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Speech, Language and Communication Acquisition in Two Adult Hearing Impaired Speakers with Congenital Onset of Bilateral SN Hearing Loss and Body Level Hearing Aid – A Descriptive and Comparative Analysis of their Mother Tongue A Preliminary Report

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Abstract

In India numerous Congenital Sensori-Neural (S N) Hearing loss cases were and also are professionally fitted with body level hearing aid. This is followed by oral approach in speech and language therapy along with auditory training and main stream integration or with admission to deaf schools. But, studies in speech and language in Indian languages concerning this population are very limited. In this study we undertake large data samplings from two different types of congenital long term trained hearing loss in Kannada language from their natural conversation and narration. From the results of analyses we describe their typical speech and language characteristics. A few advantages and drawbacks of such an approach in the context of present technological advancements and the past scenario are discussed. This paper has marked retrospective perspective after long term aurally aided auditory, oral-speech and language training, and normal integration approaches. It also has it's relevance until these types of hearing aids are disbursed. Efficacy of communication in natural conversation and narration appears significantly dissimilar in multi linguistic levels between such two types of congenital bilateral SN loss who wear body level hearing aid.

Key words: Congenital Hearing Impairment, profound S N loss, high frequency S N loss, Deafness, Body Level Hearing Aid, Narration, Conversation , communication , Phonetics , Phonology, Semantics, Lexical ,Syntax, voice , Language , Speech , Language , Linguistics ,

Psycholinguistics , Oral Approach , Integration , Rehabilitation Audiology , Kannada , Adult, Language Tool, Intelligibility.

Highlights from my study that stand out in my study and also for Dravidian languages such as Kannada

1. Phonetics - The report demonstrates the importance of testing not only the acoustic spectrum but also critical temporal parameters of speech which are also severely affected in the hearing impaired

2. The study presents typical diffusion characteristics of linguistic defects and abilities from phonetic level to higher linguistic performances which i have termed here as the ripple effect in the hearing impaired spoken speech and language.

3. The role of speech language pathologist varies with different developmental congenital hearing loss in terms of both severity and type of hearing loss but as is well known with the type of hearing aid that is clinically selected.

With less abilities in phonetic reception, the role of professional speech language pathologist ascends as in the cases of BHA Users. Indian special schools for the hearing impaired are generally granted with mass body level hearing aids by government bodies. Special educationists appointed in schools for the hearing impaired require professional supervision. Herein as the speech language systems in body level hearing aid are multiply and severely affected. However with effective linguistic approaches, better remedial approaches can be implemented. Also, we predict ripple remedies in their speech abilities and defects as discussed , with effective analyses multi-pronged speech therapy can be planned.

4. Extensive linguistic analyses such as this study and hearing impaired litr is lacking.

5. Unlike in western countries, India has developing congenital hearing impaired children of different types and degrees which fix into body level hearing aid, digital hearing aid, and v few

percentage of CI users , along with unaided minimal hearing loss and fluctuating hearing loss types . hence role of speech language and audiology capabilities in all these major areas fo hearing impairment are enhanced /remain of prime importance (generally BHA are given les attention after intrusion of expensive DHA and easy therapy + hi tech mania fad, but we are yet very very poor to CI all HI --- I put it bluntly, sad state for BHA users). Of course we also have unaided hearing impaired children who have not yet had access to hearing intervention in our community.

6. In the context of multilingual listening exposure in social Indian contexts, umpteen dialects in every language.

1. The possibility of ambient listening in DHA , CI and HI f hearing loss of different degrees with BHA onwards - that is hearing loss with hearing aid groups.
2. In minimal hearing loss and fluctuating hearing loss groups --
3. Exposure to non-Indian language with different /alien linguistic structure in educational systems
4. Agglutination properties in many Indian languages grossly affects speech reception and in speech learning which needs special attention in HI , in bha mod severe sn loss users.

Speech reception, perception and speech language learning is even more a challenge in Indian contexts in the congenital hearing impaired and in pre lingual age hearing impaired children with multiple parameters such as above contributing speech ad language in the HI , this area is a vast field in Indian arena , which needs multiple pronged probes in future.

7 Ambient listening is not found in mod - severe profound hi with BHA, turn out to be filtered in language exposure, they learn what they r exposed to or to whichever language they are trained in.

8. Whether word order flexibility in Kannada facilitate H I or not, they come out with word by word utterance, yet.

9. I do want to emphasize that ambient listening in Indian context for the aided developing hearing impaired is a challenge with multilingual and multi dialectical exposure /day , which i term as ambient linguistic geometry , whose architecture is different for every child per se. Both quantum and quality of exposure requires consideration. For example, national news broadcast in non-regional language, turns out to be AV mode with immense visual cues day after day . but a exposure in live at neighbors store for example, Malayalam and Kannada are temporal locked and short bursts, but yet needed for one's living in this geography . all these need to be probed in coming days at the case history assessment. the same is to be considered in therapeutic planning , and counseling.

10. Nevertheless, each child's linguistic outcome is unique as can be seen in this study . timeline in day for each child's exposure is to be intricately plotted for his /her linguistic exposure to derive each child's ambient linguistic geometry(over a period of 15 days at least) he /she is placed in, and therapeutic plans must be novel.

11. Do not stop therapy at a mono language development achievements but reconsider these issues too.

12. This framework offers a new tool with which to look at complex linguistic speech and language problems in India and bring them into focus. This is a model which does anchor on chosen language (at parental counseling- parents decide on the language for therapy - either regional language, mother tongue or educational language) learning leverage' phenomenon. But, this also considers complex linguistic geometry that a HI child if exposed to in his /her life time. Chosen language learning leverages (influence of primary language on new language learning/ exposure) the bilingual or multilingual outcome in DHA users and CI users (DHA bilingual are identified and CI multilingual too) which requires focus of attention in the long run in India.

13. Though English is primarily chosen as primary language for academic reasons at counseling, it comes in with pitfall of decline in ambient English language exposure - quantum exposure is bound to be in the decline in the context of a totally linguistically different regional language and mother tongue.

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Introduction

Research and clinical outcomes in congenital hearing loss mandate identification of hearing loss in infancy, fitting with best suitable aural sensory device, immediate intensive AVT and Oral approach to Speech and Language intervention in critical period, home programmes and normal integration for best results in speech and language development and academic achievements . Conversely, in India we are yet to implement each of these measures to every congenital hearing impaired. Though, the Incidence of congenital deafness in India is reported as high as 25,000 per year (http://ayjnihh.nic.in/anrp20102011.pdf).

As per DRDO estimates, nearly 1 million people in India need cochlear implants. "Every year, around 10,000 hearing-impaired children are born http://defence.pk/threads/drdo-develops-affordable-cochlea-implant.181256/ Recent infant hearing screening studies in India indicate up to 3/1000 new born infants (Paul A K 2011 Early Identification of Hearing Loss and Centralized Newborn Hearing Screening Facility-The Cochin Experience INDIAN PEDIATRICS VOLUME 48, MAY 17. http://medind.nic.in), 5.60 per 1000 in infants (Naga Poornima et al 2007. Universal Hearing Screening, Indian Journal of Pediatrics 74, 545-549 http://medind.nic.in/), one in 2000 births (Kumar S, Chaturvedi VN. 1996; Facilities for speech and hearing in schools for hearing handicapped in Wardha district India. Hearing International. 5(2):7).

Otherwise, the average age of parental suspicion regarding hearing loss in their child is by 19.59 months in the literate state of India- Kerala, with mean identification age of 24.82 months and with delay in amplification intervention by another 5-6 months (Suresh Kumar et al.

2015; Challenges in the detection and intervention of childhood deafness, International Journal of Biomedical Research 2015; 6(01): 40-45. www.ssjournals.com). Nevertheless, Ansari M S Screening Programme for hearing Impairment in new borns: A challenge during rehabilitation for all. Asia Pacific Disability Rehabilitation Journal Vol. from Kolkata, reports an alarming persisting delay in intervention up to age 7 years in India.

As regards the use of electronic amplification hearing devices, our latest visits to few rural, district, urban and metro deaf schools in Karnataka confirms yet the issue and use of body level analogue hearing aids to the congenital deaf or hearing impaired children. They are issued in quantum under governmental schemes in many districts. Several NGOs have also participated in distribution of body level hearing aids. In addition, many of Oral – Long term trained-integrated hearings impaired also wear them. Parental endeavors, to change their hearing aids to analogue /digital-programmable BTEs particularly at the time of their marriage, or in adolescence are a common tendency. How the deaf or the hearing impaired cope with such a change is a subject for study, which we have already initiated. Currently, attempts to upgrade the release of digital hearing aids are in the process (PC Dr A K Sinha). Considerable efforts are also undertaken for issue of digital hearing aids by several other NGOs A few camps held recently for example in Mangalore and Bangalore have also considered issue of digital hearing aids (ref Hindu , DH 2015).. Whether these are programmable ones is not known. Financial and cost constraints have so far debilitated access to fine new generation hearing aids in most identified babies and young children in their crucial critical period, which in turn have reflections on speech, linguistic, academic, and vocational achievements and life style.

Cochlear implants are common solutions for the severe - profoundly hearing impaired in the western countries. From here they have stepped forward to understand individual differences in success rates of cochlear implant in congenital hearing loss and the impact of mild moderate hearing loss on auditory, speech, language, literacy and economic achievements. But, in India again, we are held with a voluminous population persevering on body level hearing aid.

Focus of This Study

This study aims at a detailed description of residual speech and language defects and also achievements of long term trained hearing impaired. In this study we compare the congenital bilateral profound SN hearing loss with bilateral moderate to severe sloping SN hearing loss who wear body level hearing aid. While the first subject 1aMbh.bpsn.L1- has bilateral profound SN hearing loss, 1aFbh.bhfsn.L1- had moderate- severe sloping bilateral High frequency SN hearing loss . She had no residual hearing in high frequencies from 3K Hz onwards and at 2 KHz her hearing threshold was 95 dB HL . Our primary focus, however, is their phonetic phonological performances along with other linguistic level analyses in natural communication, conversation and narration as they are direct reflections of either achievement or difficulty due to the impact of hearing loss and aurally aided AV modality coping approaches in their language learning.

This paper is divided into 4 parts: Part 1- methodology, clinical description of two subjects selected for the study, data and transcription. Part 2 - Linguistic data analyses and results of Adult Congenital Profound Hearing Loss with body level hearing aid. Part 3 Linguistic data analyses and results of adult congenital high frequency hearing loss with body level hearing aid**.** Part 4 includes comparison of their speech and language performance, discussion and conclusions

Subjects

Two Adult subjects with congenital bilateral sensorineural (SN) hearing loss were studied to assess speech and language acquisition after long term training in oral speech and language therapy, auditory training and integration to normal schools. Their mother tongue is Kannada, which is also the geographical language in Bangalore-Mysore region.

Our first subject 1aMbh.bpsn.L1- was male congenital HI (hearing impaired) adult, age 18 years. His case history indicated no birth cry and lack of speech development which had alarmed the parents at his 4th year of age. He was diagnosed as Bilateral Severe Profound Hearing Impairment and at the time of recording his speech for the present study, he was 18 years, and hearing amplification age-the AV age is 14 years. He had discontinued his studies in

9th standard. His father is a graduate and had taken to business and mother had completed 10 th std. He has one younger sister who is normal; No other member in his family has hearing loss. His dental -oro -facial mechanism was normal, with absence of DNS (deviated nasal septum), normal jaw and bilabial diadakokinetic rates. Further he had no delay in physical milestones or other identified disorders other than congenital hearing loss, and were socially active.. 1aMbh.bpsn.L1- had attended Speech and Language therapy for 12years and he wore a body level hearing aid with V cord.

The second subject is 1aFbh.bhfsn.L1- a female 17 years old. She was identified as having bilateral moderate severe sloping SN hearing loss when she was 5 years old. Her hearing amplification AV age is 12 years. She was recommended analogue body level conventional hearing aid, with tone switch tuned to H. She exhibited recruitment, at higher levels of amplification and a MPO control was set for her hearing aid. She has also undergone intensive auditory training, oral - speech and language therapy and mainstreamed to normal school. She has also studied till 9th standard. She has a younger brother who is normal. 1aFbh.bhfsn.L1- 's father's sister has 4 children, 2 males being profoundly HI, who live in another city. In 1aFbh.bhfsn.L1- also, a similar check was done on all clinical parameters ruled out in case 1aMbh.bpsn.L1-

Method of Speech Sampling

Subjects 1aMbh.bpsn.L1- and 1aFbh.bhfsn.L1- were administered *Speech and Language Evaluation tool for the hearing Impaired TELS – HI /Kan* developed at Central Institute of Indian Languages, Mysore (Gayathri, S. G.1980, 1988, 1994) in Kannada Language. The subjects were asked to report for the recording in healthy condition, without fever, cold or cough. The Subject was seated in a silent room with hearing aid on with fresh pen torch cell in it. Subject was seated facing the clinician across a working table in a silent natural set up. Sound test was performed to the hearing aid and the wearer every session, and 1aMbh.bpsn.L1- and 1aFbh.bhfsn.L1- had not detected sh and s with their HA and also vowel I in 1aMbh.psn.L1- . The clinician also made notes in her diary as the recording and testing were in progress retaining face to face interaction with 1aMbh.psn.L1.

Recording was performed of all test sessions, along with 2 initial rapport sessions. Initial 2 sessions were not analyzed whose purpose was to familiarize the subjects to the recording context. The testing with speech and language test tool TELS-HI /Kan (G) was performed over a span of 9 and 4 sessions in 1aMbh.bpsn.L1- and 1aFbh.bhfsn.L1- respectively, along with initial 2 rapport sessions examiner. Each session lasted for a period of 40 minutes to one hour. Care was taken so that no part of the language tool, or tasks similar to the tool was conducted in first two sessions. - Where possible and when the subject found the conversation interesting prompts and recording continued to elicit greater language corpus form the subjects. Both subjects needed auditory visual (AV) modality to communicate as was indicated in the initial 2 rapport sessions.

Only sections 12.3 and 12.4 of test tool *TELS – HI /Kan* were considered for analyses.

1aMbh.bpsn.L1- was firmly focused at the Conversational Partner (C.Pr) or the tester's face at the time of administration of the test. He needed cues 70% of the time such as AV2 , graphemic and gestural cues incorporated in the test format . Those speech samples of 1aMbh.bpsn.L1- in response to AV1 and AV2 were selected, and speech response in response to AV2, Graphemic and Gestural cues were not chosen for analyses to avoid the short term influence of these cues in 1aMbh.psn.L1- 's speech sample.

But in case of 1aFbh.bhfsn.L1- face to face AV conversational conversation occurred without any need for additional cues . But she did need AV context and she had not followed the conversation in A only context which was noted in first two sessions. She did not need additional cues in conversation .She casually focused on the examiner's audiovisual cues unlike 1aMbh.bpsn.L1- due to the difference in type and severity of her hearing loss. Whereas, 1aFbh.bhfsn.L1-'s speech was normal in rhythm and tempo 1aMbh.bpsn.L1- speech was irregularly paused and slow intercepted by repetitions and cues.

Further there was his requirement for presentation of speech test in fairly slow literary manner with mild pauses in between words. This means that word segmentation is defective and problematic in 1aMbh.bpsn.L1- in spoken Kannada. In fact, the investigator also relied on 1aMbh.psn.L1-'s cues in order to understand what 1aMbh.bpsn.L1- was intending to communicate in few contexts . 1aMbh.bpsn.L1- demonstrated both supra segmental and segmental errors and 1aFbh.bhfsn.L1- 's speech sample indicated primarily segmental errors .

Transcription, Data and Analyses

The Transcription was performed by the clinician in sound treated Audiology room with head phones connected to the recording device. Recording was first played two to three times for familiarization and later fine transcription was done in bits. .Their speech samples were coded with fine transcription .At the end of transcription of these language corpus there was available a large HI natural contextual running conversational speech data.

A total of 773 ½ words were fine transcribed in continuous speech sample under the specified section of language tools administered. In general 1aMbh.bpsn.L1-'s continuous speech appeared to be intelligible for transcription to the clinician who had followed his conversation and also recorded his speech. But, It would have be a difficult task to decipher 1aMbh.psn.L1-'s speech by a naïve listener. The selected *Continuous speech samples* involved 325words; and 3097 phones in error list; and 51 words with 127 phones in correct list. A total of additional 43 words could not be transcribed and were marked as Q due to difficulties in word mapping to native Kannada language. Even conversational contexts or diary notes did not help in transcribing these Q words. But a set of 17 other such words were transcribed with the help of cues. Some words were transcribed for phonetic content but words such as *caarumaanu* could not be fixed to any target word in Kannada, nor did the conversational or narration contexts help the investigator. We emphasize that it is important to make notes at the time of recording without S (subject)'s awareness as they get sensitive regarding their speech production. I have used flower brackets for subjects utterance and regular target brackets by adjacent phones which were defective. This gives us immediate picture of word structure which is an important focus of our study. (V = Vowel , Cn = Consonant , Vd = Voiced , Vl= Voiceless , AV = auditory visual)

Table 1 Language corpus in Kannada from both subjects –

Subject	
1aMbh.psn.L1-	utterances in Conversation and discourse; Conversation- 67; Prompted discourse and narration - I= 19 II= 44; III=19 total= 82.max length of discourse = in discourse e 319= 125 words min length = sign, U , alla, one word answer (eg e 15,316, 317) >>; 773 ½ (1aMbh.bpsn.L1-) 370 words 2267 phonemes in er list 1aMbh.psn.L1-
1aFbh.bhfsn.L1-	1aFbh.bhfsn.L1- 51 utterances in conversation, narration- 104, I – 1474, II 692 words III. 3451 words. Only error words were transcribed after listening to the sample initially and randomly , syntactic examples were transcribed for language analyses at random segments of ten minute durations upto a total of 30 minutes, and 2 continuous narrations.

Overall Perceptual Nature and the Intelligibility of 2 HI Speech –

1aMbh.psn.L1- utterances were more intelligible in Conversation section than in narrations e1, e2, and e3.. But in 1aFbh.bhfsn.L1- both conversation and discourse sections were equally intelligible. The Correct word lists in 1aMbh.bpsn.L1- were generally cvcvcv cvccv word patterns i.e cv/v+c+v or cv/v+cc+v types and combinations. His longest word had 12 – 14 phones. Words from 1aMbh.psn.L1- s error list were analyzed to derive phonetic results. A naïve listener would need a close attention to his ongoing speech, back tracking, redundant, chunks of his speech, with irregular pauses and breaks in narration task. Further, due to omission of syllables in 1aMbh.bpsn.L1- , some words appeared partial or incomplete. The C.pr had to

slightly slow her rate of speech as was judged in initial rapport sessions. With normal rate of speech 1aMbh.psn.L1- would give saying *illa, gottilla.* Facilitating cues and relevant notes at time of recording helped in transcription. It was not necessary to mark cues and notes in 1aFbh.bhfsn.L1's speech recording sessions. Her speech was of normal rate. Neither did the C.Pr. had to slow down her rate of speech. 1aFbh.bhfsn.L1 easily followed spoken Kannada without the assistance of facilitating cues. It was easy to transcribe her recorded speech and her bulk of recording was larger than in 1aMbh.psn.L1. Her speech defects were mainly in phonetics only and in an additional section of non-word and word repetition of the test tool.

1aMbh.psn.L1's language exhibited defects in all linguistic levels. Redundancy , back tracking , self-speech repairs , partial word , single word incomplete phrasal structure , and faulty syntactic structures were typical in his narration samples.

Dragged, nasalized (NZd), interspersed high pitched speech was Words which involved vowels with longer duration than target and their diphthongization had higher impact on speech intelligibility However substitution of K, G /k, g and R /r contributed least effects on intelligibility. Final l deletions and r deletions were less reflective on intelligibility and also jk in medial position, also ng deletion in *inglish.* An example *yudyAru* could not be deciphered in transcription in spite of notes were made on spot. As linguistic analyses proceeded several such words could be encoded. *yiEeti* for *pensil* was another unintelligible word. Unless 1aMbh.bpsn.L1 wrote this words it's deciphering remain only as conjectures. In spite of this, there remained many unintelligible words in transcription which could not be transcribed. Particularly narration task e1, e2, e3 appeared truncated and chopped, and also semantically discrete sometimes without syntactic closure or completions. Unless heard in a sequence his narration indicated semantic ambiguity along with structural ambiguities. On the other hand, 1aFbh.bhfsn.L1's speech was intelligible with accurate syntactical and semantic structures. Only error words were transcribed after listening to the sample initially and randomly, syntactic examples were transcribed for language analyses at random segments of ten minute durations, and 2 continuous narrations. However segmental errors were noted in 1aFbh.bhfsn.L1, fixed AV modality needed slightly slow speech from C.Pr to proceed in conversation else – he would say

illa gottilla. Such modification helped him in segmenting words and deciphers meaning. He had not acquired morphophonemic rules of spoken Kannada Switching semantic context caused difficulties in his immediate replies. Ending of answer or narration – A (aSTe) facial gesture done, finished telling.

1aMbh.psn.L1- and 1aFbh.bhfsn.L1's continuous speech were analyzed for general characteristics and phonetic, phonemic characteristics with reference to Kannada language. Their schemes of language achievements were also observed.

Part 2

Linguistic Data Analyses and Results of 1ambh.Psn.L1

Linguistic Data Analyses and Results of 1ambh.Psn.L1- are Discussed Under Following Sub Sections.

2.1 Suprasegmental Characteristics of 1aMbh.psn.L1

1aMbh.bpsn.L1- had a low pitched voice, but interspersed with high pitch typical squeaky voice in the profound hearing impaired. Voice quality tended to be moderately hoarse when such interceptions happened, also noted at the vowel level at transcription. His voice had good voice projection. Most common inflections were on declarative sentences tuning to low pitch at the end of the utterance, indicating also that his utterance has accomplished completion One question inflection was also noted. His voice was intercepted with pitch breaks, which reflected on overall intelligibility. Low pitched voice with + high pitch breaks + nasalization + average loudness + irregular pauses + audible in breaths in midst of utterance and slow speech rate is the general perception of his speech utterances in conversation and narration.. This could be attributed the lengthened targets, geminates, LVs and diphthongs 266 prolongations though there is evidence of 79 shortened length of target phones and constriction of clusters and omissions of syllables and phones. Quality of pitch breaks in vowels is **indicated by**
“ adjacent to vowels.
c3.1a1 wuu”(u) nn(N)aa”> (a)c(s)uu”r*u ,wu nnaa , gg(j)ee”>(a) yy(y)aa(a) naa”>(A) gaa. A(-r)]*

2.2 Deletions of Syllables and Phones were noted in 1aMbh.bpsn.L1- in initial (I), medial (M) and final (F) positions. Highest occurrence were syllabic deletions, few being clusters ***ru***, *lla, Le, le, llu , Ele, ne, ge, DA, aku, STe, k1, ...eg- bA(a)da(ne-) , Sri-*
Consonant in syllabic deletions **in** F position being ***r*** , l and **Vowels** --I, e, u, i *mA{T}(D)(i-)*
Being g , l, k, n, d, sk, SrI Clusters deleted included lla, llu , Ste, k1aFbh.bhfsn.L1- i , sk , SrI , jk , sb , ngl w, lla , llu

Which involved 2 consonant component clusters and one syllable .Medial deletions - j jk ni sb ngl. It is noted that l has a higher tendency for deletion in all word positions. There were no vowel deletions in I and M position. *{p}(b){AA}(a){t}(d){AA}(a)(ne-)*
{p}(b){AA>}(a){t}(d){A}(a)(ne-)
b{A}(a)da(ne-)
b{A}(a)da(ne-)

(n-){I~}(I) ru was to be perceived as *water niiru or wait iru* . Again the experimenter is also helped by context to understand the subject's utterance in 1aMbh.psn.L1- deducing semantic of this word was associated with his utterances of *dONi boat* . Note more often the final syllable or phones are omitted . r,, sr,sk, k , n,g were phones omitted in M and I positions *{p}(b){AA}(a){t}(d){AA}(a)(ne-) , {p}(b){AA>}(a){t}(d){A}(a)(ne-) , mA{T}(D)(i-) , bA(a)da(ne-) 2*
{a~}(A)m(Ele-), n{A~>}(a){nn>}(n)(ge-) , (k-)at{ie<}(e) , b{a.u<}(-r)t(e)- , {A~>}(A)m{AA~>}(E)(le-),

rA{K}(jk)um{A~>e<}(A)(r-), kA{n<}(N)a{l}(lla-) ,

Partial deletion of word or stopping at the word when he is sure that the C.pr has understood his previous word which was in repetition by him*: c3.1a1 wuu"(u) nn(N)aa"> (a)c*(s)uu"r*u ,wu nnaa , A(STe-)*
Or sometimes as {mA~ nn^^~} / (mane)

Quantitative Statistics of Deletion - *had{I>.E>}(-n){T}(NT)u (g-) (SrI-) (l-)10 ; (k-)2 (n-)5 (d-) (sk-)4*
a total of .... deletions of phons , 27 medial deletions 11 medial
Deletions and and 29 Final deletions

I deletions

(l-)OhItA , (g-){A>.A>}(-y){t}(tr){I >}(I), (n-){I~}(i)ru , (n-)IrU, (n-) Iru , (Sr-)Iniva{t<d}(sm)u{o <}(U){t}(rt)I , (sk-)UTAru , (sk-)U{dy}(T)Aru,

medial deletions *- (-ni) (-sb) (-j)*
*(-jk) 7 {ii.ii}(-ngl), { (Sr-)*ii*(-ni)*vaasA
{gg}(j){eE >}(a){yy}(y)An{A >}(a)g{A.a}(-r) , mai{t}(s)U{r}(r){A.a~}(-r)m{a~}(a)nne , m{A.i}(-D) , {ii.ii}(-ngl){s}(S) , t{A.i}(-ng) , cAma{r*}(r){A~}(A)(-ja)pur{a~}(a)m*

r{A.u~}(-jk)(u)mAr , {r<}(r){A.u}(-jk)m{A~}(A){r<}(r) , {gg}(j){E >}(a){j}(y)A{nn}(n){A >}(a)g{a.a}(-r) , {t}(n){A.I}(-r)

Unlike in English, spoken Kannada for language learner poses problems due to its agglutinative property; the final syllables undergo changes or after the first syllable: badanekaayi tiMtInI>> badanekaaytiMtIni … skuulige hoogtiini>> skuulghoogtiini ..muuru sala >> muursala - such variations in formal and spoken Kannada, for example, between the class room and societal Kannada may cause difficulties in language learner and affect the segmentation also in hearing impaired speakers without such knowledge and without auditory accessibility to understand such rules.

Our superficial perception of spoken Kannada is possible lowering of loudness of final syllables at the termination of a conversational utterance)

2.3 **Vowel Misarticulation**

Amongst correct words 1aMbh.bpsn.L1- has Initial *[O]* as correct utterance of this vowel. *[I]*in Final (F) position and *[i]* in medial and initial utterances are also correct in this group. *[e]* and *[E]* are noted in medial and final position.*[a] and [A]* formed utterances together in all 3 positions . *[u]* in medial final positions and one *[U]* in medial position are correct. Highest frequency of occurrences of vowel are *[a A and u , U]*. Such wide application was not found, in spite of vowel lengthening abilities.

It is well known that Kannada language has Vowels in all 3 word positions. All words in Kannada language end with vowels. Borrowed foreign words also end with final vowels optionally as in *bassu, pensillu, kAru, fOnu, mobailu, D^ST^ru, DAkTaru, mulAju* etc. All the five SV s and LVs vowels are acquired by 1Mbh.p.L1. Even though 1aMbh.bpsn.L1- had demonstrated normal vowel space of Kannada speakers he did exhibit defects in vowels. Vowel errors were most prominent in 1aMbh.bpsn.L1 - . But, running speech data indicates that he has however uttered all these vowels correctly in one or other contexts. Vowel quality affected with pitch breaks was more significant in long vowels and long vowels substitutions. Pitch break voice quality is induced due to his phonatory control mechanisms without sufficient auditory FB and his attainment of mature voice at is puberty. Table 2 lists the frequency of vowel defects across different vowels.

Errors in vowels were primarily durational type - uttered from relatively less *[a<], [e<]* to extended duration *(a>, e>, AA> , EE>).* Vowel nasalization **(NZn) and** Diphthongization **(DZn)** of vowel was significant type of vowel error in 1aMbh.bpsn.L1- **. VoFB** was another pattern noted in 1aMbh.psn.L1-. This indicates Vowel factorial bunching was with sustenance of vowels preceding and following the deleted consonant within a word. A possible glottal stop in between such vowels is speculated at test administration and also in transcription contexts .This observation needs to be confirmed with spectral analyses. Vowel addition errors were absent in 1aMbh.psn.L1- . We have focused here intensively on analyses of vowel misarticulations with reference to Kannada spoken grammar and pragmatics as they are major impeding factors for speech intelligibility and speech rate in 1aMbh.psn.L1-.

Vowels were afflicted with greater than normal length of standard spoken Kannada vowels (swaras) *a, A , i , I , u , U , e, E , o , O* . See table 3 for phonetic vowel error in 1aMbh.psn.L1- . (It is well known that vowels are the first to be acquired in infants, and that they carry prosodic and information. Vowels by themselves have semantic significances in Kannada. For example, U expressed independently also has the significance in meaning as *acceptance*, yes I agree; U in word F position indicates a conjunction indication. *AAA means* what? A or other vowel lengthening in nouns while addressing ammAA or calling on a person

at a distance for audibility … *bAbuuu, mAdhviiii, siitaaaaaaaaaaaaa, manOjaaaaaaaa, pApUU, nirmalAAAA,* A with verb eg *barItiyA* has interrogation significance. O as *yes, I am responding*, *you called me?* . O in word may indicate PNG marker II person masculine singular (ODO, bArO) and interrogative significance (*barItIyO illwO* ?) . (bArE, hOgE, bariyE as PNG marker II person singular feminine). E as *calling a person*, informally, or a *cautioning* signal (beware) *E muTbEDa* . . I as indicator of after doing this next is *(kalasI +, nODI+,rucinODI+, kalasinODI+ mADbEku*). Again EEEEE is used as conjunctive application *andarEEE, EnandrEEEEEEEE,* for example, keeping the listener awaiting in story telling or putting forth answers for puzzle . in one occasion 1aMbh.psn.L1- .answered U meaning yes . Sometimes he has also applied vowel lengthening in between words in his expression as conjoiner. And in one example of emphatic word, he increased the length of all vowels and also of consonants in the word.

Sl..No	Vowel	Error types	Comments
1	a 36.12%	a< , a~ , a> , A/a , AA/a, AA>/a , A>/a , -e>/-a , e~ , E , E >, EE , eE > , e< , A > , I> , **ou<,**	Range of durational disparity from a< to AA>. NZn Sn -e ,E(durational defects) , I> **ou** < diphthong all substitutions are UR all Sn s are UR except **ou**
2	A 10.81%	a, a~ , AA> , A~ , A ~> , A~> , A~>e< , aeae	a range of durational variance of a from a to AA> NZn Sn-**aeae** all Sn s are UR A~>e< --discuss ???
3	e 24.79%	e< , e~ , E , E>, EE , I , A , ei< , ei , **ei~< , ai< , a~nA~**	a range of durational variance of a from e< to EE relatively less compared to a and A NZn Sn- I , A DZn Sn - ei< , ei , **ei~<** **ai<** syllabic substitution *a~nA~ / e* , a syntactic error all Sn s are UR
4	E 10.94%	A~ , aeae , AA~>	Sn- A,aeae no DZn all Sn s are UR

5	i 32.52%	i~ , I> , I~, a , AA~, , e , e<, **ei<, eI> e<AA, EEi**	range of durational variance Sn- a , AA~, e, e NZn DZn -ei<, eI> e<AA, EEi word F all Sn s are UR
6	I 8%	I >, I ~.	lengthened I and NZn I with lesser proportion of errors than it's short V Sn- nil DZn- nil all substitutions are UR
7	o 7.69%	A	Sn- A very rare , once DZn- nil only one error of 13 occurrences unlike UR 1
8	O 44.44%	A, **uo>, u<O, uO, u<O>, u<O~, u<O~> , U<o, OE>**	Sn- A-Once DZn- with RV combns of uo = **uo>, u<O, uO, u<O>, u<O~, u<O~> , U<o,** Rare **OE>** DZn once
9	u 17.46%	u< , u~, U>, , i , a , A, , A~n A~	u< to U> Sn- I,a,A A~n A~ a grammatical error /u Both R and URVs
10	U 18.92%	U~, U > , o <, **u<O, u<o ,**	Lnng NZn

			DZn- with RV combns u,o - **u<O, u<o** only RVs

Table 2 Vowel errors in continuous speech sample 1aMbh.bpsn.L1- with Frequency of defects amongst each Vowel

2.3.1 Vowel Deletion (V Dln)

e final V deletion either independently or as inclusive of syllable = 13

one F syllable ending deletions had e , u and rarely i as final V *and A{w}(m)El(e-) mA{T}(D)(i-)* one final i deletion as in *mA{T}(D)(i-) e* deletion in *barutt(e-) = 3.* Final u deletion = 5 *in mUru ,Ayitu*

And as part of F syllabic deletion - *n {A~>} (a) {nn>} (n)} (ge-),{a~}(A)m(Ele-) , ne-, 4 STe-, le in {A~>}(A) m {AA~>}(E)(le-)* , mi- in lac(kS)u(mi-)

(Sr-) in srInivAsa I deletion etc

2.3.1.1 Vowel Addition V An: Nil

2.3.2 Diphthongization of Vowels (DZn): All diphthong Sns begin with*[u]* and then*[o]*comb in R manner from low to high(B to B) ; also ei from low to high (F to F) .

Short o and u showed no diphthongization(DZn) but their corresponding long vowels did demonstrate DZn of u, o combinations ***uo>; u<O; uO; u<O>; u<O~; u<O~> ; U<o; OE> /O*** and ***u<O; u<o /U*** **eg** *w{o<U}(U)TA> ~~(?OTA);~~ ,{* Inivat<dmuo <ti, iwa~mu<oti, Inivat<dmuo <ti, iwa~mu<oti} (SrIniwAsmUrti) *m{u<O}(U)ru (mUru) ;duO>te , d{uO}(O) t(s)e(dOse),* **{**gu<O>tila}(gottilla), {*u<ODu}*(with {*kA>nnu}= (kaNNu*)meant (*nODu)* not *ODu)*

Notice nasalization of diphthongs in substitutions of O . RV is more often seen here except one utterance of **OE>** /O Another configuration of diphthongization was ***ei<; eI>***

e<AA; EEi/ e and *ei< ; ei ;* ***ei~< ; ai<*** */i* . melle <AAgA(mallige when asked for names of flowers) , {bar*uttyei <}{barutte). *{EEi}(i) {t}(n)A(a)R{EEi }(i)* . These were URV combinations. **Diphthongization of vowels(DZn)** *me(a)ll{e<AA}(i)g{A }(e) (mellage /mallige), without the question context in conversation section , this owrd could also mean to C.Pr as beLLagge*

Both Diphthongs *[uo] and [ei]* of 1aMbh.bpsn.L1- are non-native to Kannada and conspicuous error in his oral conversational speech. . *[ou]* an alternate RV combination nevertheless occurs in words such as soubhagya~~(ling)~~

2.3.3 Nasalization (NZn) of Vowels

NZd Vowels suggest imprecise timing of velar closure and opening, or Imposed by intra word surrounding nasal Cn. Or is it due to lack of auditory feedback and random improper velar demarcation between oral and nasal cavities? A few examples are : i{n}(ll){A~ }(A) ,, *{A~>}(A)m{AA~>}(E)(le-) , m{A~}(a){nn}(n){A~}(E) , (n-) I~ru, n{A~>}(a)nn>(nn){A>}(a), madu~(u)v{e~}(e), m{U~}(U)(ru-), n{A~}(A)ku, {m}(b){I~}(i){l}(L)I*
exceptions being {a~}(a)kka, b{A~.a}(-r)de , {E~}(a){g}(ng)aD{I>}(I)li,

It can be observed that in Inivat<dmuo <ti, iwa~mu<oti*(Sr-)*Iniva{t<d}(s){m}(m)uo <ti) not nasalized *(SrI-)*Iniw{a~}(A){m}(sm)u<oti is nasalized the same word has either nasal assimilatory influence but not in the second utterance of the same word . . Nasalization of vowels was very significant in few words.. *[E~]* for *[a]* in *angaDILi* and *[A~]* for *[a]* in non nasalized barade {bA~de} for [barde] . Other nasalized vowel tokens of 1aMbh.bpsn.L1- were *[a~/a]; [a~(with pitch breaks) / a]; [A~/a] ;[A~>/a]* in nasalized context and one *[a~/ a]* in [akka] non NZd context .NZn took place more often preceding and following nasal Cns or geminate nasals. It also shows manifestations of nasalization in non- nasalized contexts as exceptions to this rule. This indicates poor monitoring of V and Nzed V demarcation and defective timing of velar opening and closure when nasal consonants occur in his speech. . Other examples of non-nasalization are in, *[madAvei] for [maduve]*. At no occasion did 1aMbh.bpsn.L1- substitute nasalized Vowels for nasal consonants. *[e<., e, E , E> , eE, EE]*

with superseded nasalizations in NZd context indicated above *{E~}(a)* in *angaDILi*. There were as many as 75 Nzd errors in 227 a transcriptions *with 51 pitch breaks error.* We suspect the auditory feedback insufficiency in OMTK management of velum for oral nasal demarcations.

2.3.4. Duration of vowels is a wide range, not precise as in normal Kannada speakers. 1aMbh.bpsn.L1- has a range of vowel duration in his vowel tokens from < normal SV token to > double LV extended tokens. He performs in a range of vowel duration. Long Vowels (LV) and Short Vowels (SV) are substituted for each other as in case of a and A which are ullustrated below .In case of *[e and u, i]* duration of vowel being extended to LV. But, there were no instances of *[I, E, U and O]* substituted by their corresponding SV.

2.3.4.1Lengthened Vowels (Lnng) Vowel length – *[e]*had a range of utterance type in terms of duration such as *[e<., e, E , E> , e.E, EE]*. Inducing dragged nature in his speech *being*

a-,-a,a-, as A, AA, AA>eg aa > c5.1gr*[taa> ppaa >li]##*
c3.1a1 wuu"(u) nn(N)aa"> (a)c(s)uu"r*u ,wu nnaa , gg(j)ee">(a) yy(y)aa(a) naa">(A) gaa. A(-r). Note the total relative upsurge in word duration*

2.3.4.1Shortening the vowels (Snng) *ka<.e . ba.u<t* , ***ou*** **<** *diphthong /a* in one occurrence

2.5 Vowel substitutions. There were no consonant- vowel confusions. Substitutions UR for *[a, A, e, i]* were by unrounded vowels (URV) s

Lnng
c4.3a2 *[hadii > ee>Tu]##*
c4.3a2t *[*hadineNTu] so the overall word sounds as very long ….seeking listeners attention and in this utterance as
c4.3a2 *[hadii > ee>Tu]##[waa >cc>*a]##* for
c4.3a2t*[hadineNTu][warSa]* causing long duration of utterance

c3.4a2 *[EEkkaa] [baa~ de] ## [ekkaa] [paata]#[lekka]##*
c3.4a2t [lekka][barde]##[lekka][paaTa]#[lekka]##

9.3niinu kaafi kuDiitiyoo/haalu kuDiitiiyoo
c9.3a2 [*meLAA~gge][kaa pii]##*
c9.3a2t [beLigge][kaafii] ##

had {I>.E>}(-n){T}(NT)u, k{A}(a)pp,{t}(s){U >}(U){yy}(ry){A >}, n{A~>}(a){nn>}(n){A>}(ge-), {nn>}(n)a{nn>}(n)a{G<}(g)e, na{nn>}(n){A>}(a)ge, -A>.A>tI >. Sometimes as long as AA>

Snng

Sometimes u as u< eg in
c11.3a1[teera][mEDu<][teera];
8.5 ninage huuwu iSTaanaa?
c8.5a2 [u<wu]##
c8.5a2t [uwu]##

2.3.4. Duration of vowels

only. . A total of 13 occurrences is identified of *[o]* in which only one substitution is by *[A] and].;[I a,A]*substituted the vowel *[u]* E was . There were no substitutions for vowel *[I]* other than errors of its extended length and nasalization. *[A] and [E*]was a rare substitution for *[o, O , u]* Similarly URV s such as *[a, A I , i and e and E]* [*aeae]*. E was substituted by *[A~, AA~>, A]*.There were no Sns *[u]and [U]and [O]* by UR. .Non kannada vowel ae was also substituted in {aeae}(A)ku ~~?? is it mid central ??? vowel~~

2.6 Vowel Factorial Bunching with Glottal Stops (VoFB) =

21 *-r -D, -g , -y , -n -j –ngl, -ng, -sb , -jk*

b{a.u}(-r){t}(tt)(e-), mai{t}(s)U{r}(r){A.a~}(-r)m{a~}(a)nne ,r{A.a}{-j }akum{A~}(A)rA k{A.A}(-nn)(a) A(DA-) , ba.u<(-r)t(tt)(-e) , (-g){A>. A>}(-y)t(tr)I>, k{a<.e}(-t),* { i.A}(i)llAA,. Word middle Consonant or geminate deletion with retention of preceding and following vowel, individual vowels, with (a pause, glottal stop or breath hold between vowel to a great extent contributes to intelligibility. Contextual context in narration helped the listener in mapping the word *A*>.

2.7 Vowel Self-Repair – egs {t} (n) {A.I} (-r) (u-) i note how the meaning would change in such contexts: fibre /water

2.8 Distribution of Frequency of Defects in Each Vowel: table 3-O, a, i and e cross nearly 25% cut off I frequency of defects. Vowel o was not nasalized at all and has least percentage of defects in contrast to it's counterpart O. Back vowel O has the highest frequency of occurrence of defects with tendency for nasalization. Both a and e also exemplify superseded Lnng and Nzn, furthermore, a has many types of defects e>/a , e~ , E , E >, EE , eE > UR vowel a is less often decreased in duration a< .It is nasalized and stretched to longer duration than a and < A ; A ; A> ; AA ; AA> . It is affected with pitch break kind of quality which is not marked under vowel defects, but affecting the intelligibility, and quality of speech. It shows manifestations of nasalization's in nasal context and also in non-nasalized contexts indication poor monitoring of V and Nzed V demarcation. Substituted bye<., e, E , E> , eE, EE with superseded nasalization's {a~}(a) {a~ }(a) {A~}(a){A~>}(a)in nasalized context and {a~}(a) in akka non-nasalized and

Nasalized context indicated above {E~}(a) and g/ŋ in angaDILi.

<<Table 3 distribution of frequency of defects within each vowel and their arrangement in descending order

Vowel	Descending order
a 36.12%	O 44.44%
A 10.81%	a 36.12%
i 32.52%	i 32.52%
I 8%	e 24.79%
e 24.79%	U 18.92%
E 10.94%	u 17.46%
o 7.69%	E 10.94%
O 44.44%	A 10.81%
u 17.46%	I 8%
U 18.92%	o 7.69%

Precision in initiation, duration, consistent sustenance, and velar valving for coupling and de coupling oral nasal cavities is primary vowel defect in this subject. *ba.u<t , A>. A>tI >, ka<.e.* He managed adjacent vowels within word, for example with a consonant is affected … which is observed and predicted to be subtle glottal stops for which acoustic studies. What is perceived is a feeble Glottal stop sometimes or a pause. The latter is improbable from his poor monitoring of duration of vowels at rare sentence, phrasal and word level itself. Possible inability of the articulatory feedback to manage vowels is questioned with the absence of precise point of articulation and tactual feedback of the same. Also we question the efficiency of velum in such participations. Kannada vowel space is acquired but not consistently monitored in many dimensions discusses above. Substitutions in phonologically contrastive contexts can mislead the C.pr semantically unless the context cues are clear. Such defects in subtopic switch over can be misleading to C.pr. Vowel defects have greater impact than consonant defects on speech intelligibility. Diphthongs unusual to Kannada language uo and ei combinations were conspicuous defects.

3. Consonant (Cn) errors

Consonants most affected were velar nasals and affricates. The type of defects ranged from omission, substitution, voice voiceless contrasts, oral nasal contrasts. Transient like speech production was a characteristic feature which is discussed below. Defects in geminate duration and their confusions in utterance were observed. Defects in homorganic clusters and heterorganic clusters were seen.

3.1 Consonant not acquired at all. Cns ng, and not traced in his vocabulary nc, nj

3.2 Omission - Deletion of Consonants. N , k , g , l , r kA.a(-N){l}(ll)a *(l-){EE}(e)kka* when 1aMbh.bpsn.L1- first expressed this word it was thought of as akka by clinician , but when he proceeded with words *bade* , *pATA* , and when he wrote it , it was deduced as *lekka* = maths and not akka *Eka (akka) = sister*
Discussed in.. 1.1

3.3 Consonant Distortions
ba{r*}(r)u{tty}(tt){ei <}(e) , mai{t}(s)U{r*}(r){A.a~}(-r)m{a~}(a)nne , maisU{r*}(r)a{r*}(r)a m{a~}(a)ne , cAma{r*}(r){A~}(A)(-ja)pur{a~}(a)m , {k<G}(k)a{r*}(NN){a}(u) , {t}(sh)}(a){k}(nk)}(a){r*}(a) ,
{st*}(s)U{dy}(nd)(a){r*}(r){a<}(a), {t}(s)urE{c*}(S)A g{A}(a){j*}(nd)I ,
{g<k}(k)}(a){n*}(NN)u
As is well known they caused least effect on his speech intelligibility.

3.4 Consonant Substitution
A{l}(L)}(a)di it can be seen substns of each other ; [tt, ty, tty,T /t] and [ty,tty for tt]as also seen in [t]. *ty* is highly deterrent to intelligibility in *1aMbh.bpsn.L1-*

3.5 Consonant Addition- see VoFB

3.6 Transient Consonants

In fine transcription of 1aMbh.psn.L1- 's speech, there were consonants with transient manner of articulation with retention of target place of articulation of the phone under consideration. {g<k}(k)(a){n*}(NN)u. It can be observed that they are transients between V and VL and oral nasal featrures. They shift from Vl to Vd and from oral to nasal features .
t<d= 9
k<g= 2
{k<G}2

p<m= 1

b<m=1

t<n=0

d<n=0

T<D= 0

p<b=0

K<g= 0

k<ng=0

g<ng= 0 = 15 , Vd- Vl being 13 {k<g}(g){A}(o)ttu

One place shift that was seen in 1aMbh.bpsn.L1- was what he had universally realized as velar consonant as posterior oral plosive from velar to pharyngeal in both voiced and unvoiced sets. This error is also seen in geminate utterances. Both [g] and [k] show [k to g] transients and also the geminate *[kk]* and also K and G Velar consonants in 1aMbh.bpsn.L1- kk is taken as above as k or error of k . *{kg<}(kk); {g<k}(k) {K<}(kk* {k<g}(g){A}(o)ttu ,

{k<G}(k)a{r*}(NN){a}(u) {k<G}(g){A}(a)ya

{A>}(A)yi{t<d}(t)u, A{p<m}(m)E{r}(l)e , {b<m}(m)aduve

O{t<d}(nd)u 2, (Sr-)Iniva{t<d}(sm){uo <}(U){t}(rt)I, {t<d}(d){u<O}(O){n}(N)I 6

- (Efforts from 1aMbh.bpsn.L1- to make his comfortable output) he begins with t , it is short in duration and ends and integrates voicing to it resulting in d , certain occasions wherein it is clear t , or d of same word

{k<gAttu, Ot<du, b<maduve, t<du<O~>ni~, A>yit<du},

{Inivat<dmuo <ti, iwa~mu<oti} in keeping plosives as constant feature for analyses. *[k<g/k; g<k/k and k<g/g; k<G/k, k<G/g, kg</kk]* portray substantiation of fact that 1aMbh.bpsn.L1- occasional monitoring of voiced voiceless contrasts in his speech production . In spite of his several correct *[k] ,[g], [kk]* , 1aMbh.bpsn.L1- showed these errors which could be ascribed to shortcoming in auditory monitoring of his continuous speech . Other error noted was durational reduction or reduction in both duration and oral pressure *reduction as in [*K</k ; k/kk ; kg</kk ; K/kk ; K</kk3 K</k ; *G</g];*

{w}(d){u<O >}(O){n}(N)i

{t<d}(d){u<O}(O){n}(N)I

{t<d}(d){u<O}(O){n}(N){i~}(i)

{t<d}(d){u<O>}(O){n}(N){i~}(i)

{t<d}(d){u<O~>}(O){n}(N){i~}(i)

{t}(d)O{rn}(N){a}(i)

d{u<O}(O){n}(N){a}(i)

d{u<O}(O){nn}(N){a}(i)

{t<d}(d){u<oo~}(O){nn}(N){a}(i)

d{U<o}(O){n<}(N){e}(i)

3.7 Cluster for a Single Consonant - {st*}(s)U{dy}(nd)(a){r*}(r){a<}(a) s >> st*

{t}(s)Ar{E}(i){tty}(t)A t}(s)ar{e<}(i){ty}(t)A

{t}(s)Ar{E}(i){tty}(t)A

ba{r*}(r)u{tty}(tt){ei <}(e)

{ty}(s)arIta

{y}(sk)U{dy}(T)Aru 7

{ Kraati} for (raatri)

3.8 Place of Articulation

Intra plosives - intra place defects in plosives were few and occurred at the time of integration of voicing and nasal problems. Hardly did he shift off from plosives in manner of articulation only in t and and tt, dd and p dis rarely substitute y surprisingly in rare occasions. even tho tt ty /t can be reasoned with tongue position in oral cavity but not the y as substitution for bilabial p. T went thru series of phonetic reorganizational frame work t/T >> d/t >> dy/d ultimately as (skUTaru)as {UdyAru} . {t} (k) is noted as one single substitution in this large sample . More often the plosive consonants retroflex have retained their place of articulation.

Retroflex- rare occurrences of dental n substitution n/NN. 1aMbh.bpsn.L1- has [K], [G] and [k], [g] in free variations for both k and g pharyngeal and velar points in oral speech mechanism (. a tint of frictional termination K and G.). Evidence of interchange of velars more often than being substituted by other Cns..See table 2 for errors of velar consonants in 1Mbh.p.L1. Ambiguity in place of articulation of velars and diffusion of point of articulation to pharyngeal point in singleton velar stops and geminates were observed .In addition fronting of velar to retroflex and dental were occasional substitutions. 8/11[k]showed Vd- vl and durational and low pr errors. Only in few instances fronting in [T]. Retroflex T as dy, retroflex geminate {g<k}(k)(a){n*}(NN)u .{n*}/(NN) {g<k}(k)(a){n*}(NN)u Most often the place of articulation was distinct from bilabial to glottal … but had an additional point of articulation the pharyngeal in allophonic variation with velar voiced and voiceless plosives, for example, {nn>}(n)a{nn>}(n)a{G<}(g)e , na{nn>}(n)(a)ge

Audibly such substitutions did not affect intelligibility nor were they conspicuous. We do not know the R place of articulation in this subject, which were identified at transcription. His glottal fricatives were 100% correct. Hence place of articulation in his speech mechanism were well distributed most often from glottal point to the bilabial. His back k, g consonants was stretched out to pharyngeal place of articulation, K, G like a strip rather than a point, for we do not know the consistency of his pharyngeal points. We see here in as visible dental consonant backing of position - nasal cluster = [j*/nd]; [DD/nd], [t<d, d, dy /nd] ; nasal cluster in most cases, nasal- stop cluster is replaced by same place of articulation by Vd –Vl dental stop , or vd stop.

3.8.1 Deletions of Velars were relatively rare than the above types of errors {E}(a){g}(ng)aDi, be{g}(ng) }(a)LUru *g/ng* . ...nk eg: *{d}(j){EE}(i){k}(nk){ai<}(e)* , {t}(sh)(a){k}(nk)(a){r*}(a) d/k ,k/nk . Initial velar deletion was also a rare phenomenon (k-)at{ie<}(e)

ka{tt}(t){I}(e),ka{tt}(t){I>}(e), k{uo>}(O){T}(t){I>}(i) k{uO}(O){tt}(t)I ,pu{t}(st){E>}(a)ka, n{aeae}(A)ku .Other errors involved cluster [kSmi] in medial position in (*lakSmi).*

*{T}(k){a}(A)pi, {t}(k)Ap{e}(i)*two rare example of fronting velars

Medial positions of a few words illustrate s deletions of ngl , and ge . This resulted in the demonstrated formation of factorial vowel bunching as can be seen here – t {A.i} (-ng) *; {ii.ii}(-ngl)s*. Further clarification on request indicated the latter word as (*inglish),* and in the former it was the context of conversation which helped in deciphering the word *(tangi).* On another occasion tangi was uttered as {tagi}.

A word *amma* expressed as *amma koTTe* (fruit) may either be interpreted as final ge deletion. But, it is more accurate to interpret as absence of case marker ge as most of his speech lack grammatical case markers.

A phonotactic defect with geminate velar voiced gg is seen in (jayanagara) as*{ ggeE">yyAnA">gA.a "ggE">jAnnA">ga.a}* … geminates do not occur in initial position in Kannada words.

3.8.2 Retroflex

Geminate retroflexes are few in number TT= 4, DD= 1

However errors did occur in 1aMbh.bpsn.L1- in T for eg [y/T2 ;t/T6; dy/T 6; T/D ; tt/TT 1]. Fronting of retroflex Cn to[t]and it's free variations or to voiced substitution for *[T]* tokens by *[dy]* t/T6{{t}(T){aeaea}(E)b{AA>}(a){L}(l)U , {t}(T){aeaea}(E)b{AA>}(a){L}(l)U} *{UTAru UdyAru}* dy/T ; kANNU, kA{n}(N)uttade

1. (Ralized as [d] in 1aMbh.bpsn.L1-) Associated with voiced dental nasal is the glide y. There is a tendency to substitute dental stop in place of retroflex voiceless T. And voiceless T was substituted in place of D in 1/10 word samples.. If we superficially observe dy/T, it appears as though cluster is substituted for T. It is highly probable that they are transitory movements of tongue position as in udyAru . Similar justification can be attributed to ty/t

2. Deletion of D voiced retroflex in medial positions causing VoFB in these word targets. eg – *(m A.i) {mADi}* deletion of medial D with factorial vowel bunching A.i . Final syll deletion - *DA* , {E}(a){g}(ng)aDi

There were often voiced – voiceless confusion in T and D & rare there is to and fro substitutions between [t] and [d]

No Vd Vl inverses in retroflex stops T, D. Exception to this rule in 1aMbh.bpsn.L1- in one instance of T/D (mATi). a {y}(sk)U{dy}(T)Ar

Rare cluster rn substitution for

kA.a(-N){l}(ll)a be{g}(ng) (a)LUru

Pattern of C	**T**	**TT**	**D**	**DD**	**N**	**NN**	**L**	**LL**	**ND**	**NT**	**ST**		
Total	26	4	20	1	21	3							
Er of C	14 53.9% t/T 6 dy/T 6 y/T 2	1 25% tt/TT	10 50% T/D2 -D8	0 0%(rare)	13 61.9% NN/N n/N rn/N nn/N n</N	3 100% n*/NN nn/NN2							

Table 4 distribution of frequency of errors and types of errors in retroflex singleton and in combinations.

ii{DD}(nd)ii, (sk-)UTAru

3.9 Manner of Articulation

3.9.1 Voiced Voiceless Contrasts

Vl plosives had highest frequency of correct tokens than the voiced or corresponding nasal counterparts. The voiceless plosives did not shift to nasal counterpart. Rather few nasal counterparts showed shift to corresponding voiced plosive. Target phon in *velar position* were never longer either in Vd , Vl *[k, g and kk]*. Errors of both voiced and voiceless velar stop in 1aMbh.bpsn.L1- indicated occasional Vd- Vl contrast monitoring defects. Further, *k<G/k* , kg</kk, *k<g/g*

k<G/g showing residual ambiguity in Vd- V l distinction {k<G}(g){a}(A)ya, {g<k}(k)(a){n}(NN)u* There was

no Vd- vl, vl- vd transient type of errors in

Amongst stops hardly place of articulation residual defects rather in general a few voicng and nasal and durational c defects were noted.

3.9.2 Oral and 6 Nasal Consonants

cAma{r}(r){A~}(A)(-ja)pur{a~}(a)m , mAtu √, m{a~}(a)d{i}(u)ve, ma{dd}(d)uv{E>}(e) , {b<m}(m)aduve, mad{u~}(u)v{e~}(e), m{u<O}(U)ru ,*
m{A~>}(a){w}(dw){ei~<}(e).

Stopping Bilabial Nasal and Antithesis

A{p}(m)Ele , A{p}(m)Ele , AmE{r}(l)e A{p}(m)Ele, A{w}(m)El(e-) ,
A{p<m}(m)E{r}(l)e
{m}(b)eL{AA~}(i)gge, {m}(b)eL{AA~}(i)gge ,{m} (b){I~}(i){l}(L)I, {m}(b){I>}(i){l}(L)I

Gemination, Single Consonant to Germination and Antithesis

{nn>}(n)a{nn>}(n)a{G<}(g)e, pE{n}(nn)u

Dental **stop;** but nasal **n** has illustrated oral stop [t, d] subns {d}(n){I>}(I)ru Dental stop t for alveolar n

{tAREEi }(nari) similar to sarita .... *{nEERei<, nARei<, tAREE,tAAri,Q,Q,tAAri} n{aeae}(A)ku , n{EE}(a)R{ei<}(i)*

{t} (n) {A.I} (-r) (u-) , {t} (n) {A.I} (-r), {I>.E>}(-n)

Place Defect - Alveolar n for Fetroflex N d{U<o}(O){n<}(N){e}(i),
{t<d}(d){u<oo~}(O){nn}(N){a}(i) {g<k}(k){A>}(a){n*}(NN)u
{k<G}(k)a{r}(nn){a}(u!!*

Deletion of Velar nasal ng - *t {A.i}(-ng)*

Stopping velar nasal - *be {g} (ng) (a) LUru,*
{d}(j){EE}(i){k}(nk){ai<}(e)

Homorganic nasal –mb- Ers *t{u<}(u){pp}(mb)a ,*
t{u<}(u){pp}(mb)a

No nasal context but nasalized vowels
1. *b {A~} (a) {d} (rd) e, {a~}(a)kka*

2. Nasalization of Stop *{m}(b)eL{AA~}(i)gge* followed by nasal assimilation

A Suffix {a~nA~}(e) induced by

There is no overlap of dental nasals in place of Vd or Vl

3.9.3 Laterals Intra lateral – distortion of l , L/l and l/L (l-10.4%, L -53.8%) l for L and L for l were the type of defects along with word initial phone deletion and occasional word final syllabic deletion, and flap r /l, l<L/L(place transient) eg *A{p}(m)Ele (l-)OhItA (l-)Ohitu 2, (l-){EE}(e)kka,(l-)A{cum}(kSm)I, pe{t}(ns)il le{k}(kk)A, {t}(T){aeaea}(E)b{AA>}(a){L}(l)U be{g}(ng) }(a)LUru*

In geminated of l subd by n { i.A}(i)llAA *m{e}(a)ll{e<AA}(i)g{A }(e)*(which is similar to his utterance for beLLigge ; *kA.a(-N){l}(ll)a*

In geminated L lLL/LL

{E~}(a){g}(ng)aD{I>}(I) li ; **as locative and negation *kanalla***

3.9.4 Affricates *{t}(s)urE{c*}(S)A, jE{j} (y)AnAgARa*

Affricate – fricative stop – 25% t/c314.3%3 (*l-)A{cum}(kSm)I*

cAma{r}(r){A~}(A)(-ja)pur{a~}(a)m ,√ {t}(c){i~}(i){K}(kk){A~}(a){m}(mm)a*

{t}(c){i~}(i){K}(kk){a~ }(a){m}(mm)}(a)

gg/j 2 ;{d}/(j) , gg / j or d/j , t/c

{ggeE">yyAnA">gA.a,ggE">jAnnA">ga.a, "ggE">jAnnA">ga.a } (jayanagara)

Affrication of Sibilant Clusters

{wA>cc>a}(warSa)

{pecEE}(pensil)

3.9.5 Fricatives

s 38.5% c*/s, t/s14,t<d/s {*st*}(s)U{dy}(nd)(a){r*}(r){a<}(a)*

sh- 15.4% c*, s, S, t *{t}(sh)}(a){k}(nk)}(a){r*}(a)* ,

{t}(s)urE{c}(sh)A*

Transcription s and S

h-0% the Glottal [h] has no errors at all though it is an invisible Cn in Kannada, but it provides substantial tactual cue

Stop - t<d/s ty/s, t/s ty/s st*/s., c/ns

*{t}(s)a{r*y}(r)e{tt}(t)a, {ty}(s)arIta d{uO}(O){t}(s)e*

{ty}(s)arIta, st/s cluster or overshoot ??{st*}(s)U{dy}(nd)(a){r*}(r){a<}(a)*

Affrication - *{t}(s)urE{c*}(S)A,*

Intra fricative if any – s<&/s s//?check &

Gliding in sk

(sk-)U TAru , {y}(sk)U{dy}(T)Aru, {y}(sk)U{dy}(T)Aru ,{y}(sk)U{dy}(T)Aru , (sk-)U{dy}(T)Aru glide assimilations ? y/sk

3.9.7 Flap – 12.1%- distortion, y addition ry/r , deletion of r r-,

r</r 3, d/r,r*y/r kr</r

distortion r*/r 8 *maisU{r*}(r)a{r*}(r)a m{a~}(a)ne,*

*{t}(s)a{r*y}(r)e{tt}(t)a*

rAku{w}(m){A ~>}{A}(-r), mU(r-) ,m{U~}(U)(ru),{a.u}(-r)3 (aaru)

R= R= 7

jA{j}(y)AnAgARa, jE{j}(y)AnAgARa ,n{EE}(a)R{ei<}(i) , n{A}(a)R{ei<}(i),

,{t}(n){A}(a)R{EEi}(i),{t}(n)A(a)R{EE}(i) ,

{t}(s)AR{E>}(i){tty}(t)A

3.9.8 Glide

Er on w = 0 y7.3%,4{yy}(y) 2; j/y

Gliding y , retroflex , dental , bilabial plosive , and flap r , sk occasionally and successive diffusion phonologically, and assimilation .

,tty,dy,

"adinyOE>LU"

ggeE">yyAnA">gA.a

in suffix

baru<tya~nA~

kUtyA~n A~

{y}(sk-)U TAru , {y}(sk)U{dy}(T)Aru, {y}(sk)U{dy}(T)Aru ,{y}(sk)U{dy}(T)Aru , (sk-)U{dy}(T)Aru glide assimilations ? *(sk)U{dy}(T)Aru*

(a note on articulatory glide in 1aMbh.psn.L1-. another observation in this subject is that his tongue appeared to be flat more often apposed to hard palate, whether he was making blockage at post -dental apposition or not we do not know . as the contraction at the apex of the tongue which happen with t , but did not take place with tty which was re-examined at the end of all sessions . we conjecture that a wide strip of palate is apposed for t in particular and tty is not an intentional cluster outcome but a consequence of unintentional articulatory gestures and release . For example, geminate tt for t /s the dorsum of tongue with such a wide apposition at the hard palate, and at the release of obstruction may be functioning in following manner – 1. First the posterior dorsum at the hard palate is released and then the rest of the tongue resulting in this excess Cn y along with tt:tty. Similarly also d/T , dy/d , ty/ t/T. 2. But, this explanation does not qualify for gliding of bilabial *{y}(sk-)U TAru , {y}(sk)U{dy}(T)Aru. 3.* Again these articulatory gestures were inconsistent: which are the alternate gestures and examples they occurred more often with voiceless geminates or Vl geminate substitution for singleton Cns. Most often in medial position and vary rarely in I position, and singleton Cns. Is he making this sort of articulatory placement and gesture mostly for geminates to obtain greater obstruction duration and pressure and stiffness to target geminate tt ?

Kattei - ……..

3.9.9 Cn omission – l , r,n,

3.9.10 100% correct - w, h **0% Cn defects in w and h**

3.9.11 not found –palatal nasal, also transcription wise difficult to differentiate between sh and S Palatal nasal – no eg nc, nj not found in his lang corpus

3.9.12 Frequency Distribution of within each Cn Defects

%Distribution of freq or defects within each Cns	Descending order of same defects

k- 10.7%	ng-100%
g- 33.33%	N- 61.9%
ng- 100%	T- 53.9%
T- 53.9%	L -53.8%
D- 10%	D- 50%
N- 61.9%	Sit s 38.5%%
t- 12.5%	g- 33.33%
d- 14.9%	c25%
n- 11.11%	b 21.4%
b 21.4%	m 18.7%
m 18.7%	sh15.4%
p 4.7%	d- 14.9%
c25%	j14.3%
j14.3%	t- 12.5%
l-10.4%	r-12.1%
L -53.8%)	n- 11.11%
r-12.1%	k- 10.7%
s38.5%	l-10.4%
sh15.4%	y7.3%,
S	p 4.7%
h 0%	S?
w-0%	w-0%
y7.3%	h 0%

It is difficult to transcribe between sh and S, only orthographical evidence, for target indications.

4. Consonant -Geminate Defects – kAppu kA>nnu yenna~ melle<AAgA gu<O>tila

ammE

Emma, nA~>nn>A>, nn>ann>aG<e

nann>A>ge

{t}(c){i~}(i){K}(kk){A~}(a){m}(mm)a

{t}(c){i~}(i){K}(kk){a~ }(a){m}(mm)}(a) k{uO}(O){tt}(t)I g{u<O>}(O){t}(tt)i{l}(ll)a ka{tt}(t){I}(e) ka{tt}(t){I}(e) ka{tt}(t){I>}(e) b{A}(a)ru{t}(tt)(e-), {t}(s)Ar{E}(i){tty}(t)A ma{dd}(d)uv{E>}(e) A{k}(kk)A g{u<O>}(O){t}(tt)i{l}(ll)a kA{n<}(N)a{l}(ll)(a-)

Geminates- kA>nnu/ yenna~, yenna~, yenna~, yenna~/kiTTi, kiTTi , kitti/AkA for akka /katti for kate / bar<uttei<, barutytta~nA~, baru<tya~nA~/nn>ann>aG<e, nann>A>ge/ tU >yyA > ggeE">yyAnA">gA.a

"ggE">jAnnA">ga.a, nn>ann>aG<e

bar*uttyei"<

Example 1

1.1 interchanges of Singleton consonant-r geminate

t}(c){i~}(i){K}(kk){A~}(a){m}(mm)a ; kk>>>k *{n/nn)* a{nn}(ll)A

1.2 Pharyngeal consonant for velar consonant k>>>K

2. g{u<O>}(O){t}(tt)i{l}(ll)a rule 1.1 for t/tt and l/ll in same word

3. nn>ann>aG<e rule 1.1

1.11 nn/n twice (notice word duration increase)

4 {t}(s)Ar{E}(i){tty}(t)A… rule 1.1 t.>>>tt

4.1 tt>>>tty

4.2 Gemination of Heterorganic Clusters

Rather 2 productions of dd were replacing d *and Dl. Occasional slip outs in management of place of articulation to anterior portion of mouth itself.*

4.3 ba{tt}(nt)u4

4.4 i{n}(ll){A~ } (A) Alveolar nasal gemination for alveolar lateral germination, a manner substitution , along with it there is spread of assimilatory nasalization to adjacent vowlr A~/A

5 Homorganic Cluster – *nt , nd, nk , ng , nc ,nj ,mp,mb,*

***1.wo{d}(nd)E*> ,bA~ad(nd)e , 3. had{I>.E>}(-n){T}(NT)u wo{d}(nd)E>**

1.1 deletion of nasal consonant only.

2. ba{tt}(nt)u8, ga{TT}(NT)e

1.1. and 2.1 gemination of residual C component t >> tt batu >> battu.

2 ,1.1 and devoicing residual

3. tu<pp(mb)a

Voiced consonant b>> p and rule 2.1 gemination of modified residual C component. p >> pp

4. k{AA>}(a){tty}(nt){e<}(a)

tty/nt

1.1 deletion of nasal consonant only

2.1 Gemination of residual C component t >> tt

4.1 His phonetic defect of substitution with ty for t t >>ty , hence tt>tty

5. {st*}(s)U{dy}(nd)(a){r*}(r){a<}(a)

6 ii{DD}(nd)ii

1.1 Deletion of nasal consonant only

6.1 Place substitution d >> D

6.2 Gemination of substituted consonant D to DD i.e D >> DD

7. O{t<d}(nd)u

8. g{A}(a){j*}(nd)I

6 Heterorganic Cluster *– 1. w(a){cc>}(rS)a*

1.1 omission of r , 1.2affrication of fricative S>c 1.3gemmination of c to attempt cluster duration c>cc

2. {t}(s){U >}(U){yy}(ry){A >} ; no substitution for a consonant and one c component retained y>yy like in 1.3

3. gayatri, raatri - Only omission of one of the component r >> retention of other cluster component A.Ati, rAti.

4. lacumi for lakSmi

1.2 *affrication of fricative S> c*

4.1 Sm>>cm>>

4.2 cm>>cum insertion and simplification of cluster to cvc

***5.* Inivat<dmuo <ti** for SrInivAsmUrti- a 3 cluster situation

tri>ti as in 3eg above.

5.1 t<dm/sm sm >> tm stopping of fricative

5.2 t >> t<d hence sm >> t<dm

5.3 omission of Sr cluster as a whole

7. Phonotactics - nn>ann>aG<e

{gg}(j){eE >}(a){yy}(y)An{A >}(a)g{A.a}(-r)

{gg}(j){E >}(a){j}(y)A{nn}(n){A >}(a)g{a.a}(-r) wrong kannada

8. Errors in Word X Intelligibility

1. No of errors in same word - Inivat<dmuo <ti, iwa~mu<oti .. ut and paste from sampling …..section two to all

2. Deletion of consonants and sustenance of vowels only.

3. Long word utterances nn>ann>aG<e rule 1.1 dragged and wonde

4. Complexity fo word and defects *cAma{r*}(r){A~}(A)(-ja)pur{a~}(a)m ,√ (Sr-)i{w}(nw){a~}(A){m}(sm){u<o}(U){t}(rt)I*

5. Same word is repeated in different context in different word shapes

6. Overlap of predecessor words or successive word on a defective word and intelligibility

7. Deletion and C position or syllabic position

8. distortion- r, c*

9 More distracting defects were the nasal – oral transients, voiced voiceless transient Cs.

10 DZn

10. ty , dy , tty Clefted focus has showed significantly effective in language learning, such approaches may help eliminate ty, tty , sy defects and transient defects in therapy with effective speech equipment

11The oral nasal transients and sometimes Vd – vl transients Clefted focus has showed significantly effective in language learning, such approaches may help eliminate ty, tty , sy defects and transient defects in therapy with effective speech equipment

12. [I] for [e] in [kattI]for kate ; intelligibility of target word is good but phonetic error causing lexical substitution(knife /story) in kannada language , unless helped by conversational context . Target utterance has geminate Vs consonant [tt] for [t] , but in addition there is [I/e]. Here 1aMbh.bpsn.L1- intended story not knife as is understood by the way the conversation proceeded .His another utterance [kAttei] may mean 'donkey' in place of [kate

12 nasality **in Xs in many words**

9. Stress in Word and Consonant Defects –

{pp}=2 t{u<}(u){pp}(mb)a

t{u<}(u){pp}(mb)a wonde ….. wo~dee >

Rote - {nn>}(n)a{nn>}(n)a{G<}(g)e

na{nn>}(n){A>}(a)ge

10. Whether respiratory exhaustion a pattern in hearing impaired in speech utterances caused final syllable deletion.. With frequent pauses in narration

11 Speech with inspiratory breaths + aa~m (aameele) - is an ingressive utterance.. quick exhaustion of breath and probable final syllable deletion

12 Syllabic modfications –

ccvc1c1vcv , cvc1c1v, cv/v+c1c2+v/cv>>>cvcv, cvccv, vccv,

cvcvccv>>cvcDvcv

but {gg}(j){eE >}(a){yy}(y)An{A >}(a)g{A.a}(-r)

cvX5= c1c1vcvc2c2vcvcvv.v so c>>c1c1

. O {t<d}(nd)u

vc1c2v>> Vc1<c2v

cvcv>>cvc1c2v so c>> c1c2

(Sr-)i{w}(nw){a~}(A){m}(sm){u<o}(U){t}(rt)I c1c2c3vcc4c5vc6c7Vc8c9v>>>----

vc5vc7Dc9v>>> vcvcDcvc pattern, longer the word length, less error in identification of word particularly if most vowels are retained.

.{st*}(s)U{dy}(nd)(a){r*}(r){a<}(a)

cvc3c4vcv>>>>c1c2Vc3c4vcv

V=v<to VV>~

C= c to cc

Consonant

D= diphthong

. = an interruption

C1 to c9 are different consonants each

There is not only simplification but also random increase in the complexity from standard word phonetic structure

Self correction is a common occurrence to convey idea or to clarify to the C.pr speakers utterance as in *is it this ?.... is it this word ?* Groping word behavior ….

Example:

5.1niinu kaalige eenu haakikoNDiddiiyaa?

c5.1a1[kaa >luu]#[Kaa >nuu ~>]##{ is this a speech reception problem of kaaNu and kaalu ?? with cue he understood the que eenu-kaalu} more such utterances in spontaneous speech elicitation @ length as in narration of film stories discussed later .

3.1ninna uuru yaavudu?

c3.1a1 [wuu nnaa > c*uu r*u] [wu nnaa]{ partial word repetition }

c3.1a1t [wuNasUru][wuNa] ##{ making sure I understand the word goes thro repetition partially and stops at my face indication that I got it }

3.2nimma mane ellide? {One word X 4times to convey the idea in his mind/thought /content}

c3.2a2 [jaa jaa naa gaa Ra]#[jee jaa naa gaa Ra]## [mA~ nn][ggee > yyaa naa > gaa a] [ggee > jaa nnaa > gaa]##note that every four repition for clarity or redundant expression has different word structure .

c3.2t [jayanagara] # [jayanagara]##[mane][jayanagara][jayanagara. Segemental features intra word correction as chek meelle<AAgA

Is there aself correction also going on in the listener … yes , meelle<AAgAhad induced … meaning mallige *which was confused with* meLAA~igge mallige initially but the context quickly pulled to beLigge /beLagge

tarreei (nari) induced the name to be confused in filem story tarita .. explain

Vowel Error- Conclusion

Vowels have a complicated combination of defects. Not that it is not acquired, but they are superceded with NZn, pitch breaks, timing or duration inaccuracy, and the most significant Dzn. Our conjecture is that in spite of acquisition, defects may be due to lack of efficient auditory feedback in spite he wore his Body level hearing aid. Final vowel deletions also did occur. Individual vowel was rarely practiced for semantic purpose. For example, 1aMbh.bpsn.L1- said U,U~ yes as a reply for few conversational questions.

1aMbh.bpsn.L1- has deleted e in final position is seen in words barutte not affecting the intelligibility of this word. But in word [pAta] for badane 1aMbh.bpsn.L1- deleted final syllable and uttered the target word as [pAta] with b/p substitution +voice feature and – voice feature in 2 consecutive stops in uttered word . This word appeared structurally similar to pATa

lesson, study for the C.pr which seemed out of semantic context while the conversation was about food he had on that day. It was difficult to understand this word until he demonstrated more utterances and wrote this word. It is clear that every segment is misarticulated along with final syllable deletion causing difficulty to decipher this word at conversation concerned. As many as 75 Nzd errors in 227 a transcriptions with 51 pitch breaks (a glottal fry) error, that is every 3rd a vowel was nasalized and pitch breaks diffuse to nearly every 6th vowel a causing disturbed voice quality in his conversational speech . While we normally discuss vowel defects along 3 parameters R/UR, F, M, B and L,M, H it is obvious from this subject that auditorily a lot of speech mechanism control or management is undertaken regarding Vduration , oral-nasal coupling which we also notice in consonants and homorganic clusters , stability of vowel with tongue positioning in its optimal duration and shaping the target phone and eliminating the resting or initiating interferences. For example, ei in final position could be extension of vocalization after the word is uttered ba.uttei/barutte and training - learning effects . Clefted approach in linguistics has great application for training and learning in such subjects. To cope with such management which may be insignificant to oral speech mechanism with insufficient auditory feedback at vowle level in itself is a major problematic situation for 1aMbh.bpsn.L1- in spite of long term therapy . Adjacent vowels need not be integrated to continuity as in eg

7.1nanna hesaru eenuu
c7.1a1 [AA >. AA> tii >]## c7.3a1[yi<.eeti]##

Final vowel in word utterance is a linguistic rule in Kannada language, not in English –
cuul /skuul
taikal/saikal (correct)

Vowel+.**PNG suffixes**
baru{ty}(tt){a~nA~}(e) = what for barutte .PNG sufixes
bar{u<}(u){ty}(tt){a~nA~}(e) ; ba{r}(r)u{tty}(tt){ei <}(e) ;*
kU{ty}(t){A~n A~}(u) wrong PNG marker for crow and self *kUtyA~nA~*

Vowel+.semantics - Absence of conjunctions u when he named a series of colors or animals , or contents of things in his shop- egaDi (-li) ; {peppi , putEKa , tEkAri , Q , pertil, ma~n , pEp<Ar<u , pecE, pEnu(but one occasion of u is it pennu , pennU conjunction ?), TEpu}

Conclusions - Consonants

*meelle<AAgA.*impact on duration> mallige (Note: It is presumed that bilabials are easiest for Hi due to their clear and easy visibility. However, still errors on bilabials. There is no shift of place of articulation, rather there is error of durational confusion, p<, etc. and manner of articulation errors between stops and nasal bilabial. Stop always preceding nasal bilabial, p<m or b<m for m or p/mb, pp/ mb .

-Do we attribute nasal and stop transient to our training methods. We may for eg extend training of target m from p in which case we may get Hi to produce p and proceed with tactile nasal cue for m. In the process we must take care to see that the beginner's p and b are gradually or once for all terminated during m production. Latest Instrumental Technologies in speech sciences have therapeutic applications in these subjects to erase the ephemeral sustenance of p and m in m production .

-So can we conclude for 1aMbh.psn.L1- y there is hardly any shift in place of articulation n of velar and nasal, but it is the frontal Cns which are under confusions as indicated.

The vowel length then ranges from *less than normal vowel length* (less often) to *more than long V and short V* ….in all 3 vowel positions.

8.1niinu aaTa ADtiiyaa?

c8.1a1[iA+lla]##[E~ga Dii> li]##

c8.1a1t[illa/alla] ##[angaDiili]##

{No, I go to shop …incomplete utterance angaDiili irtiini he means }

{is he correcting within the word from i to A – a paradox for interpretation or is it a diphthong ?? }

Other examples –

c5.1a1[kaa >luu]#[Kaa >nuu ~>]##

{Vowel length is not contrastive? }it appears.

Similarly e as o as o~{Is it a substitution or near to nasal?}

-i as ii>

a as a~ in illa … substituted by nn and followed by nasal assimilation effect inaa~

c9.2a2[wo<uuTAA]

u as o<uu adds to word length as above eg c9.2a2 [wo<uuTAA]

7.3 idu eenuu?

c7.3a1[yi<.eeti]##

c7.3a1t[pensil]##

c7.1 a1t[gAyatri]##{ spectrographic or acoustic analyses should help in understanding such errors within the word more successfully, for example, is there air blocked (unheard glottal stop?}

o- Initial okay eg

6.2ninge ouSadi iSTaanaa?

c6.2a1[oSdi][ittAA]##

c6.2 t[ouSAdi][iSTa]##

{nn>}(n)a{nn>}(n)a{G<}(g)e adverb of location Ola , in variances ,

Adjective of quality – AnEdu

Adjctive of quantity wonde as wonE eo emphasize only one

Colour terms as adj

Eka bIetI for ekka biessi OdtAre .pp 119 KCS???

Use of masculine gender marking at end of verb for animate nouns atti kuuttyAAna (crow)

Neuter kUtu for ekka and also for masculine similar suffix- Ana

Uses ellaru as number ibbaru to differentiate number in his expressions. ellaru Aytu ellaru OTO oLa .

case markers – nominative e, acusative , dative , locative = pApa tint Aide , pApUna takO, Utakke OgtAre , Uvu nIralli ide .

verbs – nODu , kANU , pp 122

Language Analyses –

2- > word utterances - pp 153) – chek before documenting in format

Word utterance – partial or un inflected liited vocabulary of noun verb , v few suffixes , wrong lexical selection in some occasions, wrong suffixes or PNG and case markers … more number of ouns relatively than verbs Partial word utterance as in aameele below or in the process of self-correction and halting once sure that communication of intended idea is conveyed.

Conclusions – meelle<AAgA.impact on duration> mallige (note- It is presumed that bilabials easiest for Hi due to their clear and easy visibility. However, still errors on bilabials. There is no shift of place of articulation, rather there is error of durational confusion, p<,etc and manner of articulation errors between stops and nasal bilabial, . Stop always preceding nasal bilabial, p<.m or b<m for m or p/mb, pp/ mb .

-Do we attribute nasal and stop transient to our training methods. We may, for example, extend training of target m from p in which case we may get Hi to produce p and proceed with tactile nasal cue for m. In the process we must take care to see that the beginner's p and b are gradually or once for all terminated during m production. Latest instrumental Technologies in speech

sciences have therapeutic applications in these subjects to erase the ephemeral sustenance of p and m in m production .

-So can we say that there is hardly any shift in place of artn of velar and nasal, but it is the frontal Cns which are under confusions as indicated by

-Highest prodn is dental t and least T
-Durn is a serious intelligibility degrader in

-Unlike, in earlier days we have instrumentation feedback procedures in speech sciences to treat and enhance intelligibility of speech production of congenital HI . They will find applications to major error types in SA such as duration, Vd-vl vl/d/n and imaging technologies to enhance feedback in frontal positions and omkt enhancement exercises for monitoring. Availability of vibrator watches can also help SA in durational monitoring. Hence after long term training Hi may be referred from speech language pathology to speech sciences to highlight their efficient speaking modes with greater intelligibility. In case of young children these errors may be attacked at earlier phases of therapy, keeping in mind such long term residual systematic errors in HI .

-Similarly our teaching methods might have confused tt from t , dd vs d , kkVs k etc
Did not produce bb- 0

Do we attribute nasal and stop transient to our training methods . We may for eg extend training of target m from p in which case we may get Hi to produce p and proceed with tactile nasal cue for m . In the process we must take care to see that the beginner's p and b are gradually or once for all terminated during m production. Latest instrumental

Technologies in speech sciences have therapeutic applications in these subjects to erase the ephemeral sustenance of p and b in m production.

In clusters as in sm and kSm m is retained and s deleted /cum/kSm

- But it is the frontal Cns which are under confusions as indicated by

vd- vl transition

Geminate and corresponding indl or vd – vl transient

Nasal –s top demarcation in Vs

-Only N is it retained better

-Highest prodn is dental t and least T

-Durn is a serious intelligibility degrader .

Strain – 1aMbh.psn.L1- .

Verbal fluency and lexical diversity - when aked about names of dishes his mother Prepares: wo<uTAA> anna taaru duoote iddi iiru a~m taapi taape >>> wUTA anna saaru doose iDli niiru aameelekaafi kaafi .lexical restriction in listing out the dishes is not followed as niiru = water is also included under the list. For his age he could have come out with more names and hence his fluency in vocabulary recalling is limited. Very poor with respect to normal adults. Also fluency in narration is disturbed due to redundancy, self-regulations in lexical structure and poor lexical choice, poor lexical diversity, most lexicons were nouns, back tracking. Attempts to recall a few words were also noted. Words remained uninflected 98% of the time with root words forming narration (eg 1) , limited conjunction, absence of referential pronouns , prepositions . Most often he missed on eitherobject or subject causing the listener to make an attempt to juxtapose the semantic sequence. An advantage with this narration is that his both choices of narration a folk story and story of a film are familiar to the C.pr who was also the transcriber. To understand his narration from his limited vocabulary and impoverished, incomplete grammatical formation with root eords would otherwise have be difficult. Lexical choice was also defective one occasion water /blood retains+ liquid + but non biological + non scary, due to accident an actor has bleeding from eyes and he loses vision as in *kaNNu nIru*

In addition many words remained unintelligible. Voluntary lexical free variations and such additions caused ambiguity in listener until clarity of word was deuced and noted. it was his

Nouns– kaaage, nari , gaandhi, kaafi ,mane , beLigge , raatri , suurya, , huNsuuru , sriiniwaasa , jayanagara , lekka, pATA, shARtu(CaTTu) , tAppAli(cappali), yiE.i(pensil) , u<wu , taikal (saikal) , wo<UTA> , annA, tArU, duOte , iddi (iDli) , I~ru (nIru) , tApi(kAfi) ,kApI (kAfI) tApe(kAfi) , EgaDI(angaDi) , meLAA~gge (belIgge) , rAytI (rAtri) , meelle<AAgA (mallige) ,UTAru 2 (skUTAru) , gAyatri , cUl (skUl) ; IvirA (shivarAm) ,, begaLUru , vimA(vimAna) , dONi , kAru , TEballu,
noun - ma~n/mane, -tiin aata /sriiniwaasa, wuu nnaa > c*uu r*u/ wuNasUru, jaa jaa naa gaa Ra/ jayanagara, taa> ppaa >li/cappali, u<wu, mell e<AA ge/ mallige, yi<eeti /pensil, gaaj*ii/gaandi, pAraani /praaNi, pAA tAA /badanekaayi , wuuTA, annaa/anna, taa ruu/saaru, duoo te/doose, iddi/iDli, iiru/niiru, taapi/kaafi, meLAA~gge/beLagge , cAATTU, c*AA> rAA> Tu/ SarTu, AA > AA> tii >/gaayatrii, tuu >yyaa >/suurya , cuul, paaTa, taikAl/saikal **,wuuTA??**
ZU did not know

For naming flowers in 8.6 a1named only jasmine (HuwugaLa hesaru hELu) and in 8.6c
Named colors white , black , yellow (black?!) Wrong answer) **Substituton of an attribute in place of noun eg color for flowers**

Naming animals – c8.8upto ge said illa did not know pAnigaLa hesaru hElU ,
c8.8cue – ilU, kOti, dappa AwU , dEgai (deer) wrote ANe , huli, simha, jinke , haawu , naayi

Numeral –adi.oo. ee>ll uu/ adi ny eeLu (ooLu), naa~ku /naaku, muu~/muuru, wo~dee >/ wonde

Kinship terms

approach to clarify his utterance, hence his narrations were loaded with repetiions. Consequently his narration appeared dragged and chunked. aa~m (aameele)- is an ingressive utterance, possible that such an utterance is short.

{ HI need respiratory speech training methods .. that they have to produce speech at exhalation not @inhalation …. the listener does hear such inspiratory noise, inhalation of air ,before utterance …. Mirror may be used , feather , light thermocol objects to get to exhalation preparatory mode before speech utterance …or acoustic analyses methjods such as Dr speech , spectrograms etc . }. Syllabic deletions appeared as partial word utterances.

Recalling a word - ambiguity in lexical selection illa repaired to alla, wrong lexical selection niiru for rakta, limited vocabulary, ambiguity in phonetic component of words, mallige

PNG marker for first person varied baru - ttei , - ttya~nA~ , -ttya~nA~ , -tte,
- ttEne, - ttEne , - t<, - tttyei <

Dative - used -ge rarely ,rAjkumAr(ge-) kANalla)
– kaage kUtide (-nominative) ; has locative case engaDILi, dative - ge missing , -ce of accusative case
He has used locative case -angaDIli,

Nouns– kaaage , nari , gaandhi, kaafi ,mane , beLigge , raatri , suurya, , huNsuuru , sriiniwaasa , jayanagara , lekka, pATA, shARtu(CaTTu) , tAppAli(cappali), yiE.ti(pensil) , u<wu , taikal (saikal) , wo<UTA> , annA, tArU, duOte , iddi (iDli) , I~ru (nIru) , tApi(kAfi) ,kApI (

kAfI) tApe(kAfi) , EgaDI(angaDi) , meLAA~gge (belIgge) , rAy
mallige) ,UTAru 2 (skUTAru) , gAyatri , cUl (skUl) ; IvirA (shiv
vimA(vimAna) , dONi , kAru , TEballu,

noun - ma~n/mane, -tiin aata /sriiniwaasa, wuu nnaa > c*uu r*u/ wu
jayanagara, taa> ppaa >li/cappali, u<wu, mell e<AA ge/ mallige, yi
pAraani /praaNi, pAA tAA /badanekaayi , wuuTA, annaa/anna, taa
iddi/iDli, iiru/niiru, taapi/kaafi, meLAA~gge/beLagge , cAATTU, c'
AA > AA> tii >/gaayatrii, tuu >yyaa >/suurya , cuul, paaTa, taikAl

Suffix- very few inflections
ninge sara iSTaanaa? Illa akka , No ,sister likes it without +*ge* case marker
11.1 niinu illinda ellige hoogtiiyaa?
c11.1a1[paaTaa]## ge suffix missing
c11.1a1t for paaTakke
11.2 manege hoogi eenu maaDtiiyaa?
c11.2a2..[cuul][paaTa][Attu][ooti] ##
c11.2a2t skuul , paaTa attu ooti
c8.1a1[iA+lla]##[E~ga Dii> li]##
c8.1a1t[illa/alla] ##[angaDiili]##
{ No , I am at shop to work …illa angaDiili irtiini he means }note missing dative suffix, locative suffix and pNG marker in c11.1a1, c11.1a2, presence of locative case in c8.1a1 as +li

Verb-

c9.1ge eg{?? wuuTaa maaDi bande bande ??

maat / maaDi ???

ootii /oogiddini have gone

ooti/ oogtiini??/Ottiini?? Will go

meeku/beeku

Pronoun -a nna~/aNNa, aa mm a/amma, taa i/taayi, ta mmA, a~ kka, cikkama , c7.1a1 nanna,

Past tense -

oo > gi ddi/oogiddiini PNG ……. Missing number and first person

Adjectives of quantity - attu , naaku, wodE (wondE) , mU~(ru) ,

adiOyEllU>(adinyOLu) ibbaru

adiOyEllU>(adinyOLu)

meelle<AAgA (mallige)wodE (wondE) (like jasmine one and only wondE)

Adjective - appa AwU

Adjective colors – white, black , yellow

Pronouns –anna,(aNNa) , tangi, akka, tamma, tAyi , appa, pApa,

C6.4c= yE~nnA~ nindelli. inA~ (no , not , yours . no not) (I Bagu nindA?) used nindA instead of nadalla as pronoun

Interjections -[uu~], [AA]?

Adjective - [allaa]##Aneedd>u/aLeedu used as an anotnym and negation for osaadu

Adjective – anEdu (haLEdu) (old shirt)

Used first person nanage with (… marker)

Conjunction - Aga , AmEle Absence of conjunctions u when he named a series of colors or animals , or contents of things in his shop- egaDi (-li) ; peppi , putEKa , tEkAri , Q , pertil, ma~n , pEp<Ar<u , pecE,

pEnu(but one occasion of u is it pennu , pennU conjunction ?), TEpu,aa~m (aameele)

Question types understood by him – yeenu , yaawa, eStu, eSTanE ,Enu, yaaru, haLeedaa? (is it?) iSTaanaa? yeeru?/yeenu

heege , elide , is it this or that yes or no type ,

Een beeku >? eenu>

C6.4 a1 I bAgu nindA? A contextual que answered illa akkaadu

Negation = allA, AnnA(alla) ,inA~ akka(du) belongs to clinician suffix missing , ia~(illa), illA, illa, ia (illa) , illAA,

iAllAA EgaDIli for c8.1a1 (nInu skUlige hOgtIyA)

C6.4 a1 I bAgu nindA? A contextual que answered illa akkaadu

C6.4c= yE~nnA~ nindelli. inA~ (no , not , yours . no not) (I Bagu nindA?) used nindA instead of nadalla as pronoun

aKa

rAKumA~r< Kan<al (KANalla) e232

here with absence of suffix it is not clear whether rajkumar is blind or akka ?

illA

Example: 8.1niinu aaTa ADtiiyaa?

c8.1a1[iA+lla]##[E~ga Dii> li]##

c8.1a1t[illa/alla] ##[angaDiili]##

{ No , I go to shop … angaDiili irtiini he means }

gu<oo> tila/gottilla

aannaa/alla

c6.1ninge sara iSTaanaa?

c6.1 [inaa~ # aakaa##]

c6.1 [illa akka]

{No ,sister likes it without +*ge* suffix instead of akkaLige/akkaage iSTa}

Raakumaar kannu kaanal raajkumaar kaNNu kAnalla

Prohibitive negations not used as mADbArdu , dAtbArdu , muTTbArdu not used

Emphatic - wo~dee >/wonde , loud

Declarative - rAkumAr maduve Ayitu

rAu~mA~r ADu Awatu

-Absence of pronouns – names are used in their place repeatedly such as raajkumar , sarita ,

Personmarkers are in error as in fox and crow story

Number markers – ibbaru , appa amma ibbaru

Verbs – include – battu (kAru) ; Aytu ; OTO Aytu, taeaebAA>lu Akuttyae

AmEle badu (bandu) ; ma~nne~ oLagA< badu

ellAru ma~n OTo OTO Q ..Aytu

ellAru mA~nA`

Adjective of volume and size = tumba = tu<ppa

Interrogation – Yenu beeku? yEnu …..

Absence of interrogations yAwa? yAke? eSTu? hEge?yAru? yAwudu? –A ? not used .

Distance – dUra

Adjective of quality – dappa aawu ?/size

Onomotepia – not used

No reduplication

1. melle<AAgA for mallige appeared more as recalling and repair attempt causing e<AAA
2. *Ialla,*
3. *naari,niiru nIAri*

Lexical **free** variation –1(maduve)- marriage -*.m{A~>}(a){w}(dw){ei~<}(e) , m{a~}(a)d{i}(u)ve ma{dd}(d)uv{E>}(e) , {b<m}(m)aduve,*

2. (AmEle)-then *A{p}(m)Ele , A{p}(m)Ele , AmE{r}(l)e A{p}(m)Ele, A{w}(m)El(e-), A{p<m}(m)E{r}(l)e*

3(.biLi)– (white *){m} (b){I~}(i){l}(L)I, {m}(b){I>}(i){l}(L)I,*

4. {nari } fox – *n{A}(a)R{ei<}(i), {t}(n)A(a)R{EE}(i), {t}(n){AA}(a)ri ,*

5. (dONi) –boat

{w}(d){u<O >}(O){n}(N)i

{t<d}(d){u<O}(O){n}(N)I

{t<d}(d){u<O}(O){n}(N){i~}(i)

{t<d}(d){u<O>}(O){n}(N){i~}(i)

{t<d}(d){u<O~>}(O){n}(N){i~}(i)

{t}(d)O{rn}(N){a}(i)

d{u<O}(O){n}(N){a}(i)

Q

d{u<O}(O){nn}(N){a}(i)

{t<d}(d){u<oo~}(O){nn}(N){a}(i)

d{U<o}(O){n<}(N){e}(i)

5. (badane)– birnjal *{p}(b){AA}(a){t}(d){AA}(a)(ne-) , {p}(b){AA>}(a){t}(d){A}(a)(ne-)*

6(jayanagara) – jayanagara- name of residential location – in utterance no 2a2 [jaa jaa naa gaa Ra]#[jee jaa naa gaa Ra]## [mA~ nn^^~][ggee > yyaa naa > gaa.a] [ggee > jaa nnaa > gaa]

7(SrInivAsmUrti)– name of a person -Inivat<dmuo <ti, iwa~mu<oti

8.{maisUraramane}- mysore palace - mai{t}(s)U{r*}(r){A.a~}(-r)m{a~}(a)nne , maisU{r*}(r)a{r*}(r)a m{a~}(a)ne ,

It may be observed that wide lexical variations occur for same lexicon, repetition had not helped him acive the target word structure

Grammatical structure – *more often he anwered at conversation in single words, and adding word one by one to convey the meaning* c11.2a2[…..[cuul][paaTa][Attu][ooti] ##i.e , c11.2a2t skuul , paaTa attu ooti .

Occasional sentence construction with SOV was noted. rAkumAr maduve Ayitu *(dative suffix-ge raajkumaarge maduve aayitu missing) Imcomplete sentences , phrases were also seen rarely .*

a severe break down in expression of this subject when he cose to tell the famous simple crow and fox story: ka<e nEERei< naaRei< . he was extremely poor in narration of folk story than the film story as can be seen below : of crow and fox narration -

AA aa>ge> AagutyAAR>e . attyi kuutyaa~nA~. aagei< taa>rEEi kuutyaa~nA~. aagAA tAii oo>guttyAA~n^A~ .

aaGaa tAAri aagaa tAAri Q Q aaga tA.ii kuo<tdarA~na.

Etti kuutyaa~nA~. KEtii KEttii Ei<Ga .

***Few phrases …** V few … rajkumar kANalla missing object*

aayitu maduve aayitu- missing subject

atti kUtyAna /hatti kuutide- missing subject

kate baruttyana /kate barutte- missing subject

ellAru mA~nA`- missing verb

(morphophonemics , language : delivery of intended expression very rare complete sentences-simple , word by word or phrasal , word order , phrasal word order , nanage kate barutte ,lexical selection , self repair and regulation , lexical capacity- limited , inflections , lexical diversity , new word learning ,

Other examples of sample sentence tokens –

Language Unlike other profound hearing loss adults in our study he did not carry key words from the questions addressed to him in his answers. He needed gestural and graphemic cues 70% of the time in conversational test sessions. He used noun stems more often and very few verbs. He bought in the names of the characters in the film in sequential order as it appears in the film with few verbs following some of them. Most often object was missing.

Token 1 has one simple sentence but phonetically and perceptually defective, with appropriate word order in this sentence .Another simple sentence had missing object, with retention of subject verb and wrong PNG markers. 2nd person singular masculine for neuter gender kaage. Similarly wrong PNG in token with absence of conjunction marker or conjunction . 2 Most often his expressions were in one word in conversation, with occasional phrases. Phrases were NV type … with repetition of words in them until he was sure that the listener has understood and shifting to next question .this is self-regulation, self-repair by the subject from C.prs feedback signals. Having addressed the clinician as akka Ekka, EKa , when he uttered initial part of 7 eekka baa~de . The listener is in ambiguous comprehension state. However, when he enumerated as *ekka* paata lekka. Wrong lexical selection can be observed in 8 .for negation alla NO >> illa Not with me. In eg 6 syntactic structure is incomplete. Syntactic and phonetic phonological structures complicate such comprehension for a new listener. Word order in phrase utterances is defective V verb followed by N noun with

1 na{nn>}(n)(a)ge
ka{tt}(t){I}(e)
baru{ty}(tt){a~nA~}(e) for>>>
>>>>nanage kate barutte-
complete sentence
incomplete grammatical structure
/phrases ka{tt}(t){I>}(e)
bar{u<}(u){ty}(tt){a~nA~}(e
>>> kate barutte

1. (k-)AgE a{tty}(tt)I
kU{ty}(t){A~n A~}(u)
>>> kaage(mara) hatti kuutide
2. (k-)Ag{ei< }(e)
{t}(n){A}(a)R{EEi }(i)
kU{ty}(t){A~nA~}(u)
>>>kaage nari kUtive
3. A)yi{t<d}(t)u Ayi{t<d}(t)u
m{A~>}(a){w}(dw){ei~<}(e)
m{a~}(a)d{i}(u)ve
Ayit(u-) ma{dd}(d)uv{E>}(e)
>>>maduve aayitu
4. anna tinaata mee.e mee.e
for>>> aNNa Sriinaata
manEliddaane
5. eekka baa~de . ekka paata lekka
for >>lekka barde . lekka pATa
barde
6. illa akka
(for >>alla akkaadu no case
marker for que I pensil niMdA ?
)
7. raaku~ma~ ii~ru iiru g<kaan*u
>>> rajkumar has water eyes (
eye bleeding)
8. raaKumaa~>e Kaana<l
>>> raajkumAarge kANalla (
kaNNu)

random repetition of words in phrases. C.pr is left with semantic ambiguity often with multi linguistic level defects. This is much easier in structured section of conversation due to build up semantic and syntactic contexts. However semantic ambiguity for C.pr intensifies in narration .with such complexity in interaction the conversation appeared dragged in time in addition to his slow rate of speech and more often slow ambiguous semantic outputs. Token 9 indicates incomplete syntactic and semantic content which cannot be labeled as phrases but word by word utterance it is here that lexical choice is defective – water/blood niiru for rakta . . Token 9 indicates the actor has lost vision … understanding the film story was much easier for the Clinician as she had also watched this movie. His narration of a film story were only many nouns mainly names of persons, and few objects *skUTaru , kiTaki , kaNNU ,gaaya , pustaka, vINe* location such as *KRS , home, river , boat and very limited verb words haaDu , nOdu , battu(bandu) ,kaanuttade(kANuttade), ODu, kANalla(kaan<al*), without sentence formations. It appeared he was visualizing the film in his imagery and sequentially narrating the name of characters. The only conjunction he used was aameele and demonstrative pronoun was *awattu* . There was absence of referential, pronouns, determiners, tense markers, case markers and PNG markers. for long years of training and amplification age and oral integration his language appeared highly impoverished and aurally difficult to deduce speech output with multilevel linguistic defect in every unit of communication.

Every word, most phonemes within word has either phonetic phonological defects, with embedded semantic syntactic defects, summarized in check list. Table no

This adult …. has multilinguistic defects pervading and interacting with each other in the process of communication . …In sum. Communication with this hearing impaired speaker affects the pattern , speed and nature of language comprehension in C.Pr with prerequisite preparedness to tuning to his patterns , rate of speech ,t o his truncated chunks of speech expressions without essential grammatical markers , expressions with semantic or syntactic ambiguity , fixed AV modality adjustments from listener or C. Pr. Both The pace with which the intended idea or thought is expressed by the HI speaker and semantic grasping of this idea in C.Pr undergo several regulations, repairs with necessity for leads , and cues in conversation

.Hence the whole process is dragged . It was also obvious that at the end of 90 minutes .of communication …. Would appear stressed and tired .Expressive oral communication from HI speaker's mind and thoughts are partial and defective and more often mental transformations from his linguistic oral expression in C.Pr may be ambiguous and also erroneous if not accustomed with HI speaker in communication.

We then question incidental ambient language learning in the critical language learning period or in auditory speech and language training period. However, he indicates essentiality for hearing aid in AV communication situation. No oral AV communication happens then in AV mode. This definitely proves the utility of body level hearing aid in communication. He has discontinued his studies by 9th standard in normal school . A definite lag in academics and literary skills is indicated by his failure to pass 9 th std repeatedly. This is also expected from above psycho linguistic observations. He is now helping in a small grocery shop. Until 1990s Programmable digital BTE hearing aids were not in Indian market and if available now are drastically expensive. These body level hearing aids were hence a great support for oral communication, normal integration until advanced technological hearing aids came to market. Further reports on profound hearing loss will be presented in later papers.

With above observations and interpretations we now move to part 2 of this paper

Part 2 No Repetitions or Cues Needed in Conversation

A pretext to overall nature of ***1aFbh.bhfsn.L1***- was given in part -1 Noingressive speech No irregular pauses, minimal pause in SK maintained:
66 incorrect words with error (occasional) in ss, ST , c , l, etc . s

- No keen attention to facial cues
no efforts to communicate for the 1aFbh.bhfsn.L1- -or clinician

Suprasegmental characteristics ***1aFbh.bhfsn.L1***- had husky, moderate voice, with normal pitch. Her inflections were appropriate but were in minimal range. At the time of narrating stories she switched her voices to different pitch to illustrate distinct characters and role plays. She modulated her voice such that a child's talk was higher pitched than the grandmas's voice in her story. Further, a magic curse word was uttered with loud voice and lengthened word. Fluency, duration, pause, rhythm characteristics had no shortcomings. Her speech defects were also less conspicuous than that of 1aMbh.bpsn.L1- due to Consonant distortions and their consisitency. These errors are similar to target phon in terms of distinctive features. Clusters were vivid and of sevral combinations. A typical finding of cluster production and individual Cn production in her speech is discussed below. Her speech and language were fluent informal, natural and colloquial SK. Her speech was characteristic of colloquial Kannada of the region. She was monolingual like 1aMbh.bpsn.L1- . With exposure to English and Hindi at school she had not picked up both of them . India is a multilingual country. Conversation with her can be marked as crypt and informative of normal colloquial speech in Kannada language

Word recalling – nil

We find definite significantly distinct patterns in speech and language between a 1aMbh.bpsn.L1- and 1aFbh.bhfsn.L1- who …….severe profound to mod severe sloping hif loss.

Phonemic similarity – Auditory synonym ,Visual Phonotactics-
Modality – AV but not instensely fixed on C.Pr

Voice and Suprasegmental -

Allomorphs – *bartaare , baruttaare ,*

oodtaare , ooduttaare ,

maaDidlu , maaDidaLu

laughs at que *Oushadi iSTAnA ? and says no*

redup, *-ajji , ajji antant,*

Dam – onomatoepia

She uttered- hUwu , hAwu,

U~ agree *U~* annutte

Vowel lengthening for stress and question markers : Hosaaa blous bEkO haLEdE bEkO ?

ajjige *obnE obba* maga ante;

Vowel duration for stress in que makers - *sOp bEkOOO sIgEkAy bEkOOO anta kELtALe haLE sIre bEkOOO hosA sIre bEkOOO antALe*

Vowel in Conjunctions -*AgA,A tirugAA, AwAgA, mattEE*

*Emphasize, IIIIS*TUdddhad.gombe*

complete, and non ambiguous syntactic structures, accurate word order , from simple to complex sentences relative complex senteneces etc in her transcriptions. Cues wrere not at all necessary in conversation. She indicated good topic mianatainanace in narration her narrations were cohesive, sequentially organized, with appropriate referentials case markers, and conjunctions, etc . Initiation and termination of narrations were good with abstraction of morales from stories. Her conversation and also narration were equally good and intelligible.

1351correct words; 23138 phonemes with average 17 phones in a word in colloquial Kannada.

Vowels

All 10 vowels of Kannada were acquired by ***1aFbh.bhfsn.L1-*** . In addition her vowels had their morphophonemic ,semantic and syntactic applications.. There were no defects of temporal or durational, NZn, nasal assimilation, Dzn, VoFB . *O* as question marker *bEKO …*

tegItiYA, in 1aFbh.bhfsn.L1- , A as que marker hOguttAnA?; beLLi *bEkOO? maNNu bEkOOO?*

*For stress or emphasis effective lengthened vowel along with other phones in the word : IIIIS*TUdddhad.gombe* etc . She had appropriately used vowel length as call outs in role switching in narration with high and low pitch … *ajjiiiii, ajjiiiiii or puTANiiiiiii , puTANiiiiiii puTTANNaaaaa ,puTTANNaaaaa it is natural for kannada speakers to extend the length of last vowle in a word to emphasize , sometimes even consoanats (eg biLiiiidu ,karrrrage , kapppage, dOOddadu , dUUUra) hosA, eraDanE , haLEdE . in addition she succefully managed constriction of successive words in spoken kannada which underwent typical Dravidian agglutination phenomenon, with deletion of vowels. Otherwise all her word ended with vowels a wordstructure rule in Kannada*

Diphthongs were also clear and correctly spoken.

Consonants

While 1aFbh.bhfsn.L1- 's Consonant errors were relatively minimal. Her consonant defective subsets were errors of lateral and fricative, affricates only. .Occasional Distortions of fricative, affricates and lateral place substitutions had minimal reflections on her speech intelligibility. Voiced- voiceless stop distinction, contrasts between nasal- oral consonants, singleton -gemminate consonants, accurate homorganic consonants , accuracy of all 6 nasals of kannada , and 3 way coronal tongue placements in plosives typical of Dravidian lanaguges ( ) were positive reflections in her natural spoken conversational speech .A Good durational control .Phone duration, geminate duration and overall word duration and sentence duration normal The listener's focus was on semantics or content of her urtterances than deciphering the uttered speech as first step and then deduce semantic content as next step which happened while conversing with 1aMbh.bpsn.L1- .

"{s}(s)8 {ss*/ss)2"{c*}(c)1 c*/s 1 {s<&/s) 1 , {l<L, l/L) ; {LL/ll) lLL /LL, s/sk , {n&}(ns)1 ,{&T}(ST){l/L) f*}(f), {f<p}(fr) {&<TT/ST), {St/ST,) {n&/ns), {h}(g) etc*

Fricatives

ssh/s maisshuru

shsh/ss in

kaafi

Correct in singleton more often in initial occurrence and heterorganic cluster eg sk, sr, distortion of alveolar s in singleton more often in medial position and rarely in I position comparatively and gemminate occurences ,s to S place transient or ambiguous utterance in *mai{s<&}(s)Uru , and S/s in cluster ns pe{n&}(ns)illu* maintaining one component of cluster , substitution by other fricative and overall duration of cluster or *puss*aka /pustaka* maintaining one component of cluster to fine dlauetr duration with their distirtions which are observed in singleton s *eg- kel{s*}(s)akhOgtAre*

In case of gemminates which are 50% + in duration - ba {ss} (ss) albande* again duration is well mainatained of geminate but ss distorted as above
or in heteroraganic cluster omission of *k in sk- {sUlal}/{s}(sk)Ulal ;* skUlg IskoNDU tho 2 such clusters were correct listed here .

alveolar voiceless fricative s= swalpa ; siguttante, nangeondswalpa ; sari ; saNNa, saNNad , sakre, sigutte , snAna , sOp, sIgEkAy , sIre, sari, hosA, blous, IskoNDU , hesru, skUlg , klAsighOgtAne *dAswALad*
ba{ss}(ss)albande ; mi{ss*}(ss)u*
dO{s}(s)e kel{s*}(s)akhOgtAre ;*
mai{s<&}(s)Uru , {s}(s)Urya , {s*}(s)umitra ; {s*}(s)AyankAla ; {s*}(s)aikallu, pu{ss*}aka /pu(st)aka , ; pe{n&}(ns)illu ; pe{nc*}(ns)illu,, pencillu {s}(sk)Ulal ;* skUlg IskoNDU
bassu and shshs/ss
caikallu/saikallu {c}(s)ampi{h}(g)e ;{c*}(s) imha*

Retroflex Voiceless fricative S –
*i{shT}(ST)A ; a{sh<TT}(ST)e 2 a{&*T}(ST)e ; bEkAda{st}(ST)ide , Correct -= iSTudda* = one correct *IIII{S*T}(ST)Udddhad.*

As palatal short

Distorted in clsuters all

Or as *drAk{S}(kS)I, drA{sh*}(kS)I 2, drA{S*}(kS)i*

Palatal fricative sh- shuNTi,

Glottal fricative h-

Borrowed fricative – f in freNDs as one incorrect inctance {f<p}(fr)eND, kAfi,kA{f*}(f)I, Again one stop substitution transient in f bowrowed word … tho kaafi and and one more distortion.

Affricates- kur{c*}(c)

I, ma{nc*}(nc)a, {c*}(c)appali, pe{nc*}(ns)illu/pensillu pencil

bAckoNDu , kirckOtAre , capAti, N OBSERVATION HERE IS THAT C* IS MISSING IN *bAckoNDu , kirckOtAre bAckoNDU , etc .. is this beacsue that disrtrotion is ocuring at release or termination of fricative … and in cluster there is no relase … but continued up to net cluster component eg k, or co articulatory facilitating factors ,*

rAjange ; rAjA ; ajji , ajjige ,, gAndIji , jote , jAji , jinke ,

Laterals- navil*u , navilu2

rail*u

{s}(sk)UlalkUgtAre

LL= *IruLLi 4;* 4 toal occurrences as same word errored as lLL and 1 correct

l= Free variance kALmuL, kAlmuL

kel{s*}(s)akhOgtAre , ba{ss*}(ss)albande

{c}(c)appali , ha{l<L}(L)Edu , {s*}(s)AyankAla , s*aikallu caikallu*

i{LL}(ll)a , pe{n&}(ns)illu , pe{nc}(ns)illu pe{nc}(ns)illu*

{s}(sk)Ulal

irtA{l}(L)e , , IrU{lLLi}(LL) 3, IruLLI 1 *kUdlu3 , , swalpa , nangeondswalpa , nangondswalpa 2, blous 2 , , gulAbi , idlante , skUlghOgtAne , skUl , klAsighOgtAne , AmEle ,*

bAl, gaNigle , huli, hAl, manEli , gulAbi

Correct, in IM alveolar lateral, cluster *lp, dl,lgh,kl,gl,*M geminate ,

Intra- lateral place transient - *ha{l<L}(L)Edu*

Place substitution intra- lateral - kALmuL, kAlmuL,

Cluster with similar intra- lateral place for geminate LL IrUlLLi 3 IruLLI 1

Retroflex geminate for alveolar lateral *{iLLa}(ll)a*

Distortion of *l*

Occurrences - , ll= *i {LL} (ll) a*

ll correct list - *ondUrnalli , ellAru , bellAguttalla , antAralla ? 2 , illE , illa , nandalla , mallige , gorilla , ellA , iralla pe{n&}(ns)illu {s}(sk)UlalkUgtAre bAl, gaNigle , huli, hAl, manEli , gulAbi ,skUlal.elrU*

l=54-28= 26 occurences of l in the C word list . *kUdlu3 , swalpa , nangeondswalpa ; nangondswalpa 2, blous 2; gulAbi ; idlante , skUlg , skUl , klAsighOgtAne ; AmEle ; prouDA&Ale ; bAl, gaNigle ; huli, hAl, manEli , gulAbi*

*27 distortions in er list

L == *gALige , hELuttE , kELtALe , hELtALe , anthELtALe, awaL , kELtALe , koDtALe , haLE , antALe , haLEdE , obLu , IruLLi 6 , hELtAne, marLE , dAswALad , beLigge , beLiyuttante ,hELutte*

IruLLi2 , Iru{lLL}(LL)i 3, i{LL}(ll)a (laughs does nott like medicine taste) ; irtA{l}(L)e

Correct L in M, Lt,wL, rL,

L Does not occur in word I position in kannada.. other retrflex T , D , N, ND, NT , appropriate .

Manner of articulation evidences – affricate for fricative , stop for bowrrowed fricative very rare.

Place – within manner and eg of deviations -

No nasal -oral confusions nor velar nasal difficulties - ng= rAjange total 13 , nange , nangeondswalpa , nangondswalpa 2 , ninge , nang 2 , nange 3 , iwnge , tangI , ring , and their cluster formations , oNTe , jinke , munde, nange , antant with no co articulatory

or assimilatory influences **Velar nasal** – nange , nangondswalpa and homorganic clusters , nsalization in U only , no nasal assimilatory signs

Singleton utterance of C and cluster???!! compare)

Deletion of consonants – nil in 1aFbh.bhfsn.L1- - other than in very few clusters …. eg … *{s}(sk)Ulal*

mai{s<&}(s)Uru ha{l<L}(L)Edu IrU{lLL}(LL)i in 1aFbh.bhfsn.L1- see place shift in her unlike in

Cosonant clusters - Management of clusters in their specified duration and phonetic combintaions. it is known that kannada/clusters stand some where between singleton C and gemminates ?????????? 1. Cluster in minimal duration, 2. Cluster nand single consonanst pattrens in 1aFbh.bhfsn.L1-.Geminate versus individual cn good Clusters found in 1aFbh.bhfsn.L1- –1. Natural word clusters, 2. Grammatical morphophonemic clsuters …. ge , -Le, -ne, -tte, lli, -A , E 4. **Compare release and and holdings in clsuters -**

Error patterns in single and clusters and geminates -

Morphophonemic application of SK – leading to cluster formation as per rule in words and

-pp, mp, lp,

-bl, mb, pp, mm, bL, br, bn, bbr, bbt,

-mm, mh, mb, mp, Nm

-tt, nt, tr

-dd, dl, dy, dm, dk, ndr

-nd, nh, nn,nt, ndb, ndsw , nk , nth ,wn ,ns,sn,nh,ndr,wn

-TT, NT, Th, TTh, ST, rT,

- Dt, Dn, DD, Dt,

-NDt, Nm, NT

- kk, tt , kb, nk , kr ,nk ,kt,dk,ck

-gg, gt, ng, gl, gL

-ng, nk, ngr

cc, rck, ck,

-jj,

-lm, lp, ll,

-Lt, LL,rL

-rw, rn, rck, rt, rL, ry , rT,ngr,tr,ry,ndr,rs,sr,rL

-ss, sk, sr, sn, sw,

-sh--

-ST,

- - yt,ry

-ww,wn, sw, rw , wng, dw,wL,wr,

Effortless Clusters production - swalpa, cuccirutte, nangondswalpa, andbiTTU, bAckoNDu, ondUrnalli, idlante, kirckOtAre, andbiDu , kankAmbara , OdkOtIni, eNDtIrirtAre , orTOgbiDuttante , ibbru(geminate duration incorporated in cluster approp) , haNmara , siguttante , hAkbiTThOguttante ,

cuccirutte , tegidbiTThOguttante , anthELtALe , , nangeondswalpa , nangondswalpa, dAswALad

klAsig.hOgtAne, sUryakAnti, hAkbiThOgtIyA? hOgtirwAg , nangondswalpa, hAkbiTTu , hOgtIyA , hAkbiTThOguttante , hOgtirwAga , klAsig.hOgtAne

utterances of continuous speech case markers , PNG markers , correct , word ending vowels and consonants correct . colloquilal lang and assemblage of two neighboring words to sandhi , hakbiTTu , mAvinmara , irtAne , ondUrnalli, orTOgbiDtAne , rAjange, bartA , siguttante , nangondswalpa , basssalbande , kelaskhOgtAre , as in colloquial kannada 3 adjacent words were combined into 1 as in colloquial informal kannada klAsig.hOgtAne

Homorganic - kankAmbara eNDtIrirtAre andbiDu, , siguttante, anthELtALe ondUrnalli, bAckoNDu, saNNad.IskoNDU

Geminates –locative - ondUrnalli, siguttante , hAkbiTThOguttante , ibbru, , hAkbiTThOguttante , saNNad.IskoNDU, sanNa, doDDa, peTTige
Geminate clusters correct except ss, LL, (ll correct)
Trilcusters –ndsw,NDt, bbr, hAkbiTThOguttante, anthELtALe

Speech intelliginbility - *Q nil*

Intra Lexical free variation - Free variance kALmuL, kAlmuL

Minimal pauses in Morphophonemics - klAsighOgtAne , haakak.koDtALe, kelask.hOgtAre, saNNad.IskoNDU, doDDad.bEKO ?haLe hosA , awan.hesru, skUlig.bartAne
Rhythm and tempo of Conversation - Appropriate pauses, word length and closure of sentences – grammatically correct structures generally

Repetition of syllablesAV-
in section on NW repetition of syllables and ….. discrimination …in AV ta-Ta, da-DA , sa-ca , sha –ja, sh- Sa , ka-pa, ga – ba , da – ga , na- NA , na – ma . pa-tt, ta –ka, na ma , Na –na (word) stra as STra
for tA she responded with bA in imitation

Depending on the age of onset the child would have passed through ormotor coustic fb correlation, and age of intervention , or not is major parameter in HI

Onamotepia -- *Dam*

Direct and passive voice

Reduplication -

- *antant(Redup) madyAnna ajji ajji nODajji IrulL IrulLi antAralla? ant hELtAne (* Redup

Que – Yaradu? tegItIyA? hOgtIyA? ; hAkbiThOgtIyA? ; tegItIyA? , bellAguttalla yAwAg awnu skUlg hOgtAirtAne; hOdAga IruLLi banda IruLLi banda ant ellAru kirckOtAre

Quantity – nangeondswalpa , eraDanE, ibbru, ondUrnalli, obba, iSTudda

Locative – ondUrnalli, illE, manEli,

avanig; manEge, gALige, Anege , awn.na , ajjiinA,

yAwAg awnu skUlg hOgtAirtAne; hOdAga IruLLi banda IruLLi banda ant ellAru kirckOtAre

pronouns? – eNDtIge, rAjange, ondUrnalli, ajii, maga , akka ,

prep- innu,munde

verbs-

enutte; hAkbiTTu ; (Akitu– jayshree) ; hELutte ; U~ ; andbiTTu , sigutte , cuccirutte ; tegItIyA? anthELtALe; snAna ; hAkhak; beLiyuttante; andbiTTU ; koDtALe ; bEkO , antALe , bEku , IskoNDU , bAckoNDu, bartA , idlante , kirckOtAre; banda; hOgtAirtAne; hOdAga ; irtAne, kOpa bandbiDutte ; bellAguttalla ; enutte , tegidbiTThOguttante, kELtALe, pATa mADtAre ; hIge Agutte , bartAne ; antAralla ant hELtAne ; nODajji ; hELtAne ; antAralla ? andbiDu ; bartAne ; iddAre ; OgtIni; ADtIni; OgiddIni ; mADtAre

uytAre ; mADtAre ;' OdkOtIni; irtAne; bartA, enutte , hELutte ; hOgtirwAga ;

Que – Yaradu? tegItIyA? hOgtIyA? ; hAkbiThOgtIyA? ; tegItIyA? , bellAguttalla yAwAg awnu skUlg hOgtAirtAne; hOdAga IruLLi banda IruLLi banda ant ellAru kirckOtAre

Referential senence -yAwAg awnu skUlg hOgtAirtAne; hOdAga IruLLi banda IruLLi banda ant ellAru kirckOtAre

kOpa bandbiDutte ; bellAguttalla ; enutte ,

tegidbiTThOguttante, kELtALe, pATa mADtAre ; hIge Agutte ,

bartAne ; antAralla ant hELtAne ; nODajji ; hELtAne ; antAralla ? andbiDu ; bartAne ;

iddAre ; OgtIni; ADtIni; OgiddIni ; mADtAre

uytAre ; mADtAre ;' OdkOtIni; irtAne; bartA, enutte , hELutte ; hOgtirwAga ;

ondUrnalli obLu ajji idlante

ajjige obnE obba maga ante

awan hesru IruLLi anta

A IrulLLi yAwAg awnu skUlg hOgtAirtAne

hOdAga IruLLi banda IruLLi banda ant ellAru kirckOtAre

adakke iwnge kOpa bandbiDutte

adakke Awat madyAnna skUl bellAguttalla

AwAg klAsig.hOgtAne

pATa mADtAre

hIge Agutte

AmEle manEg bartAne

madyAnna ajji ajji nODajji IrulLi IrulLi antAralla ant hELtAne

adakke IrUlLLi antAralla ant hELtAne

adakke Q nin hoTTe Dam andbiDu Q

sari skUlig.bartAne

nangeondswalpa nIr hAkbiT hOgtIyA?

munde bartA irwAgA gulAbi mara siguttante

adakke nIr hAkbiTu hOguttante

tiruga adu munde hOgtA irwAga mAvina haN mara siguttante

A mAvinhaN mara nangeondswalpa nIr hAkbiT hOgtIyA? enutte

u~ enutte

sari A innu munde hOgtirwAg iruve siguttante

sari A iruve hELuttE nangondswalpa sakre hAkbiTTu hOgtIyA anta hELutte

adakke U~ andbitTTu hAkbiTT.hOguttante

tiruga innU munde hOgtirwAga Ane sigutte

Anege kAlmuL cuccirutte

nangondswalpa kAlmuL tegItIyA enutte

tegidbiTT hOguttante

Aga avanig ajji mane siguttante

Yaradu nata kELtALe Aga ajji

ajji hELtALe nA~ ajji anthELtALe

sari Aga awaL snAna

sOp bEkO sIgEkAy bEkO anta kELtALe

sOpu andbiTTU sOp hAkhak.koDtALe

sari hELtALe ajji ninge haLE sIre bEkO hosA sIre bEkO antALe

nang haLEdE bEku ant

nong hosA blous bEkO haLEdE bEkO ant

nange halE blous bEku antALe

tirigA sari ninge saNNa peTTige bEkO doDDad bEkO antALe

adikke saNNad.IskoNDU , tale bAckoNDu bartA irtAle

AgA gulAbi mara sigutte

ondUrnalli obLu ajji idlante

ajjige obnE obba maga ante

awan.hesru IruLLi anta

A IruLLi yAwAg awnu skUlg hOgtAirtAne

hOdAga IruLLi banda IruLLi banda ant ellAru kirckOtAre

adakke iwnge kOpa bandbiDutte

adakke Awat madyAnna skUl bellAguttalla

AwAg klAsig hOgtAne

pATa mADtAre

hIge Agutte

AmEle manEg bartAne

madyAnna ajji ajji nODajji IrulL IrulLi antAralla ant hELtAne

adakke IrUlLLi antAralla ant hELtAne

adakke Q nin hoTTe Dam andbiDu Q

sari skUlig bartAne

Part 3

It can be concluded that with precise analogue HA fitting and long term oral intensive training and integration to normal schools , the profound HI continue to have significant defects in suprasegmental, segmental features. But 1aFbh.bhfsn.L1- with moderate sloping high frequency hearing loss shows minimal significant segmental defects in these characteristics with her analogue hearing aid.

(Morphophonemics is based on auditory phonological semantic knowledge and semantics as in *hasi iTTu , hasITTu akki iTTu akkITTu* – how duration can change meaning)

Discussion -Kannada and Orthography

Alphabetical ordering in kannada is as per place of articulation from back to front consonants k, c, T , t , p in 5 rows. Unlike English, kannada has one to one syllabic-phonetic representation of consonant (Eg. there are no confusions in kannada such as psychology , (ps) being silent , siren (siren), site (saiT), cite , call (kAl) please(plIs) . at the time of therapy scripts are presented along with oral- verbal speech . (kADu) kAlu, kAsu , kANu , kALu , have exact one to one syllabic formations in script. So the problem of spelling in education and academic contexts is relatively contrastive and non-redundant facilitating phonetic aspects of speech production in Kannada . 1aFbh.bhfsn.L1- indicated mainly place of articulation defects in consonants.

We conclude the section on Vowels in hearing impairment with a closing statement. We highlight that Vowels are not affected in moderate sloping hearing loss. Significant defects are

seen in profound hearing impaired. Both need their prescribed hearing aids for communication. 1aFbh.bhfsn.L1- seems to acquire vowels accurately but not 1aMbh.bpsn.L1- . Both have undergone long term speech and language training ….yrs and yrs and both wore analogue hearing aid. We can state further that intelligibility of 1aMbh.bpsn.L1-'s speech is affected to a greater degree than 1aFbh.bhfsn.L1- . 1aMbh.bpsn.L1-'s DZn , NZn , durational errors and pitch breaks and their permutations and combinations call undue attention to his defective speech . DZn particularly of non Kannada types are most significant in his speech efects. Instead of performing in two distinct duration of SV versus LV in Kannada language 1aMbh.bpsn.L1- uses a range of durational variations in Vowels. More often SVs are extended to LVs. Fine transcription has helped demarcate the primary defective characteristics of 1aMbh.bpsn.L1- The process in not only major Dzn s, Sns , Ons, but in maintaining duration , oral nasal valving , Vowel Assimilation of Nasalization

Intercepted conversation for communication of intention between the profund hearing impaired1aMbh.bpsn.L1- 's and C.Pr , rigid AV modality , irregular pauses , need for lead cues , redundancy , lexical free variation , poor verbal fluency , lexical diversity , evidence of word recall difficulty and self repair , rare sentence construction , wrong word order , incomplete phrases , word by word communication without inflections generally ,conversation in fragments and chunks , poor speech intelligibility to unintelligible speech , poor segmental distinction and articulation , temporal management difficulties , after oral long term speech therapy and normal integration and lag in literacy were highlights of speech and lanaguge defects in 1aMbh.bpsn.L1- 's . Further on, the C.pr had to tune to slow speech formal kannade and not the SK dialect ridden with morphophonemic rules. in 1aFbh.bhfsn.L1 conversation was fluent with normal tempo , casual AV modality , with residual defects only in affricates, fricates and intra lateral place feature were typical speech defects . Her morphophonemics, and syntactic structures were complete and coreect with good lexical diversity. However inspite of normal integration she had learnt single lanaguge Kannada, tho she was exposed to English and Hindi. . in addition her speech had minimal range of intonational variations.When we studied further the results of her word and non word discrimination and repetition from TELS- HI /Kan, she had persisting defects in place discrimination amongst plosives . It was evident that such

diffiuclties reflect on accuracy in incidental new word learning in school which involves introduction of new words in curriculum and their connection to concepts, relations and theorems .Their introduction in higher level classes are at steep rate in all core subjects which causes additional difficulty. Difficulties in dictation, listening to accurate contrasts and interference from natural noise in indian classrooms, high teacher -student ratio (1:48) are some of other foreseen educational problems with sufficient functional communication . .A later interview with her revealed that she had also failed in 9th standard and had discontinued her studies. In the following table we enlist the typical conversational speech and language and communication differences between profound hearing loss subject 1aMbh.bpsn.L1-'s in our study and subject with sloping high frequency hearing loss1aFbh.bhfsn.L1 in our descriptive study who wore body level hearing aids .

The typical conversational speech and language and communication differences between profound hearing loss subject 1aMbh.bpsn.L1-'s in our study and subject with sloping high frequency hearing loss1aFbh.bhfsn.L1:

Sl.No	Speech Language Chracteristics >> means P= present ,-- means absent defect	1aMbh.bpsn.L1-	1aFbh.bhfsn.L1-
1.	Voice quality	P	Husky
2.	loudness	--	Moderate
3.	Pitch	P	--
4.	Pitch breaks	P	
5.	Expansion of word duration for emphatic stress	--	--
6.	Intonation	P 1 que inflection	< range
7.	Expected Speech Rate from C.pr by HI	Little Slow	Normal
8.	Adept at spoken kannada dialect	P	--

9.	Expected minimal pauses between words in C.Pr's speech	P	--
10.	Rate of speech and fluency HI Spkr	Slow	Normal
11.	Ability to follow natural speech rate in order to segment words and understanding in Hi Spkr	P	--
12.	Cues needed to understand C.pr's speech	Yes: one to 4	--
13.	Cues needed by C.pr to understand HI speaker's speech	Yes	--
14.	Dlns of syllables	P	--
15.	Vowel Deletion **Dl**n	P	--
16.	Consonant Dln	P	--
17.	Gemminate Dln	P	--
18.	Homorganic cluster Dln		--
19.	Heterorganic cluster Dln		--
20.	**DZn** of Vowels	P	--
21.	**Consistency of DZn**	NO	--
22.	**Non native diphthongs**	P	--
23.	**NZn *of vowels***	P	--
24.	Quality of pitch breaks in vowels	P	--
25.	Duration of vowels	P	--
26.	Lnng	P	-
27.	Snng	P	-
28.	IntraVowel Substitutions	P	-
29.	Consistency of defects in vowels	No	-
30.	Vowel Assimilation of Nasalization from nasal consonants	P	-
31.	Medial Consonant and cluster omission and Vowel Factorial Bunching with	P	-

	Glottal Stops (VFB)		
32.	Non native vowels	-	-
33.	Vowel Consonant distinction	-	-
34.	Consonant substitution	P	P
35.	Consonant geminate confusions	P	-
36.	Cosonant addition	P	-
37.	Manner of articulation defects	P	P
38.	Place of articulation defects	P	P
39.	Fronting of phones	P	-
40.	Backing of phones	P	-
41.	Voiced Voiceless contrasts	P	-
42.	Transient consonants	P	P
43.	Oral nasal consonant contrasts	P	-
44.	Consonant Distortions *	P	P
45.	Consonant duration	P ^,<	-
46.	Clustering the consonant	P	-
47.	Consonant cluster distinction	P	-
48.	Non native consonant	P K , G, R	nil
49.	**Consistency of consonant defects**	P V poor	Mild
50.	**Homorganic cluster**	P	-
51.	*Heterorganic cluster frequency*	low	-
52.	*Heterorganic cluster diversity*	P	-
53.	**Consistency of** *cluster* **defects**	P poor	Mild
54.	Stops	P	-
55.	nasals	P	P
56.	Laterals	P	-
57.	flap	P	-
58.	Affricates	P	P

59.	Fricatives	P	P
60.	Bilabial	P rare	-
61.	Dental	P rare	-
62.	Retroflex	P	Fricative , lateral
63.	palatal	P affricate , fricative	P affricate, fricative
64.	velar	P	-
65.	Pharyngeal inclusions in C production	P	-
66.	glottal	-	-
67.	Speech intelligibility of HI Spkr	P poor	-
68.	Pauses between words of HI Spkr	P irregular	-
69.	Pauses between syntactic units of HI Spkr	P irregular	-
70.	Speech rhythm	P	-
71.	Rate of speech of HI Spkr	P	-
72.	Modality	AV rigid	AV flexible
73.	C.Pr's difficulty to understand speech of HI	P	-
74.	Incomplete word utterance	P	-
75.	Unintelligible words ,transcribed but unable to decipher semantically	P	-
76.	Unintelligible words ,transcribed but unable to decipher semantically , but later encoded it's semantics in the process of data analyses	P	-
77.	Unintelligible words , unable to transcribe at all Q	P	-
78.	Series of unintelligible words in an utterance	P sometimes 2 to 3	-
79.	Defective attempts to repair unintelligible	P	-

	words		
80.	Manipulation of voice and duration for speech for emotional indications	P only 2 times	-
81.	DefectiveLexical selection	P	-
82.	Restricted Lexical diversity and number	P severe	-
83.	Defective Lexical free variation	P often	P rare
84.	Defects or nil -Morphophonemic rules and applications	P	-
85.	Defects or nil -Manipulation of morphophonemic rules in specified syntactic duration and effective durational variations	P	-
86.	Defects or nil - Management of minimal pauses effected by Morphophonemic rules skUlig.hOgtIni	P	-
87.	Appropriate case markers, PNG suffixations.	P	-
88.	defective Syntactic constructions	P	-
89.	Restricted syntactic constructions		
90.	Only word level	P	-
91.	More often uninflected word –word stems	P	-
92.	Successive words appear to be similar and mapped to words in previous utterances in hearing impaired speaker . But , actually he is referring to a different word. Semantic word /s ambiguity and intra -word structure/s ambiguity	P	-
93.	phrasal constructions only	P	-
94.	Wrong phrases	P	-
95.	Partial Syntactic constructions	P	-

96.	Word Order defects in Syntax	P	-
97.	Ambiguity in Syntactic Structure constructions	P	-
98.	Semantic Ambiguity in syntactic constructions	P	-
99.	Truncated speech , expressions in chunks	P	-
100.	Carrying Key words from C.Prs speech	-	-
101.	Waits to chek on grasped key words before replying	-	-
102.	Repairs key words	-	-
103.	Carries C.prs whole question in replies	-	-
104.	Own Word repititions	P excess	-
105.	Own Phrasal repititions	P excess	-
106.	Back tracking to own speech expressions	P	-
107.	Strain after interaction for more than 90 minutes or less	P	-
108.	Visemes comprehension	P Poor	-
109.	Need for building semantic context in conversation by C.pr	P	-
110.	Difficulty in HI person when a topic is switched Suddenly by the C.Pr at conversation	P	-

Discussion

If we group Consonants of kannada based on parameters which influence acquisition in HI (see MST and G) … audibility X visibility X complexity X OMKT X teaching modalities to articulatory learning.

We may be able to arrive at explanations for such variations
Also teachning methods may be supported or not supported by visual FB equipments such as comp technology etc.
But it is the frontal Cns which are under confusions.

Lexical Free variations most complicate and confuse the listening C.Pr when…. Hi person speaks. This is because C.pr is unable to identify a definite pattern of word- to thought connection with suchc a wide variaince.This is because the phonetic structure within same word varies so often in most of its phonetic units reflecting on word structure pattern . Next most obvious difficulty is with unintelligible words and diphthongizations.

It can be concluded that articulatory gestures for phonological representation of word is a wide range. Without sufficient auditory feed back …*1aMbh.bpsn.L1*- is deprived of auditory – phonological loop (braddley) but is dependant on speech mechanism oro- motor - tactile kinesthetic feedback – in phonological representation.Every phone is then represented as a sequence of articulatory gestures which need to be precise due to the missing inefficient and insufficient stabilizer which monitors the output the auditory feedback in 1aMbh.bpsn.L1- . Unlike in normal hearing word learning is not totally auditorily linked to phonological representation but to rigid auditory -visual AV input as speech stimulant in language learning - transformed to oral speech mechanism to oro tactile kinesthetic feedback in natural conversing contexts . Though, a fair amount of visual feedback through mirror is participating in speech therapy sessions which are their connected to articulatory gestures – phonological representation. Ths support from visual feedback is nullified once 1aMbh.bpsn.L1- is in natural communication situation. Feed back regarding appropriate or communicatively functional out put of speech expressions is external from the C.Pr. Its is from the C.Pr ‘s signals such as requests to repeat , eye signals of ambiguity , irrelevant reaction to HI speakers expression etc .

This is because profound hearing impaired with body level hearing aid is deprived auditorily to severe degrees and neither can they watch their Articulatory gestures at their speech expression. Again, the role and efficiency of Articulatory gestural memory and their prcsion in continually varying configuration of oral mechanism in connected speech context under such atypical situation is to be debated. Whether such mechanisms happening in the hearing impaired speaker form a phonological loop at all is a question. He misses out on personal feedback at speech expression and production.

When we hold that in *1aMbh.bpsn.L1- the* ar ticulatory gestures for phonological representation of word is a wide range, there is every possibility that different words overlap into fuzzy regions.. This may explain his illaVs *alla. ialla* expression. What is understood is that such successive lexical variations yet did not approximate close to target in most exemplars.. they bypass the C.Prs limits to decode defcets of inconsistentcy within same words and the next coming in similar pattern leading to semantic ambiguity and incomplete communication . Such a word-ambiguity –range can be definitely reduced nowadays with availability of speech training visual feedback softwares , which are to be implemented in the early stages of speech and language therapy for precise habit formation of articulatory gestures and sensitization of oral pseeh mechanism for maximum possible feedback.Also, induced defective parameters in the HI speech . e g: amma nasalized nostril- tactual feedback while training should be within mm and not take to oral-velar connection either before or after mm amma not a~mma~ . This can be overcome with visual feedback softwraes with clefted linguistic teaching approaches in initial stages of therapy. ***Similarly our teaching methods might have confused*** *tt from t , dd vs d , kkVs k* . ***Do we attribute nasal and stop transient to our training methods? Or, to the lapse in the P.HI feedback*** . *We may for eg extend training of target m from p in which case we may get Hi to produce p and proceed with tactile nasal cue for m.* We imply that along with body level hearing aids there may is need for qualified speech and lanaguge pathologist in district quarters with visual feed back facilities to support speech training and correction approaches .In the process of learning language and speech the profound hearing impaired are left with multiple defects at every linguistic level which interact with each other with impoverished residual lanaguge and literacy lags. We are further examining more such samples from different subjects

which will be presented in forthcoming papers. Unlike in the past we have such availability of equipment and softwares. As long as body level hearing aids are issued such additional devices is a necessity along with professional services. .

How such a wide range of words is organized in mental schema and their possible overlaps with fuzzy regions in memory systems, with the stress involved in such ambiguities is a question. We see this as a impeding factor for acquiring distinct lexical diversity and their quantity. In a mock conversational session at the end of 90 minutes *1aMbh.bpsn.L1-* reported that he is tired to continue inspite the conversation was a natural one. Then, how would he cope with learning tasks at full day school is another query. His rigid AV modality for speech and language stimulation in language learning hindered natural auditory based ambient language learning with his hearing aid. In addition, there exist such altered phonetic - phonological – word constructions, storage and organization as discussed above. In case of 1aFbh.bhfsn.L1 body level hearing aid helped develop efficient functional day to day communication. But, she had failed in literacy achievements and had resorted to domestic life style. *1aMbh.bpsn.L1-* now works at a petty grocer's shop after discontinuation of his studies by 9th standard. They are however orally integrated to society with limited technical facilities available then at the time of their intervention. Our ongoing cohort study in profound hearing loss however shows that performance would be far better with advanced technological hearing aids available currently.

Results of these 2 cases present evidences to the fact that effectiveness of rehabilitation plan under study in this paper differs significantly with 2 different types of hearing loss described above. Further conventional manner and place of articulation analyses of articulation parameters are inadequate to analyze profound hearing loss under this plan as defects are multidimaensional beyond these parameters. We emphasize that those children who are being issued body level hearing aids should also be provided professional services from speech pathologist with supplementay equipment back up for feed back and training purposes. Sensitization of oral motor approaches may also be considered to enhance the feed back control in profound hearing loss. But, platforms to reconsider the issue of didgital hearing aid to profound hearing loss with professional follow up services and the Cochlear implant supports are

welcome with the innumerable speech and lanaguge defects that persist in profound hearing loss even after long term training . Further, had no proficiency to follow spoken Kannada, rather he intended that formal dialect be used with him with very mild manipulation in duration to slow rate fom the C.pr .This was not the case with 2 , she was adept at spoken Kannada and in tun she also applied the morphophonemic rules of Kannada language of spoken kannada dialect in kannada for day to day communication successfully . With new generation of hearing aids for sloping high frequency hearing loss such as 1aFbh.bhfsn.L1 better literacy achievements are fore seen in addition to bilingual achievemants with systematic training and follow up professional services.

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Notes

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Chek ranganath M R on phonemic frequency –

And sridevi Overall, vowels constituted 44.3% and consonants 55.3% of the data. occurredJAIISH, Vol.31, 2012 PHONEMES IN KANNADA 40 FREQUENCY OF OCCURENCE OF PHONEMES IN KANNADA: A PRELIMINARY STUDY 1 Sreedevi N., 2 Smitha K. Nair, & 3Vikas M. D using conversation samples69,624 phoneme countsShows mean percentage and standard deviation of vowels and consonants VOWELS CONSONANTS Mean % (SD) Mean % (SD) Mean % (SD) /a/ 14.06 (0.8) /n/ 7.87 (0.4) /s/ 1.72 (0.2) /I/ 7.08 (0.14) /r/ 5.43 (0.4) /∝/ 1.61 (0.38) /e/ 5.94 (0.21) /l/ 5.14 (0.4) /□/ 1.29 (0.28) /a:/ 5.35 (0.27) /t/ 4.47 (0.5) /j/ 1.21 (0.14) /o/ 2.08 (0.24) /g/ 3.46 (0.1) /p/ 0.94 (0.25) /e:/ 1.83 (0.73) /k/ 3.34 (0.1) /Σ/ 0.61 (0.31) /o:/ 1.26 (0.21) /m/ 2.81 (0.2) /dʒ/ 0.44 (0.12) /i:/ 0.95 (0.27) /v/ 2.59 (0.1) /tΣ/ 0.36 (0.11) /u:/ 0.57 (0.1) /□/ 2.41 (0.3) /♥/ 0.27 (0.05) / ə/ 0.56 (0.88) /b/ 2 (0.2) /kh /, /∝ h / 0.03 (0.02) /h/ 1.87 (0.4) /ŋ/, /ph /, /□ h / 0 Figure 3 represents the mean percentage of the most frequently occurring twelve phonemes. On overall observation the frequency of occurrence of phonemes in decreasing order are: /a/, /n/, /I/, /e/, /r/, /a:/, /d/, /l/, /t/, /u/, /g/ and /k/. The consonants /m/ and /v/ occurred for 2.7% of the total data. Vowel /o/ occurred 2% whereas phonemes /h/, /s/, /j/ occurred less than 2% and /p/, /tΣ/, /Σ/, /i:/, /o:/ occurred less than 1% each of the total data. Consonants /ŋ/, /ph /, /□ h / did not occur in the five recorded conversational samples though they are present in the Kannada phoneme system. The aspirated phonemes were amply seen. Diphthongs /ai/ and /au/ occurred for less than 1% of the total data. /ai/ occurred for 0.2% and /au/ occurred 0.06% of the total data

/a/, /n/, /I/, /l/, /e/, /d/, /a:/, /r/, /t/, /u/, /g/ and /k/ which constituted 70.2% of the total data. The less frequently occurring phonemes were /m/, /v/, /o/, s/, /p/, /h/, /tΣ/, /dʒ/, /Σ/, /i:/ and /o:/.

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