little objective data in support of these recommendations. In this context, the present study investigated rate of speech/ reading in 4 Dravidian languages and *established normative data on rate of speech in Kannada, Tamil, Telugu, and Malayalam in subjects ranging in 10 decades.*

Four hundred and one (Kannada = 136, Telugu = 69, Tamil = 103, Malayalam = 93) normal subjects participated in the study. All subjects were literates and were from urban population. Informed consent was obtained from subjects prior to collection of speech samples. Subjects in the age range of 4-10 years described cartoons and narrated stories and subjects in the age range of 11-100 years read passages which were developed by the investigators. All these were audio-recorded and analyzed to obtain syllables per second, syllables per minute and words per minute. Cool Edit software was used to eliminate pause and calculate duration.

Results indicated significant difference between age groups, and languages. Rate of speech increased with increase in age till about 40 years and declined after 40 years (except Tamil). Malayalam had the highest SS and SPM compared to other languages. No significant difference between genders was observed. The results provide normative data for clinical purposes and to set rate of speech in persons with stuttering and cluttering.

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Appendix I - Reading passage in 4 languages

¹ಒಂದು | ²ಊರಿನಲ್ಲಿ | ³ಒಬ್ಬ | ⁴ಬ್ರಾಹ್ಮಣನಿದ್ದ | ⁵ಇವನು | ⁶ತುಂಬಾ | ⁷ವಿದ್ಯಾವಂತ,
⁸ಗೌರವಸ್ತು. | ⁹ಆದರೆ | ¹⁰ಮೂಢನಂಬಿಕೆಗಳೇ | ¹¹ಇವನಿಗೆ | ¹²ದೇವರು. | ¹³ಯಾವುದೇ |
¹⁴ವಿಚಾರದಲ್ಲೂ | ¹⁵ಮೂಢನಂಬಿಕೆಗಳಿಗೆ | ¹⁶ಕಟ್ಟು | ¹⁷ಬೀಳುತ್ತಿದ್ದ. | ¹⁸ಇದರಿಂದ |
¹⁹ಜೀವನದಲ್ಲಿ | ²⁰ಇಲ್ಲದ | ²¹ತೊಂದರೆಗಳಿಗೆ | ²²ಒಳಗಾಗಿದ್ದ. |

²³ಇವನು | ²⁴ತಿಂದು-ತೇಗಿ | ²⁵ತುಂಬಾ | ²⁶ದಢೂತಿ | ²⁷ಆಗಿದ್ದ. | ²⁸ಎಲ್ಲರೂ | ²⁹ಇವನನ್ನು |
³⁰ತೂಣಪ-ಗಣಪ | ³¹ಎಂದೇ | ³²ಕರೆಯುತ್ತಿದ್ದರು. | ³³ಪುಷ್ಕಳವಾದ | ³⁴ಊಟ |
³⁵ಅಂದರೆ | ³⁶ಇವನಿಗೆ | ³⁷ತುಂಬಾ | ³⁸ಇಷ್ಟ | ³⁹ಯಾರೇ | ⁴⁰ಊಟಕ್ಕೆ | ⁴¹ಕರೆಯಲಿ, |
⁴²ಯಾವುದೇ | ⁴³ಸಮಾರಂಭವಾಗಲಿ | ⁴⁴ಹಾಜರಾಗುತ್ತಿದ್ದ. |

⁴⁶ಅಲ್ಲೋಂದು | ⁴⁷ನಗರ. | ⁴⁸ಧನಪತಿ | ⁴⁹ಎಂಬ | ⁵⁰ವ್ಯಾಪಾರಿ | ⁵¹ಇದ್ದ. | ⁵²ತೂಣಪ |
⁵³ಬ್ರಾಹ್ಮಣನಿಗೂ | ⁵⁴ಇವನಿಗೂ | ⁵⁵ಬಾಲ್ಯದಿಂದಲೂ | ⁵⁶ಸ್ನೇಹ. | ⁵⁷ಒಂದು | ⁵⁸ಬಾರಿ |
⁵⁹ವ್ಯಾಪಾರಿಯ | ⁶⁰ಮಗನಿಗೆ | ⁶¹ಹುಟ್ಟುಹಬ್ಬದ | ⁶²ಸಮಾರಂಭ | ⁶³ಜರುಗಿತು. | ⁶⁴ಸಾಕಷ್ಟು |
⁶⁵ಮಂದಿ | ⁶⁶ಗಣ್ಯರಿಗೆ | ⁶⁷ಕರೆ | ⁶⁸ಕಳುಹಿಸಿದ. | ⁶⁹ಬ್ರಾಹ್ಮಣನಿಗೂ | ⁷⁰ಕರೆಯೋಲೆ | ⁷¹ಬಂತು. |

⁷²ಪ್ರೀತಿಯ | ⁷³ಬಾಲ್ಯ | ⁷⁴ಸ್ನೇಹಿತನ | ⁷⁵ಮನೆ, | ⁷⁶ಜೊತೆಗೆ | ⁷⁷ಸಾಹುಕಾರ | ⁷⁸ಸ್ನೇಹಿತನ |
⁷⁹ಮನೆಯ | ⁸⁰ಸಮಾರಂಭ. | ⁸¹ಸ್ಮರಿಸುತ್ತಿದ್ದಂತೇ, | ⁸²ಬಾಯಿ | ⁸³ತುಂಬಾ | ⁸⁴ನೀರೂರಿತು. |
⁸⁵ಆದರೆ | ⁸⁶ಅವನ | ⁸⁷ಮನೆ | ⁸⁸ಇದ್ದದ್ದು | ⁸⁹ಬ್ರಾಹ್ಮಣರಿದ್ದ | ⁹⁰ಊರಿನಿಂದ | ⁹¹ಆರು |
⁹²ಮೈಲಿಗಳ | ⁹³ದೂರದಲ್ಲಿ. | ⁹⁴ದಢೂತಿ | ⁹⁵ಇದ್ದುದರಿಂದ | ⁹⁶ಬಸ್ಸುಗಳಲ್ಲಿ |

⁹⁷ ಹೋಗಲು | ⁹⁸ ಸಹ | ⁹⁹ ತುಂಬಾ | ¹⁰⁰ ಮುಜುಗರ | ¹⁰¹ ನಡೆದುಕೊಂಡೇ |
¹⁰² ಹೋದರಾಯಿತು | ¹⁰³ ಆರೋಗ್ಯವೂ | ¹⁰⁴ ಜೊತೆಗೆ | ¹⁰⁵ ಹಸಿದ | ¹⁰⁶ ಹೊಟ್ಟೆಗೆ | ¹⁰⁷ ಊಟವೂ |
¹⁰⁸ ತುಂಬಾ | ¹⁰⁹ ರುಚಿಸುತ್ತದೆ" | ¹¹⁰ ಅಂದುಕೊಂಡ. |

¹¹¹ ಸಮಾರಂಭದ | ¹¹² ದಿನ | ¹¹³ ಬಂತು. | ¹¹⁴ ಬೇಗ | ¹¹⁵ ಸ್ನಾನಾದಿಗಳನ್ನು | ¹¹⁶ ಮುಗಿಸಿದ. | ¹¹⁷ ಹಣೆಗೆ |
¹¹⁸ ವಿಭೂತಿ | ¹¹⁹ ಧರಿಸಿದ. | ¹²⁰ ನಾಲ್ಕು | ¹²¹ ಬೆರಳಂಚಿನ | ¹²² ಧೋತ್ರ | ¹²³ ಉಟ್ಟು, | ¹²⁴ ಜರತಾರಿ |
¹²⁵ ಶಾಲು | ¹²⁶ ಹೊದ್ದುಕೊಂಡ. | ¹²⁷ ಮನೆಯಿಂದ | ¹²⁸ ಹೊರಗೆ | ¹²⁹ ಕಾಲಿಡುತ್ತಿದ್ದಂತೆ | ¹³⁰ ಒಬ್ಬ |
¹³¹ ಕುಷರೋಗಿ | ¹³² ಕಾಣಿಸಿದ. | ¹³³ "ದಿಕ್ಕಿಲ್ಲ | ¹³⁴ ತಂದೇ, | ¹³⁵ ಯಾರಾದ್ಯು | ¹³⁶ ದಾನ | ¹³⁷ ಮಾಡಿ |
¹³⁸ ಅಪ್ಪಾ' | ¹³⁹ ಎಂದು | ¹⁴⁰ ರಾಗಾಲಾಪನೆ | ¹⁴¹ ಮಾಡುತ್ತಾ | ¹⁴² ಬಂದ. | ¹⁴³ 'ಧೂ | ¹⁴⁴ ಅಪಶಕುನ' |
¹⁴⁵ ಅಂದುಕೊಂಡು | ¹⁴⁶ ಮನೆಯೊಳಗೆ | ¹⁴⁷ ಹಿಂದಿರುಗಿದ. |

¹⁴⁸ ಐದು | ¹⁴⁹ ನಿಮಿಷದ | ¹⁵⁰ ನಂತರ | ¹⁵¹ ಮತ್ತೆ | ¹⁵² ಮನೆಯಿಂದ | ¹⁵³ ಹೊರಗೆ | ¹⁵⁴ ಬಂದ. | ¹⁵⁵ ಅತ್ಯಲ್ಪ |
¹⁵⁶ ದೂರ | ¹⁵⁷ ಹೋಗುತ್ತಿದ್ದಂತೆ | ¹⁵⁸ ಒಂದು | ¹⁵⁹ ಕರಿಯ | ¹⁶⁰ ಬೆಕ್ಕು | ¹⁶¹ ಇವನ | ¹⁶² ಪಾದಗಳ |
¹⁶³ ಮೇಲಿಂದ | ¹⁶⁴ ಹರಿದು | ¹⁶⁵ ಹೋಯಿತು. | ¹⁶⁶ ಅವನ | ¹⁶⁷ ಜೊತೆಗಾರ | ¹⁶⁸ ಬ್ರಾಹ್ಮಣರು |
¹⁶⁹ "ಏನಿ | ¹⁷⁰ ಗಣಪಯ್ಯನವರೇ, | ¹⁷¹ ಬರೋದಿಷ್ಟೇ?" | ¹⁷² ಎಂದು | ¹⁷³ ವಿಚಾರಿಸುತ್ತಾ |
¹⁷⁴ ಮುಂದೆ | ¹⁷⁵ ಮುಂದೆ | ¹⁷⁶ ಹೋದರೂ, | ¹⁷⁷ ಸಹ | ¹⁷⁸ ಇವನು | ¹⁷⁹ ಅಪಶಕುನ | ¹⁸⁰ ಆಯಿತೆಂದು |
¹⁸¹ ಮತ್ತೆ | ¹⁸² ಮನೆಗೆ | ¹⁸³ ಹಿಂದಿರುಗಿದ. | ¹⁸⁴ ಮತ್ತೆ | ¹⁸⁵ ಐದಾರು | ¹⁸⁶ ನಿಮಿಷಗಳ | ¹⁸⁷ ಕಾಲ | ¹⁸⁸ ಬೆಕ್ಕು |
¹⁸⁹ ಹಾಗೂ | ¹⁹⁰ ರೋಗಿಯನ್ನು | ¹⁹¹ ಶಪಿಸುತ್ತಾ | ¹⁹² ಮನೆಯಲ್ಲಿಯೇ | ¹⁹³ ಇದ್ದು, |
¹⁹⁴ ಮ್ಹಾರನೆಯ | ¹⁹⁵ ಬಾರಿ | ¹⁹⁶ ಮನೆಯಿಂದ | ¹⁹⁷ ಹೊರಟ. |

198 199 200 201 202 203 204 205
 ಹೊಸಿಲ ಬಳಿ ಬರುತ್ತಿದ್ದಂತೆ ಮನೆಯ ಹೊಸಿಲಿನ ಬಳಿ ಎಡಪಾದ ತಾಕಿ
 ಎಡವಿಡ. ಯಾಕೋ ಗ್ರಹಚಾರ ಸರಿಯಿಲ್ಲ ಅಂದುಕೊಂಡು ಇನ್ನೂ
 ಕೆಲವು ನಿಮಿಷಗಳ ಕಾಲ ಮನೆಯೊಳಗೇ ಇದ್ದು ಮತ್ತೆ ಬೇಗ ಬೇಗ
 ಸೇಹಿತನ ಮನೆಯ ಕಡೆ ನಡೆದ.

224 225 226 227 228 229
 ಮೊದಲೇ ಬೊಜ್ಜು ಹೊಟ್ಟೆ ಬೇಗ ಬೇಗ ಹೆಜ್ಜೆ ಹಾಕುತ್ತಿದ್ದಂತೆ,
 ಬ್ರಾಹ್ಮಣನಿಗೆ ಮೇಲುಸಿರು ಹೆಚ್ಚಾಯಿತು. ಹಾಗೂ ಹೀಗೂ ಕಷ್ಟದಿಂದ
 ಸೇಹಿತನ ಮನೆ ತಲುಪಿದ. ಹೋಗಿದ್ದವರೆಲ್ಲರೂ, ಊಟ ಮಾಡಿ, ಕೈ
 ತೊಳೆದುಕೊಂಡು ಸಂತೋಷದಿಂದ ತೂಗುತ್ತಾ ತಾಂಬೂಲ
 ಪಡೆಯುತ್ತಿದ್ದರು.

248 249 250 251 252 253 254
 ಇಷ್ಟು ಹೊತ್ತು ಮೀರಿ ಬಂದ ಬ್ರಾಹ್ಮಣನನ್ನು ಕಂಡು ಧನಪತಿ
 ಪೇಚಾಡಿದ 'ಯಾಕಯ್ಯಾ ಇಷ್ಟು ತಡ ಮಡಿದೆ? ಊಟದ ವೇಳೆಯೇ
 ಮುಗಿದು ಹೋಗಿತೇ? ಅನ್ನುತ್ತಾ ಎರಡು ಬಾಳೆಹಣ್ಣು ಒಂದು
 ಲೋಟ ಹಾಲು ತರಿಸಿಕೊಟ್ಟ.

271 272 273 274 275 276 277
 ಬ್ರಾಹ್ಮಣ ಅಷ್ಟರಿಂದಲೇ ತುಪ್ಪಿಪಟ್ಟು ಬಂದ ದಾರಿಗೆ ಸುಂಕ ಇಲ್ಲ
 ಅನ್ನುವಂತೆ ಸಾಕೋ ಸಾಕಾಗಿ ನಡೆದುಕೊಂಡೇ ಮನೆಗೆ ಬಂದ.
 ಆಗಲೂ ಇವನಿಗೆ ಮೂಢನಂಬಿಕೆಗಳಲ್ಲಿದ್ದ ವಿಶ್ವಾಸ ಅಳಿದಿರಲಿಲ್ಲ.
 'ಹಾಳು ಬೆಕ್ಕು ಕುಷ್ಟರೋಗಿ ಈ ದಿನ ನನಗೆಲ್ಲಿ ಕಾದಿದ್ದರೋ

296 297 298 299 300 301 302
ಅಂದುಕೊಂಡೇ | ಮಲಗಿದ. | ಎಡವಿದ್ದ | ಪಾದದ | ನೋವು | ಇವನ | ನಿರ್ದೇಗೂ /
304 304
ಭಂಗ | ತಂದಿತು. |

300 words passage (Telugu)

ఒక ఊళ్లో ఒక బ్రాహ్మణుడు ఉండేవాడు. ఇతను గొప్ప విద్యావంతుడు, గౌరవనీయుడు. కాని మూఢనమ్మకాలే ఇతనికి దేవుళ్ళు. ఏ విషయంలోనైనా మూఢ నమ్మకాలకు కట్టుబడి ఉండేవాడు. ఇందువల్ల జీవితంలో లేని కష్టాలకు గురయ్యాడు.

ఇతను బాగా తిని భారీకాయుడు అయ్యాడు. అందరూ ఇతన్ని బొజ్జవాడు, గణపతి అని పిలిచేవారు. పుష్టికరమైన భోజనం అంటే ఇతనికి చాలా ఇష్టం. ఎవరు భోజనానికి పిలిచినా, ఏ కార్యక్రమం జరిగినా హాజరయ్యేవాడు.

అక్కడొక నగరం. ధనపతి అనే వ్యాపారి ఉండేవాడు. బొజ్జ బ్రాహ్మణునికీ ఇతనికీ బాల్యం నుంచే స్నేహం ఉండేది. ఒకసారి వ్యాపారి కుమారునికి పుట్టినరోజు పండగ జరిగింది. ఆ కార్యక్రమానికి అనేకమంది పెద్దలను ఆహ్వానించాడు. బ్రాహ్మణుణ్ణి కూడా ఆహ్వానించాడు.

ప్రియమైన బాల్యస్నేహితుని ఇల్లు, దానికి తోడు షావుకారు స్నేహితుని ఇంటి కార్యక్రమం, తలచుకుంటేనే

నోటినిండా నీళ్ళూరాయి. అయితే బ్రాహ్మణుడున్న ఊరినుంచి ఆరుమైళ్ళు దూరంలో అతని ఇల్లు ఉంది. భారీకాయుడు కావడంతో బస్సుల్లో పోవడానికి కూడా సంకోచమే. నడచుకొనిపోతే సరి. ఆరోగ్యమూ దానికితోడు పొట్టకు భోజనం బాగా రుచిస్తుంది అని అనుకొన్నాడు.

కార్యక్రమం రోజు రానే వచ్చింది. తొందరగా స్నానాదులను ముగించాడు. నుదుటికి విభూతి ధరించాడు. నాలుగు వేళ్ళ అంచున్న పంచెను కట్టి, జరీ శాలువాను కప్పుకొన్నాడు. ఇంటినుంచి కాలు బైట పెట్టగానే ఒక కుష్టురోగి కనిపించాడు. దిక్కులేదు తండ్రో, ఎవరైనా దానం చెయ్యండయ్యా! అంటూ రాగాలుతీస్తూ వచ్చాడు. "ధూ అపశకునం" అనుకొని ఇంటిలోపలికి వెనుదిరిగాడు.

ఐదు నిమిషాల తర్వాత మళ్ళీ ఇంటినుంచి వెలుపలికి వచ్చాడు. కొంచెం దూరం పోగానే ఒక నల్ల పిల్లి ఇతని పాదాల పైనుంచి వెళ్ళింది. అతని జతనున్న బ్రాహ్మణులు "ఏమండీ! గణపతిగారూ! రావటం లేదా?" అంటూ విచారిస్తూ ముందుకు పోయినా కూడా ఇతను అపశకునం అయ్యిందని మళ్ళీ ఇంటికి వెనుదిరిగాడు. మళ్ళీ ఐదారు నిమిషాల సేపు ఇంట్లోనే ఉండి,

గడప దగ్గరికి రావడంతోటే ఇంటి గడప దగ్గర ఎడమకాలు తగిలి పడ్డాడు. ఏమిటీ కర్మ. సరిలేదు అనుకొంటూ ఇంకా కొన్ని నిమిషాలపాటు ఇంట్లో ఉండి, మళ్ళీ తొందర తొందరగా స్నేహితుని ఇంటివైపు నడిచాడు.

అసలే బొజ్జ పొట్ట. తొందర తొందరగా అడుగులు వేయడం వల్ల బ్రాహ్మణునికి ఎగశ్వాస ఎక్కువైంది. ఎలాగో అలాగా కష్టపడి స్నేహితుని ఇంటికి చేరుకొన్నాడు. వచ్చినవారంతా భోజనం చేసి, చేతులు కడుక్కొని, సంతోషంతో తూగుతూ తాంబూలం వేసుకుంటున్నారు.

ఇంత పొద్దు పోయి వచ్చిన బ్రాహ్మణుణ్ణి చూసిన ధనపతి గొణుక్కుంటూ ఎందుకయ్యా ఇంత ఆలస్యం చేశావు? భోజనం వేళ దాటిపోయిందే! అంటూ రెండు అరటిపళ్ళు, ఒక లోటా పాలు తెప్పించి ఇచ్చాడు.

బ్రాహ్మణుడు అంతదానికే తృప్తిపడి, వచ్చిన దారికి సుంకం లేదు అన్నట్లు చాలబ్బా చాలని, నడచుకొని ఇంటికి

వచ్చాడు. అయినా ఇతనికి మూఢనమ్మకాలమీద ఉన్న విశ్వాసం పోలేదు. పాడు పిల్లి, కుష్టురోగి ఈరోజు నాకోసమే కాచుకున్నాయి అనుకొని పడుకున్నాడు. తట్టుకొన్న కాలు నొప్పి ఇతని నిద్రకూ భంగం కలిగించింది.

మూఢనమ్మకాల మీద విశ్వాసం వల్ల బాజ్జిగావతికి బాజ్జినిండా రుచికరమైన తిండికి బదులు కాలునొప్పి నిరాశ నిశ్చయాల ఎదురైనాయి. చూసారా మూఢనమ్మకాల వల్ల కలిగే పరిణామం.

300 சொற்களுள்ள பத்தி - Tamil

ஓர் ஊரில் ஒரு அந்தணன் இருந்தான். இவன் மிகவும் படித்தவன். எல்லாரும் அவனை மதித்து வந்தனர். ஆனால் இவன் மூடநம்பிக்கைகளைத் தெய்வமாக வணங்கிவந்தான். எந்தக் காரியத்தைச் செய்தாலும் மூட நம்பிக்கைகளுக்குக் கட்டுப்பட்டே நடந்து வந்தான். இதன்காரணத்தால் இவன் வாழ்க்கையில் பல இன்னல்களுக்கு ஆளானான்.

இவன் அதிகமாகச் சாப்பிட்டுக் கொழுத்து மிகவும் பருமனாக இருந்தான். ஆதலால் எல்லாரும் இவனைத் “ தொப்பைக் கணபதி ” என்று அழைத்துவந்தனர். விருந்துக்காக “யார் எந்த நிகழ்ச்சிக்கு அழைத்தாலும் முதலாவதாக அங்கு சென்றுவிடுவான்.

அங்கு தனபதி என்று ஒரு வியாபாரியும் இருந்தான். இந்தத் தொப்பை கணபதியும் வியாபாரியும் இளமையிலேயே நண்பர்கள். ஒருநாள் அந்தவியாபாரி

அவனுடைய மகளுடைய பிறந்தநாளைக் கொண்டாட
அனேக நண்பர்களை அழைத்தான். பிராமணனையும்
அழைத்திருந்தான்.

தனபதி தன் இளமைக்கால நண்பன் மட்டுமல்ல
ஒரு பணக்காரனும் கூட. இதை எண்ணும்
போதே பிராமணனுடைய வாயில் எச்சில் ஊறியது. ஆனால்
அந்த வியாபாரியின் வீடு அன்தணனின் வீட்டிலிருந்து
ஆறு கல் தொலைவில் இருந்தது. பருமனாக
இருந்ததால் அவன் பேருந்தில் பயணம்
செய்யத்தயங்கினான்.

நடந்து சென்றால் உடலுக்கும் நல்லது. வயிறும் நன்றாகப்
புப்பசிக்கும். பசிஎடுத்தால் விருந்தைச் சுவைத்துச்
சாப்பிடலாம் என்று எண்ணிக் கொண்டான்.

பிறந்தநாள் கொண்டாடும் நாளும் வந்தது. வேக
வேகமாகக் குளித்து எல்லா வேலைகளையும் முடித்துக்
கொண்டான்.

நெற்றியில் நாமம் போட்டுப் புது வேட்டியும் கட்டிப், பட்டுக் கவணியையும் தோளில் போட்டுக் கொண்டான். வீட்டிலிருந்து வெளியே கால் வைத்ததும் அவன் கண்ணில் ஒருகுஷ்டரோகி தென்பட்டான். “எனக்கு வேறு ஒரு கதியும் இல்லை. யாராவது பிச்சை போடுங்கள் ஐயா” என்று சொல்லிக் கொண்டே அவன் வந்தான்.

“ஐய்யய்யோ சகுனம் சரி இல்லை” என்று கூறிக்கொண்டு பிராமணன் வீட்டிற்குள் சென்றான்.

ஐந்து நிமிடங்கள் கழிந்து மீண்டும் வீட்டிற்கு வெளியே வந்தான். சிறிது தூரம் சென்றதும் ஒரு கறுப்புப்பூனை அவன் செல்லும் பாதையைக் கடந்துசென்றது. மேலும், அங்கு சென்று கொண்டிருந்த பிற பிராமணர்கள் இவனிடம் “என்னப்பா, தொப்பை கணபதி, நீ வரவில்லையா?” என்று கேட்டுக் கொண்டே சென்றனர். இவன் மீண்டும் சகுனம் சரியில்லை என்று வீட்டிற்குத் திரும்பிச்சென்றான். வீட்டில் ஒருசில நிமிடங்கள் பூனையையும் குஷ்டரோகியையும் சபித்த பின்னர் வீட்டிலிருந்து மறுபடியும் புறப்பட்டான். வீட்டு வாசற்படியைக் கடக்கும்போது

அவனுடைய இடது கால் இடறிவிட்டது. ஏனோ இன்று சகுனமே சரியில்லை என்று எண்ணிக் கொண்டு மீண்டும் சிலநிமிடங்கள் வீட்டிலேயே இருந்து கொண்டு நண்பனின் வீட்டை நோக்கி வேகமாக நட^{ந்}ன்தான்.

ஏற்கனவே பெரிய வயிறு, அதோடு வேகமாக நடந்தகாரணத்தால் பிராமணனுக்கு மேலும் கீழுமாக மூச்சு இரைக்கத் தொடங்கியது. எப்படியோ மிகவும் கஷ்டப்பட்டு நண்பனின் வீட்டை அடைந்தான். ஏற்கனவே அங்கு விருந்துக்கு வந்திருந்தவர்கள் எல்லாரும் நன்றாகச் சாப்பிட்டுவிட்டு மகிழ்ச்சியாக அமர்ந்து வெற்றிலை போட்டுக் கொண்டிருந்தார்கள்.

இவ்வளவு தாமதமாக வந்த கணபதியிடம் தனபதி "ஐய்யய்யோ ! இப்பொழுதுதான் நீ வருகிறாயா? ஏன் இவ்வளவு தாமதமாக வருகிறாய்? சாப்பாடு எல்லாம் முடிந்து விட்டது என்று கூறி இரண்டு வாழைப்பழமும் ஒரு செம்புபாலும் வரவழைத்து கொடுத்தான்.

300 WORDS PASSAGE (MALAYALAM)

ഒരിടത്ത് ഒരു ബ്രാഹ്മണൻ ഉണ്ടായിരുന്നു. അവൻ അഭ്യസ്ഥവിദ്യനും, അഭിമാനിയും ആയിരുന്നു. എന്നാൽ അന്ധവിശ്വാസങ്ങൾക്ക് ഇവൻ അടിമ ആയിരുന്നു. അതുകൊണ്ടു തന്നെ ജീവിതത്തിൽ അവന് ഒരുപാടു പ്രശ്നങ്ങൾ നേരിടേണ്ടി വന്നു.

വലിയ തീറ്റപ്രിയനായിരുന്നു ഇവൻ പൊണ്ണുതടിയനായി തീർന്നു. ജനങ്ങൾ ഇവനെ 'പൊണ്ണുതടിയ' എന്നു വിളിച്ചു. സുഭിക്ഷമായ ഭക്ഷണത്തിനോട് ഇവന് അതിയായ പ്രിയമായിരുന്നു. ആര്, എന്തു വിശേഷ അവസരത്തിനു ക്ഷണിച്ചാലും ഭക്ഷണത്തിനായി ഇവൻ ഹാജരാകുമായിരുന്നു.

മറ്റൊരു നഗരത്തിൽ ധനപതി എന്ന ഒരു
വ്യാപാരി ഉണ്ടായിരുന്നു. ഈ പൊണ്ണുതടിയനും
വ്യാപാരിയും ബാല്യകാലം മുതലേ
സ്നേഹിതരായിരുന്നു. ഒരു ദിവസം വ്യാപാരി മകന്റെ
ജന്മദിനം ആഘോഷിക്കാൻ തീരുമാനിച്ചു.
ഒരുപാടുപേർക്ക് ക്ഷണക്കത്ത് അയച്ചു. ഈ
പൊണ്ണുതടിയനും ക്ഷണക്കത്ത് കിട്ടി.

തന്റെ പ്രിയപ്പെട്ട സ്നേഹിതന്റെ വീട്,
പോരാത്തതിന് ധനവാനായ സ്നേഹിതന്റെ വീട്ടിലെ
ആഘോഷവും.. അവന്റെ വായിൽ വെള്ളമുറി.
എന്നാൽ സ്നേഹിതന്റെ വീട് ബ്രാഹ്മണന്റെ വീട്ടിൽ
നിന്നും ആറ് കിലോമീറ്റർ അകലെ ആയിരുന്നു.

തടിയനായതിനാൽ ബസ്സിൽ പോകാൻ അവൻ
മടിയായിരുന്നു.

നടന്നുപോയാൽ ആരോഗ്യത്തിന്, ^{നല്ലത്,} കൂടാതെ
കൂടുതൽ വിശന്നാൽ ഭക്ഷണം കൂടുതലും കഴിക്കാം.
ബ്രാഹ്മണൻ തീരുമാനിച്ചു.

ജന്മദിനാഘോഷത്തിന്റെ ദിവസം എത്തി. കുളി
തുടങ്ങിയവയെല്ലാം വേഗം കഴിച്ചു. നെറ്റിയിൽ
സ്മേക്കുറിയൊട്ടു നാലു വിരലിലും മോതിരം
ചാർത്തി, കസവുകരയുള്ള ഷാൾ തോളിലിട്ട് - വീടിനു
പുറത്തേയ്ക്കിറങ്ങിയ ^{കു}തക്ഷണം “ഒന്നുമില്ലാത്തവനാണ്
വല്ലഭം തരണേ” എന്ന രാഗാലാപനത്തോടെ ഒരു
കുഷ്ഠരോഗി മുൻപിൽ പ്രത്യക്ഷപ്പെട്ടു. ഛരീ --
അപശകുനം എന്നു പറഞ്ഞുകൊണ്ട് ബ്രാഹ്മണൻ
വീടിനുള്ളിലേക്ക് തന്നെ കയറി പോയി.

അഞ്ചുമിനിട്ടു കഴിഞ്ഞ് വീണ്ടും വീട്ടിൽ നിന്ന് പുറത്തേക്ക് വന്നു. അൽപദൂരം ചെന്നപ്പോൾ ഒരു കറുത്തപുച്ച ഇവന്റെ കുറുകെ ചാടി. അവന്റെ കൂടെയുള്ള ബ്രാഹ്മണൻ “എന്താ പൊണ്ണുതടിയൊ വരുന്നില്ലേ? എന്നു ചോദിച്ച് മുൻപേ നടന്നു പോയി. വീണ്ടും അപശകുനം ആയി എന്നു ചിന്തിച്ച് ബ്രാഹ്മണൻ വീട്ടിലേക്ക് തിരിച്ച് പോയി, പിന്നെയും കുറച്ചുനേരം, കുഷ്ഠരോഗിയേയും, പുച്ചയേയും ശപിച്ച് വീട്ടിൽ തന്നെ അവൻ ഇരുന്നു. പിന്നീട് മൂന്നാമത്തെ തവണ വീട്ടിൽ നിന്നും പുറപ്പെട്ടു.

വാതിലിനു പുറത്തേക്ക് കടക്കാനായി തുടങ്ങിയപ്പോൾ ഇടത്തെകാൽ കട്ടിലപ്പടിയിൽ തട്ടി

താഴെവീണ്. ഇന്നത്തെ ദിവസം ശരിയല്ലെന്ന് ചിന്തിച്ച്
കുറച്ചു നിമിഷങ്ങൾ കൂടി വീട്ടിലിരുന്ന് പിന്നെ വേഗം,
വേഗം സ്നേഹിതന്റെ വീട്ടിലേക്ക് നടന്നു.

കൊടന്തവയറുമായി അവൻ വേഗം നടന്നു.
ബ്രാഹ്മണൻ കിതയ്ക്കാൻ തുടങ്ങി. അങ്ങനെ,
കഷ്ടപ്പെട്ട് സ്നേഹിതന്റെ വീട്ടിൽ എത്തി. മുൻപേ
വന്നവരെല്ലാം ഭക്ഷണം കഴിച്ച്, കൈകഴുകി.
താമ്പുലം ചവച്ച് വിശ്രമിക്കുക ആയിരുന്നു.

ഇത്രനേരം വൈകിവന്ന ബ്രാഹ്മണനെ കണ്ട്,
ധനപതി, “എന്തേ ഇത്ര വൈകിയത് ” എന്നു
ചോദിച്ചു. ഭക്ഷണത്തിനുള്ള സമയം
കഴിഞ്ഞുപോയല്ലോ എന്നു പറഞ്ഞുകൊണ്ട് രണ്ടു
വാഴപ്പഴവും, ഒരു ലോട്ട പാലും വരുത്തി കൊടുത്തു.

ബ്രാഹ്മണൻ കിട്ടിയതുകൊണ്ടു തന്നെ
 തൃപ്തിപ്പെട്ടുകൊണ്ട് തനിക്ക് നഷ്ടമൊന്നും
 സംഭവിച്ചില്ലല്ലോ എന്നു ചിന്തിച്ച് ചുറ്റിരിഞ്ഞ്
 വീട്ടിൽ എത്തി. എന്നിട്ടും അവന്റെ
 അന്ധവിശ്വാസങ്ങളിലുള്ള വിശ്വാസത്തിന് ഒരു
 കോട്ടവും തട്ടിയില്ല. നശിച്ച പുച്ചയും,
 കുഷ്ഠരോഗിയും ഈ ദിവസം എനിക്ക് വേണ്ടി
 കാത്തുനിൽക്കുകയായിരുന്നോ? എന്ന് ചിന്തിച്ച് ഉറങ്ങി.
 ഇടത്തെ കാലിലെ വേദനയാകട്ടെ അവന്റെ
 ഉറക്കത്തിന് ഭംഗം ഉണ്ടാക്കിക്കൊണ്ടിരുന്നു.

Appendix II - Normative data on rate of speech/reading in 4 Dravidian languages

M = Mean, A= Average

| Age | | Kannada | | | Telugu | | | Tamil | | | Malayalam | | |
|----------|-----------|-------------|------------|------------|-------------|-------------|-------------|-----------|-----------|----------|------------|------------|------------|
| | | SS | SPM | WPM | SS | SPM | WPM | SS | SPM | WPM | SS | SPM | WPM |
| 3-3.11 | M | 4.9 | 291 | 129 | | | | | | | | | |
| | SD | 13 | 78 | 34 | | | | | | | | | |
| 4-4.11 | M | 4.2 | 252 | 91 | | | | | | | | | |
| | SD | .79 | 48 | 17 | | | | | | | | | |
| 5-5.11 | M | 4.2 | 254 | 120 | | | | 5 | 299 | 114 | | | |
| | SD | 13 | 79 | 37 | | | | 1 | 62 | 24 | | | |
| 6-6.11 | M | 4.3 | 261 | 92 | | | | 4.65 | 278 | 86 | | | |
| | SD | 0.84 | 50 | 18 | | | | 1 | 64 | 20 | | | |
| 7-10 | M | 4.1 | 250 | 85 | | | | 6.7 | 402 | 130 | | | |
| | SD | 0.65 | 41 | 14 | | | | 1.67 | 100 | 31 | | | |
| 11-15 | M | 5.7 | 343 | 104 | 7 | 431 | 123 | 4.5 | 272 | 95 | 7.9 | 474 | 115 |
| | SD | .83 | 48 | 14 | 1.25 | 132 | 37 | 4 | 22 | 8 | .8 | 51 | 12 |
| 16-20 | M | 7.0 | 425 | 127 | 7 | 439 | 125 | 6.5 | 384 | 133 | 8.8 | 529 | 128 |
| | SD | .96 | 58 | 17 | 0.61 | 36 | 10 | .7 | 53 | 18 | 12 | 73 | 18 |
| 21-30 | M | 6.5 | 386 | 116 | 8 | 466 | 133 | 6.5 | 391 | 136 | 9.3 | 558 | 135 |
| | SD | .96 | 70 | 21 | 0.58 | 36 | 10 | 12 | 74 | 25 | .9 | 62 | 15 |
| 31-40 | M | 7.2 | 434 | 131 | 6 | 384 | 116 | 5.5 | 326 | 114 | 8.2 | 492 | 119 |
| | SD | 31 | 19 | 6 | 0.95 | 54 | 23 | 11 | 68 | 24 | .6 | 36 | 9 |
| 41-50 | M | 6.8 | 410 | 124 | 7 | 389 | 117 | 5.9 | 353 | 122 | 7.9 | 477 | 116 |
| | SD | .87 | 53 | 16 | 1.04 | 75 | 20 | 8 | 49 | 17 | 12 | 81 | 20 |
| 51-60 | M | 6.9 | 415 | 124 | 6 | 392 | 110 | 5.4 | 326 | 115 | 7.9 | 483 | 117 |
| | SD | .62 | 37 | 11 | 1.04 | 69 | 18 | 9 | 52 | 20 | 1 | 67 | 16 |
| 61-70 | M | 6.9 | 404 | 125 | 6 | 336 | 96 | 5.7 | 340 | 118 | 7.8 | 448 | 110 |
| | SD | .73 | 52 | 12 | 0.99 | 60 | 17 | 1 | 62 | 21 | .6 | 66 | 12 |
| 71-80 | M | 6.4 | 380 | 118 | 5 | 309 | 89 | 5.9 | 354 | 123 | 7 | 423 | 102 |
| | SD | .85 | 51 | 15 | 0.19 | 11 | 4 | 9 | 54 | 19 | 16 | 99 | 24 |
| 81-90 | M | 5.6 | 337 | 102 | 5.14 | 309 | 88.8 | | | | 6.6 | 398 | 96 |
| | SD | .97 | 58 | 17 | 0.19 | 11.3 | 3.85 | | | | .86 | 52 | 13 |
| 91-100 | M | | | | | | | | | | 4.3 | 257 | 63 |
| | SD | | | | | | | | | | .7 | 44 | 11 |
| A | M | 5.3 | 318 | 104 | 6.4 | 384 | 111 | 5.7 | 34 | 117 | 7.8 | 469 | 114 |
| | SD | 2.20 | 133 | 40 | 0.76 | 53.8 | 15.9 | 12 | 72 | 25 | 14 | 88 | 21 |

95% confidence intervals for mean
 LB: Lower boundary, UB: Upper boundary

| Kannada | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|
| Age | SS | | SPM | | WPM | |
| | LB | UB | LB | UB | LB | UB |
| 3-3.11 | 3.9 | 5.8 | 235 | 347 | 104 | 153 |
| 4-4.11 | 3.6 | 4.8 | 218 | 286 | 79 | 104 |
| 5-5.11 | 3.3 | 5.2 | 198 | 310 | 93 | 146 |
| 6-6.11 | 3.7 | 4.9 | 225 | 296 | 80 | 105 |
| 7-10 | 3.7 | 4.6 | 220 | 279 | 75 | 94 |
| 11-15 | 5.1 | 6.3 | 309 | 377 | 94 | 114 |
| 16-20 | 6.3 | 7.7 | 383 | 466 | 115 | 139 |
| 21-30 | 5.8 | 7.2 | 336 | 435 | 101 | 131 |
| 31-40 | 7.0 | 7.4 | 421 | 448 | 127 | 135 |
| 41-50 | 6.2 | 7.4 | 372 | 448 | 112 | 135 |
| 51-60 | 6.4 | 7.3 | 388 | 442 | 116 | 132 |
| 61-70 | 6.4 | 7.5 | 366 | 441 | 117 | 133 |
| 71-80 | 5.8 | 7.1 | 353 | 426 | 107 | 129 |
| 81-90 | 4.6 | 6.6 | 276 | 399 | 83 | 120 |

| Telugu | | | | | | |
|--------|-----|-----|-----|-----|-----|-----|
| Age | SS | | SPM | | WPM | |
| | LB | UB | LB | UB | LB | UB |
| 11-15 | 5.4 | 7.1 | 315 | 567 | 90 | 162 |
| 16-20 | 6.1 | 7.9 | 367 | 475 | 105 | 136 |
| 21-30 | 7.0 | 7.8 | 413 | 464 | 118 | 132 |
| 31-40 | 7.3 | 8.1 | 441 | 492 | 126 | 141 |
| 41-50 | 5.7 | 7.1 | 346 | 422 | 100 | 132 |
| 51-60 | 6.2 | 7.6 | 336 | 443 | 102 | 131 |
| 61-70 | 5.7 | 7.2 | 342 | 441 | 97 | 123 |
| 71-80 | 4.9 | 6.2 | 297 | 377 | 85 | 108 |
| 81-90 | 3.4 | 6.9 | 207 | 411 | 54 | 123 |

| Tamil | | | | | | |
|--------|-----|-----|-----|-----|-----|-----|
| Age | SS | | SPM | | WPM | |
| | LB | UB | LB | UB | LB | UB |
| 5-5.11 | 3.3 | 6.6 | 200 | 399 | 76 | 152 |
| 6-6.11 | 3.7 | 5.5 | 225 | 333 | 69 | 103 |
| 7-10 | 5.5 | 7.9 | 330 | 473 | 101 | 146 |
| 11-15 | 4.3 | 4.8 | 256 | 287 | 89 | 100 |
| 16-20 | 6.0 | 7.0 | 346 | 421 | 120 | 146 |
| 21-30 | 5.6 | 7.4 | 338 | 443 | 117 | 154 |
| 31-40 | 4.7 | 6.2 | 278 | 374 | 97 | 130 |
| 41-50 | 5.3 | 6.5 | 317 | 388 | 110 | 135 |
| 51-60 | 4.8 | 6.0 | 289 | 364 | 100 | 129 |
| 61-70 | 4.9 | 6.4 | 296 | 384 | 103 | 133 |
| 71-80 | 5.2 | 6.6 | 315 | 393 | 110 | 137 |

| Malayalam | | | | | | |
|-----------|-----|-----|-----|-----|-----|-----|
| Age | SS | | SPM | | WPM | |
| | LB | UB | LB | UB | LB | UB |
| 11-15 | 7.3 | 8.5 | 438 | 511 | 106 | 124 |
| 16-20 | 7.9 | 9.7 | 476 | 581 | 116 | 141 |
| 21-30 | 8.6 | 10 | 514 | 602 | 125 | 146 |
| 31-40 | 7.7 | 8.6 | 467 | 518 | 113 | 126 |
| 41-50 | 7.0 | 8.8 | 419 | 535 | 101 | 130 |
| 51-60 | 7.2 | 8.7 | 435 | 531 | 106 | 129 |
| 61-70 | 7.4 | 8.2 | 400 | 495 | 101 | 119 |
| 71-80 | 5.9 | 8.2 | 352 | 494 | 85 | 119 |
| 81-90 | 6.0 | 7.2 | 360 | 435 | 87 | 106 |
| 91-100 | 2.5 | 6.0 | 148 | 367 | 36 | 89 |