

ISSN 0970-0277

OSMANIA PAPERS
IN
LINGUISTICS

Volume 46 & 47

2020-21

Editor

Dr.C.S.Swathi



Department of Linguistics, (CAS - IV Phase)

University College of Arts and Social Sciences

Osmania University

Hyderabad, Telangana, India – 500007

Osmania Papers in Linguistics
Volume – 46 & 47, 2020 - 2021

Editor

Dr.C.S.Swathi

Editorial and Review Committee

Prof. Mohammad Ansari

Prof. M. J.Warsi

Prof. Niladri Sekhar Dash

Prof.Usha Devi

Dr.G.Renuka

Dr.C.S.Swathi

Osmania Papers in Linguistics (OPiL) is an annual refereed research journal devoted to the publication of articles in the field of general and applied linguistics. It also includes book reviews and review articles. The journal publishes work primarily by the staff, students, and visiting faculty of the Department of Linguistics, Osmania University. However, articles may occasionally be invited from scholars outside Osmania on special topics. All contributions must be in English. Views expressed in OPiL are only those of the authors. Articles for publication, review copies, and communications relating to editorial matters should be sent to The Editor, OPiL, Department of Linguistics, Osmania University, Hyderabad 500007, India. Matters related to orders, payment, change in address or exchange may be sent to The Head, Department of Linguistics, Osmania University, and Hyderabad 500007. The price for OPiL (one Volume) is Rs500/- or US \$50 (excluding postage). This publication is also supplied to institutions, societies and Departments of Linguistics in exchange for similar publications.

Osmania Papers in Linguistics

Volume – 46 & 47, 2020 - 2021

CONTENTS

1. Some Well-Known Part-Of-Speech (Pos) Tagging Systems: A Short Survey
Niladri Sekhar Das 1-21
2. Forensic Linguistics: Latitude and Limitations
Chinmayee Nanda 22-30
3. Typical Errors Made by Russian Students in Learning Telugu: An Observational Analysis
Darya Soboleva 31-40
4. Linguistic skills in children with cochlear implants: Case Studies
Palnaty Vijetha 41-51
5. Sonority Profiles of Reduplicated Words in Telugu
Vidyamrutha Imandi and Swathi C.S. 52-62
6. Effect of Aging on Semantic Categorization
Renuka Thangavel and Susan.G.Oommen 63-72
7. Language Affecting Gender Identity: A Case Study Of English Text Books
Mohammad Jahangeer Warsi and Mehvish Mohsin 73-80
8. The Use of Conjunctive Cohesion: A Case Study of Yemeni Undergraduate EFL Learners at Sana'a University
Mohammed H Masoud, Bedoor Sharaf Al-Deen, Nausheen Akbar and Mohammed Hajeb 81-91

9. Articulation and speech intelligibility after Hemiglossectomy
Jaya.V., Monish.V., and R.Johnsi Rani 92-97
10. A Cross-Linguistic Study of Telugu and Swahili Number Systems
Kalloji Susheel Kumar and K.Augustino Amos 98-104
11. Evaluation of Language Skills in Children born Prematurely
Jyoshna Tanigundala, Lokesh Lingappa and V Thiruvalluvan 105-116
12. A certain grammatical aspects of Lambada Language in Telangana
Korra Balu Naik 117-125
13. A Study on Auditory, Visual and Auditory-Visual Speech Perception in Individuals with Cochlear Implants and Hearing Aids
Aparna Ravichandran 126-140
14. Echo Formations and Expressives in the Kunha Language of Odisha
Anup Kumar Kujur 141-154
15. Errors Analysis of Initial consonant clusters in Persian speakers' English
Sanaz Montazer, Swathi,C.S. and Ali Mirzavandi 155-167
16. Socio-linguistic Aspects in Kāraka Prakaraṇam
Varalakshmi. K. 168-175

17. Bilingual Education: An Indian Tribal Context
Sudheer Bhan 176-183
18. Metaphors and Similes in Literature: A Case Study of
'Antarani Vasantam'
Kalloji Susheel Kumar 184-187

Editorial

Department of Linguistics has been publishing this peer reviewed journal - 'Osmania Papers in Linguistics' (OPiL) since 1975. It is my pleasure to bring to you the 46 & 47 issues as a combined volume. This journal has witnessed publication of articles ranging from Core Linguistics to Applied Linguistics.

The journal not only covers different Indian and Foreign Languages, but also shows its presence as an international journal by contributions from international writers. The present issue has seventeen articles. We have authors from various fields, making this journal and Linguistics a truly interdisciplinary field. The articles cover topics on Indian Knowledge System, Computation Linguistics, Sociolinguistics, Stylistics, Semantics, Syntax, Phonology, Clinical Linguistics and Forensic Linguistics.

The article by Niladri Sekhar Dash on 'Some Well-Known Part-Of-Speech (POS) Tagging Systems: A Short Survey' tries to capture some of the linguistic properties and functions of words used in a corpus. It attempts to describe briefly a few POS tagging systems that are widely used across all major languages.

Forensic Linguistics has gained lot of importance in the recent years. The article by Chinmayee Nanda on 'Forensic Linguistics: Latitude and Limitations', deliberates on the various aspects of forensic linguistics which can be considered in legal proceedings.

'Typical Errors Made by Russian Students in Learning Telugu: An Observational Analysis' by Darya Soboleva aims at analyzing most general errors that occur in the process of learning Telugu by Russian speakers using Error analysis method. It shows significant deviation from the normative grammar of a native speaker.

The article by Vijetha, Palnaty studied the performance on linguistic skills of two children with Cochlear Implants. The results underscore the importance of the involvement of parents in child's training and development.

Vidyamrutha Imandi and Swathi, C.S. paper on 'Sonority Profiles of Reduplicated Words in Telugu' discusses the Sonority sequencing principle (SSP) on reduplicated words in Telugu. Findings of the study provided that 'sonority peaks' were commonly found among onsets that solely have one obstruent or nasal or liquid (O or N or L) and the coda usually end with a nasal or a vowel. The majority of the reduplicated words have a base or stem open in the final syllable and adhere to SSP.

'Effect of Aging on Semantic Categorization' was studied by Renuka Thangavel and Susan.G.Oommen. Semantic categorization is an integral part of language learning. The study aimed to investigate the effect of age on semantic categorization in Tamil speaking normal young and older adults. Results showed mean reaction time was greater for group I than group II for all the coordinates. The results provide insight into semantic organization and are useful in rehabilitation of cognitive linguistic disorders.

Mohammad Jahangeer Warsi and Mehvish Mohsin article on 'Language Affecting Gender Identity: A Case Study of English Text Books' discuss the topic of 'Gender Discrimination'. The aim of this study was to critically examine the impact of the school curriculum in shaping the gender roles. In this context, the study critically examines the language used in these teaching aids. Thus, emphasizing that the textbook writers and those engaged in

production of teaching-learning materials must be sensitized on gender concerns in language.

The article by Masoud et al on 'The Use of Conjunctive Cohesion: A Case Study of Yemeni Undergraduate EFL Learners at Sana'a University' analyzes conjunctive cohesion devices of university learners. It was observed that though EFL university learners used all the conjunctive types, they are still unaware of the significance of using these devices to enrich their text. Hence, the majority of conjunctive cohesive devices were scarcely used or ignored by the learners.

'A Cross-Linguistic Study of Telugu and Swahili Number Systems' by Kalloji Susheel Kumar and Augustino Amos Kagwema presents a comparative analysis of number system of two agglutinating languages; Telugu and Swahili. This study is very interesting in that it presents how different languages encode the same world view differently. For example, while Telugu views animals like dogs and tigers as singular and plural, Swahili looks at them as neither singular nor plural. The number feature for animals in Swahili is depicted through concord.

The article on 'Evaluation of Language Skills in Children born with Prematurity' by Jyoshna et al , discusses the 'sensitive / critical period' hypothesis in language acquisition in preterm children's linguistic skills. Findings suggest that despite the significant biological risk endangered by premature birth, linguistic development appears to proceed in a relatively normal fashion among preterm children as in full-term children.

Korra Balu Naik article on 'Certain Grammatical Aspects of Lambada Language in Telangana', discusses the linguistic features in Lambada language which is spoken by Lambada people living

in Telangana state. The paper concludes that as there is an inevitable bilingual situation, there is always the possibility of influence in terms of sociolinguistic interface.

‘A Study on Auditory, Visual and Auditory-Visual Speech Perception in Individuals with Cochlear Implants and Hearing Aids’ article by Aparna Ravichandran discusses the perception using different modalities. In conclusion, it was noted that children using CI tend to rely more on acoustic cues and have difficulty following visual cues alone however in auditory visual and auditory alone they have performed better than HA individuals who have good scores in audiovisual mode.

Anup Kumar Kujur article on ‘Echo Formations and Expressives in the Kunha Language of Odisha’ highlights the influence of constant interaction between the speakers of Kũñḥũ and those of the Indo-Aryan language family, i.e., Oḍia, Hindi and Sadri, and the Mũñḍa language family i.e., Mundari [mũñḍari], Munda [mũñḍa] and Kharia [khaṛia], and Kuṛux a North Dravidian language.

‘Errors Analysis of Initial consonant clusters in Persian speakers’ English’ by Sanaz Montazer, Swathi, C.S. and Ali Mirzavandi noted that Persian speakers of English largely re-syllabified initial consonant clusters based on the phonological restrictions of Persian. Analyses of ‘sC’ clusters and preceding phonological environment were done. This study seems to support the sonority application to initial consonant clusters to Persian Language and also support the original prediction that vocalic environments will have a facilitating effect.

Varalakshmi presented an analysis of ‘Socio-linguistic Aspects in Kāraḱa Prakaraṇam’ using the aphorisms of kāraḱa theory of

Aṣṭādhyāyī of Pāṇini, Socio-linguistic aspects like religious faiths and practices, Astrological aspects, code of conduct, cultural aspects, attitudes, behavior etc., was shown to have significance in determining the factors in sentence.

Article by Sudheer Bhan on ‘Bilingual Education: An Indian Tribal Context’ examines the scenario of Bilingual education in schools of predominantly indigenous/tribal regions across 13 states of India. The study reveals that Bilingual Tribal education programs have been largely successful in states of Orissa, Nagaland, Tripura, Mizoram and Meghalaya. However, Languages like Ao and others are endangered in Arunanchal Pradesh due to total English medium Inadequate teaching material (Text books) and lack of sufficient Tribal teachers has also contributed to the failure of Bilingual education programs.

The last article on ‘Metaphors and Similes in Literature: A Case Study of ‘Antarani Vasantam’’ by Kalloji Susheel Kumar discusses the important role of literary text to say more in few words to achieve a maximum effectiveness. The paper describes the concepts of Metaphors and Similes and the style of the author by providing examples from Telugu language.

I hope the readers will be benefitted from reading this volume as much as I have worked hard but enjoyed putting it together.

Some Well-Known Part-Of-Speech (Pos) Tagging Systems: A Short Survey

Niladri Sekhar Dash*

Abstract

In natural language processing, POS tagging was a process of assigning parts-of-speech to words that are used in a text. It tries to capture some linguistic properties and functions of words used in a corpus. It was a complex process embedded with several theoretical and technical issues relating to the identification of words and determination of their lexico-semantic identity and syntactico-grammatical roles in a text. It also involves a process of defining the basic hierarchical modalities of tag assignment and designing rule-based schemas that are applied for the automatic assignment of tags to words. It uses a strategy made with a combination of linguistic and extra-linguistic knowledge and computation for achieving success. The output was a POS tagged corpus which was a useful resource for language processing, language computation, machine learning, cognitive processing, data mining, information extraction, language teaching, dictionary compilation, and language description. Keeping these issues in view, in this paper, I attempt to describe briefly a few POS tagging systems that are widely used across all major languages. This paper was for those scholars who come from linguistics and want to explore areas of corpus linguistics and language technology with a mission to serve their mother languages.

Keywords: Annotation, Tagging, Part-Of-Speech, Morphology, Syntax, Semantics, Context

1. Introduction

In natural language processing, language technology, and computational linguistics, POS tagging involves the assignment of particular parts-of-speech to words in a text. Due to its diverse functional roles, it was also known as grammatical annotation (GA) and word category disambiguation (WCD). The primary tasks involve understanding the grammatical roles of words, marking each word with a part-of-speech, and disambiguating words at the grammatical level (Søgaard, 2010). The task of assigning POS value was based on the form and function of a word in the context of its use in larger syntactic frames (e.g., *phrases, sentences, paragraphs*). Although the process of POS tagging was complicated and error-prone, it was essential because research and development works of language technology cannot move further with a list of words obtained from a corpus without any information about their grammatical behaviours in various usage-based contexts. In descriptive and applied linguistics, a corpus tagged at the POS level was a useful input for both theoretical and applicational purposes (Manning, 2011). A POS tagged corpus presents words that are marked with different parts-of-speech in different textual contexts. It provides scopes for revising existing knowledge, traditional grammars, and dictionaries.

*Linguistic Research Unit, Indian Statistical Institute, Kolkata, India.

The fact that words vary in part-of-speech was not a new thing to natural languages. This was noted and discussed in grammars and dictionaries. However, these traditional knowledge texts hardly define the contextual conditions and factors that trigger a change in part-of-speech of words. This question was partly addressed through POS tagging as it provides positional and contextual information to know how and why words, when used in a text, change in part-of-speech. It also shows that there are words in a language, which not only vary in part-of-speech but also in form and meaning to be recognized as ‘ambiguous’ (covering both *homonymy* and *polysemy*) forms. This feature was prevalent in all natural languages. For instance, in English, the word *sound* was tagged with different parts-of-speech based on the context of its use the following examples show.

- (1) The *sound*_[NN] of this music was very good.
- (2) He has taken a *sound*_[ADJ] decision.
- (3) In this context, she *sounds*_[FV] rational.

At the time of POS tagging of the words stated above, one indicates that the word *sound* was a noun (NN) in the 1st sentence, an adjective (ADJ) in the 2nd sentence, and a finite verb (FV) in the 3rd sentence. A native speaker identifies these words as a noun, adjective, or finite verb, respectively, to perform grammatical and semantic analysis based on his internalized linguistic rules and grammar. A computer, which was designed to tag words automatically, has to be programmed with linguistic rules and conditions to perform the same task of identifying parts-of-speech of words.

It was argued that the parts-of-speech that are found in grammars and dictionaries are enough for a language to tag words found in texts. In reality, it was found that there are some lexical categories and sub-categories which should be distinctly represented if a POS tagging scheme was to be designed for a language. For instance, in Bengali, there are eight parts-of-speech, namely, *noun, pronoun, adjective, adverb, finite verb, non-finite verb, postposition, and indeclinable* (Chattopadhyay 1995). It was said that only these parts-of-speech are enough for Bengali; once these are learned, there was no problem in identifying part-of-speech of words used in Bengali texts. However, after analyzing a Bengali corpus it was found that there are some more parts-of-speech (e.g., *demonstratives, infinitives, conjunctions, enclitics, quantifiers, particles*) which are not found in grammars and dictionaries. This additional set needs to be analyzed and described before one designs a POS tagging system for Bengali.

Before I move further, I need to address some issues regarding the presentation of information in this paper. The first issue was related to the justification of the paper. Why this short paper was written can be understood if the present situation of language technology in India was visualized with reference to its application in industry and its impact on the new generation of scholars. Since the idea of POS tagging was not a very well-known domain of academic exercise, there was a need to introduce this to the readers. This paper tries to serve this purpose. It also tries to simplify the complex ideas and processes of POS tagging to general readers so that readers can comprehend how this new area was going to help them in the analysis and utilization of their languages in various domains of their linguistic activities.

The target readers of this paper are not advanced scientists who are involved in computational analysis of language data and utilizing the same for developing various language applications; the target readers are students and young scholars of linguistics who are trying to delve into various advanced domains of language processing and machine learning. This paper can be useful for them in various ways; they will understand the basic concepts, goals, and stages of POS annotation as well as know about some of the best known and widely used POS tagging methods that are used across languages. This paper will provide necessary insights to the readers to learn about POS tagging in detail to develop similar processes for their languages.

2. What was Part-of-Speech (POS) Tagging?

Part-of-speech (POS) tagging was a process of assigning part-of-speech tags to each word used in a text after the word passes through morphological and grammatical analysis (Garside 1995). A set of designed codes (known as ‘tags’) carrying grammatical information are assigned to words to indicate their parts-of-speech. In most cases, a set of linguistic rules are applied to identify and assign POS tags to words to determine their meaning and grammatical functions (Bada, *et al.*, 2012). The advantage was realized at 3 levels (a) at orthography level it distinguishes homographic words in a text to make distinctions in semantic information of words, (b) at word level it allows to analyze the morphological structure of words that represent their surface forms; and (c) at sentence level it allows to identify the syntactico-grammatical functions of words to assign their POS identity. It was a common form of text annotation and was considered as the first stage of a more comprehensive process where multiword expressions (e.g., *phrases, compounds, reduplications, idioms, and proverbs*) are marked with special tags leading to further assignment of phrase markers to sentences. Although the use of POS tags on words in a text makes a text cumbersome, difficult to read, and hard to comprehend by human beings, it was quite useful for providing processed linguistic data and information needed by a system for differentiating between the words different was parts-of-speech in a text (Leech and Eyes 1993). From the application point of view, POS tagging increases specificity in data retrieval from a text and provides basic grammatical information of words needed in sense tagging, morphological analysis parsing, dictionary-making, grammar writing, language teaching, and description. The process of POS tagging follows the following eight steps:

- (a) Identification of words within a piece of text,
- (b) Identification of their orthographic forms and appearances,
- (c) Analysis of their morphological structures and formation,
- (d) Identification of their syntactic (grammatical) functions in a sentence,
- (e) Determination of their grammatical roles and parts-of-speech,
- (f) Identification of their semantic roles in the sentences,
- (g) Assignment of POS tags—either manually or automatically, and
- (h) Final verification and validation of the tags assigned to words.

The POS tagging was carried out on a text at three stages: (a) Pre-editing of a corpus, (b) POS tagging to words, and (c) Post-editing of a tagged corpus (Fig. 1).

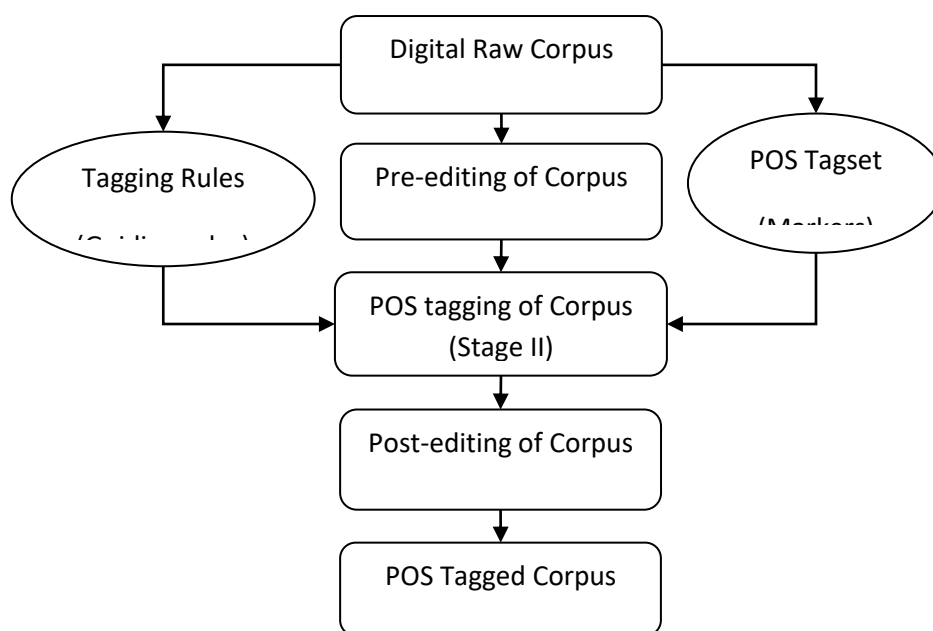


Fig. 1: Different stages of POS tagging of a corpus

We need good knowledge of the morphology and grammar of a language to do POS tagging. If a system was to do this work, it has to be trained with data, information, and rules to do the work. That means the tool, which was designed for automatic POS tagging, should be programmed with elaborate linguistic knowledge and information. Only then it can assign correct part-of-speech to words in a text (Kupiec 1992). Moreover, before the task of POS tagging was executed on a written text corpus—manually or automatically—there was a need for a well-defined POS tagset, which will be used in a uniform manner in POS tagging. Keeping this rudimentary information in mind, in the next four sections, I present short discussions on the four most popular POS tagging systems that are widely used across languages.

3. CLAWS POS Tagging

The CLAWS (Constituent Likelihood Automatic Word-tagging System) tagging system was developed at the *Lancaster University*, UK for tagging words in an English corpus. Over the years, it was revised several times (Garside, 1987; Leech, Garside, and Bryant, 1994; Garside, 1996; Fligelstone, Rayson, and Smith, 1996; Garside and Smith, 1997; Fligelstone, Pacey, and Rayson 1997). The latest version was used to tag the *British National Corpus* with a very high rate of accuracy (98%). Even on a raw corpus, it achieves more than 95% accuracy although the level of accuracy varies based on the type of English text. It also works as a post-processor of a tagging process. The use of ‘template tagger’ improves tagging accuracy in a corpus.

The CLAWS tagsets are modified several times to make them appropriate for modern English texts. The CLAWS-1 tagset included 132 basic tags, many of which were identical in form and application to those used in the *Brown Corpus*. The CLAWS-2 tagset was revised and enlarged to include 166 tags. However, since such an elaborate tagset created problems in tagging, the number was reduced for general purposes. Thus the tagset, which was used for the *British National Corpus*, contained only 60 tags. It was designed mainly for handling larger corpora than small corpora of specialized works. The CLAWS-7 tagset was revised with the addition of tags for punctuation marks. It was further revised to produce CLAWS-8 to make finer distinctions in determiners, pronouns, and auxiliary verbs. Given below was an English text that was tagged using CLAWS-7 through an online tagging portal (Table 1).

Table 1: Sample English text POS tagged with CLAWS-7 tagset

Source Site	Michael Martin, Tue, 6 July, 2021, 11:34 pm https://in.style.yahoo.com/
Sample Text	A very common early sign of diabetes, increased thirst happens because diabetes causes sugar (glucose) to build up in the bloodstream. Normally, the kidneys process glucose, but when they become overwhelmed, the excess glucose was flushed out with your urine. Water from other body tissues was pulled along with it, leaving you dehydrated and craving fluids to replace what you've lost.
Tagging Tagset Output	Text with CLAWS POS Annotation Tagset: c7(http://ucrel-api.lancaster.ac.uk/cgi-bin/claws74.pl) Horizontal
output	A_AT1 very_RG common_JJ early_JJ sign_NN1 of_IO diabetes_NN1 ,_, increased_JJ thirst_NN1 happens_VVZ because_CS diabetes_NN1 causes_VVZ sugar_NN1 (_(glucose_NN1)_) to_TO build_VVI up_RP in_II the_AT bloodstream_NN1 ._. Normally_RR ,_, the_AT kidneys_NN2 process_VV0 glucose_NN1 ,_, but_CCB when_CS they_PPHS2 become_VV0 overwhelmed_JJ ,_, the_AT excess_JJ glucose_NN1 is_VBZ flushed_VVN out_RP with_IW your_APPGE urine_NN1 ._. Water_NN1 from_II other_JJ body_NN1 tissues_NN2 is_VBZ pulled_VVN along_II21 with_II22 it_PPH1 ,_, leaving_VVG you_PPY dehydrated_VVD and_CC craving_VVG fluids_NN2 to_TO replace_VVI what_DDQ you_PPY 've_VH0 lost_VVN ._.

Several strategies are defined in CLAWS-7 to decide how to draw a line of distinction between correct and incorrect POS tags. This was essential as there was a need for detailed guidelines to be used in tagging practice and therefore it was created to remove confusion about what was ‘correct’ or ‘accurate’ tagging. The tagging guidelines of CLAWS-7 are useful for Indian languages corpora as they contain some rules which are language independent and relevant to all natural languages. Some modifications of these guidelines

may be considered based on the requirement of Indian languages if we use these guidelines for POS tagging of Indian language corpora.

4. HMM-Based POS Tagging

The HMM (Hidden Markov Model) was a statistical method of POS tagging. It describes the sequence of potential events in which the probability of a POS was dependant only on the state which was attained in the previous event. It was based on the Markov assumption that predicts the probability of a sequence. In the case of POS tagging, it works in the following manner: If we have a sentence like "*We like green tea*" and we need to assign POS tags to each word in the sentence following our grammatical knowledge, then the possible POS tag for each word will be like the followings: 'We' (PN), 'like' (FV), 'green' (ADJ), and 'tea' (NN), respectively. To calculate the probabilities associated with the word tags, a system has to learn how likely it was for a noun to be followed by a verb, an adjective, and finally a noun. These probabilities are typically called 'transitions probabilities' that connect the change from one state to the next in the system. It also needs to learn how likely it was that '*We*' was a pronoun, '*like*' was a verb, '*green*' was an adjective and '*tea*' was a noun. These probabilities are called 'emission probabilities' that quantify the possibility of making a particular POS given in a defined sentence.

From the 1980s, researchers started using HMM to tag and disambiguate words in the *LOB (Lancaster-Oslo-Bergen) Corpus* (Kupiec, 1992). They used HMM as it provided scope for observing patterns of distribution of words of various POS for developing tables regarding probabilities of sequences of words as well as specifying patterns of use of words in the formation of English sentences. For instance, if the article 'the' occurs at a certain place within a sentence, then the probability of POS of the next word as a noun (40%) was the same as that of an adjective (40%) followed by words of other POS (20%). Based on this, they developed a program that could calculate that the word 'cook' in a sentence like "The cook has left for home" was more likely to be a noun than a verb (Leech, *et al.*, 1983). It also helped to gather information about the POS of a word that followed after a noun in a sentence. The HMM could learn probabilities not only of word pairs but also of larger sequences made with three or more words (Belmore, 1991). For instance, if a tagging program first encounters an article followed by a gerundial noun (e.g., the_[DET] making_[NN] of_[PP] a_[DET] film_[NN] is_[FV] a_[DET] long_[ADJ] process_[NN]), then the probability of the next word to be a preposition was much higher than others. This was useful for the development of an automatic POS tagging system for English.

The application of HMM showed that, in those situations where ambiguities occur, the probability of identifying the POS of a word was multiplied. With higher-order HMM, one can enumerate every possible combination of words and assign them a relative probability by multiplying the probabilities of each choice in a turn sequence. The highest probability was then selected as the most suitable candidate for POS tagging. This technique achieves higher accuracy in tagging on English corpora. There are criticisms against HMM arguing that in the process of dissolving ambiguities, it assigns the most common tag to each known word and

‘proper noun’ to all unknown words. It was not a worthy process as any POS tagger can achieve some level of accuracy in this method because most of the words are unambiguous in a text (Charniak 1997). Another limitation of HMM was noted in its ‘generous nature’ in tag assignment. Although HMM was used due to its high rate of accuracy in comparison to CLAWS, it was quite expensive as it tends to enumerate all possibilities. Moreover, it resorts to backup methods when there are too many possibilities creating problems in disambiguation (Atwell, 2008). This can make a POS tagged corpus more deceptive and less reliable than it was before it was tagged.

5. Brill POS Tagging

The Brill POS tagging method was developed by Eric Brill in 1993. It generates an interface during POS tagging following pre-defined rule-based strategies (Brill 1992). It was known as ‘Transformation-Based Error-Driven Tagging’ that follows an inductive method and was based on the following two principles (Brill 1995):

- (a) It operates through ‘supervised learning’ to minimize error in POS tagging; and,
- (b) It follows a transformation-based process, in the sense that a tag was assigned to each word and changed using a set of predefined rules.

In the tagging process, if a word was known to the system, the system assigns the known tag to it. If the word was not known, it assigns the tag ‘noun’ to it. By applying this method over-and-over the rule and changing the incorrect tags at subsequent operations, the system achieves a high rate of accuracy. It ensures that lexical information (e.g., *morphosyntactic information of words*) was properly employed in the tagging process. The algorithms may be summarized in the following seven stages:

- (1) Start the POS tagger on a digital corpus text and encounter a word.
- (2) If the word was found in the inbuilt lexicon, assign the most frequent tag associated with it.
- (3) Encounter a new word (not in the inbuilt lexicon) and tag it as a proper noun (if capitalized) or as a simple noun (if not capitalized).
- (4) Learn or guess possible tags of the word based on contextual rules.
- (5) Change incorrect tag to a correct one with contextual rules.
- (6) Finalize the POS tagging assignment to the word.
- (7) Generate the final output.

The learning phase of the Brill POS tagging system involves several sub-stages and strategies. First, it iteratively computes the error score of each candidate rule to calculate the difference between the number of errors before and after applying the rule. Second, it selects the best (higher score) rule. Third, it adds it to the ruleset and applies it to the text again. Fourth, it repeats the process until no rule has a score above a given threshold. If the chosen threshold was zero, it continues the application of rules until it achieves a greater score than the chosen threshold. Once it was achieved, it was then considered to be the final stage of tagging (Fig. 2).

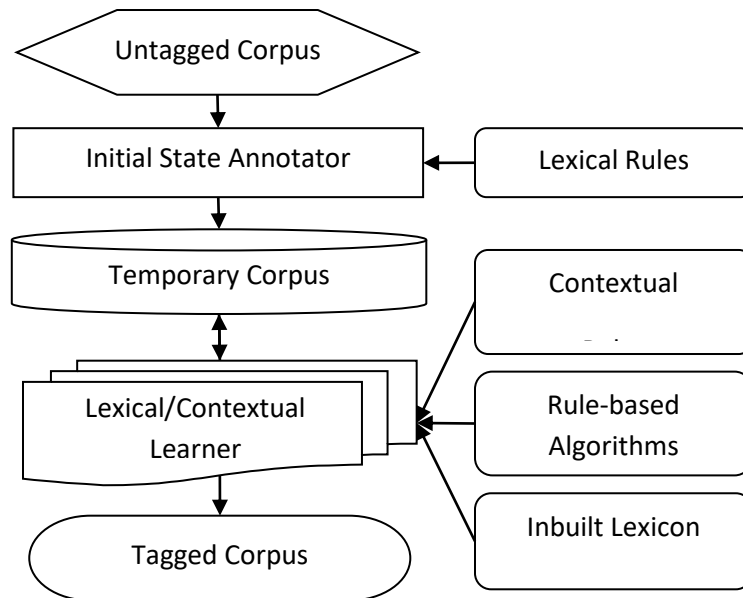


Fig. 2: The rule-based Brill POS tagging system

For achieving a higher rate of accuracy it applies two sets of rules: the first set of rules are called the ‘Lexical Rules’, which are used for initialization of a POS tagging process. The second set of rules are known as ‘Contextual Rules’, which are applied to remove errors and correct final tags.

- (a) Lexical Rule : Tag $W_1 \rightarrow W_N$ IF W_1 carries suffix like ‘-tion’, ‘-ment’, etc.
- (b) Contextual Rule: Tag $W_1 \rightarrow W_2$ IF the preceding or the following tag was X.

The Brill system faces problems in assigning POS to words belonging to ‘open class’ because words of this class often carry complex morphological structures. On the other hand, lexical categories of words of ‘closed class’ are easier to detect and annotate. It also shows that it was more difficult to derive information from those words which are tagged with POS information only than those words which are tagged with additional information with regard to their inflectional types (Toutanova, *et al.*, 2003). Therefore, for better evaluation of the system, it was necessary to test the Brill system on corpora of diverse text types where words are used with inflections. Higher accuracy can be achieved by using it on corpora made with different text types. Also, the use of a larger lexicon can reduce the number of unknown words. The accuracy of the system can be improved if rule-generating mechanisms are flexible allowing consideration of different characteristics of languages. Given below are a sample English text and its POS tagged version generated through the Brill POS tagging system (Table 2).

Table 2: Output obtained from Brill POS tagging system

Input Text	So many people have diabetes-about 1.5 million are diagnosed in the United States each year, and nearly 1 in 10 Americans have it-you'd think it'd be easy to spot. But although the condition was relatively common, many people go undiagnosed because the early symptoms can be vague, easily
------------	---

	overlooked at first, or confused with other conditions.
Output Text	So/RB many/JJ people/NNS have/VBP diabetes-about/JJ 1.5/CD million/CD are/VBP diagnosed/VBN in/IN the/DT United/NNP States/NNPS each/DT year/NN ./, and/CC nearly/RB 1/CD in/IN 10/CD Americans/NNPS have/VBP it-you/NN 'd/MD think/VB it/PRP 'd/MD be/VB easy/JJ to/TO spot/VB ./. But/CC although/IN the/DT condition/NN is/VBZ relatively/RB common/JJ ./, many/JJ people/NNS go/VBP undiagnosed/JJ because/IN the/DT early/JJ symptoms/NNS can/MD be/VB vague/JJ ./, easily/RB overlooked/VBN at/IN first/JJ ./, or/CC confused/VBN with/IN other/JJ conditions/NNS ./.

Although it was claimed that the Brill POS tagging system was language independent (Brill 1995), in reality, it has shortcomings with those languages which are different from English. This system was yet to be tested with Indian language texts to see how it works for these languages.

6. TnT POS Tagging

The TnT (Trigrams-n-Tagging) POS tagging was also a statistical method that was trained for different languages. It can be adopted with any tagset of a language (Brants 2000). The performance of this system depends largely on its ability in generating components for parameters through its trial use on pre-tagged corpora. Moreover, it was capable of incorporating several methods of smoothing to handle those words that are not previously encountered by the system (Ramshaw and Marcus 1995). Since this tagging system was not optimized for a particular language or a variety, one can use it for training on corpora of different languages. Also, one can apply this method to a text of a new language as well as on a new genre of a text. It can be optimized to speed up tagging so that it generates quick outputs from a corpus. It tags words after analyzing the suffix parts tagged with words. In this way, all known and unknown words are handled by a suffix trie-structure and successive abstractions. It was applied to corpora by using three different modes:

- (a) Input Mode: Input file contains one token per line.
- (b) Base Mode: Tagger adds the second column to each line, containing a tag for the word.
- (c) Output Mode: Tagger emits alternative tags for each token with a probability distribution.

If a word was marked with an asterisk (*) in the output database, it was assumed that the word was not in the lexicon used by the system. The speed of tagging largely depends on the rate of average ambiguity of words and the percentage of unknown words used in a text. When it was applied to small corpora, it generates low accuracy (around 94%) due to the small size of corpora and large size of tagset (160+ plus multi-token tags). But when it was used on large corpora with reduced tagset, the percentage of accuracy was very high (around 98%). The method was trained on corpora where written words are separated by a white

space (Brants 2000). A notable limitation of the TnT tagging system was that it works well with a tagset represented in the ASCII (*American Standard Code for Information Interchange*), but falters with a tagset was represented in other encoding systems.

7. A Brief Note on Indian Scenario

Perhaps the first POS tagged text for any Indian language was developed in 2004 before any attempt was made to design a tool for this. We manually POS tagged a Bengali text of a hundred thousand words to calculate frequency of use of words of different POS in Bengali (Dash 2004). We used POS set of standard Bengali grammar to form the first POS tagset for Bengali (Table 3).

Table 3: Generic POS tagset proposed for Bengali (Dash 2004)

No.	POS	Tag	Example
Categories			
1	Noun	[NN]	bālak, śahar, kathā, mānuṣ
2	Pronoun	[PRN]	āmi, tumi, se, tārā, tui
3	Demonstrative	[DMS]	ýe, ei, oi, tāi
4	Finite Verb	[FV]	karchi, kartām, gela, ýābe
5	Non-Finite Verb	[NFV]	karle, karte, gele, giye
6	Adjective	[ADJ]	bhāla, manda, sundar, sādā
7	Adverb	[ADV]	haṭhāt, bābad, kāraṇe
8	Postposition	[PSP]	pare, kāche, āge, niche
9	Conjunction	[CNJ]	tabe, ýadi, naile, ýāte
10	Indeclinable	[IND]	kintu, athabā, baram ā
11	Particle	[PRT]	i, o, to, nā, ne, ni
12	Quantifier	[QNT]	ek, dui, pratham, paylā
13	Punctuation	[PNC]	., : ; - / ..., !, ? (), [], { }, etc.
14	Symbols	[ORS]	+, -, x, >, <, \$, #, @, ^, &, * etc.

The work of POS tagging was carried out manually on a small Bengali text corpus (Dash 2005: 104-108). As shown below (Fig. 3), there was no attempt to go into sub-classification of POS as we found in English (Biber *et al.* 1998, Barnbrook 1998). Since it was the first attempt, we tried to provide only broad POS level information to words based on their role in texts.

<p><Sentence START> krṣi_[NN] kārýer_[NN] janya_[PP] ek_[ADJ] jāygāy_[NN] saṅgabaddha_[ADJ] haiyā_[NFV] basabās_[NN] karite_[NFV] lāgila_[FV] eban_[IND] parasparer_[PN] madhye_[PP] krṣi_[NN]</p>

kārýer _[NN] bibhinna _[ADJ] kalākauśaler _[NN] bişaye _[NN] labdha _[ADJ] jñān _[NN] binimay _[NN] dvārā _[PP] kṛṣikei _[NN] jībikār _[NN] subidhājanak _[ADJ] upāy _[NN] hisābe _[PP] grahaṇ _[NN] karibār _[NFV] siddhānta _[NN] grahaṇ _[NN] karila _[FV] ebaṇ _[IND] śikār _[NN] apekṣā _[PP] kṛṣi _[NN] kārýer _[NN] sāhāyīe _[PP] jībikā _[NN] arjaner _[NN] upar _[PP] mānuṣ _[NN] adhik _[ADJ] jor _[NN] dīla _[FV] .[PNC] <Sentence END>

Fig. 3: Sample of a POS tagged Bengali written text (Dash 2005)

In another experiment, to add more information at the word level, we attempted to provide multiple levels of POS information to words (Dash 2005: 112). Since the use of homonyms in a text was quite regular, it was necessary to identify the possibility of a word to be used in different POS in a text. Given below was an example, where some Bengali words, following Biber *et al.* (1998), were tagged with multiple POS values to inform that based on contexts a word may be used in different POS in Bengali (Fig. 4).

POS Annotated Text (Bengali)	
ābdul_NN +++++	chini_FV/NN +++++
mājhi_NN +++++	se_PRN/ADJ +++++
chhūchālo_ADJ +++++	dādāke_NN +++++
tār_PRN/NN +++++	padmā_NN +++++
dāri_NN +++++	theke_PSP/NFV +++++
gōph_NN +++++	ene_NFV +++++
tār_PRN/NN +++++	dīta_FV +++++
kāmāno_ADJ/FV +++++	iliś_NN +++++
māthā_NN +++++	māch_NN +++++
tār_PRN/NN +++++	ār_IND/ADV
nerā_ADJ/NN +++++	kachchaper_NN +++++
tāke_PRN/NN +++++	ḍim_NN +++++

Fig. 4: Multiple POS tagging of words in Bengali (Dash 2005)

In the last three decades, there have been efforts to build POS tagset and POS tagged corpus in Indian languages. These efforts are primarily computer-oriented because POS tagging was a computationally ‘easy’ problem compared to a manual attempt. For the Indian languages, POS tagging was no more a theoretical exercise. Since I cannot give details about these tools

in this paper, I refer to only a few tools that address POS tagging in Indian languages (Saha *et al.* 2004, Avinesh and Karthik 2007). Also, there are reports on POS tagging and chunking (Dandapat 2007, Rao *et al.* 2007, Sastry *et al.* 2007, Saharia 2009) and POS tagging and parsing (Rao and Yarowsky 2007). An attempt was also made to develop a common POS tagging framework for all Indian languages by using a standard POS tagset (Baskaran *et al.* 2008). Scholars have used mathematical models, statistical tools, and computational techniques to develop POS tagging tools and trained them on Indian language corpora with nearest-neighbor transition probabilities to achieve high accuracy. Till date, the POS tagging tools that are developed for Indian languages, include Hindi (Shrivastava and Bhattacharyya 2008, Ray *et al.* 2010, Mishra and Mishra 2011), Bengali (Ekbal *et al.* 2007, Dandapat 2009, Chakrabarti 2011), Kannada (Shambhavi *et al.* 2012), Tamil (Dhanalakshmi *et al.* 2009), Malayalam (Antony *et al.* 2010), Assamese (Saharia *et al.* 2009), and Bhojpuri (Singh and Jha 2015). Attention was also given to other Indian languages (Rao *et al.* 2007, Pammi and Prahallad 2007, Rao and Yarowsky 2007, Kumar and Josan 2010, Shambhavi and Ramakanth 2010). A milestone in this area was the building of parallel POS tagged translation corpus in 23 Indian languages (Jha 2010). This has opened up many possibilities of using POS tagged texts in linguistics and language technology (Dash *et al.* 2016).

8. Summary of Observations

The POS tagging methods that I have discussed in this short survey paper mostly use the pre-existing digital corpora to experiment and apply methods of POS tagging algorithms. These experiments give us an important insight: it was possible to bootstrap texts by using ‘unsupervised’ tagging conventions. In most cases, an unsupervised tagging technique uses a small part of a tagged text corpus for training purposes, and then it produces desired outputs through induction of new rules and information either derived from the contexts (rarely) or obtained from inbuilt lexicon provided within a system. In most cases, a system observes patterns of word use in raw texts and then derives the POS information for words from the texts after calculating possible morphosyntactic identities of words in a sentence. For example, information gathered from raw English corpora reveals that while the determiner ‘*an*’ occurs in limited contexts, the determiner ‘*the*’ occurs in much varied contexts. It implies that the application of probability measurement, with sufficient iterations and repeated use in varieties of text types, can generate similarity scores for words of similar POS—a crucial strategy that linguists want to prepare for a POS tagging system. Also, the application of this technique produces differences, the analysis of which provides valuable insights about the POS of words, hardly presumed by human annotators.

Tagging a word at the POS level on a text was full of unforeseen challenges. We have to keep in mind that POS tagging—either we do manually or automatically—we have to do it on a piece of raw text. Typically, a text contains many words, which occur in sentences with specific syntactic functions and semantic roles. It was a challenge for us as well as a machine to identify specific POS value of a word. We cannot do this unless we understand actual morphological-cum-syntactic role of a word in a text (Toutanova and Manning 2000). Also, we have to consider linguistic and technical issues involved in it before we start POS tagging

to words. In most cases, these issues are related to sanitation of text, correction of sentence, normalization of words, tokenization of inflected words, removal of spelling error, validation of real word, management of white space, and correction of grammatical error (Dash 2021b). We can avail linguistic information of a word from its structure, meaning, syntactic role, and functional relation with other words used in a sentence (Brill 1992). While structure refers to its morphological features, lexical properties refer to its abstract or concrete values, syntactic role refers to its subject-predicate role in a sentence, and semantics refers to its agentive or thematic role in a sentence. We may utilize such information during POS tagging to ensure that linguistic information of a word was rightly represented and marked (Durand *et al.* 1996).

Variation in POS of a word was a common thing in all languages. Also, the number of POS mentioned in standard grammars of a language was enough for tagging words in a language. We, however, find that a word can be used in more POSs than registered in a grammar. We should identify and describe the additional POSs when we design a scheme for POS tagging. For instance, we have learned that Bengali has 8 POS: *nouns, pronouns, adjectives, adverbs, finite verbs, non-finite verbs, postpositions, and indeclinables*. We are taught that once we learn these POSs, we can identify POS of a word used in a Bengali text. We are also advised that these POSs are adequate for knowing words in Bengali texts. In reality, however, we find that there are some more POSs (e.g., *quantifiers, conjunctions, demonstratives, enclitics, particles*) that deserve attention. We should analyze, understand, and define the forms and functions of these POSs to gather better ideas about words used in texts. In actual work of POS tagging, we face more challenges when we try to distinguish between plural and singular nouns, tag words with case makers; identify nouns and adjectives with gender and number; tag verbs with a person, number, tense, aspect, modality, and honorification; tag adjectives with degree suffix; tag adjectives that behave like nouns. These are more complex and challenging problems as they are loaded with various grammatical informations. If these challenges are not addressed, a POS tagging tool fails to mark unique linguistic information of words. As a result, a tagged text fails to reflect on finer linguistic properties of words.

Despite so many advantages in POS tagging, there are limitations regarding proper identification of POS of words used in texts. This leads scholars to argue that POS tagging should be separated from other types of corpus tagging (e.g., *semantic tagging, syntactic tagging, etc.*). It was also realized that since POS tagging, chunking, and parsing are three different ways of tagging a corpus with different goals, they should be addressed separately. This helps to systematize various layers of text tagging, separate POS tagging from other related tasks, and devise more useful methods for POS tagging. In the last fifty years, POS tagging was accepted as an indispensable exercise in corpus tagging. It has become useful for designing text-based systems and tools that are used in language-related services to common people through digital platforms. Recent studies report about some high accuracy-based POS tagging tools for English and other advanced languages. Similar success for Indian languages has not yet come, although there are some POS tagging tools, which are quite robust (Dash 2021a).

What we realize from this paper was that there are large numbers of words, correct POS of which cannot be assigned without understanding contexts of their occurrence and meanings they denote in different contextual environments. We also realize that we need to understand information underlying structure and discourse of a text to assign the right POS tags to words. These are complex and expensive pre-conditions for developing a useful POS tagging system because extraction of information from extra-textual level and applying the same in a POS tagging system was a complex machine learning task. Even in a simple linguistic study, analyzing information of higher levels relating to meaning, function, pragmatics, and discourse was a complex cognitive challenge. Therefore, a system developer, who was trying to develop a POS tagging tool, has to be extremely skilled in transferring linguistic knowledge and tagging complexities into an application. A workable solution was application of a POS tagging tool on corpus and improving precision of the tool with continuous analysis of outputs and modifications of POS tagging algorithms. This was still a dream for most of the Indian languages.

9. Value of a POS Tagged Corpus

The value of a POS tagged corpus was enormous. It was used in language description, language teaching, grammar writing, dictionary compilation, text processing, and language-based technology (Zhou, *et al.*, 2005). One can have some ideas on how a POS tagged corpus was utilized in applied linguistics, computational linguistics, and cognitive linguistics from the following diagram (Fig. 5). In language description and application, a POS tagged corpus was used to describe form and nature of inflection of words, record patterns of use of inflected words, calculate the frequency of use of words of different POS, define patterns of distribution of different lexical tokens, understand nature of changes words undergo during inflection, compile lexical lists of different POS, and teach processes of formation of words of different POS to language learners. In language computation, a POS tagged corpus was used to develop systems for word sense disambiguation, named entity recognition, chunking, sentence annotation, text understanding, query answering, grammar checking, e-learning, and machine translation. It was also used in machine learning, extraction of linguistic and grammatical elements, and language modelling.

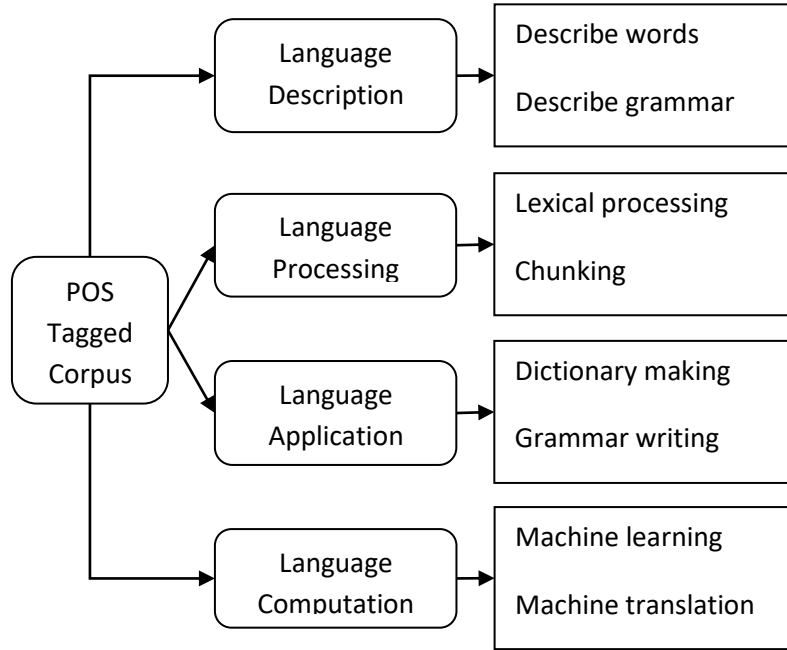


Fig. 5: Utilization of POS annotated text in various domains

Keeping multipurpose use of a POS tagged corpus in mind, I propose here to take initiative to develop POS tagged corpus for all the scheduled and non-scheduled Indian languages. During this works, we should keep the following issues in mind:

- (a) A corpus should be pre-edited, normalized, and standardized before it was used in POS tagging,
- (b) The tagset should be large keeping in view the existing POS varieties of an Indian language,
- (c) The tagset should be designed to optimize accuracy in POS tagging, and
- (d) The POS tagging system should work well for all types of synchronic and diachronic texts.

This was a short survey paper where I refer to a few notable POS tagging systems that are used in many advanced languages. Although many research papers have discussed different types and methods of POS tagging, I hardly come across any paper that summarizes the basic concepts and functionalities of the major POS tagging systems. From this perspective, this was a ‘gateway paper’ (very brief in length, though) in the sense that it gives some preliminary ideas about an area of study which requires deeper and wider exploration. One of the major limitations of the paper was that it fails to refer to any POS staging system that has been successfully developed and used in Indian languages. This was because, to date, no good quality POS tagging system was made openly available for public access for the Indian languages although it was known that some good quality POS tagging systems are developed and used in some Indian languages. Another limitation of the paper was that, due to paucity of space, I am not able to describe POS tagging in detail regarding actual computational operations of a system as well as refer to some new and more advanced POS tagging methods that require advanced knowledge in computation, statistics, and linguistics. Hence, I try to

delimit myself within a specified scope keeping in mind that the paper desires to serve some pedagogical purposes rather than presenting results of any ground-breaking innovation.

References

- Abney, S. (1997). "Part-of-speech tagging and partial parsing". In: Schreibman, S., Siemens, R.G. and Unsworth, J.M. (eds.) *Corpus-Based Methods in Language and Speech: A Companion to Digital Humanities*. London: Blackwell. Pp. 118-136.
- Antony, P.J.; Santhanu, P.M. and Soman, K.P. (2010). "SVM-based parts-of-speech tagger for Malayalam". *Proceedings of the International Conference on-Recent Trends in Information, Telecommunication & Computing (ITC 2010)*, Kochi, Kerala, 2010, pp. 339-341.
- Atwell, E.S. (2008). "Development of tagsets for part-of-speech tagging". In: Ludeling, A. and Kyto, M. (eds.) *Corpus Linguistics: An International Handbook, Vol. 1*. Berlin: Walter de Gruyter. Pp. 501-526.
- Avinesh, P.V.S. and Karthik, G. (2007). "POS tagging and chunking using Conditional Random Field and Transformation based learning". *Proceedings of the Workshop on Shallow Parsing for South Asian Languages (IJCAI-07)*, IIT-Hyderabad, India, pp. 21-24.
- Bada, M., Eckert, M., and Evans, D. (2012). "Concept annotation in the craft corpus". *BMC Bioinformatics*. 13. 161. DOI <https://doi.org/10.1186/1471-2105-13-161>
- Barnbrook, G. (1998). *Language and Computers*. Edinburgh: Edinburgh University Press.
- Baskaran, S.; Bali, K.; Bhattacharya, T.; Bhattacharya, P.; Chaudhury, M.; Jha, G.N.; Rajendran, S.; Sarvanan, K.; Sobha, K., and Subbarao, K.V. (2008). "Designing a common POS tagset framework for Indian Languages". *Proceedings of the 6th Workshop on Asian Language Resources, Asian Language Resources in International Joint Conference on Natural Language Processing (IJCNLP-2008)*, 11-12 January 2008, IIT-Hyderabad, pp. 89-92.
- Biber, D., Conrad, S. and Reppen, R. (1998). *Corpus Linguistics: Investigating Language Structure and Use*. Cambridge: Cambridge University Press.
- Brants, T. (2000). "TnT- A Statistical Part-of-Speech Tagger". *Proceedings of the 6th Conference on Applied Natural Language Processing (ANLP-2000)*, Seattle, WA, USA. Pp. 37-42.

- Brill, E. (1992). "A simple rule-based part of speech tagger". *Proceedings of the 3rd Conference on Applied Natural Language Processing (ANLC '92)*. Trento, Italy, March 31-April 03, pp. 152-155.
- Brill, E. (1995). "Transformation-based error-driven learning and natural language processing: a case study in part-of-speech tagging". *Computational Linguistics*. 21(4): 543-565.
- Chakrabarti, D. (2011). "Layered parts of speech tagging for Bangla". *Language in India*. www.languageinindia.com, May 2011, Special Volume: Problems of Parsing in Indian Languages. Pp. 1-6.
- Charniak, E. (1997) "Statistical Techniques for Natural Language Parsing". *Artificial Intelligence Magazine*. 18(4): 33-44.
- Chattopadhyay, S.K. (1995). *Bhasa Prakash Bangla Vyakaran (Grammar of the Bengali Language)*. Kolkata: Rupa Publications.
- Dandapat, S. (2007). "POS tagging and chunking with Maximum Entropy model". *Proceedings of Workshop on Shallow Parsing for South Asian Languages (IJCAI-07)*, IIT-Hyd, India, pp. 29-32.
- Dandapat, S. (2009). *Part-of-Speech tagging for Bengali*. Unpublished MS Thesis, Dept. of Computer Science and Engineering, Indian Institute of Technology, Kharagpur, India.
- Dash, N.S. (2004). "Text annotation: a prologue to corpus processing". *Indian Journal of Linguistics*. Vol. 23. No. 1. Pp. 71-82.
- Dash, N.S. (2005). *Corpus Linguistics and Language Technology: With Reference to Indian Languages*. New Delhi: Mittal Publications.
- Dash, N.S. (2021). "Pre-editing and text standardization on a Bengali written text corpus". *Aligarh Journal of Linguistics*. Vol. 10. No. 1. Pp. 1-22.
- Dash, N.S. (2021). *Language Corpora Annotation and Processing*. Singapore: Springer Nature.
- Dash, N.S.; Arulmozi, S. and Hussain, M.M. (2016). "The carriage of Indian languages corpora: and miles to go before we stop". *Indian Journal of Applied Linguistics*. Vol. 42. No. 1 & 2. Pp. 63-92.
- DeRose, S.J. (1988). "Grammatical category disambiguation by statistical optimization". *Computational Linguistics*. 14(1): 31-39.

- Dhanalakshmi, V.; Kumar, A.; Shivapratap, G.; Soman, K.P. and Rajendran, S. (2009). "Tamil POS Tagging using Linear Programming", *International Journal of Recent Trends in Engineering*, Vol. 1. No. 2. Pp. 166-169.
- Durand, D.G.; DeRose, S.J.; and Mylonas, E. (1996). "What should mark-up really be? Applying theories of text to the design of markup systems". *Proceedings of ALLC/ACH '96*, June 25-29, 1996, Bergen, Norway.
- Ekbal, A.; Mandal, S. and Bandyopadhyay, S. (2007). "POS tagging using HMM and rule-based chunking", *Proceedings of the Workshop on shallow parsing in South Asian languages (SPSAL)*, IJCAI 2007, IIT-Hyderabad, India, pp. 31-34.
- Fligelstone, S., Pacey, M., and Rayson, P. (1997). "How to generalize the task of annotation". In: Garside, R., Leech, G. and McEnery, A. (eds.) *Corpus Annotation: Linguistic Information from Computer Text Corpora*. London: Longman. Pp 122-136.
- Fligelstone, S., Rayson, P., and Smith, N. (1996). "Template analysis: bridging the gap between grammar and the lexicon". In: Thomas, J. and Short, M. (eds.) *Using Corpora for Language Research*. Harlow: Longman. Pp 181-207.
- Garrette, D. and Baldrige, J. (2013). "Learning a part-of-speech tagger from two hours of annotation". *Proceedings of NAACL-HLT 2013*, Atlanta, 9-14 June 2013. Pp. 138-147.
- Garside, R. (1987). "The CLAWS word-tagging system". In: Garside, G., Leech, G. and Sampson, G. (eds.) *Computational Analysis of English: A Corpus-based Approach*, London: Longman. Pp. 30-41.
- Garside, R. (1995). "Grammatical tagging of the spoken part of the British National Corpus: a progress report". In: Leech, G., Myers, G. and Thomas, J. (eds.) *Spoken English on Computer: Transcription, Markup, and Application*. London: Longman. Pp. 161-167.
- Garside, R. and Smith, N. (1997). "A hybrid grammatical tagger: CLAWS4". In: Garside, R., Leech, G., and McEnery, A. (eds.) *Corpus Annotation: Linguistic Information from Computer Text Corpora*. London: Longman. Pp. 102-121.
- Garside, R. (1996). "The robust tagging of unrestricted text: the BNC experience". In: Thomas, J. and Short, M. (eds.) *Using corpora for language research: Studies in the Honour of Geoffrey Leech* Longman: London. Pp. 167-180.
- Huang, Z., Xu, W., and Yu, K. (2015). "Bidirectional LSTM-CRF models for sequence tagging". ArXiv preprint ArXiv abs/1508.01991 (2015): n. pag.

- Jha, G.N. (2010). "The TDIL program and the Indian Language Corpora Initiative (ILCI)". *Proceedings of the 7th Conference on International Language Resources and Evaluation (LREC'10)*, Valletta, Malta, 19-21 May 2010. Pp., 982-985.
- Kumar, D. and Josan, G.S. (2010). "Part-of-speech taggers for morphologically rich Indian languages: a survey", *International Journal of Computer Applications*. Vol. 6. No. 5. Pp. 1-9.
- Kupiec, J. (1992). "Robust part-of-speech tagging using a Hidden Markov Model". *Computer Speech and Language*. 6(3): 225-242.
- Leech, G. and Eyes, E. (1993). "Syntactic annotation: linguistic aspects of grammatical tagging and skeleton parsing". In: Black, E., Garside, R. and Leech, G. (eds.) *Statistically-driven Computer Grammars of English: the IBM/Lancaster Approach*. Amsterdam: Rodopi. Pp. 36-61.
- Leech, G., Garside, R., and Atwell, E. (1983). "The automatic grammatical tagging of the LOB Corpus". *ICAME Journal*. 7(1): 13-33.
- Leech, G., Garside, R., and Bryant, M. (1994). "CLAWS4: The tagging of the British National Corpus". *Proceedings of the 15th International Conference on Computational Linguistics (COLING 94)* Kyoto, Japan. Pp. 622-628.
- Manning, C.D. (2011). "Part-of-speech tagging from 97% to 100%: was it time for some linguistics?" In: Gelbukh A.F. (eds.) *Computational Linguistics and Intelligent Text Processing (CICLing 2011)*. Lecture Notes in Computer Science, Vol. 6608. Berlin, Heidelberg: Springer, https://doi.org/10.1007/978-3-642-19400-9_14
- Mishra, N. and Mishra, A. (2011). "Part of speech tagging for Hindi corpus", *Proceedings of the International Conference on Communication Systems and Network Technologies*, Katra, Jammu, 2011, pp. 554-558.
- Pammi, S.C. and Prahallad, K. (2007). "POS tagging and chunking using Decision Forests". *Proceedings of the Workshop on shallow parsing in South Asian languages (SPSAL)*, IJCAI 2007, IIIT-Hyderabad, India, Pp. 33-36.
- Ramshaw, L.A. and Marcus, M.P. (1995). "Text chunking using Transformation-Based Learning". *ACL Third Workshop on Very Large Corpora*, June 1995. Pp. 82-94.
- Rao, D. and Yarowsky, D. (2007). "Part of speech tagging and shallow parsing of Indian languages". *Proceedings of the Workshop on Shallow Parsing for South Asian Languages (IJCAI-07)*, IIIT-Hyderabad, India, pp. 17-20.

- Rao, P.T., Ram, S., Vijaykrishna, R., and Sobha, L. 2007. A text chunker and hybrid POS tagger for Indian languages. *Proceedings of the Workshop on Shallow Parsing for South Asian Languages (IJCAI-07)*, IIT-Hyd, India, pp., 9-12.
- Ray, P.R.; Harish, V.; Sarkar, S. and Basu, A. (2010). “Part of Speech Tagging and Local Word Grouping Techniques for Natural Language Parsing in Hindi”. *Proceedings of the International Conference on Natural Language Processing (ICON2003)*, Dept. of Computer Science and Engineering, IIT-Kharagpur, India, pp., 118-125.
- Saha, G.K.; Saha, A.B., and Debnath, S. (2004). “Computer-assisted Bangla words POS tagging”. *Proceedings of (iSTRANS-2004)*, New Delhi, India, pp., 111-115.
- Saharia, N.; Das, D.; Sharma, U. and Kalita, J. (2009). “Part of Speech Tagger for Assamese Text”. *Proceedings of the ACL-IJCNLP-2009 Conference*, Suntec, Singapore, pp., 33-36.
- Sastry, G.M.R.; Chaudhuri, S. and Reddy, P.N. (2007). “A HMM-based part-of-speech and statistical chunker for 3 Indian languages”. *Proceedings of the Workshop on Shallow Parsing for South Asian Languages (IJCAI-07)*, IIT-Hyderabad, India, pp., 13-16.
- Shambhavi, B.R. and Ramakanth, P.K. (2010). “Current State of the art POS tagging for Indian Languages: a study”. *International Journal of Computer Engineering and Technology*. Vol. 1. No. 1. Pp. 250-260.
- Shambhavi, B.R.; Ramakanth, K.P. and Revanth, G. (2012). “A Maximum Entropy Approach to Kannada Part of Speech Tagging”. *International Journal of Computer Applications*. Vol. 41. No.13., Pp. 9-12.
- Shrivastava, M. and Bhattacharyya, P. (2008). “Hindi POS tagger using Naive Stemming: harnessing morphological information without extensive linguistic knowledge”, *Proceedings of the 6th International Conference on Natural Language Processing (ICON-2008)*, CDAC, Pune India, 20-22 December 2008, pp., 1-8.
- Singh, S. and Jha, G.N. (2015). “Statistical tagger for Bhojpuri employing Support Vector Machine”. *Proceedings of the International Conference on Advances in Computing, Communications and Informatics (ICACCI)*, 2015, pp., 1524-1529.
- Søgaard, A. (2010). “Simple semi-supervised training of part-of-speech taggers”. *Proceedings of the ACL 2010 Conference Short Papers*, July 2010. Pp. 205-208.
- Toutanova, K. and Manning, C.D. (2000). “Enriching the knowledge sources used in a maximum entropy part-of-speech tagger”. *Proceedings of the Joint SIGDAT Conference on Empirical Methods in Natural Language Processing & Very Large Corpora (EMNLP/VLC-2000)*, pp. 63-70.

- Toutanova, K., Klein, D., Manning, C.D., and Singer, Y. (2003). “Feature-rich part-of-speech tagging with a cyclic dependency network”. *Proceedings of the 2003 Conference of the North American Chapter of the Association for Computational Linguistics on Human Language Technology (HLT-NAACL '03)*, May 2003, Vol. 1. Pp. 173-180.
- Zhou, G., Su, J., Zhang, J., and Zhang, M. (2005). “Exploring various knowledge in relation extraction”. *Proceedings of the 43rd Annual Meeting of the ACL*, Ann Arbor, June 2005. Pp. 427-434.

Forensic Linguistics: Latitude and Limitations

Chinmayee Nanda*

Abstract

Forensic linguistics was the study of language and law in connection with crime. This paper deliberates on the various aspects of forensic linguistics which can be considered in legal proceedings- forensic phonetics, interpreting police-suspect interaction, verifying police reports and other inter-cultural and cross-cultural aspects pertaining to speech act in a legal context. It focuses on the scope as well as limitations of forensic linguistic in tracing the crime. A close scrutiny of a specific area that of attributing authorship, in short messages service and comes to a close by enquiring some existing contention and disagreement relating to forensic linguistics and also throwing some light on further potential if/any.

Key words: Forensic Linguistics, Forensic Science, Authorship Detection and Attribution, Voice Identification, Cross-cultural Differences

1. Introduction

Forensic linguistics was the study of language and law in connection with crime. It was transpiring as a sub-discipline of forensic science. It can also be understood as an interdisciplinary field of applied linguistics or descriptive linguistics. It consists of the analysis, scrutiny and measurement of language in a contextual relationship with crime, disputes in law and the judicial procedures. It aims at combining language, crime and the law can be traced. For example, in the court room discourse analysis, the interpretation and translation, comprehension of legal documents, transparency in the police caution issued to accused, also attributing authorship. Nevertheless, it can never compensate DNA testing for that matter with regard to accuracy, yet it proves to be helpful when combined with the expertise of applied linguists in disclosing the legal conundrum. To achieve the desirable results, informed use of forensic linguistics helps. It needs familiarity with the extensive usage and application of this branch of linguistics as a social science. It takes into account the areas like phonetics and phonology, syntax, morphology, semantics, discourse analysis, pragmatics, psycholinguistics, neurolinguistics, sociolinguistics, dialectology, computational linguistics as well as corpus linguistics. The forensic linguists basically apply their knowledge base and strategies to the language concerned with legal cases or proceedings. Additionally it focuses on the private disputes between parties which might result in legal action. Firstly this paper deals with the possible extent to which this area of linguistics can cater to. Subsequently, an overview was presented in areas where forensic linguistics plays a vital role. It includes voice identification, also known as forensic phonetics, analyzing police-accused interaction; police report verification as well as cross-cultural dimension in varied speech pattern. Lastly, some existing issues regarding the further development in the area

*Assistant Professor, School of Law, KIIT deemed University, Bhubaneswar, Odisha.

of forensic linguistics will be discussed.

2. Was this a Science?

The fundamental difference between forensic and non-forensic methods in linguistics was the systematic and technical approach. Here, the systematic and a more scientific method look for “hypothesis testing and a litigation-independent testing of the method for its accuracy.”(Betz, 94) In this case, these examinations are conducted with complete control of amount of data, sources of the data obtained, and analysis based objectivity. Restrictions in applying linguistic expertise relating to law are due to variations in degrees of acceptability in the court room. Also variations in degrees of reliability relating to shortcomings such as the brevity of documents, small data samples, regular characteristics and attributes of language, like generic features of the accused and the dynamism in language, due to which constant change takes place in this regard. The standard value of evidence connected to this field also largely relies on the expertise of the individual linguist associated with the case assigned. In different countries, courts function differently.

Many courts allow forensic evidence having various criteria. Pertaining to individual fingerprint, there was a query to look into whether a linguistic alternative exists. It certainly gives an impression of an attractive idea connected to forensic linguistics to receive the status of being ‘science’. As per the claim goes, each human individual has a specific way of using any language, and such variation can be observed easily and securely like in case of fingerprint. But actually, it sounds to be a farfetched idea to collate a set of markers which would mark each particular writer/speaker to be unique. Hence, the idea behind ‘Linguistic impression’ or fingerprint seems to be not practicable and there was hardly any evidence to support it. So, it was fruitful to highlight on the specific individual style of a person, as identified in a collection of known and suspected texts within the framework of an investigation.

3. Forensic Linguistics and its Application

In the following sections the various applications of Forensic Linguistics has been discussed.

3.1. Forensic phonetics

It was the application of the knowledge, theories and methods of general phonetics to practical tasks that arise out of a context of police work or the presentation of evidence in court, as well as the development of new, specifically forensic-phonetic, knowledge, theories and methods. It was also known as voice identification. These techniques are applied in analyzing the voice as done in criminal investigation. This consists of technicalities in voice comparison, voice recognition, speech signal enhancement, transcription of spoken language and the authentication of recordings. Phoneticians in this area, administer speaker identifications, figure out disputed content recordings, and convert spoken texts. Also, they are engaged in establishing voice line-ups or parades in which ear witnesses are enquired to partake so as to identify a suspect. The specific queries taking place in this connection are

usually related to confirming the voice of the “person concerned” in a case. Another type includes queries based upon samples of comparing accent/ dialect, the specific phone or sound. For example: was the pronunciation of phonemes similar across the known and questioned voices? Voice identification needs to be done without delaying and also with utmost care. Forensic record includes spoken texts in the form of interviews, oral statements, or interrogations which need to be translated into written form, which also may cause problem as some chunk of information might get lost or it might be inaccurate too due to various factors. For instance, it may be due to lack of context based information or non-verbal features. Also, written discourse varies from the spoken form to a larger extent as the later was more context-dependent.

Coulthard & Johnson (2007) has mentioned a very appropriate example in his book, “A man accused of manufacturing the drug ecstasy was misheard by the police transcriber as ‘hallucinogenic’. The transcriber heard “but if it’s as you say, it’s hallucinogenic, it’s in the Sigma catalogue”. Actual utterance was “but if it’s , as you say, it’s German, it’s in the sigma catalogue.” (2007 162-63) Another disputed utterance was between a police and an accused, one of the issues of their discourse was a third man known as “Ernie.” The poor signal of the recording made it sound like “Ronnie”. The surveillance tape presented acoustic problems: an intrusive electronic-sounding crackle, the sound of the car engine, the playing of the car radio, the movement of the target vehicle, and the intrusive noise all coincided with the first syllable of the disputed name, as cited in Olsson (2008).

3.2. Language and the Power Structure

In the year 1966, the Supreme court in *Miranda v. Alabama* in the USA set forth the requirement that prior to the arrest or interrogation of a suspect in a crime, s/he must be intimated about their right to remain silent, the right to legal counsel as well as the provision for them to be informed about that anything they utter can be used against them in the court of law. The application of this requirement was highly suggestive of an idea that speech act performed by the police may lead to ‘consensual’ nature of searches that questioning can be understood as coercive. Also, the relationship between the authority and the accused was asymmetric. A very appropriate example can be cited from Solan and Tiersma (2005, 35), which indicates that the semantic level cannot be interpreted as directives:

Does the trunk open?

You don’t mind if we look in your trunk, do you?

Why don’t you put your hands behind your back, all right?

The level of coerciveness increases in ‘requests’ such as:

Would you mind if I took a look around here?

Well, then, you don’t mind if I look around in the car, do you, or would you?

The police mostly go without the authority to vouchsafe such as “We will go easy on you if you confess,” yet this are implied in their approach to comply. In this connection Solan and

Tiersma(2005, 38) have pointed out, that people who are stopped by the police tend to interpret ostensible requests as commands or orders, yet, in contrast, their own indirect wishes to get a lawyer often go unnoticed. This problem was again aggravated due to issues relating to the intelligibility of the Miranda warning and other police language for many accused, including defendants who may be less literate speaking some other language, or might be too young or intellectually disabled to understand their rights to remain patient and seek legal advice. In any matter, the lopsided and off-balanced nature of the relationship between the authority figures that was the police and the suspect-who may be disadvantageous in many ways-as a result a text (in the form of a record of interview, video or audio recording or written statement) which sounds to be negotiable as compared to the statements made in a less threatening environment. This further leads to the culmination that though there was a requirement of context dependence in interpreting of speech acts, court may also depend upon the inferences without any context to reach to a decision.

3.3. Testimony and the Cross Cultural and Linguistic Variances

Sociolinguists study the variations in dialects of a particular language, and also across cultures and languages. This aspect of linguistics was hardly considered in terms of law enforcement where passing crucial judgment was the primary concern relating to someone's guilt or innocence. Eades (2008) has examined the social consequences of court room talk through detailed investigation of the cross examination of three Australian Aboriginal boys in the case against six police officers charged with their abduction. In her study of Australian courtroom discourse, she discovered that yes/no questions are not considered coercive in Australian Aboriginal interactions, but rather are understood as an invitation to explain or elaborate. Further, these are considered as open-ended. Additionally, the cultural differences in non-verbal cues also become a determining factor in passing judgments in the courtroom. Short pauses or long silences have different connotations in different countries.

Tag questions may also create misunderstanding in the interpretation of testimony. For instance, negative tag questions in English Grammar actually look for an answer in negation, whereas in many other languages mostly Asian and Spanish, either of the possibility was accepted. For example, "You took the Legal Lexicon, didn't you?". Another landmark trial of O.J.Simpson has a lot to offer in connection with interpreting the auxiliaries in the testimony of Rosa Lopez. The interpretation was more pressing in case of the cross-examination in Spanish than English. An innocent person might be found guilty and vice versa because of the cross cultural variations in syntax, semantics or paralinguistic features.

3.4. Divergence and Variation in Police Reports

While looking for the accuracy of police reports and the alleged statements, one must scrutinize the association between the documents and the incidence it intend to report. Like, the time frame, taking up of the notes of the specific event, the legitimacy of the chronology stated in reiterating the events are to be verified minutely. To avoid any kind of discrepancy between the police report and the oral discourse, videotaping was what was suggested. This idea was also not widely accepted except for a few cases. Solan and Tiersma(2005) have recorded that video taping has been the law for many years in the UK and Australia, yet in

the US it was required in specifically few states. Police officers usually refer to “police speak”(Anna-Betz, 97) which was more comprehensible and feasible for detection. It offers concrete set phrases, impersonal style, brevity and conciseness with regard to time, place and sequence.

3.5. Authorship Attribution

Authorship attribution refers to the science of drawing the attributes of the author from characteristics of the specific documents produced by that same individual. Here the primary task was to ascertain who said or mentioned something which would be used as evidence. Attribution was enabled by assessing the word length average, average number of syllables per word, article/determiner, and punctuation, syntactic boundaries and quantifying unique words in a text, all accord to solving the issue. Chaski(1997,2001) and Kredens(2000) highlight the priority to take the relative frequency of various syntactic markers into consideration.

3.6. Forensic Text

Forensic text types include any variety text ranging from a written document or an audio or video recording, which mostly was the subject of police investigation or of criminal procedure. The linguist involved in the process of investigation usually called upon to make an analysis of various documents of different types. The text type can be emergency calls, ransom demands and other threats, hate mail aiming at abusing others. In such circumstance the authenticity or fraudulence related to the call has to be decided to find out or get rid of imposture or deception. Similar variation appertains to suicide notes or such letters. And the last sentence, might explicates the idea of guilt or innocence of a convict if at all a death row inmate thinks of uttering their last words:

I have nothing to say. I am apologetic about what I did and that's all.

Death row statements directly or indirectly may corroborate commission of a criminal activity or deny it, having highlighted the innocence. They may also discredit witnesses as disreputable or disparage law enforcement as corrupt.

3.7. Text Message Analysis

Text messages can be analysed for attributing authorship in criminal cases where the culprit was alleged of sending text messages from the victim's cell phone, personating to be texted by the victim. In this connection, forensic linguist tries to look for the stylistic device used redundantly. Statistical analysis, relying upon the specialized database of numerous text messages, might help in this regard. The fundamental question was to how to ascertain the juncture where a style change within the texts was apparent which was also called as the cutoff point. It should include a compiled sociolinguistic profile of the author with regard to age, gender, origin, socio-economic background, education as well as profession. It also becomes pertinent to establish a connection with the message at hand by means of cohesion and coherence, to find out the sequence by which the messages were sent. The dialectical features might be consistent or inconsistent, for instance, the use of personal

pronoun(me/myself). Crucial stylistic feature might include formation of clusters of words, *wan2go* and their average length as well as characteristics like phrases, clauses or word. Length of the text as well as average word length, punctuation, spacing etc. play a vital role. Individual words can also be considered and the various ways of writing the phrases may also be taken into account. Other features like alternative lexical choices, morphological, alphanumeric, orthographic or phonic reduction etc. also become quite pertinent at this position. For instance: *R u goin? B4 c rchs*

There was another agenda that any individual person's style of writing might not always be consistent and there was every possibility of a change in the same. There are various circumstances due to which this change may take place, like text type or sender and receiver relationship. Also in small and large sample, one cannot deny of the changing linguistic feature. Olsson has referred to that mobile phone texts often use mixed styles. (2009, 57) On various occasions a complete linguistic analysis of the SMS messages sent from a victim's phone have led to the capture of the culprit due to specific, unique and distinctive features, like spacing, non contracted form of positive verbs, or inconsistencies in texting style as referred by Amos. (2008) there are differences in author variation, within and across the text. The former was called as the intra-author variation and the later inter-author variation. Intra-author variation was about the ways showcasing one author's texts differing from each other. It was inclusive of variation in vocabulary, genre, text type and so on. One must also consider various factors like time lapse between discourses, probable disguise, changing personal circumstances, cultural divergence influencing the texting language and so on. Inter-author variation refers to the ways in which different authors vary from each other due to a wide ranging social backgrounds, educational background, geographical location, variations in occupation etc. another problem detected was the short text stability issue, where in one usually finds high intra-author variation and low inter-author variation if the texts fall into the same category.

3.8. A Systematic and Methodical way of Authorship Detection

Focusing on linguistic characteristics, the accuracy relating to authorship falls somewhere between 72% and 95 % as per the empirical data states. Chaski has presented a computational method showcasing 95% accuracy and for that reason it was being successfully employed in case of investigation and adjudication of several crimes involving digital evidence. In case of Cyber crime investigations, it becomes crucial to assess the whole frame work ranging from homicide to that of theft and other crimes relating to fraud. In such cases relating to cyber crime, evidence can be collected using various methods like, biometric analysis of the user, qualitative analysis of peculiar trait and distinctive features in the language in intervention and familiar documents, quantitative and computational stylometric analysis. If the accuracy rate was higher, naturally it was better. Further, queries relating to the similarity index of the disputed data belonging to another suspect, have to be answered too. A method has been developed by Chaski and Chemylinski(2005) for the decomposition of the data into smaller chunks so that a larger set of variables can be used for the discriminating analysis. Chaski and Chemylinski(2005) have got similar results by using these variables with logistic regression, that was a segment of a category of statistical model called generalized linear model. Logistic

regression usually permits one to assume a discrete output, such as group membership, from a set of variables that may be continuous, discrete, and dichotomous or a mix of any of these. Stamatos(2009), has presented the recent advances of the automated approaches to attributing authorship, evaluating their attributes for both text representation and text classification. The focus was primarily on computational requirements and settings than on literary or linguistic issues. He has also thrown light on evaluation methodologies and criteria for authorship attribution studies.

Talking about the SMS authorship attribution, in this era of increasing number of digital evidence available on cell phones, it becomes quite crucial to detect SMS or text authors in criminal cases. In this connection, Mohan, Baggili and Rogers(2010) have proposed a model called N-grams based approach for finalizing the authorship of text messages. This method was about showing impressive results in identification of authors. Usually SMS messages are quite brief so lack various syntactic features, so during the forensic analysis of these messages, there was a requirement for high processing speed as it might be relating to someone's life risk too. An N-gram approach for such SMS corpus appears to search application under such conditions and was believed to predict the author with an accuracy of approximately 65 to 72% in case of smaller number of SMS messages samples and larger number of the size of the authors.

4. Limitations

Nevertheless there are many controversies relating to speaker identification, testimony, reputability of statements, establishing guilt or innocence with regard to Forensic Linguistic. Hollien (2001) disagrees with the idea of 'scientific community' on the degree of accuracy with the help of which usually examiners are expected to identify speakers under various conditions. Vocal disguises can be difficult for the examiner to deal with the accuracy part. Again the investigator needs to appeal the court order that she/he should provide such a sample with repetition of phrases of the questioned call, in a quite natural conversational style and that has to be provided at least three times and to the satisfaction of the investigator in a legitimate manner. However, there was no universal standard for the exact number of words meant for identification, sometime 10 for few agencies and also 20 for the rest. Hollien has added that spectrographic voice identification undertakes that intra-speaker variability was distinguishable from inter-speaker variability. But, that argument was not sufficiently proved by any systematic theory or data as such. Opinion related to actual error rates are based on various professional judgements and experiment results rather than from objective data representative of results in forensic applications.

Matter relating to testimony was also not free from controversies. Cases relating to verbatim or second hand verbal material may give rise to such situation as explained in Solan and Tiersma(2005: 98) e.g. I am not very sure but I can say he said he did it. Such statements cannot be considered as reliable as human memory lacks the capacity to retain the exact words even after few moments of listening, so a complete reproduction after a certain period of time was not realistic. Even if it was produced, there was every possibility it may not include the paralinguistic and the pragmatic features. 'Scientific' criteria for court

admissibility of testimony still cause a problem as those would differ from country to country and from state to state. Also there was no such required qualification defined to become a forensic expert.

The truthfulness of a spoken or written testimony was also another dimension of challenges involved in forensic linguistics. It was mostly determined by the consciousness level of the defendants feeling challenged, time lapse between the verbatim uttered and reproduced. The question was quite pertinent as to how long one can actually remember what was said by someone else-word for word. In this connection Clifford and Scott(1978) have stated, “the upper limit for short- term memory was 7-9 items, beyond which meaning may be retained but not the actual wording.” An average person’s recalling level was somewhere between 30 and 40% after a few seconds. In addition, the usage of generic language or an unsuitable register when a specific jargon was normally used creates a scope of doubt for the linguists involved about the authenticity of a given statement.

Authentic sample material was a big time agenda to make a reliable identification. In this context Tiersma has pointed out, “Research was ongoing and the availability of large corpora of speech and writing samples suggests that the field may advance in the future.” So the attribution method needs to be robust and practicable to a limited amount of short texts. Still several questions need to be answered pertaining to authorship attribution. Sanderson and Guenter(2006) and Hirts and Feguina(2007) have indicated that it has not yet been possible to define a text-length threshold for reliable authorship attribution.

5. Conclusion

This paper has investigated and offered an overview of the interdisciplinary field of Forensic Linguistics and also emphasized on some of the application part like pragmatic analysis and various scientific methods of authorship attribution and law enforcement. The complexities and critical features of linguistic are elaborately discussed. The linguist might be convinced about the innocence of the defendant, but s/he has to restrict their view in connection with degree of probability. Impartiality was another major onus, the linguist must bear. The practices of voice identification and authorship attribution has not yet be found that much reliable like DNA test or finger print. At most, linguistic expertise facilitates elimination of a suspect as the perpetrator, but was not in a position to identify one with certainty (cf. Solan and Tiersma, 2005: 242). Of course, with the technological advancements, the experts can examine the documents and voice recordings in a more reliable manner. Yet, the area of forensic linguistics has not yet been fully recognized in terms of legitimacy and legality.

References

- Amos, O. (2008). The text trap. *The Northern Echo*. Retrieved January 5,2012 from http://www.thenorthernecho.co.uk/features/leader/2076811.the_text_trap/
- Chaski, C. E., and H. J. Chmelynski. (2005a) (pending publication). Testingtwenty variables for author attribution by discriminant functionanalysis.

- Clifford, B. R., & Scott, J. (1978). Individual and situational factors in eyewitness testimony. *Journal of Applied Psychology*, 63(3) pp 352-359
- Coulthard, M., & Johnson, A. (2007). *An introduction to forensic linguistics: Language in evidence*. Oxford: Routledge:162-3.
- Eades, D. (2008). *Courtroom talk and neocolonial control*. Berlin and New York: Mouton de Gruyter.
- Hirst, G. and O. Feiguina. (2007). Bigrams of syntactic labels for authorship discrimination of short texts. *Literary and Linguistic Computing*, 22(4), pp. 405-417.
- Hollien, H. (2001). *Forensic Voice Identification*. London: Academic Press.
- Kredens, K.(2000). *Forensic linguistics and the Status of Linguistic Evidence in the Legal Setting*. Unpublished Ph.D. dissertation. University of Łódź.
- Mohan Ashwin , Ibrahim M. Baggili, and Marcus K. Rogers (2010). *Authorship attribution of SMS messages using an N-grams approach*.
https://www.cerias.purdue.edu/assets/pdf/bibtex_archive/2010-11-report.pdf
- Olsson, J.(2008). *Forensic Linguistics*. New York and London: Continuum International Publishing Group.
- _____ (2009). *Word Crime: Solving Crime through Forensic Linguistics*. New York and London: Continuum International Publishing Group.
- Sanderson, C. and S. Guenter. (2006). Short text authorship attribution via sequence kernels, Markov chains and author unmasking: An investigation. *Proceedings of the International Conference on Empirical Methods in Natural Language Engineering*, pp. 482-491. Morristown, NJ: Association for Computational Linguistics.
- Solan, L.M. and P.M. Tiersma. (2005). *Speaking of Crime: The Language of Criminal Justice*, Chicago and London: Chicago: The University of Chicago Press.
- Stamatatos, E. (2009). A survey of modern authorship attribution methods. *Journal of the American Society for Information Science and Technology*, Volume 60, Issue 3, pp. 538–556

Typical Errors Made by Russian Students in Learning Telugu: An Observational Analysis

Darya Soboleva*

Abstract

The article aims at analyzing most general errors that occur in the process of learning Telugu using Error analysis method, which may contribute to a better understanding of the natural logic of Russian and may be used in preparing exercises to prevent typical errors made by Telugu students learning Russian. By error the author of the article understands a significant deviation from the normative grammar of a native speaker. At the same time, students can improve their language skills due to teachers' advice and guidance. The errors analyzed are primarily translation errors. Causes for these errors can be attributed to the structure of the mother tongue i.e., Russian, and take their roots at the nonverbal stage, before the actual answer was produced. Together with Error analysis the author gives a brief synopsis of the theory in teaching methods that are traditionally used at Saint Petersburg (former Leningrad) University. Through a course of time these methods have become a combination of classical translational methods with modern communicative techniques. Though teaching translation of a vast range of stylistically different texts was still considered a major goal of teaching.

1. Introduction

Learning a language implies making mistakes, like exploration of another sphere of human activity. There have been different approaches to the fallacies made by learners in the course of the XX-XXI centuries. As a result, modern approach was given shape when Corder in his work "Introducing Applied Linguistics" stated that "the study of errors was part of the investigation of the process of language learning. In this respect it resembles methodologically the study of the acquisition of the mother tongue. It provides us with a picture of the linguistic development of a learner and may give us indications as to the learning process." (Corder, 1974, p.125). It has become a common place to distinguish between errors and mistakes. A mistake refers to a performance fallacy that was either a random guess or a slip. All people make mistakes, both in native and second language usage circumstances. Native speakers are normally capable of recognizing and correcting such fallacies or mistakes, that happen not due to a deficiency in language competence but as a result of a transient breakdown or imperfection in the process of speech (for example, on account of fatigue or carelessness). Results of the above-mentioned breakdowns and imperfections - such as deviations, omissions, accidental grammar mistakes - are also found in second language speech. To the contrary, an error was a significant deviation from the normative grammar of a native speaker. It represents a projection of the learner's competence i.e., an error reveals a portion of the learner's competence or lack of competence in the target

* Senior Lecturer at Saint Petersburg (former Leningrad) State University
Faculty of Asian and African Studies, Indian Philology Department

language. Thus, according to Carl James (James, 1998, p. 83) an error cannot be self-corrected if the deviation was not pointed out to the speaker. Whereas, a mistake can be self-corrected by a student because she / he possesses enough language competence to do so.

We can see here that errors are important in teaching any language as a foreign one, because they serve as a source of information and means of assessment in language training process. Scientists, developing various approaches in the linguistic field, trying to systematize the process of error assessment, have developed various theoretical approaches to the phenomenon of error itself. The main method to achieve this has been Error analysis (Fahmida, 2010). By detecting and analyzing students' errors, teachers can understand how to correct errors made by students and avoid their repetition in the future. Thus, error analysis allows teachers to change and develop the language skills of their students. At the same time, students can improve their language skills due to teachers' advice and guidance.

Error analysis was basically a linguistic analysis and it elucidates different underlying processes that are involved in the very complex phenomenon of language learning. It was the major area of applied linguistics and tries to resolve the problems and issues related to the second and foreign language learning. Error analysis method was chosen for the reason that by detecting and analyzing students' errors, teachers can understand how to correct them and avoid error repetition in future. Error analysis allows teachers to change and develop the language skills of their students.

The article aims at analyzing most general errors that occur in the process of learning Telugu, thus being of assistance to those who teach Russian to Telugu students. I hope that Error analysis given below will contribute to a better understanding of this second language natural logic and may be of use while preparing exercises to prevent typical errors made by Telugu students learning Russian.

2. Teaching Methods applied at the Indian Philology department, Faculty of Asian and African Studies, SPSU

Before describing typical errors that occur among Russian students learning Telugu, it seems quite appropriate to give a brief outline of major teaching methods used at the Department of Indian Philology, Saint Petersburg State University.

As of present, a mixture of traditional and modern approaches was used. At the initial stage, the *grammatical-translation* method was used. The main underlying factor for using this method was that students in their vast majority do not have any, even the most general notion of the Telugu language. And a solid foundation should be given in a quite limited period, usually one year.

Theoretically, the *grammatical-translation method* was included in the group of conscious methods, which are otherwise called translational. In Russia, this method became widespread in the first half of the XIX century and occupied a leading place for almost a century. Translation methods are possible under the following conditions: all students in the group speak a single native language, they are of the approximately same age, background

education of the students was high – these are, as a rule, high school students, with a high level of learning ability.

On the next stage, usually after the first year the *text-translation method* was applied. The text translation method has the same linguistic and psychological basis as the grammatical-translation method. But it was based on reading and translating the original, large-volume text. The idea of studying a foreign language on the basis of one original work goes back to Wolfgang Ratke (1571 – 1635) —an outstanding German educational reformer, who wrote that “no language can be studied on the basis of grammar; it should be studied by a certain author” (Cit. Skrypnikova, 2017, p.98). According to Ratke, reading an original text makes it possible to understand the uniqueness of a language, while studying grammar makes language "unnatural", so it was "unwise to memorize the grammatical rules first and only then study the language itself, i.e. get acquainted with the original texts” (Cit. Skrypnikova, 2017, p.98). It was his strong belief that when a student learns language material through an original piece of writing, he will be able to read and understand all other writings in this language. The task of a teacher was to correlate new material with the previously learned one.

Principles of the *grammatical-translation method*:

1. Deductive, or rather synthetic-deductive approach: from the general rule to special cases. A foreign language was studied in the process of combining numerous separately learned rules (deductive method). Subsequently, step by step, a general system was built from individual rules – synthesis. Practical application was expressed in translation, more often from a foreign language to a native one.
2. Abundance of grammatical descriptions.
3. The lesson was conducted mostly in the native language.
4. The word was considered as the basic unit of the language.
5. The main purpose of the lesson was comprehensive spiritual development, "education of the mind and heart".

To achieve this goal, certain skills and abilities are required, primarily mental, conscious, formation of which occurs during the practical application of a foreign language. By practical application a written application was implied in its passive and active aspects: reading and writing. Students should understand not only the content, but also the form of the text. Texts used in this approach are mainly prosaic writings by established authors. The goal was considered achieved if students know a certain vocabulary and can make a two-way translation using the learned grammatical rules. Theoretically it means that the goal here was written/receptive language proficiency.

This method was the best for training translators, but it fails when there was a need to prepare people who are actively fluent in the language. It was not possible to teach direct communication, colloquial speech through this method.

In our modern reality these two fundamental approaches (*grammatical-translation method* and *text-translation method*) can't be considered sufficient given into consideration modern need for listening and speaking skills. To obtain latter teaching time was also given to modern methods that enable to enhance communication skills in students. To achieve this some principles of the *direct method* are used. The starting point in the development of *the direct method* was as early as the publication in 1882 of a well-known brochure entitled "Teaching foreign languages must be radically changed." Its author was a prominent representative of the "Reform Movement" in modern language teaching in Germany, Professor of the University of Marburg Wilhelm Viëtor. He was known to be as an implacable critic of the *grammatical-translation method* (Howatt, 1984).

Methodically, the main form of the lesson or its part was a dialogue in a foreign language which was mastered in the process of listening (audibly). Usually, it was an extract from a film or a song, a piece of news, some video presentation dedicated to a certain topic. Words needed to comprehend audio and video material are presented through definitions, synonyms, antonyms, a pair of words (such as walk - run), a verbal context, etc. For the same purposes, a large number of visual materials are used: pictures displaying scenes appropriate to the context. Such visualization allows teacher to use as minimum of the native language during the lesson as possible. Much time was devoted to the question-answer form of work on the topic.

It can be seen through this presentation of methods that errors made by students can be generally divided into errors in translation, i.e. primarily made in writing and into self-produced errors which occur in the process of speech. Errors that happen while translating from Telugu into Russian are both syntactic and morphological. Further I will present most common errors that occur among Russian students that learn Telugu.

3. Error Analysis of Typical Errors

The author's 20years experience of teaching Telugu language at SPSU allows to give the following brief outline of the most persistent students' errors in the teaching process

3.1. Word Order Errors

Due to a different syntax system the very *word order* presents rather a big challenge for Telugu learners in Russia. Sentence structure in Russian along the classic European word order SVO (Subject–Verb–Object) can be changed into either VOS, OSV, VSO or SOV.

For Example -

1. VOS (Verb–Object–Subject) Гуляли по улице ребята.
Walked along the street children.
2. OSV (Object–Subject–Verb) На траву роса выпала.
On grass dew fell.

3. VSO (Verb–Subject–Object) Ушёл Иван в лес.

Went John into the forest.

4. SOV (Subject–Object–Verb) Дедушка окно открыл.

Grandpa the window opened.

Whereas in Telugu - though the order of words was relatively free - a basic pattern of a simple sentence remains SOV. Due to SOV structure, it was easier to determine the basis of a sentence through finding its predicate. Errors occur when students start translation from the beginning of a sentence not seeing its logical head - predicate - that generally was found at the end of a sentence.

There are two accompanying factors that make this error most frequent especially at the first stage of Telugu learning.

Firstly, the fact that in Telugu objective and subjective cases are often not distinguished morphologically i.e., presented by *direct case* (Gurov, 2013) which adds to the confusion in translation carried out by students. Second factor was that students are already used to learning one or several European languages (normally at the school stage) and have a trained habit for SVO sentence structure.

3.2. Mixing up of Object and Subject

The error mainly manifests itself in mixing up objects and subjects, or not being able to find a subject for the verb when sentence becomes extended.

I will illustrate this type of an error on typical erratic translations produced by students in the first year of studies. Telugu sentences are taken from “An Elementary Course of Telugu” published at SPSU in 2016.

For example

5. ఏనుగు సింహము చూసినంతమాత్రాన భయ పడుతుంది.

Едва завидев, слон и лев пугаются.

As soon as they see, the elephant and the lion gets scared.

Here the student, having seen both nouns ఏనుగు and సింహము in a *direct case* and having failed to establish verb grammar properly, translated both words as subjects.

Eg. 6. కాని కైకేయ రాముడు రాజు అగుటకు ఇష్టపడ లేదు.

НоКайкейи-Рамацаремчтобыстатьнелюбит. (Erratic student translation)

But Kaikeyi Rama to become a raja doesn't love. (An English equivalent for the upper error translation)

In the above example the whole sentence was misunderstood because the student hadn't recognized subject and object properly. Moreover, here yet another source of errors was

exposed - cultural context. Generally, when students are at their first year, they have problems recognizing Indian proper names. Here the student evidently thought that words Kaikeyi and Rama describe one person.

Here it seems important to add that proper names cause serious problem in translation from Telugu into Russian. In Telugu proper names are not marked with capital letters, so students tend to translate them as common nouns: కృష్ణమూర్తి as *dark figure*, కరుణ కుమార్ as *a prince of compassion* etc. This type of error generally becomes scarce or totally expires by the end of the first academic year.

It should be noted here that the discussed syntax differences lead to self-made errors in speech as well.

3.3. Attributive syntagm

Telugu has a fixed word order with a rule that modifier always precedes a noun modified by it. This provision was determined by the morphological apparatus used by this agglutinative language, when lots of grammatical meanings are expressed through morpho-syntactic means.

It was not the case with Russian, where a great deal of grammar was expressed within word morphology. Here the error occurs, because students feebly distinguish between nouns and their modifiers as there are no solid modifier markers in Telugu. This difficulty can be easily overcome through practice exercises and persists only when modifier was a participle. To be more explicit let me give an example of such an error in translation of the following syntagm: నేను చదివిన పుస్తకం. Here due to the strictly fixed attributive order the meaning of the participle చదివిన was clearly passive, which was not marked in verb itself, but can be inferred through syntax.

In Russian it was not the case. Not seeing passive markers and forgetting the syntax students tend to translate this phrase as “I who read a book”, and not as “book read by me”.

This difference also presents a certain difficulty while speaking. Students search for passive forms of participles - which leads either to a considerable delay in expressing their thought, or to an excessive use of analytic passive participles such as చదవ బడ్డ.

3.4. Errors in Negation

Negation presents difficulties of both morphological and syntax nature. The errors that occur in negation are discussed here.

Unlike Indo-European languages where negation was expressed through negation particles Telugu doesn't have common applied-for-all negation marker. In case of tenses, it was expressed via an independent negative conjugation. A table below shows difference in

information that was perceived through morphological markers in Telugu and Russian. Here I use interlinear glosses (Leipzig glossing rules).

Table 1: Negation Markers in Telugu and Russian

	Past Tense	Present Tense	Future Tense
TELUGU	చదవలేదు read-PAST-NEG	చదవడం లేదు read-PRES-NEG	చదవను read-FUT-NEG.1sg
RUSSIAN	не читал read-PAST-NEG.msg	не читаю read-PRES.IMPF-NEG.1sg	не буду читать read-FUT.IMPF-NEG.1sg

There was a uniform negation marker in Russian **не** whereas in Telugu tenses negation **లే** was not uniform i.e., was not presented in Future tense where negation was formed by a combination of infinitive with person-number marker. This difference leads to a number of mistakes in translation.

Errors that occur due to this difference are as follow:

Firstly, students tend to translate negative forms as having positive meaning (*read* instead of *didn't read*). Secondly, they translate past as present or future and vice versa. Thirdly, if there was no feminine pronoun showing that subject was other than masculine, students in most cases translate it as masculine. For example, రా లేదు as *he didn't come*. This error obviously happens due to the Russian negation model for the past tense where gender marker was obligatory and masculine was considered as *a neutral* form if it was needed to show negation in past tense generally.

Interestingly, this was not generally a problem while making their own statements in negative in Telugu.

కాదు/లేదు negation as an answer to an alternative question. This type of errors occurs when semantics of the given forms are blurred in the mind of a student. This happens due to two major factors: one has already been described in the previous section - students are not used to a diversity of means expressing negation. The second was that కా and లే - being suppletive forms of the verbs అవు and ఉండు correspondingly - are not associated with these verbs. It means, that to give negative or affirmative answer to a yes-no question student should well distinguish between the meanings of these two verbs. Whereas in English and in Russian there was one verb *to be* or *быть* in both cases, Telugu distinguishes between అవు *to be* referring to the essence of a thing or a person and ఉండు *to be* referring to its location or existence. To be more explicit I will give text-book Telugu-Russian examples below accompanied by interlinear glosses where it was most needed:

For Example 7 - Question 1

Is this a book?

TELUGU

ఇది పుస్తకమా?
this book. YNQ?

RUSSIAN

Это книга?
this book?

Affirmative answer

Yes, it is.

అవును
be-INDEF.3sg

Да.
yes-AFF

Negative answer

No, it isn't.

కాదు
be-INDEF-NEG

Нет.
no-NEGP

For Example 8 - Question 2

Is he at home?

వాడు ఇంట్లో ఉన్నాడా?
He home-LOC.sg stay-
PRES.3msg. YNQ?

Он дома?
he at.home-ADVL?

Affirmative answer

Yes, he is.

అవును, ఉన్నాడు.
be-INDEF.3sg stay-PRES.3msg

Да.
yes-AFFP.

Negative answer

No, he isn't.

లేదు, ఇంట్లో లేదు.
stay-NEG, home-LOC.sg stay-NEG

Нет.
no-NEGP

When asked an alternative question Russian students tend to give లేదు as a negative answer in either grammatical situation:

ఇది పుస్తకమా? — లేదు, ఇది పుస్తకం లేదు.

వాడు ఇంట్లో ఉన్నాడా? — లేదు, వాడు ఇంట్లో లేదు.

Students also find it hard to answer అవును/అవునండీ, when a positive answer was expected;

they pause to think evidently looking for some kind of positive particle natural for the Russian language and other European languages familiar to them. This pause persists even when students get acquainted with a shortened form of the positive answer అ.

It should be noted here that this error was very scarce in translation and occurs quite abundantly in self-produced expressions.

4. Conclusion

This short outline of errors made by Russian students clearly shows that roots of these errors can be traced to the structure of the mother tongue. Understanding that teaching circumstances in India and Russia differ considerably - especially in terms of mother tongue issues - the author still hopes that this brief outline will be of help to teachers of the Russian language for Telugu speaking students.

Abbreviations

1 – first person

ADVL - adverbial

AFFP – affirmative particle

FUT – future tense

IMPF – imperfective

INDEF – indefinite tense

m – masculine

NEG – negative

NEGP – negative particle

PAST – past tense

PRES – present tense

sg – singular

YNQ – yes-no question

Bibliography

In Russian:

Gurov N.V., Klimina E.A. (2013). *Yazyk Telugu //Yazyki Mira. Dravidiyskiyazyki*. [Telugu Language // Languages of the world: Dravidian languages], Moscow, Academia.

Gurov N.V., Adi Lakshmi M., Soboleva D.V. (2016). *An Elementary Course of Telugu*, SPSU, Saint-Petersburg.

Skrypnikova, T.I. (2017).

Teoriticheskieosnovymetodikiobucheniyainostrannymyazykam. [Methodological Theory of Foreign Languages Teaching] Vladivostok.

In English:

Brown, H. Douglas.(2000). *Principles of Language Learning and Teaching*. New York: Pearson Education.

Corder S. P. (1967). *The significance of learner's errors*. IRAL: International Review of AppliedLinguistics in Language Teaching 5(4). – Pp. 161-170. Retrieved from: <http://www.uky.edu/~tmclay/Corder%201967.pdf>

Corder, S.P. (1974). Error Analysis. In Allen, J.L.P. and Corder, S.P. (Eds.) (1974). *Techniques in Applied Linguistics*. Oxford: Oxford University Press.

Howatt, A.P.R. (1984). *A History of English Language Teaching*. Oxford: Oxford University Press.

Fahmida, B. (2010). *Bangladeshi tertiary level students' common errors in academic writing*. Thesis to obtain the Master's degree. Bangladesh BRAC University. Retrieved from: <http://dspace.bracu.ac.bd/bitstream/handle/10361/252/08163004.PDF?sequence=4>

James, Carl. 1998. *Error in Language Learning and Use: Exploring Error Analysis*. Harlow, UK, Addison Wesley Longman.

Internet resources:

Leipzig Glossing Rules: <https://www.eva.mpg.de/lingua/pdf/Glossing-Rules.pdf>

Linguistic Skills in Children with Cochlear Implants: Case studies

Palnaty Vijetha*

Abstract

Performance in linguistic skills of two children with hearing impairment unilaterally implanted with cochlear devices has been discussed in this paper. The case study design was used to study the participants and survey research design was used to recruit the two participants from the clinics. Informed consent was obtained from their parents as a part of ethical procedure. A case history form was used for collecting demographic details, and Linguistic Profile test (LPT) was used, to collect their performance data on linguistic skills. The scoring procedure mentioned in the LPT manual was employed to calculate the scores of each participant. The influence of factors such as child and family related factors, clinical related factors, and Educational related factors on development of linguistic skills have been studied. The results underscore the importance of cochlear implant device as well as the involvement of parents in child's training and development and also in the performance of linguistic skills.

Keywords: Children with Cochlear implants, Linguistic Skills, and Parental Involvement.

1. Introduction

Language was one of the many forms of communication. It was an expression of thoughts. It was learnt naturally from the environment by listening through the ear. But any defect in the ear leads to hearing impairment. It impacts areas such as language development, speech development, communication, academic achievement, social and emotional development and others. Children with hearing impairment face many challenges pertaining to language development as compared to their age matched typically developing hearing children for example: they learn concrete words easily than abstract words and articles (*a, an, the*), have difficulty in understanding words with multiple meanings, produce short and simple sentences, difficult in understanding relative clauses, passive voices, verbs, tenses, possessives. This was in accordance with Ivimey (1982) who points out the various shortcomings like deaf children produce less language than younger children with hearing. He believes children with hearing impairment show a preference for short, simple sentences rather than long, complex or compound sentences. There was an overuse of nouns and verbs and under use, or misuse, of auxiliaries, prepositions, determiners, and adverbs. Negative and interrogative sentences were reported as frequently incorrect, structurally. Each sentence employed by children with hearing impairment tends to form an isolated concept, and successive sentences rarely carry a single thought or group of thoughts. This was also supported by Meadow-

*Dr.Palnaty Vijetha, Associate professor in Special Education, Department of Special Education, All India Institute of Speech and Hearing, Mysore.

Orleans (1987) who studied the impact of deafness on language with respect to many areas and concluded that severely hearing impaired have delayed onset of language, smaller vocabularies, delayed syntax, inappropriate articulation, even after substantial oral training. Often there was a misunderstanding that these children have poor intellectual abilities but the actual problem was language learning. However, if the problem of hearing loss was identified early and intervention was provided, effects are less serious in learning language. The language deficiency of a child with hearing impairment affects their social integration and peer integration (Bench, 1992).

Thus, in recent times, for majority of children with severe to profound hearing impairment, cochlear implant was an attempt to help speech and language development (NICE, 2019). A cochlear implant was an electronic device that provides access to sounds to individuals with severe to profound hearing loss and are unable to gain optimum benefit from hearing aids. The device has internal and external components. Surgically internal components are placed inside the inner ear or cochlea. The external component consists of either a body level or ear level speech processor. The implant bypasses the damaged parts of the ear and ends electrical sound information directly to the auditory nerve. Wenrich et al (2019) suggested that age at which first cochlear implantation surgery was done impacts vocabulary and receptive language development among bilateral implanted children. There has been an enormous amount of research activities being carried out in language assessment. There are number of purposes for assessing language of the students such as to determine learner's language proficiency according to the age; for diagnosis purposes like to identify learner's strengths & weaknesses, to plan for instruction and teaching, to encourage learners to study more. Language was the foundation for overall development. Therefore, it was important to see the effectiveness of the cochlear implant device in developing language skills in children with cochlear implants. The number of students with cochlear implants continues to rise and a development that brings new language and communication needs into the classroom context (Christiansen & Leigh, 2002).

The purpose of this paper was to compare the performance of two individual cases of children with cochlear implants and to highlight as to what constituted their differences in the performance in Linguistic Skills as well as to highlight the important factors contributing to the success.

Aim of the study

To examine and compare the performance of children with cochlear implants in Linguistic skills with respect to child and family related factors, clinical related factors and Educational related factors.

It may be noted that review of literature has not been separately included but discussed along with the case studies.

2. Method

The following research methodology was used for this study.

2.1: Participants

Two pre-lingual profound children with hearing impairment (one girl : Participant A and one boy: Participant B) aged nine and ten years respectively participated in this study. They were diagnosed with severe to profound bilateral hearing impairment before 36 months of age. The cause for hearing loss was however unknown. As was routine practice, the children were fitted with bilateral conventional hearing aids after the diagnosis of hearing impairment. None of the children showed any benefit from hearing aids, as reported by their caregivers and also based on their earlier results. Hence, these were hence recommended for cochlear implant. Both these children were implanted with unilateral implants. Both children had early training. They used oral communication as their main mode of communication. Both children had hearing parents. Survey research design was used to recruit them for the study from the clinics. The following table gives details of both the participants.

Table 1: Details of Participants

S.No.	Particulars	Participant A	Participant B
I Child and family related factors			
1	Gender	Girl	Boy
2	Father's occupation	Professional (Software Engineer)	Expired (was a farmer)
3	Mother's occupation	Professional (Doctor)	Home maker
4	Father's education	Graduate	SSLC
5	Mother's education	Post graduate	Middle school
6	Number of siblings	None	One
II Clinical related factors			
8	Cause of hearing loss	unknown	Unknown
9	Age at testing (Chronological age)	9 years old	9 years old
10	Age at diagnosis of hearing loss	1 year	1.6 years
11	Duration of deafness	One year	1.6 years
12	Age at using of hearing aid	1 year	2 years
13	Duration of hearing aid Used	1 month	4 years
14	Age at implantation	1.4 years	6 years
15	Duration with cochlear implant	8 years	3 years

16	Mode of communication	Oral	Oral
17	Speech intelligibility	Good	Below average
18	Type of training before formal schooling	Early training	Early training and special school
19	Duration of Systematic training	One year	1.2 years
III Educational related factors			
20	Class in school	Class III	Class III
21	Academic achievement	A+	B

2.2. Linguistic skills

To test linguistic skills, Linguistic Profile Test (LPT) (Karanth, 1980) in Kannada language was administered. It was constructed to assess both receptive and expressive language skills. It consisted of three sections namely phonology, syntax and semantics and each section was further divided into different sub-parts. Phonology was devoted to test different phonemes. Semantics contained 12 categories and 66 test items, while Syntax consisted of 10 sub-categories and 60 items.

2.3. Procedure

Children with cochlear implants for the study were recruited from two clinics. Case study design was used to study them. Prior appointments were taken from their parents. Before starting the test, the purpose of the study was explained in brief to parents. An informed consent and case history forms filled by the parents were collected. Both the children were assessed on Linguistic profile test (LPT) individually by the researcher at their respective homes. The children with cochlear implants were asked different questions on test items from three sections namely phonology, syntax and semantics of LPT. As per the instructions given in the LPT manual, the researcher asked different test items to the participants. The instructions for each child were oral and the responses of children were also oral.

2.4 Scoring

To calculate the individual score of participants under study, the scoring procedure mentioned in the Linguistic profile test manual was employed by the researcher and the scores for three sections namely phonology, syntax and semantics of Linguistic profile test were calculated.

2.5: Operational definitions

Children with Cochlear implants: In the present study, they include those children who are implanted and do not have any additional disabilities.

Linguistic skills: It refers to the ability to process phonology, syntax semantics and discourse components as assessed by Linguistic Profile Test (Karanth, 1980). Phonology includes Phonemic discrimination, Phonetic expression and Running speech, Syntax includes morphemic structures, plural forms, tenses, PNG markers, case markers, Transitive's, intransitives, causatives, sentence types, predicative's, conjunctives, comparatives and quotations, conditional clauses, participle constructions and Semantics includes semantic discrimination, semantic expression and Discourse.

Parents: In the present study, they include caregivers, guardians, and biological parents of children with cochlear implants.

3. Results and Discussion

The following section gives details on the performance on linguistic skills of each child and was compared to standard norms. Their performance was also discussed in relation to other studies in literature.

3.1. Case Study 1: Performance on Linguistic Skills of Participant-A

As can be seen in the table, Participant A was a girl child whose parents were highly educated and were professionally well placed. She had no siblings. Her cause of hearing loss was unknown. She was nine years old when the test on Linguistic Skills was administered. She was diagnosed with profound sensory-neural hearing loss at one year of age and she was fitted with appropriate behind the ear model hearing aid. She used the hearing aid for one month but soon identified that she did not benefit much, hence she underwent cochlear implant surgery at 1.4 years age and from then onwards she started using the implant for almost eight years. She communicates using speech or oral mode and her speech intelligibility was good. She underwent early training for one year. She was studying in Class III and secures 1st rank in her class and her grade A+.

This finding was in consistent with the findings of Hess et al (2014) who examined on an average language scores of children with bilateral implants was age appropriate and they were mainstreamed at age-appropriate grades in schools. Children whose families' socio-economic status was high, and whose mothers' education was high performed well within the same range as normative sample of hearing children. In his study, 39 children with bilateral cochlear implants aged 4 to 9 years were tested on two standardized tests: the test of language development and the Leiter international performance scale-revised version for evaluating expressive/ receptive language skills and nonverbal IQ. Hierarchical regression analyses were used to evaluate whether language performance predicted hearing experience. In the following Table 3 the performance in Linguistic Skills of Participant A as compared to standard norms was presented. .

Table 2 : Scores of Participant A on Linguistic Skills as compared to Standard Norms

S.No	Participant Scores	Chronological age	Linguistic Skills			Total
			Phonology	Syntax	Semantics	
1	Scores of Participant A	9	96	61	93	250.00
2	Linguistic Skills- Standard Norms	9	93.79	70.87	78.03	242.00

From the above table it can be noted that in phonology component she secured 96, syntax 61 and semantics 93 and overall 250 score was obtained. Even though her performance was low in syntax area but in all other remaining areas she excelled as compared to norms. When researcher interacted with her parents, it was told that child was given special training at home in educational concepts in the native language Kannada and they used functional language i.e. day to day language rather than bookish language with the child (for e.g. ‘meju’ = table in Kannada, but they taught her ‘table’ as table and not ‘meju’). Child’s grandmother was the one who trained the child at home in Kannada language. They informed that they got lot of guidance and education materials from John Tracy Clinic in USA (a specialized clinic working in the area of hearing impairment for children), and Warren Easterbrooks, an expert working in the area of education for children with hearing impairment. Parents regularly exchanged emails with them and were actively involved in training their child at home.

This highlights the role of parental involvement and was supported by Moeller (2000) who examined the relationship between language outcomes and family involvement. His findings revealed that family involvement as the most important contributor for better language outcome and he also found age at intervention i.e., younger the child was enrolled then better was the performance in language skills. Mother informed to the researcher that when their child was diagnosed with profound hearing loss it would have been more meaningful if the doctors immediately suggested for cochlear implant rather than wait with hearing aid which was of no use. She stressed that cochlear implant brought life back to them as well as to the child.

This was also supported by a study by Archbold (2012) who investigated the benefits derived from cochlear implants from 101 parents of children whose average age at implantation was 4.7 years: range 1.3 to 12.4 years using a questionnaire consisting of 74 statements on a Likert scale. Findings revealed majority of parents were satisfied from cochlear implant outcomes: children developing greater confidence, becoming more independent, using spoken language for communication, and interactions within the family improved. The study highlights the need for

optimum functioning of the technology, and the long-term support for children with cochlear implants.

They informed that they gained knowledge about cochlear implant device, related surgery and specialized doctor through a daily newspaper article. In dealing with the child they treated her normally and engaged her in all family gatherings. Researcher observed that she was well behaved child and enthusiastic in answering the questions.

3.2. Case Study 2: Performance on Linguistic Skills of Participant-B

As can be seen in the table, that Participant B was a boy child whose parents were not very well educated. His father expired when child was eight years old. His mother was a home maker and finished her middle school. He had one older sister. His cause of hearing loss was unknown. He was nine years old when the test of Linguistic Skills was administered. He was diagnosed with profound sensory-neural hearing loss at one year and six months of age and at two years of age he was fitted with appropriate behind the ear model hearing aid. He used the hearing aid for four years. At the age of six years, he underwent cochlear implant surgery and started using the implant for almost three years. He communicates using speech or oral mode and sign language. It was informed his speech improved with the use of cochlear implant. His speech intelligibility was below average. He underwent early training for one year and two months. The training for pre and post-implant was irregular due to their family issues. He was studying in Class III and his academic achievement in school was reported to be below average.

Table 3: Scores of Participant B in Linguistic Skills as compared to Standard Norms

S.No	Participant Scores	Chronological age	Linguistic Skills			Total
			Phonology	Syntax	Semantics	
1	Scores of Child B	9	77	0	17	94
2	Linguistic Skills- Standard Norms	9	93.79	70.87	78.03	242.00

The test scores obtained in Linguistic Skills were compared to standard norms and it was clearly evident that there was difference in the performance on Linguistic Skills in Participant B as seen in Table 3. The scores were very poor in all the three components of Linguistic skills especially syntactic and semantics as compared to standard norms. When the researcher interacted with mother, it was informed to her that child was good at mechanical work. He did not have good experience of training. He was very adamant and not very cooperative. Mother informed he never liked to attend therapy, never likes to study or read and write. His responses to a large

extent were neither meaningful nor age appropriate to the questions asked (for e.g. when researcher showed the picture of plate and asked what was it called – child said ‘food’, for tumbler – child gestured drink). Mother informed that she was finding difficult to manage the child and wanted to enroll him to a residential special school for the deaf.

From the case studies analysis, the researcher noted that the most important aspects for child’s progress are parent’s involvement, their dedication and their practical approach; parents’ education; child’s personal qualities and interest, absence of siblings; use of oral mode or speech; pre-implant training; positive environment in home as well as school; ongoing training at home, and social participation. These notions of the researcher derived from the data analysis in the present study are supported by the literature such as a research article by Powers (2011) reported the reasons for the success of 27 high achieving deaf students in England from the views of deaf students themselves, their parents, teachers, and other school professionals. Findings revealed the two major reasons in explaining the success among the deaf students are deaf children’s personal attributes and character, and the influence of parents. This article supports the important role of parents in the success of their deaf children and highlights’ working with parents was one of the most crucial aspects of the teacher’s work.

The present study reveals the potential benefit of cochlear implant to children with severe to profound hearing loss. Those children who could not benefit or were least benefited from conventional hearing aids, and who were unable to listen or speak are now able to speak, listen, communicate, socialize and are able to study along with typically hearing children in schools. This was a very big achievement for these children. A study by Archbold (2012) investigated the benefits derived from cochlear implants from their parents. Data was collected from 101 parents of children whose average age at implantation was 4.7 years: range 1.3 to 12.4 years using a questionnaire consisting of 74 statements on a Likert scale. Findings revealed majority of parents were satisfied from cochlear implant outcomes: children developing greater confidence, becoming more independent, using spoken language for communication, and interactions within the family improved. It was also reported by the parents that the support provided by parents before implantation was more compared to after implantation and support they were offering post implant was more productive. But few expressed their concern regarding the need to be patient as the progress of the child takes time; future education, and few mentioned that the outcomes did not match their expectations. The study highlights the need for optimum functioning of the technology, and the long-term support for children with cochlear implants.

However, the critical thing which should not be forgotten was that cochlear implant was also a machine and it promotes an unnatural way to listen sounds and at any time cannot be compared to natural hearing. Another important point to be considered was that cochlear implant was not any magical device, which as soon as fitted would instantly make the child listen. This was an incorrect assumption. This was in accordance with the views expressed by Johnson and Seaton

(2012) that many think that amplification technology such as hearing aids, cochlear implants improve hearing as similar to how spectacles improve vision, but this was not the case and quality of auditory signals received by these amplification machines are either distorted or diminished. And one of the most general criticisms of cochlear implants according to Crouch (1997) was that they do not provide adequate spoken language which was required to function on par with hearing community.

In addition to this, as mentioned by McConkey Robbins (2000) the only direct influence of cochlear implantation was on hearing but not on complex skills such as language and reading which was the actual measure for development of these children. Therefore, if children using cochlear implants for listening purposes have to achieve their maximum potential then they have to be taught in what they are lacking. Researchers also advocate for children with hearing impairment to receive their second cochlear implant as early as the first one to avoid impairment in speech perception abilities (Santa Maria Oghalai, 2014; Kocdor et al., 2016; Myhrum et al., 2017; Illg et al., 2019).

They are emerging totally as a different group, neither can they be assumed to function the same as normal hearing children nor can they be treated as completely deaf children. This was supported by a study by Spencer, Tomblin and Gantz (2012) who investigated the long-term gains of cochlear implants in 41 children with bilateral cochlear implants. Data was collected on educational, vocational, affiliations and quality of life measures using questionnaires and scales. Qualitative results revealed they have high educational achievement and a very high satisfaction of life compared to their peers. Quantitative results revealed a significant correlation between ability to hearing and ability to speak and also consistency in device use. The results also revealed relationships between mothers and individual educational statuses, hearing scores and communication system. On satisfaction with life measures younger children scored high. They felt comfortable with dual identity: one with deaf individuals and another with hearing individuals, and younger children endorsed dual identity more often. Therefore, the study diminishes the concern that children with cochlear implants will become culturally bereft and cannot function in hearing world. If appropriate support needed for these children be provided throughout, they can emerge successful. Attempts should be made to enable them to understand their limitations as well as their strengths which can improve their quality of life.

4. Conclusion

It can be concluded from the study that based on qualitative and quantitative findings based on the data of the present study, researcher made certain essential observations which have to be given utmost importance. On one side, benefits of cochlear implants attract suitable children with hearing impairment for cochlear implant surgery and on the other side there are few basic challenges which need attention. First and foremost, it should not be forgotten that these children with cochlear implants are '*children*' first and later '*children with cochlear implants*'. Therefore,

their needs, abilities and interests must be given importance. It was also interesting to note the role of home environment, the language input to the child and family conditions, are very crucial in such children.

References

- Archbold, S., & Mayer, C. (2012). Deaf Education: The impact of cochlear implantation. *Deafness and Education International*, 14(1), 2-15.
doi: 10.1179/1557069X12Y.0000000003
- Bench, R.J., (1992). Communication skills in Hearing impaired children, London: Whurr
- Christiansen, J., & Leigh, I. (2002). Cochlear implants in children: Ethics and choices. Washington, DC: Gallaudet University Press. As cited in *Stephanie Cawthon* (2009), Professional development for teachers of students who are deaf or hard of hearing: facing the assessment challenge. *American*, Vol. 154: 1, pg. 50-62.
- Crouch, R.A. (1997). Letting the deaf be deaf – reconsidering the use of cochlear implants in prelingually deaf children. *Hastings Center Report*, 27, 14-21.
- Government of India, Indian Education Commission Report (1964-66), Ministry of Education, New Delhi.
- Hess, C., Zettler- Greeley, C., Godar, P. S., Ellis-Weismer, S., & Litovsky, Y. R. (2014). The effect of differential listening experience on the development of expressive and receptive language in children with bilateral cochlear implants. *Ear and Hearing*, 35(4), 387-395.
- Illg, A., Sandner, C., Buchner, A., Lenarz, T., Kral, A., Lesinski-Schiedat, A. (2019). The optimal interimplant interval in pediatric sequential bilateral implantation. *Hearing Research*, 372: 80–87.
- Ivimey, G.P. (1982). Assessing the language skills of hearing impaired children- a critical review. *Journal of the British Association for teachers of the deaf*, 6 (5), 133- 144. As cited in Hull, R.H., & Dilka, K.L. (1984). 'The Hearing impaired child in school', Orlando, Grune & Stratton Ltd.
- Johnson, C.D. & Seaton, J.B. (2012). *Educational Audiology Handbook*, 2nd ed. Clifton

Park, NY: Delmar, Cengage Learning.

- Karant, P. (1980). *Linguistic Profile Test*. ICMR project, All India Institute of Speech and Hearing, Mysore.
- Kocdor, P., Iseli, C., Teagle, H., Woodard, J., Park, L., Zdanski, C., et al. (2016). The effect of interdevice interval on speech perception performance among cochlear implant recipients. *The Laryngoscope*, 126(10): 2389–2394.
- McConkey Robbins, A. (2000). Rehabilitation after cochlear implantation. In: Niparko JK (ed.). *Cochlear implantation: principles and practices*, 323-367. Philadelphia: Lippincott Williams & Wilkins.
- Meadow-Orleans, K.P., Macturk R.H. (1987). Interactions of deaf and hearing mothers with three and six month old infants. Baltimore, MD.
- Moeller, M. P. (2000). Early intervention and language development in children who are deaf and hard of hearing. *Paediatrics*, 106(3), 1-9.
- Myhrum, M., Strøm-Roum, H., Heldahl, M.G., Rødviik, A.K., Eksveen, B., Landsvik, B., et al. (2017). Sequential bilateral cochlear implantation in children: outcome of the second implant and long-term use. *Ear and Hearing*, 38: 301–313.
- NICE guidelines on cochlear implantation (2019). Cochlear implants for children and adults with severe to profound deafness. Retrieved April 15, 2021, from <https://www.nice.org.uk/guidance/ta566/chapter/1-Recommendations>.
- Powers, S. (2011). Learning from success: High achieving deaf students. *Deafness and Education International*, 13(3), 92-109. doi: 10.1179/1557069X11Y.0000000007.
- Santa Maria, P.L., Oghalai, J.S. (2014). When was the best timing for the second implant in pediatric bilateral cochlear implantation? *The Laryngoscope*, 124: 1511–1512.
- Spencer, J. L., Tomblin, B. J., & Gantz, J. B. (2012). Growing up with a cochlear implant: Education, vocation, and affiliation. *Journal of Deaf Studies and Deaf Education*, 17(4), 483-498. doi: 10.1093/deafed/ens024.
- Wenrich, K.A., Davidson, L.S., Uchanski, R.M. (2019). The effect of cochlear implant interval on spoken language skills of pediatric bilateral cochlear implant users. *Otology & Neurotology*, 40: e600–e605.

Sonority Profiles of Reduplicated Words in Telugu

Vidyamrutha Imandi* and Swathi, C.S.**

Abstract

Sonority was one of the many prosodic features that define the quality of sound. It was the relative loudness and the carrying power of sound compared to other sounds which have similar pitch, stress and duration (Collins and Mees, 2008). It was with this feature that we derived the phonotactics of a syllable and check whether it obeyed the Sonority sequencing principle (SSP). Reduplication was a word-formation process that has part or whole of the sound of a word copied to form a wholly different meaning. This process can occur in any of the prefixal, infixal or suffixal positions (Roca and Johnson, 1999) and was used by a speaker to convey a more expressive or figurative tone or speech that was different from ordinary speech to bring emphasis or call for attention, etc. The study of sonority among the reduplicated words was an interesting topic since sonority was not just seen within a word but across the syllable boundaries (Chand and Kar, 2017). Thus, the aim of this study was to derive at a sonority scale that can be used to analyse the data of reduplicated words in Telugu. Findings of the study provided that 'sonority peaks' were commonly found among onsets that solely have one obstruent or nasal or liquid (O or N or L) and the coda usually end with a nasal or a vowel. The majority of the reduplicated words have a base or stem open in the final syllable and adhere to SSP. This study will open a new research path, although theoretical, on the phonological process of using sonority with reduplication, it was expected to enrich the field.

1. Introduction

Reduplication was a word-formation process that has a part or whole of the sound of a word copied to form a wholly different meaning. This process can occur in any of the prefixal, infixal or suffixal positions (Roca and Johnson, 1999). It was used by a speaker to convey a more expressive or figurative tone or speech that was different from ordinary speech to bring emphasis or call for attention, etc. This was a very common phenomenon across various world languages. Telugu language also exhibits two types of reduplication processes like partial reduplication and total reduplication in native and few borrowed words. Research has been done on illustrating the sonority profiles of few languages of world like Carlson (1997) and Joel (2015), however not much work has been done in Indian languages. Hence this paper aims to obtain the sonority

*Ph.D. Scholar, **Assistant Professor, Dept. of Linguistics, UCASS, Osmania University.

Abridged version of this paper was presented at the 43rd International Conference of the Linguistic Society of India hosted online from 21-23rd December, 2021 by the Central Institute of Indian Languages, Mysuru

profiles of reduplicated words for Telugu language and also look at the syllable structures of these words. Sonority as a prosodic feature has always been a topic of intrigue and it has many definitions put forth by many famous phonologists like Lagdeford, Clements, Parker, etc. It can be defined as ‘the degree of loudness length and carrying power of the sound that occurs due to relative degree of openness of the vocal tract during articulation (Collins and Mees, 2008; Yavas, 2011). The Latin word ‘sonus’, which means ‘sound’ was an obvious implication of the meaning of sonority. Here, Sound can be perceived as ‘a phonological segment’ or ‘quantity of sound’ (Roca and Johnson, 1999). Depending on the place and manner of articulation, the sonority of a segment was greatly varied. The more sonorous a segment, the higher the value of sonority in hierarchy. This phonological analysis of sonority scale determines the syllable structure in a language. Segments were arranged within a syllable in such a way that the sonority rises towards the peak from the onset and reduces after the peak in coda following onto the next onset within a word but across the syllable boundaries also.

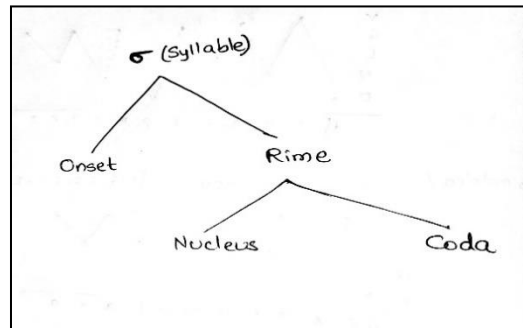


Fig 1: Syllable Structure

When the arrangement of rise and fall of sonority was followed in a syllable, it shows that the sonority profile of the word was adhering to the Sonority Sequencing Principle. Any violation or disobedience of the ideal segment arrangement in a syllable means non-adherence to Sonority Sequencing Principle.

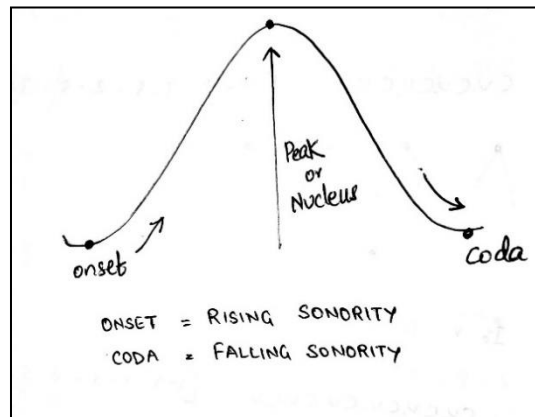


Fig 2: Ideal Syllable Based on Sonority

Telugu language, a part of Dravidian language family is predominantly spoken in Andhra Pradesh and Telangana states. In its long developmental process, Telugu has borrowed and assimilated many words from Sanskrit, Prakrit and other languages. Vowels in this language have both independent form like long and short vowels; and diacritic form that can be used with the consonant. Together they form a smallest unit of a syllable. The concept of syllabication in Telugu was first discussed by Krishnamurti (1961) and he observed that every syllable in the language has a vowel in its nucleus position. Bhaskar Rao (1977) discussed the repetitions that occur in colloquial speech of Telugu speakers in everyday use. In line with the aim of this study, we look into the sonority profiles in reduplicated words of Telugu which will help us understand whether the sonority of the reduplicated words adhere to SSP or violates them.

2. Review of Literature

Sonority has proven to be an important concept in syllabification as it was a cluster of sonority defined by a sonority peak acting as a structural magnet to the surrounding lower sonority segments. The core element of the constituent, i.e. the nucleus or the peak acts as the head or core element of the constituent (Roca and Johnson, 1999). A syllable helps in easing the process of a child's first language acquisition as well as the languages learnt later as well as accounting for the errors exhibited by language disordered patients (Joel, 2015). Many theories related to sonority were expected to be universal and applicable cross-linguistically. Sonority scale was a universal scale or ranking of sonority in the segments.

Phonologists like Hogg and McCully (1987) and Ladefoged (1993), have proposed sonority scales which basically defines the segments according to their sonority value from most sonorous to the least sonorous. Most of the languages follow the universal sonority scale proposed by Clements (1990) for their syllable formation. It may also be observed that same sonority values for the phonemes and allophones especially when the manner of articulation is considered. The speech sounds can be classified into five groups to form a sonority hierarchy, as proposed by Clements (1990) and Smolensky (1995) as given below:

Table 2: Sonority Hierarchy Scale of Clements

Natural class	Sonority value
Vowels (V)	5
Glides (G)	4
Liquids (L)	3
Nasals (N)	2
Obstruents (O)	1

While many believe sonority scale was universal, there were also those that argue that it was not, because most of the works related to sonority were based on European languages and propose language specific scales.

Jany, Gordan, Nash and Takara (2007) observed the universality of sonority hierarchy of glides, liquids, nasals and obstruents in four genetically distinctive languages like Egyptian Arabic, Hindi, Mongolian and Malayalam which have different phoneme inventories. Different phonemic realizations of the phonemes of each language was taken into consideration and they compiled a disyllabic word list with all the possible coda variations in the first syllable. An audio recording of this data produced by different speakers was taken for comparison. By comparing the codas of the first syllable and the onsets of the second syllable which were prone to phonetic lengthening, they looked at various variables like prosodic position, speaker, gender, consonant voicing and consonant class. The obtained data was then analyzed to come up with sonority ranking value for consonant. The results of the study revealed that universality of the sonority hierarchy was maintained the same in all languages with the exception of Mongolian. The scale becomes more language specific and loses its cross-linguistic applicability when the grading was done in-depth like between voiced and voiceless sounds, aspirated and unaspirated sounds, laterals and rhotics, sibilants and other fricatives etc.

Selkirk (1984) defined Sonority Sequencing Principle (SSP) as a syllable that consists of a sonority peak and was preceded and/or followed by sequence segments of progressively decreasing sonority value. Ideally, the peak was occupied by a vowel which was the most sonorous of all the segments. But, there were cases where this nucleus or peak position was occupied by consonants. These were called '*syllabic consonants*' or '*vocalic consonants*'. They form their own syllables in absence of a vowel. Clements (1990) divided the syllable into three types based on the SSP:

- i. *Sonority Peak*: the onset segments have ascending sonority values towards the nucleus and descending sonority values towards coda.
- ii. *Sonority Plateau*: the segments at the margin have the same sonority values. It defies the SSP principle that no two neighboring segments should have the same sonority value.
- iii. *Sonority Reversals*: they have descending sonority values towards the nucleus i.e. the segments near the margin have higher sonority values than the segments close to the nucleus.

Clements argued that only those segments that have sonority values ascending towards their nucleus i.e. the sonority peaks were the ones that adhere to SSP. Any other type of syllable pattern like plateau and reversals were in violation of SSP. He also insisted that nucleus without a vowel was not a syllable peak.

Sastry (1994) proposed few rules for syllable division after understanding that Telugu needs to have individual rules for native words and borrowed words. He proposed that any two

consonants in intervocalic position were divided between the preceding and following vowels, forming coda in preceding nucleus and onset in following nucleus respectively which was similar to the Telugu syllable rules given by Krishnamurti (1961). This rule was also applicable to geminates that occur at the word medial position and in special cases of words with sounds like /ɳ/ in /kaɳa/ ‘art’ and /ŋ/ in /o:ŋi/ ‘traditional dress’, the syllable division was done according to rule which is similar in both the native and non-native rules for syllable division, which states that any single consonant followed by a vowel belong to the following vowel. However, a few phonologists disagreed to let it be divided as per the rules. This was because the onset of the second syllable cannot be used to form a new word with the consonant. Hence, it can be derived that not all syllable initials can bring forth a word initial. While some can be used to form a word, some others can never be used. He also observed that colloquial speech in Telugu often induces syllable reduction which results in Sandhi form with vowel loss and in words that have more than two syllables, the nucleus or peak of the second syllable was reduced so that there can be a formation of cluster.

In an investigation conducted by Joel (2015) to assess the application of sonority in syllables of Swahili language and its adherence to SSP, it was found that a good number of onset clusters in a syllable adhere to SSP rules and the only violation observed was at nasal + obstruent clusters but not the other way around. Sonority reversals and plateaus were also observed in obstruent + obstruent clusters and Arabic borrowed words in the language. It was also understood that sonority and its SSP help in the arrangement of phonemes in a syllable. She points out the words of Odden (2012) that there was a need for revising the SSP rules or make it language specific to properly study the SSP violations.

Reduplication was an act or result of doubling a sound, word or word element usually for grammatical or lexical purposes and was the most natural processes of forming compound words. This repetition reflects certain phonological characteristics of the base and was used cross-linguistically to express their speech in more figurative or expressive way (Handke 2012). Reduplication was of two types: Total reduplication where the whole word was repeated and partial reduplication in which instead of the entire word, only a part of the base was repeated. Handke (2012) observed the following changes and effects that can occur cross-linguistically but not universally in the process of reduplication:

- Ablaut/vocalic change: vowel change or alternation in the word with no change in base.
 1. English (a) ‘*sing/sang/sung*’ (inflectional change)
(b) ‘*long/length*’ (derivative change)
- Rhyme-motivated reduplication: The change was seen in the onset consonant while the base remains the same.
 2. (a) *willy – nilly*,
(b) *walkie – talkie*
- Borrowing

Borrowing the words from other languages

3. (a) Malay to English *ilang-ilang* (*a type of tree*)
 (b) Hindi to Telugu *bas-bas* (*enough*)

- Phonetically Suggestive

Onomatopoeia was the best example in this case

4. (a) Telugu */b^haga- b^haga/* *burning*
 (b) German */mampf-mampf/* *to munch/chew*

- Emphatic Repetition: This type was used when a speaker wants to put special emphasis on what he wants to say.

5. (a) Hindi */dʒa:dʒa:/* ‘*go*’
 (b) Telugu */ra:ra:/* ‘*hurry*’

- Child language: Reduplication was often a way of communication for young children

6. (a) English *da-da* (*daddy*), *ma-ma* (*mommy*)
 (b) Telugu *ba-ba* (*drinking water*),
 (c) Hindi *su-su* (*urinate*)

- Pidgins/Creoles:

7. (a) Jamaican Creole *hard* ‘*hard*’
 hard-hard ‘*very hard*’
 (b) TokPisin Creole *luk* ‘*look*’
 luk-luk ‘*look carefully*’
 tok ‘*talk*’
 tok-tok ‘*chat*’

- Augmentation (increase in quantity), intensification (increase in degree), diminution (decrease in size or quantity) and attenuation (decrease of degree) were some of the effects of reduplication.

3. Methodology

A total of 70 target words were randomly chosen from Bhaskar Rao (1977), ‘Reduplication and Onomatopoeia in Telugu’ and were analysed with respect to the application of sonority sequencing principle (SSP). The chosen words included partial, total and semantically reduplicated words from the annexure-I enclosed at the end of the book in Bhaskar Rao (1977). The list do not include the onomatopoeic reduplicated words. The chosen words were phonetically transcribed and syllabified according to the rules explained by Sastry (1994) for native and non-native words. Then, the sonority profiles of the selected reduplicated words was analysed as per the sonority hierarchy scale in five natural classes as proposed by Clements (1990). A view of the classification of sound segments that fall under these classes in the order of high sonority to low sonority when it was applied to Telugu language was given below:

- Vowels: They have the high vowels /i/, /i:/, /u/, /u:/, mid vowels like /e/, /e:/, /o/, /o:/ and low vowels like /a/, /a:/, /æ:/
- Glides: They have the sounds /j/ and /v/

- iii. Liquids: These contain both the rhotics sound /r/ and the lateral sounds /l/ and /l/
- iv. Nasals: These have the sounds /m/, /n/, /ŋ/, /ɲ/, /ɳ/
- v. Obstruents: These contain Plosives/Stops, Affricates and Fricatives.
 - a. Sounds of this category were /p/, /t/, /tʃ/ /k/, /b/, /d/, /dʒ/, /g/, /pʰ/, /tʰ/, /tʃʰ/ /kʰ/, /bʰ/, /dʰ/, /dʒʰ/, /gʰ/, /f/, /s/, /ʃ/, /f/, /h/, /ts/, /dz/, /tʃ/, /dʒ/, /tʃʰ/, /dʒʰ/

The resultant sonority profiles were analysed as per their sonority index values to understand whether these words adhere or violate SSP

4. Data Analysis

Out of 70 chosen words, 40 words were partial reduplicated, 20 were of total reduplicated and 10 of them were semantically reduplicated words. The selected words were analyzed with the Clements' sonority scale (1990) and the resultant words were categorized into 3 types:

- a. Words beginning with single vowel or vowel-consonant as a syllable
- b. Words with two and three consonant clusters
- c. Semantically reduplicated words.

Words beginning with single vowel or vowel-consonant as a syllable.

In (a) type of words, the data of reduplicated words were mostly beginning with the syllable structure of V, -VC or -CV. We will first look into the partially reduplicated words.

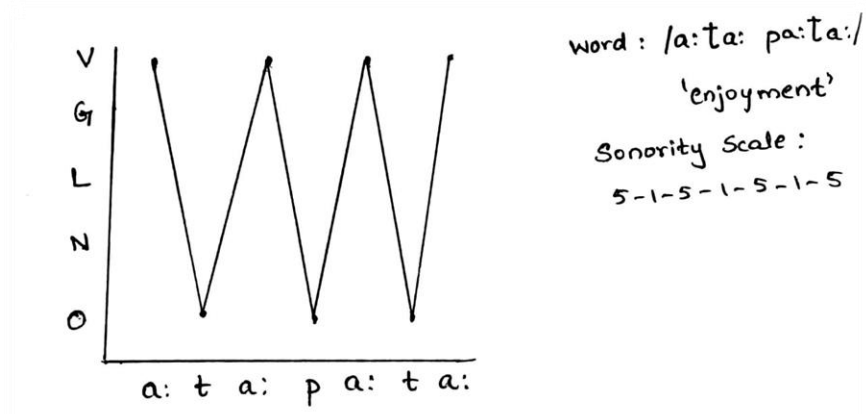


Fig 3: Words beginning with V.CV Syllable Pattern

In syllable patterns such as V.CV as shown in Figure 3, the data shows that a consonant was added to the onset part of the reduplicated word base when the original base word starts with a vowel. This onset consonant was either Obstruent or Nasal.

In syllable patterns such as CV.CV, the data shows that there was a consonant shift where the word initial consonant of the original base shifts to a voiceless or voiced obstruent or nasal initial consonant of the reduplicated word base. A majority of the following vowel sounds were also observed to go through a vowel change from /u:/ to /a:/, /i:/ to /o:/ or /a/ to /e/.

In case of total reduplicated words, just as the name suggests, there was no change between the base and reduplicated words but only repetition of the base word. The sonority profiles of both the vowel beginning words and consonant beginning words were completely adhering to the sonority sequencing principle.

Words with two and three consonant clusters

In (b) type words where there were two consonant clusters, the position of the cluster was always intervocalic i.e. VC₁C₂V. According to the syllabification rules proposed by Sastry (1994), the first consonant in the cluster belongs to the preceding vowel and the second consonant belongs to the following vowel. Thus, the resultant syllabification will be VC.CV or CVC.CV. This stands true for both regular consonant clusters and geminate consonant clusters. In the case of both the total and partial reduplication of the regular consonant clusters, the data shows C₁ is always nasal and C₂ is a stop. The only exception in the data was observed in the word /**veldam veldam**/ ‘going going’, where the C₁ consonant was a liquid. This reduplicated word only happens in the colloquial speech of a speaker.

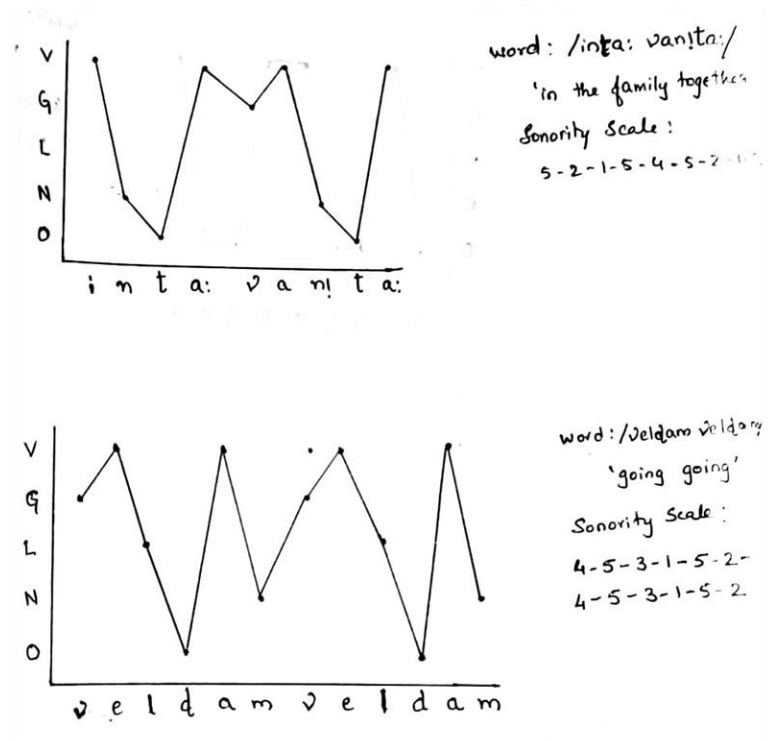


Figure 4: Words with VCCV Syllable Pattern

In case of geminate consonant clusters, though the consonants C₁ and C₂ were the same, they follow the syllabification rules followed by the regular consonant clusters.

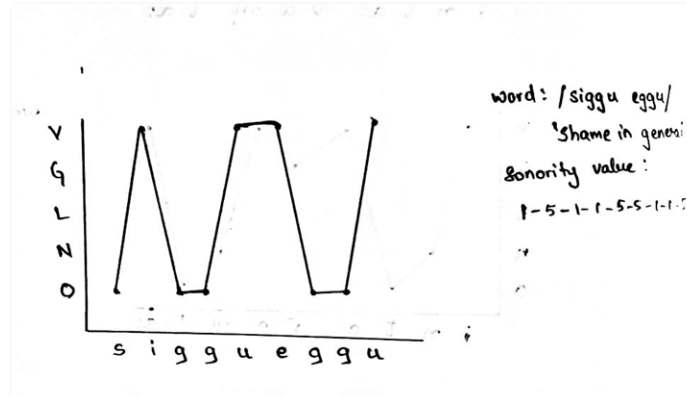


Figure 5: CVCCV syllable pattern words with geminate consonant clusters

Out of 70 chosen words, 25 of them were geminate consonant clusters of VCCV and CVCCV type and the sonority profiles of all these type of syllables violate the SSP rules by forming plateaus in all three types of reduplicated words.

The words that have three consonant clusters were very rarely seen in native words. Only two reduplicated words were seen in the list of 70 chosen words and both of them occur in total reduplicated words.

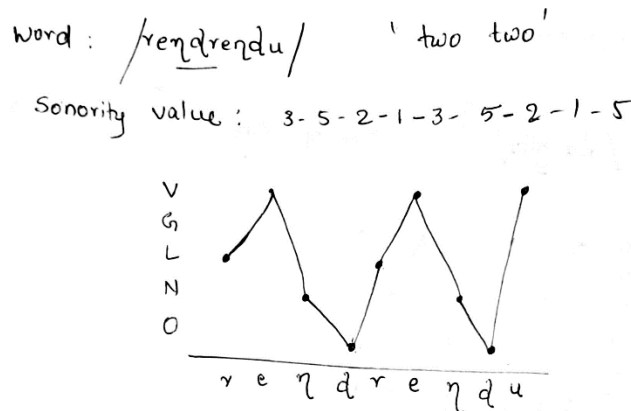


Figure6: (C)VCCCV Syllable Pattern

Three consonant clusters in the medial position, though they were very few in native language, go through syllable reduction and out of them, the first consonant of the consonant clusters will always be a nasal. The sonority profile shows the three consonant cluster reduplicated words also follow SSP.

Semantically reduplicated words

The data also consists of 10 semantically reduplicated words where the reduplication was not visibly seen in the words but the meaning was reduplicated. Few of those were mentioned below:

8. (a) /maɖi: a:tʃa:ram/ 'religious habits of purity in general'
- (b) /sig'ubiɖijam/ 'shame in general'
- (c) /manʃimarja:da:/ 'respectful behaviour'

All these words adhere to SSP. In 8(a), sonority plateau can be seen in the medial position of the two words between the segments /i:/ and /a:/ similar to the example given in figure 5 where the first word's coda position and the second word's onset position were both vowels, violating SSP. Due to the geminate consonant clusters forming sonority plateaus, 4 among the 10 semantically reduplicated words violate SSP.

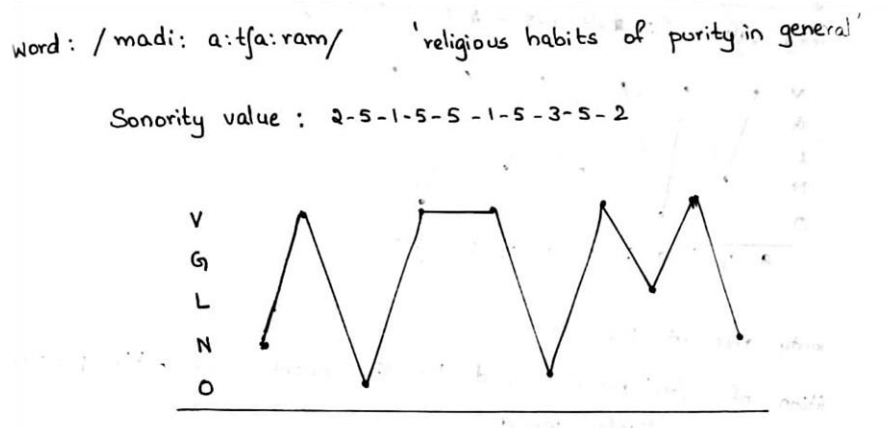


Figure 7: Sonority Profile of 8(a)

5. Conclusion

In this study of sonority profiles in Telugu reduplicated words, out of 70 chosen words from Bhaskar Rao (1977) for the partial, total and semantically reduplicated words, majority of them do not adhere to the SSP rules. Ablaut or vocalic changes as explained by Handke (2012) are also seen in partially reduplicated words of Telugu language. By using the sonority scale proposed by Clements (1990) for Telugu sound segments, the universality of sonority scale seems to be applicable to just one set of data in the language like the words with single vowel or a vowel and consonant together as a syllable. The words with consonant clusters were seen violating the SSP majorly due to the gemination in the words where neighboring consonants that were completely identical to each other. Similarly, in regular consonant cluster words i.e. where the clusters were not geminates, violation to SSP was seen in the consonants of the same class i.e. obstruents. In Clements' scale, obstruents like stops, fricatives and affricates were given the same value in sonority. Not evaluating them independently made the sonority values of these sounds similar leading those words to form a plateau violating SSP. Hence, similar to the findings by Joel (2015) and Jany, et al (2007), and based on the initial findings of the data, it was suggested that Telugu language needs to be explored from the view of a language specific

sonority scale as this is widely different from the languages that were explored in terms of sonority during the Clements' times.

References

Bhaskar Rao, P. 1977. *Reduplication and Onomatopoeia in Telugu*. Pune: Deccan College.

Bhaskar Rao, P., & Ray, A. 2017. Telugu. *Journal of the International Phonetic Association*, Vol 47(Issue 2), 231-241. doi:10.1017/S0025100316000207. Retrieved on 08/10/2021 from www.cambridge.org/core/journals/journal-of-the-international-phonetic-association/article

Carlson, K. 1997. *Sonority and Reduplication in Nakanai and Nuxalk (Bella Coola)*.

Clements, G.N. 1990. The Role of Sonority in Core Syllabification. In J. Kingston & M.E. Beckman (Eds.), *Papers in Laboratory Phonology I: Between the Grammar and Physics of Speech*. New York: CUP. 283-333. Retrieved on 20 November 2021 from <http://www.ai.mit.edu/projects/dm/featgeom/clements90.pdf>

Chand, G., & Kar, S. 2017. Sonority and Reduplication in Hadoti. *Journal of Universal Language*, Vol 18(Issue 2), 1-37. DOI 10.22425/jul.2017.18.2.1 Retrieved on 21/08/2021 from www.researchgate.net

Hogg, R And McCully, C. 1987. *Metrical Phonology: A Course Book*. Cambridge, UK: Cambridge University Press.

Jany, Gordon, Nash And Takara. 2007. *How Universal was the Sonority Hierarchy? A Cross-linguistic Acoustic Study*. ICPHs.16. 1401-1404.

Joel, Anatoria (2015). *Sonority Profiles of Swahili Words*. Unpublished Masters Dissertation. Osmania University: Hyderabad

Handke, J. (2012). Morphology – Reduplication. *The Virtual Linguistic Campus Video Library*. Retrieved on 20/09/2021 from www.linguistics-online.com

Venkateswara Sastry, J. (1994). *A Study of Telugu Regional and Social Dialects – A Prosodic Analysis*, Mysore: Central Institute of Indian Languages. 59-112.

Roca, I., & Johnson, W. (1999). *A Course in Phonology*. Blackwell Publishing, 235-259.

Effect of Aging on Semantic Categorization

Renuka Thangavel* and Susan.G.Oommen**

Abstract

Semantic categorization is an integral part of language learning. Every word in the lexicon is related to another word belonging to the same lexical category or sharing common features and this kind of relationship is called semantic relatedness. There are four categories of semantic relatedness and these include Superordinate Coordinate, Categorical Coordinate, Functional Coordinate and Derivational Coordinate. The present study aimed to investigate the effect of age on semantic categorization in Tamil speaking normal young and older adults. All the participants were native speakers of Tamil, group I were 15 older adults (60 - 70 years) and group II were 15 younger adults (18 - 28 years). Data was collected using semantic judgment task for different semantic coordinates and was presented using DMDX software. Results showed mean reaction time was greater for group I than group II for all the coordinates. There was a highly significant difference between the age groups for all coordinates except categorical coordinate. The mean percentage for accuracy was slightly better for the younger group than the older adults across the coordinates, but there was no significant difference between the age groups. The results provide insight into semantic organization and are useful in rehabilitation of cognitive linguistic disorders.

Keywords: Semantic Coordinates, Young Adults, Older Adults

1. Introduction

Semantic categorization is an integral part of language learning. The important role of semantic knowledge used to generalize natural language concepts. The semantic features associated with a given category vary in the extent to which they define that particular category. In the present study four semantic coordinates were selected: Super ordinate coordinates are nouns that can be used to stand for an entire class or category of things (e.g., animal is a super ordinate for lion, tiger and elephant).Categorical coordinates fall under the super ordinate category. This is a sub category of nouns which has similar features (e.g., apple, mango, banana etc. which are the sub category of fruit).Functional coordinate are the functional features of the target noun (e.g., barking is a functional coordinate of dog).Derivational coordinate defines specific feature to the particular target noun (e.g. success is a derivational coordinate of hard work). Semantic relatedness as mirroring the similarity in the meaning of two different words like in “cat - dog” and “orange-mango”. Frequently recognized categories in terms of semantic relatedness include Superordinate coordinate (SC) e.g., *animal-lion*), Categorical coordinate (CC) e.g., *tiger-deer*,

*MASLP and **Associate Professor (Speech Language Pathology), Helen Keller’s Institute of Research and Rehabilitation for Disabled Children, Secunderabad.

Functional coordinate (FC) e.g., *lion-roar*, Derivational coordinate (DC) e.g., *dog-loyalty*. Hence all nouns can be defined through the extent of semantic relatedness based on the features they share with the respective word as defined in its respective language. In other words, a word can have set of features which are reflected in terms of extent of semantic similarity between them. Such feature distinctions are explained in priming experiments (Akshaya, Deepak & Abhishek, 2015).

Tamil language (the Language studied in this research) is primarily spoken in Tamilnadu and Puducherry and other states of south India. Tamil language is a Dravidian language. According to Census of India (2011), among all Indian languages, Tamil has 5th position based on the maximum number of speakers. The total population of Tamil speakers or people, who speak Tamil as their first language in India, is 5.70%.

1.1. Need of the study

The relationship between normal aging and processes of language is complex and the studies show that it may influence specific language processes (Alwin & McCammon, 2001). There is an inadequacy of studies which focused on the effect of aging on semantic categories. Semantic categorization significantly influences the organization of semantic memory system therefore, there is a need to study semantic categorization processing in younger and older adults' population. There are only some western literatures and only a couple of Indian studies on semantic categorization in older adults and most of the studies had compared only two coordinates (Akshaya et.al. 2014). Thus, the present study in Tamil language was taken up to fill this gap.

1.2. Aim and Objectives

The present study aimed to investigate the effect of age on semantic categorization in Tamil speaking normal young and older adults. The objectives of the study were to compare the reaction time and accuracy of responses for semantic coordinates (Superordinate coordinate, categorical coordinate, functional coordinate and derivational coordinate) in young and older adults.

2. Review of Literature

Categorization refers to a set of abstract or concrete things that are grouped together. It is a primary attribute of cognition and it focuses on organization of semantic knowledge and mental representation of categories. In semantic categories whatever the categories, it mainly depends on the meaning of the words (Rakison & Oakes, 2004).

First efforts to study derivational features in the processing of semantic categories were by Rips, Shoben and Smith (1974). They described the derivational feature is the one that helps an individual to distinguish the category member from the rest of the category member, where in

derivational features becomes the specific feature to the noun. For example, king of the jungle become distinctive feature of lion. They are essential in discriminating among similar concepts, the shared features as used for categorizing the items into their respective superordinate are presumed to impart stronger representation since they are existent across many concepts. Thus, derivational features can be presumed to play a vital role in retrieval of concepts.

Nosofsky and Palmeri (1997) suggested that judgment of categorical coordinates was made by retrieving the members one at a time from semantic store. The more the number of instances is stored, the faster one can respond.

David, Madden and Thomas (1993) conducted 4 experiments on age related slowing and semantic priming effect during visual word identification. Twenty-four younger and twenty-four elder adults participated in experiment. Visual pair wise decision paradigm and pronunciation task was used to collect the data. Results revealed that there was no consistent difference between task in the time course of semantic priming and age difference associated with response selection were greater than predicted age related slowing.

Lagishetti and Goswami (2014) explored the semantic categorization of words based on their typicality effects. 10 native Kannada speaking monolinguals and 10 bilingual adults whose native language was Kannada and English as second language were subjected to the test. Stimuli included 20 clothing and 20 non-clothing stimuli (strong and weak exemplars). Neuroscan Inc. data acquisition system gentask program was used to measure reaction time. All the participants were instructed to press the appropriate option in response pad for all stimuli. Comparison of reaction time between monolinguals and bilingual groups and comparison between first language and second language in bilinguals was measured. Results indicated that a typicality effect was observed in both monolinguals and bilinguals and no differences were observed between clothing and non-clothing stimuli except in one category. There was significant difference between languages was seen in bilingual groups.

Akshaya (2014) conducted a study on the effect of semantic relatedness on semantic processing in Kannada speaking normal adults, age range between 55-65 years were recruited and semantic priming paradigm was investigated on four semantic categories (Superordinate, subordinate, functional, derivate). It was found that normal Kannada speaking older adults had least reaction time for Superordinate, followed by categorical coordinate, followed by derivate and highest in case of functional coordinate. On comparing their accuracy in processing those semantic categories showed that individuals were more accurate in processing Superordinate category, followed by almost same level of accurate processing for categorical and derivate and functional coordinates.

3. Methodology

In the present study the participants were 30 normal adults. Participants were divided into two groups. Group I consisted of 15 normal older adults in the age of 60 - 70 years. Group II consisted of 15 young adults in the age range of 18 - 28 years. All the participants were native speakers of Tamil and were able to speak and read Tamil fluently. It was made sure all participants did not have any neurological, psychological, cognitive and sensory deficits. The participants who had a score above 25 in Mini mental status examination and having a similar socio-economic status based on SESS checklist by Venkatesan (2009) were only selected. An informed consent was taken from all participants prior to the study for ethical reasons. Purposive sampling was done and participants were drawn from the office, college, houses around Karur district in Tamilnadu.

For the purpose of stimulus preparation, the experimenter listed 13-word pairs for each semantic category, which included 7 related and 6 unrelated word pairs. Then, the lists of word pairs were given to 5 Tamil speakers with proficiency in reading and were instructed to read the target word and judge appropriateness of each word pair and rate as 1 for related word pair and 0 for unrelated word pair. From this list, 10-word pairs which included 5 related and 5 unrelated word pairs were finalized for each of the four semantic coordinates. Thus, a total of 40-word pairs which included 20 related and 20 unrelated word pairs. Examples of stimulus list are given in *Appendix*. Stimuli were presented orthographically on Lenovo 15.6 inch in laptop using downloaded DMDX automode (5.0.1) software. First the prime word was presented for 350 ms and after a gap of 350ms; the target word was presented for 500 ms; the response duration was 3000ms. The order of presentation of word pairs for each coordinate was randomized to avoid bias.

During data collection, the participants were instructed to press left arrow if the stimulus was related and right arrow if not related. Separate instruction was given for each semantic coordinate. A trial was given for each participant, before commencing the actual test. The software automatically recorded the reaction time and accuracy. Later mean of reaction time and percentage of accuracy for each participant for the four semantic coordinates were calculated. Further the statistical analysis was done using SPSS statistic software version 20.0.

4. Results and Discussion

The objective of this study was to compare between young and older adults for reaction time and accuracy across the four semantic coordinates. The results and discussion are elaborated first for reaction time and then accuracy.

4.1. Reaction time

The overall mean and standard deviation for the four coordinates of both groups were calculated. Mean reaction time was greater for group I than group II for all the coordinates. i.e., older adults

group were slower to respond than the younger group as in figure 1. Across the coordinates, super ordinate coordinate had higher reaction time than other coordinates with mean of 1320.2ms (SD =368.44) and 872.7 ms (SD =276.85) for older adults and younger group respectively. Minimum reaction time was obtained for categorical coordinate (M= 1112.15, SD=417.44) and functional coordinate (M=753.64, SD=304.79) for older adults and younger group respectively. In the semantic judgments tasks, all the participants were able to respond fastest for categorical coordinates (lion-monkey, cup- saucer) followed by functional coordinate (doctor-medicine, nurse- injection)and responded slowest for Superordinate (fruit-cherry, bodypart- stomach).For example, they could correctly identify and respond quicker for ‘*lion* is related to *monkey* or not’ than ‘*dog* is related to *barking* or not’, but took more time to respond correctly for ‘if *animal* is related to *dog* or not’.

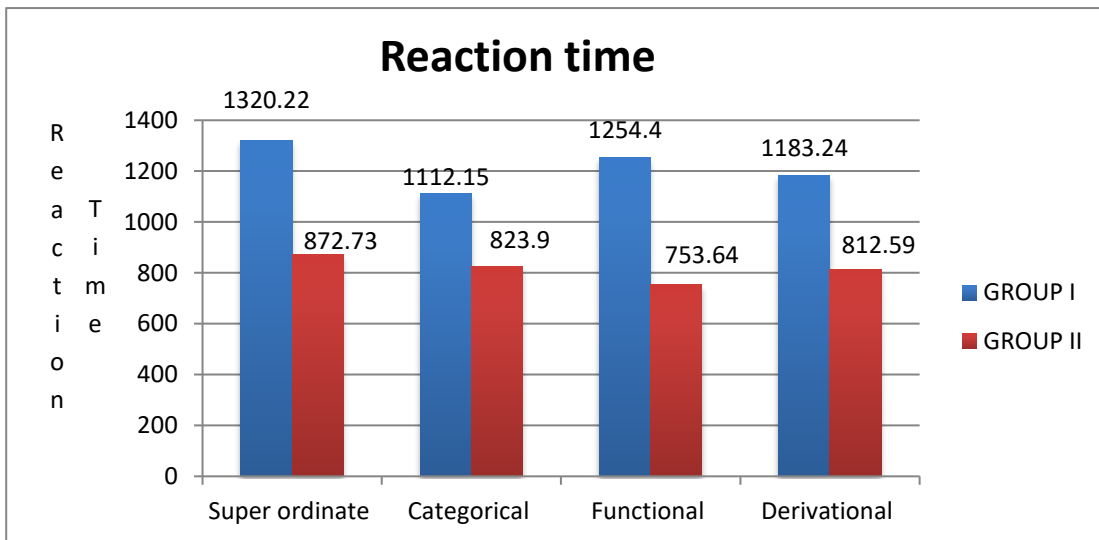


Fig 1: Reaction time measures across four semantic categories

MANOVA was done to find the significant difference between the groups for the reaction time. The dependent variables were reaction time for the categories and independent variables were the two age groups. Results indicated that among the four coordinates, categorical coordinate has no significant difference between the older adults and younger group. There was a highly significant difference between the age groups for Superordinate $F(1, 28) = 14.14, p = .001$, functional $F(1,28)= 22.94, p=.001$ and derivational coordinate $F(1,28)=17.9, p=.001$. Thus revealing that there is a significant effect of aging on the semantic related judgments across the semantic coordinates.

The greater reaction time for older adults than younger adults may be due to the reduced speed of judging for the particular task due to aging. It may not be due to the cognitive slowing as all the older participants had intact cognitive processes. The reason also may be that, the semantic

spreading may occur quickly in younger adults compared to the older adults. This is in accordance with Laver and Burke (1990) that reliably larger semantic priming effect was seen in older adults than in the younger adults. As age increases, semantic activation spreads more slowly in the old age, therefore less semantic priming was obtained at very short prime- target asynchrony, thus increasing the time to respond. The reduced reaction time is due to the process-specific slowing rather than general cognitive slowing.

4.2. Accuracy

The percentage of accuracy was measured for all the participants. Mean and SD of percentage of accuracy was calculated for both younger and older adults, for all four categories. MANOVA was done to find the significant difference between the groups for the dependent variable accuracy. The overall mean and standard deviation and MANOVA for all categories are summarized in the table 1 and fig 2 respectively.

Table 1: Mean, SD and MANOVA for accuracy

Coordinate	Participants	Mean (%)	S D	F	Sig
Superordinate	Group I	93.33	8.99	1.59	0.21*
	Group II	96.67	4.88		
Categorical	Group I	88.00	12.07	2.0	0.16*
	Group II	93.33	8.16		
Functional	Group I	96.66	4.88	0.92	0.34*
	Group II	94.67	6.39		
Derivational	Group I	97.33	5.94	0.43	0.51*
	Group II	96.00	5.07		
Total	Group I	93.83	5.88	0.44	0.31*
	Group II	95.17	4.39		

*p< .05, No significant difference

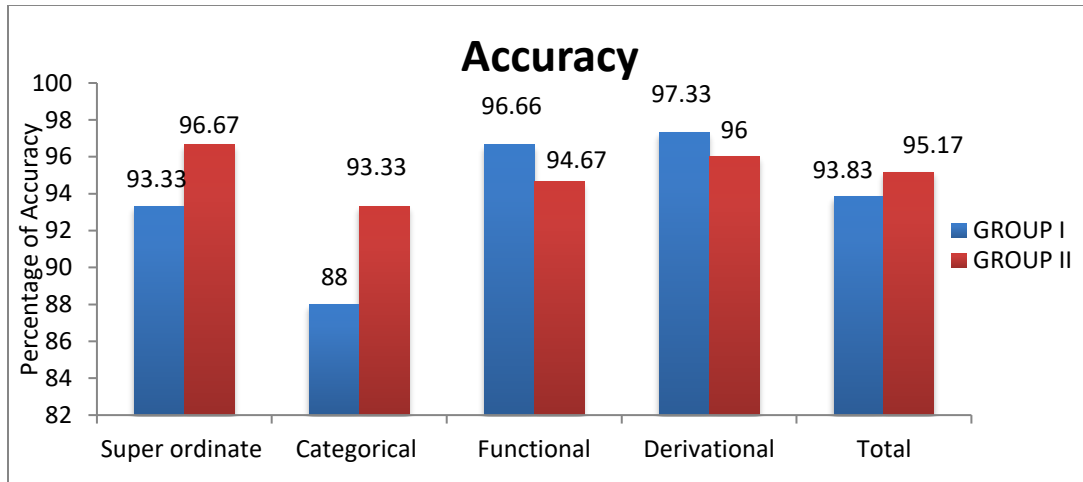


Fig 2: Percentage accuracy score across four semantic categories

Results revealed that the mean percentage of accuracy was 93.83 (SD = 5.88) and 95.17 (SD = 4.39) for older adults and younger group respectively, indicating that younger group responded more correctly than the elder group. Analyzing across the coordinates, accuracy was better for older adults in derivational and functional coordinates, whereas the younger group had better scores for Superordinate and derivational coordinates. The accuracy was minimum in categorical coordinate for both groups, indicating a poorer performance. For example, the younger group could give more correct responses for ‘is *fruit* related to *apple* or not’ but responded less correctly for task like ‘if *apple* is related to *banana* or not’. The MANOVA revealed that, all the four coordinates had no significant difference between the older adults and younger group for accuracy scores.

The above results revealed that, even though there was slightly better accuracy score for younger group when compared to the elderly, there is no significant difference between the age groups for accuracy across coordinates. This may be due to the reason that there was no cognitive deficit in the older adults group. Our results are in accordance with Lima et al. (1991) and Madden (1992) that aging slows semantic tasks but does not affect the response accuracy.

The better accuracy for derivational coordinate in the older adults may be due to the reason that older people might have detailed store of knowledge in retrieving the specific feature. Also, educational and language experience would have played a major role in identifying specific feature. This is in agreement with Hoffman (2018), that the ability to engage in controlled retrieval of less salient information from the semantic store is better in older population. Also, it is supported by Barea and Mansur (2007) that the performance in semantic memory was dependent on the education of older adults. But this is not in concordance with the study of Akshaya, Deepak and Abhishek (2014) in older adults on judgment of semantic relations that percentage of accuracy was more for Superordinate coordinate and less for derivational coordinate.

Younger group had better accuracy in super ordinate relations which may be due to stronger connections between two concepts as it is more closely placed in the mental lexicon. Collins and Loftus (1975) suggested that high frequency words triggered faster processing than low frequency words. When super ordinate is the prime, it activates the target with relative high frequency, which means more activation spreads to the related target word, and hence it leads to less error in Superordinate coordinate.

4. Conclusion

From, the results it can be concluded that on comparison of reaction time for judging the semantic relatedness was greater for group I than group II for all the coordinates. i.e., older adults group was slower to respond than the younger group. There was a highly significant difference between the age groups for all coordinates except categorical coordinate. All the participants were able to respond fastest for categorical coordinates, followed by functional coordinate and responded slowest for Superordinate coordinate. The mean percentage for accuracy was slightly better for younger group when compared to the elderly, but there was no significant difference between the age groups across coordinates. The mean percentage for accuracy was better for older adults in functional and derivational coordinates, whereas the younger group had better scores for Superordinate and categorical coordinates. The accuracy was minimum in categorical coordinate for both groups.

This suggests that, accuracy of responses was similar across the coordinates but, age has a considerable effect on the reaction time of semantic categorization in semantic relatedness judgments tasks even in healthy aging adults, due to slowing of semantic activation spreading with aging. So, while assessing elderly these findings can be kept in mind to avoid any misdiagnosis.

Theoretically the present study contributes to the better understanding of semantic organization in the mental lexicon for different categories with aging in native Tamil speakers. Practically, these results can provide reference values for younger and older adults in the age of 17-27 years and 60-70 years. It will also contribute to the clinical rehabilitation of adults with cognitive linguistic disorders.

Limitations of the current study are that, the findings of the present study cannot be generalized, as it was conducted in smaller population with a limited age range for younger and older adults. Word length was not considered. There was no comparison done between the performances of semantic judgment on related vs. unrelated word pairs.

Future implication can be extended to larger population in wider age range in various Indian languages. Gender wise comparison can be done. It can be done in clinical populations. The study can be taken up for other semantic categories (for example clothing vs. non clothing, living vs. nonliving, abstract or concrete categories).The semantic relatedness can be studied using pictorial and auditory modalities.

Acknowledgement

We cordially thank all our participants for their support and cooperation while conducting the study.

References

- Anderson, J. R. (1983). A spreading activation theory of memory. *Journal of Verbal Learning & Verbal Behavior*, 22, 261–295.
- Akshaya, S., (2014). Semantic categorical processing in Kannada speaking older adults adults. Published master's dissertation, University of Mysore, Mysore.
- Burke, D. M., White, H., & Diaz, D. L. (1987). Semantic priming in young and older adults: Evidence for age constant in automatic and attentional processes. *Journal of Experimental Psychology: Human Perception and Performance*, 13, 79-88.
- Burke, D.M., & Yee, P. L. (1984). Semantic priming during sentence processing by young and older adults. *Developmental Psychology*, 20,903-91.
- Burke, D. M., MacKay, D. G., Worthley, J. S., & Wade, E. (1991). On the tip of the tongue: What causes word finding failures in young and older adults. *Journal of Memory and Language*,30, 542-579.
- Battig, W.F. and Montague, W.E. (1969) Category Norms for Verbal Items in 56 Categories: Replication and Extension of Connecticut Category Norms. *Journal of Experimental Monograph*, 80, 1-46.
- Barbara, A. D. (1976). The retrieval of sentences from memory: A speed-accuracy study. *Cognitive psychology*, 8(13), 291-310.
- Collins, A. M., & Loftus, E. F. (1975). spreading-activation theory of semantic processing. *Psychological Review*, 82, 407-428.
- Lima, S. D., Hale, S., & Meyerson, J. (1991).How general is general slowing? Evidence from the lexical domain. *Psychological Aging*,6, 416-425.
- Madden, D. J. (1992).Four to ten milliseconds per year: age-related slowing of visual word identification. *Journal of Gerontology*,47, 59-68.

Appendix

Stimulus List with Examples

S.NO	Target words	IPA
<i>Superordinate coordinate pairs</i>		
1	விலங்கு- சிறுத்தை	vilɒŋgə- sɪrʊθaɪ
2	பழம்- திராட்சை	paɫɒm̄- trɒ:kʃaɪ
3	பறவை- காகம்	paravaɪ -kɒ:gam
<i>Categorical coordinate pairs</i>		
1	கை-கால்	kaɪ- kɒ:l
2	குயில்-கிளி	kuɪɪl-kɪɪɪ
3	மேசை-நாற்காலி	mesaɪ-nɒ:rka:lɪ
<i>Functional coordinate pairs</i>		
1	நாய்-குரைக்கும்	naɪ-kuraɪkʊm
2	கண்-பார்வை	kɒnn-pɒ:rvaɪ
3	விளக்கு-வெளிச்சம்	vilakə-velɪtʃɒm
<i>Derivational coordinate pairs</i>		
1	கரும்பு-சர்க்கரை	kaɾʊmbə-sarkaraɪ
2	புத்து-பாம்பு	puʈʈə-pɒ:mbə
3	கடினஉழைப்பு-வெற்றி	kadɪna ʊɒɪpə-veɾɪ

Language Affecting Gender Identity: A Case Study of English Text Books

Mohammad Jahangeer Warsi* and Mehvish Mohsin**

Abstract

The topic of “Gender Discrimination” was one of the burning issues for discussion nowadays. There was no doubt that schools play the significant roles of agents of gender socialization and shape the gender roles of the school children. The aim of this study was to critically examine the impact of the school curriculum in shaping the gender roles. Indeed, textbooks are considered to be the essential medium of power which helps in constructing the ways in which students start looking at the society and to them as well. It was seen that these are negatively encouraging both genders to take up the stereotypical positions constructed for them by these teaching aids. In this context, the study critically examines the language used in these teaching aids. The data for the present study was collected from the text books of English medium schools of Uttar Pradesh region. The use of language was analyzed critically throughout the study.

Key Words: Gender, Language, School Curriculum, Society

1. Introduction and Review of Literature

Family and school play a significant role in gender socialization process by reinforcing the traditional values and norms of the society. They are said to be the most important pillars of this process. School was the social institution of learning. One of the strongest tools to transmit the culture, values and beliefs of the society to the learners was the “CURRICULUM”. The curriculum includes textbooks, learning material and also the environment of the school (hidden curriculum). Though the attitude and behavior are taught at home but are reinforced during the school experience. School was the place where children learn what was exactly meant by being male or female. But the question arises ‘is it taking place in the right direction?’ Skolnick claims that at the age of 11, boys start viewing science as a masculine subject while the perspective of the girls remains neutral however by the age of 14, girls also start looking it as a domain of male (Skolnick, 1982). Again, the question comes in mind ‘what was the contributing factor leading to this change of perception?’ Teaching aids are the most powerful tool to transmit culture and beliefs to the students. Dorthy Smith views textbooks as the essential medium of power which helps in shaping the ways children start thinking about society as well as about themselves (Smith, 1987). Along with the modern teaching aids, the textbooks and the posters lying on the walls of the schools play a significant role in the process of learning. Sadker and Zittleman asserted that students spend their 80-90 percent classroom time dealing with the textbooks even the majority of the teacher’s decisions are based on the textbooks (Sadker and Zittleman, 2007). It was seen that the language used in the attractive pictures placed on the walls and in the

* Professor, ** Ph.D. Scholar, Department of Linguistics, Aligarh Muslim University, Aligarh.

textbooks leave a long-lasting impression on the young minds of the learners and transfer some kind of hidden messages to the young minds. Narahara claims that these young minds are daily bombarded with the kind of language and images that influence the way their formation of gender roles takes place (Narahara, 1998). Even though the behavior of teacher was unbiased still the language using by them was not always unbiased. Bias in language refers to language that was uneven or unbalanced or not a fair representation. Bias in writing and speaking may contain “hidden messages” about the superiority or inferiority of various groups or types of people. Researchers have shown that the expressions used in language deny the status of equality and this discrimination leads to the degradation of women in society.

Kulshreshtha (1993) claimed that School Text Books are effective means of spreading stereotypical images of women which promote anti feminine prejudices and discriminate women. The damaging effect of discrimination was evident in the behavior and psyche of young and adolescent children exposed to such textual material. Language, the fundamental tool to represent thought, was used to develop the abilities and skills in children. Ironically the use of language in the books has also perpetuated stereotype anti-feminine prejudices

UNESCO (2004) analyzed that curriculum was one of the most important aspects to transform the society in terms of values, cultures and beliefs. It was implemented by the textbooks, learning material and environment of the school. Gender stereotypes are existing in our society and a child start to understand about gender stereotypical roles through school curriculum as a form of pictures.

Bursuc (2013) stated that school textbooks and teaching materials communicate very robust messages about what it means to be both gender (male or female). Textbooks show different stereotypical gender roles for both male as well as female such as mostly women are engaged in household activities while men work outside the home. Such these types of stereotypical roles affect later career choices for girls and boys. Both genders may face difficulties at the time of attaining jobs if they consider that only certain jobs are appropriate for them. This impact was much more serious for girls, because they are usually associated with low-paid and low-prestige jobs.

Molla (2016) mentioned that there are two important tools which affect a child i.e., family and school. It was called gender socialization process. This process starts at the time of birth. In school, mostly, teachers do not perform same behavior with both genders. Development of gender stereotypes are also contributed by the teachers. For example- teachers expect to be more polite from the girls, on the other side they expected to be more oblivious from boys.

Discrimination operates against women in textual material due to the prevailing prejudice in society and the attitude of people towards them. Such discrimination was discernible both in the thematic and in the linguistic content of textual material. School Text Books are potent means of perpetuating stereotype images of women promoting anti feminine prejudices. The damaging

effects of discrimination are evident in the behaviour and psyche of young and adolescent children exposed to such textual material.

Socialization Process

The concept of “socialization” starts when a child takes birth. The very the first question strike on everyone’s mind was ‘a boy or a girl’. Gender socialization was the process by which individuals are taught how to behave socially in accordance with their assigned gender, which was assigned at birth based on their biological sex. It was socially constructed. Gender stereotypes can be the result of gender socialization: girls and boys are assumed to act in certain ways which are socialized from birth. Children, adults and also older people who do not conform to gender stereotypes are often ostracized by peers for being different. During early childhood, girls and boys spend much of their time in the home with their parents and siblings. That was why parents are the primary source of gender socialization process.

When we divide the world into two groups- (1) men, and (2) women, we tend to consider all men are similar, all women are similar, and there are two categories of “men” and “women” which are totally different from each other. In real life, the characteristics of women and men tend to overlap. However, unfortunately, gender polarization often creates an artificial gap between women and men and gender roles that are very difficult to change in time.

Gender typed expectations may occur regarding personality traits (e.g., “boys are aggressive”, “girls are submissive”), abilities (e.g., “girls are good at reading”, “boys are good at engineering”), activities and roles (e.g., “men are scientists”, “women are nurses”). Mostly parents may support egalitarian views about some domains (e.g. occupations) but remain more traditional about other domains (e.g. family roles), finally parents (especially father) tend to be more rigid in their expectations for sons than daughters.

The classical example of gender socialization was the experiment done with a baby such as “sturdy”, “handsome”, and “tough” are used to describe boy infants and “dainty”, “sweet” and “charming” for girls infants, there was no matter what the size of the infants.

According to one comprehensive review of studies conducted in western countries, the most consistent manner by which parents treat girls and boys differently was through the encouragement of gender stereotypical activities. This includes the types of toys that parents might purchase or the kind of activities they promote. For example- parents are more likely to provide toys vehicles, action figures and sports equipment for their sons, and are more likely to give dolls, kitchen sets and dress up toys for their daughters. In this way society creates gender inequalities among boys and girls.

The next step of socialization process starts when children enter the school, where a conscious process of socialization was taking place. Looking through the school textbooks from the very beginning we find gender stereotype was presented and reinforced throughout the teaching aids.

We find the images that small kids receive from these books are women with babies in their hands, or women preparing foods, or women working in the field. When we talk about a teacher or a nurse the first image that comes in our mind was a woman. Was this the woman only who becomes a teacher or a nurse? No, it was just a stereotype that was created through the process of socialization. In the same way men are usually soldiers, playing some prestigious sports, executing some heavy job, and, of course, leaders, somehow the perception that being a soldier and carrying weapons was more important than giving birth and taking care of life, was induced in the minds since the very beginning of the conscious life of children. Looking again at school manuals we find images or small texts, where boys are those, who are good in mathematics: they are “helping” their little sisters in solving the problems and girls- they are good in reading, singing etc. when teaching practical skills boys will be the ones leading to operate machines or computers and girls will be taught to be doctor or similar. The language that was being used throughout the teaching aids was also biased. Language was an amazing tool as it truly can shape the way people think. In general, people are not very conscious about the language that they are using but evidences suggest that people used gendered language that not only expresses their beliefs around gender but also shapes the way they see the world their place in it as a woman or a man. When the learners hear these words, they consider them as cues that reinforce their gender beliefs.

Objectives of the Study

The following were the objectives of this current study -

- To examine school curriculum linguistically.
- To show how gender inequalities are being constructed through the school curriculum.

Delimitations of the Study

The study was limited to the English medium schools of Aligarh city. Though the term ‘curriculum’ includes a number of aspects but because of the dearth of time the data was collected through textbooks, pictures and posters only.

2. Methodology

The research design of this study was descriptive. Descriptive research design was the type of research design that was concerned with describing the characteristic of a particular individual or a group. The following methodology was adapted for this study.

2.1. Universe and Sample

The school curriculum specifically the textbooks and the pictures or posters lying on the wall of the schools constituted the universe of the study. These textbooks, pictures or posters were selected randomly.

2.2. Tools for Data Collection

Photography and the observation method were used for collecting the data.

2.3. Sources of Data

Both primary as well as secondary data were used for this study. Primary data was collected through textbooks, pictures and posters while the secondary data was collected through articles, journals, books and magazines.

3. The Linguistic Analysis of Data

The analysis of the data of this study came up with the following findings-

- Throughout the survey, it was noticed that a particular gender was being favored in the language used in the posters or the textbooks. As the data was collected from the English medium schools, the data shows that English language gives preference to masculine gender over feminine.
- The famous nursery rhyme “*Early to bed and early to rise makes a man healthy, wealthy and wise*” is a very good example of gender inequality.
- Masculine generic was used every time when the gender was not specified. The expressions like ‘he, his, him, himself’ are used when the referent was singular and we do not have a knowledge of the gender. Hence, it was proved by this survey that the number of masculine pronouns were comparatively higher than those of referring to the females. Pasco also claimed that while examining the language of textbooks he found that the occurrence of “HE” was higher than the occurrence of “SHE” to be exact three times more (Sunderland, 1994).
- Dealing with the various teaching aids, it was found that there was gender segregation in the job associated to men and women. Professions like doctor, police, postman, headmaster etc. are presented by masculine characters, whereas the job of nurse or teacher was exclusively represented by feminine characters. There was a poem entitled “My Doggy ate my Homework”, the poem starts like:

“My doggy ate my homework.

He chewed it up,” I said.

But when I offered my excuse

My teacher shook her head.”

- Though it was a fact that a masculine generic was used whenever the gender was not specified, still the above poem intentionally uses the possessive case marker ‘her’ just for creating an image that the teacher was a female which gives rise to gender segregation in jobs. Some jobs are appropriate for one sex while some of others. The male figures are seen outside the house performing professional tasks at a place to which we can call a workplace. While the female figure was portrayed doing indoor tasks, doing something with child, doing domestic responsibilities such as cooking, cleaning, washing clothes etc.
- There was a poem named “Everybody Has a Duty” it says

*“Mum cooks the meals,
 I taste it,
 Dad goes to work and;
 I play games all day”.*

The poem delivers a message that has a great conflict. It directly and clearly reflects the gender bias labor distribution. It creates an image where mother was seen to be involved in household chores whereas father goes out for his job. An interesting thing to note was that the word ‘cook’ can also be used for man but it was worth mentioning that only in the context where cooking was considered as profession not as a household chore. In addition to this, for teaching prepositions in an interesting way the textbook used a picture along with the usage of prepositions in a sentence like “*Neelam was inside the house. Amar was outside the house*”. The preposition ‘inside’ was used for Neelam while outside for Amar. Here, we find a division of domains where the male figure was always seen to be involved in the public domain while the female figure in the private domain where they remain focused on children, family and households chores only.

Throughout the analysis a generic use of terms was found which was summarized in the following table along with their alternatives that are available in language.

Table: 1 Generic Use of Terms for Nouns

Biased	Unbiased
Man	Person
Mankind	Humanity
Man-made	Machine-made, Synthetic, Artificial
The common man	The average person, ordinary people

Table: 2 Generic Uses of Terms for Pronouns

Biased	Unbiased
He	One
His	One’s
Him	One’s
Himself	Oneself

Table: 3 Generic Uses of Terms for Job References

Biased	Unbiased
Chairman	Chairperson, Chair
Policeman	Police Officer
Businessman	Business Executive, Entrepreneur

Serviceman	Service Representative
------------	------------------------

Table: 4 Generic Uses of Terms for Other Stereotypes

Biased	Unbiased
King-size	Jumbo, gigantic
Lady-like	Courteous, Cultured
Manly	Strong, Mature
Master (Noun)	Owner, Chief
Master (Verb)	Learn, Succeed at
Master (Adjective)	Expert

The use of masculine generics when the person in question was not necessarily male have consistently been shown to evoke mental images of man rather woman, even if they are accompanied by explicit statements that the reference should include both genders.

4. Conclusion

Along with various social, cultural and political factors, language was one of the biggest conveyors of prejudices. In the present scenario, we are expecting gender integration almost everywhere at workplace, in social spaces and the others. But we find gender segregation in every sphere of life whether it's a matter of profession, sports or anything else. Gender roles are set by convention and other social, economic, political and cultural forces. From this perspective, sex was fixed and based in nature; gender was fluid and based in culture. There was an urgent need of gender inclusion in the society. A sense of gender equality should be developed from the very first stage i.e. the home itself and also the schools. The teaching materials should be reviewed from the gender point of view and the use of language should be a deliberate effort. Cengage says it was not a difficult task to avoid gender bias language, as in this example:

- Before a surgeon can operate, *he* must know every relevant detail or the patient's history.

With just a simple adjustment we can avoid bias:

- Before operating, *a surgeon* must know every relevant detail of the patient's history.

Consciously or subconsciously, we tend to depict all our beliefs, values and expectations via our choice of vocabulary, speaking style, etc. There was a need to understand the deeper cause that shapes the barrier women have to face. Thus, the textbook writers and those engaged in production of teaching learning materials must be sensitized on gender concerns in language.

References

- Bursuc, G. C. (2013). Achieving Gender Equality in Teaching and Learning: Identifying Problems and Searching for Solutions. *Lingua Culture 2*.
- Cengage Learning. (n. d.). Choose Your Words: Avoiding Biased Language. Retrieved November 15, 2020, from https://college.cengage.com/english/raimes/digitalkeys/keyshtml/choose_7.htm
- Kulshreshtha, I., &Nupura, I. (1993). *The War Against Gender Bias*. New Delhi: Sterling Publishers Private Limited.
- Molla, E. (2016). The Role of School in Gender Socialization. *European Journal of Educational Sciences; 3:1 1857-6036*
- Narahara, M. M. (1998). Gender Stereotypes in Children's Picture Books. Long Beach: University of California.
- Sadker, D., &Zittleman, K. (2007). Gender bias: From colonial America to today's classrooms. *Multicultural education: Issues and perspectives*, 135-169.
- Skolnick, J. (1982). *How to Encourage Girls in Math and Science*. Englewood Cliffs, NJ: Prentice Hall.
- Smith, D. E. (1987). *The Everyday World as Problematic: A Feminist Sociology*. Toronto: University of Toronto Press.
- Sunderland, J. (Ed.). (1994). *Exploring gender: Questions and Implications for English Language Education*. London: Prentice Hall International.
- United Nations Educational Scientific and Cultural Organization, (2004). Gender Analysis of School Curriculum and Textbooks.

The Use of Conjunctive Cohesion: A Case Study of Yemeni Undergraduate EFL Learners at Sana'a University

Mohammed H Masoud¹, Bedoor Sharaf Al- deen² Nausheen Akbar³ and Mohammed Hajeb⁴

Abstract

This research paper analyzes conjunctive cohesion devices of university learners. The main aims were to identify, quantify, analyze conjunctive cohesive devices found in 32 selected samples, including their types, and provide possible suggestions for teachers and students in using such conjunctive cohesive devices. The taxonomy given by (Halliday and Hasan 1976) was used in analyzing conjunction devices. The results revealed the total number of conjunctions, 388 in all types, but with some differences in the frequency of various types of conjunctions, additive cohesive devices were the most frequent type in the selected samples 247 times (63.66%), followed by temporal devices 81 times (20.88%). The third rank was cohesive causal devices, 46 times (11.86%). Finally, the fewest occurrences were for adversative devices, which appeared 14 times (3.61%). Though EFL university learners used all the conjunctive types, they are still unaware of the significance of using these devices to enrich their text. Hence, the majority of conjunctive cohesive devices were scarcely used or ignored by the learners.

Keywords: Cohesive Devices, Conjunction, Additive, Causal, Temporal, Adversative, Textual Competence, English, Foreign Language

1. Introduction

McCarthy (1996) claimed that the term cohesion was derived from Latin that means 'cling together.' Halliday and Hassan (1976) claimed that "cohesion in English refers to the range of possibilities that exist for sometimes linking with what has gone before." Conjunctions were given different labels; see (Crewe 1990; Granger and Tyson 1996; Fraser 1999; Celce and Larsen 1999; Huddleston and Pullum 2002). Halliday and Hassan (1976) classified conjunctive cohesive devices into four categories.

a) **Additive conjunctive devices** are used for linking discourse units of semantic similarity and adding relevant new information to expressions that have been previously mentioned. Examples of additive conjunctions are "and, or, furthermore, for instance."

b) **Adversative conjunctive devices** are used for introducing information that marks contrasts with the mentioned previous information, e.g. "in addition, however, although."

c) **Causal conjunctive devices** are used to connect text by describing a cause-and-effect relationship (e.g., hence, therefore, because, therefore, thus, and as a result, etc.). Causal

¹⁻³Ph.D. students, Department of English, Aligarh Muslim University, Aligarh, UP, India

²Ph.D. student, Department of Linguistics, Aligarh Muslim University, Aligarh, UP, India

⁴Ph.D. student, English Department, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, India

conjunctions express why something happened. E.g., “He met an accident *because* he was fast.”
driving

d) **Temporal conjunctive devices** are used for connecting or contextualizing information in terms of time. (e.g., “first, next, simultaneously' previously, and finally, etc.

The findings of this study based on the frequencies of these types will help learners, teachers, and policymakers. It helps learners in developing themselves in writing meaningful essays without committing more related errors to conjunctions. Such a study may enable learners to realize their repeatedly committed errors in these types. It also helps policymakers or those who prepare writing courses enable learners to overcome their challenges.

2. Review of Related Literature

Since the study was restricted to analyzing conjunctions, the review will unfold the available literature using conjunctive elements in ESL/EFL learners’ written text.

Zamel (1983) asserted that it would be difficult, without conjunctions, to make sense of ideas. According to Khelifii (2014), cohesive writing was one of the most challenging skills for learners to develop their writing, which was regarded as the crucial element of academic writing success. Khelifii(2014) added that cohesive devices are essential mechanisms to improve writing. Conjunctive cohesive devices are used to build elements of a text together (Harmar 2004).

Abu-Ayyash and Mckenny (2017) found that more cohesive elements can play various roles in texts. In this regard, Elraggas (2014) stated that unless there are proper semantic links in the text, these essays will appear to be incoherent. Al-Khalidy (2018) referred to conjunctions as words used to combine two sentences.

Hessamy&Hamedi (2013) conducted a study revealing a significant difference among the most cohesive device types. Ghasemi(2013) showed some cohesive devices that learners preferred to use more than others for various reasons. Al-Khalidy (2018) showed some differences in the frequency of conjunctive cohesive devices, mainly additive, causal, adversative, and temporal conjunctions. It was concluded that the most frequent conjunctions were additive, followed by adversative conjunctions and then causal conjunctions. The fewest occurrences were for temporal conjunctions.

This study aims at analyzing the conjunctive cohesion devices of university learners. It aims to determine the types of conjunctive devices found in learners’ written essays, analyze the frequencies of each type of cohesive device, and provide possible suggestions for teachers and students in using such conjunctive cohesive devices.

The main aims of this study were to identify, quantify and analyze conjunctive cohesive devices, including the conjunctive cohesive devices learners' final English written exams in advanced writing during the academic year (2017-2018) in the Department of English, Faculty of Education at Sana'a University, Yemen. In recent years, many studies have been conducted in different countries, focusing on cohesive devices. However, not much attention has been given to address the lack of cohesion in students' writing, especially in Yemen. Therefore, this study was devoted to explaining the use of conjunctive devices in Yemeni undergraduate learners' essays.

3. Methodology

In this study, the quantitative approach has been adopted to quantify conjunctive cohesive devices in learners' writings. The samples of this study were 32 scripts selected out of 159 by picking up every fifth essay systematically till the required data was selected. The data were collected from English Department, Faculty of Education, Sana'a University, Yemen, during the academic year (2017/2018) in final English written exams in advanced writing.

4. Results of the data analysis

This part was about representing conjunctive cohesive devices in the data based on the total and the percentage and providing further details of each type of conjunctive cohesive device.

4.1 Students' use of conjunctive cohesive devices

In this part, the total frequency and percentage of each conjunctive cohesive type are represented, as shown in Fig.1.

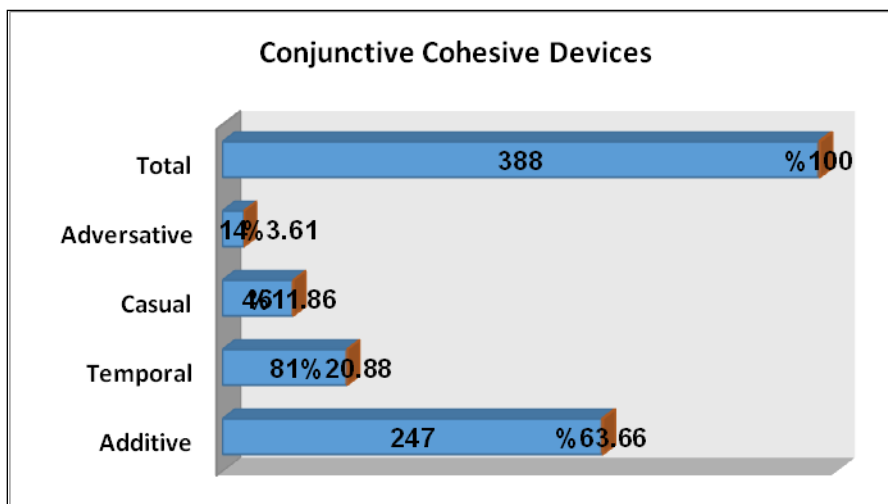


Fig.1: Learners' use of conjunctions

Fig.1. showed that the total frequency of learners using conjunctive cohesive devices was 388. The additive conjunctive cohesive devices occupied the highest frequency where learners used additive conjunctions 247 times (63.66%). The temporal conjunctions occupied the second-highest position with 81 times (20.88%). The causal conjunctive cohesive devices occupied the

third-highest frequencies 46 times (11.86%). The least type was adversative conjunctive devices which only occurred 14 times (3.61%).

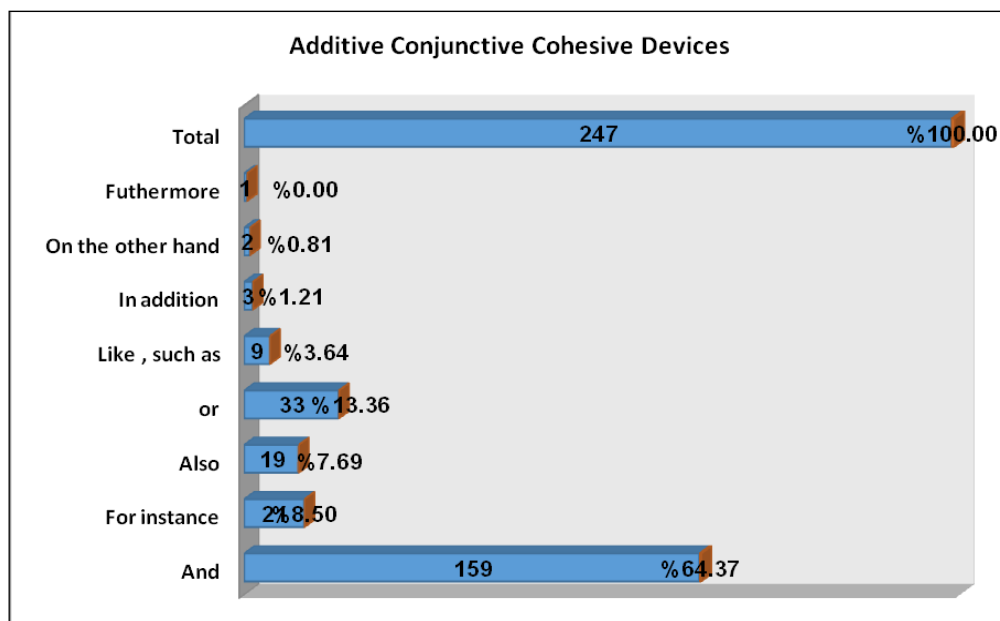
4.2. The types of conjunctive cohesive devices used by the students

This section provides further details of each conjunctive cohesive device found in the third-year university learners' essays in English.

4.2.1 Students' use of additive conjunctive cohesive devices

This part showed the total frequency and percentage of all the observed additive conjunctive cohesive devices, see Fig.2.

Fig.2:



Learners' use of additive conjunctions

Fig.2 revealed the frequency and percentage of additive cohesive devices that third-year university students used in their English written essays. This bar presents the additive conjunctions used by the learners in the additive cohesive devices category like "and, for instance, also, or, likewise as like or such as, in addition, on the other hand, furthermore. The conjunct 'and' was the most frequently occurred conjunct additive device. Learners widely used this cohesive device 159 times (64%37).

Some other additive devices that were found in the text are: "for example"21 times (8%50), "also" 19times (7%69), "or" 33times (13%36),"such as"9times (3%64). Some additive devices were rarely observed, such as "in addition"3 times, (1%21), "on the other hand" 2 times (0.81%),"furthermore" only 1 time (0%00).

4.2.2 Students' use of temporal conjunctive cohesive devices

This part showed the total frequency and percentage of all the observed conjunctive temporal cohesive devices, see Fig.3.

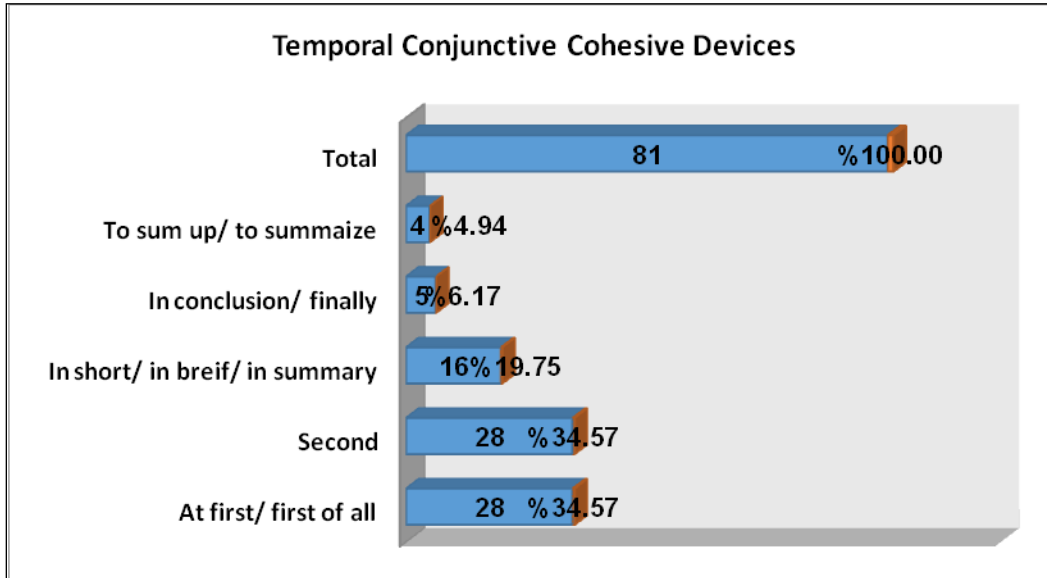


Fig.3: Learners' Use of temporal conjunctions

Fig.3. revealed the frequency and percentage of cohesive temporal devices that third-year university students used in their English written essays. In this bar, it was observed that learners used some of the temporal conjunctions in their essays like "first," "second," "in short," "in conclusion," and "to sum up." "First" and "second" temporal conjunctions both occupied the highest frequency 28 times (34.57%). The next temporal conjunction with the second high frequency was "in short, in brief, in summary," 16 times (19.75%). It was worth mentioning that there are other temporal conjunctive devices used by the learners like "in conclusion, finally" occurred 5 times (6.17%) followed by "to sum up," which occurred 4 times (4.94%).

4.2.3 Students' use causal conjunctive cohesive devices

This part showed the total frequency and percentage of all the observed causal conjunctive cohesive devices, see Fig.4.

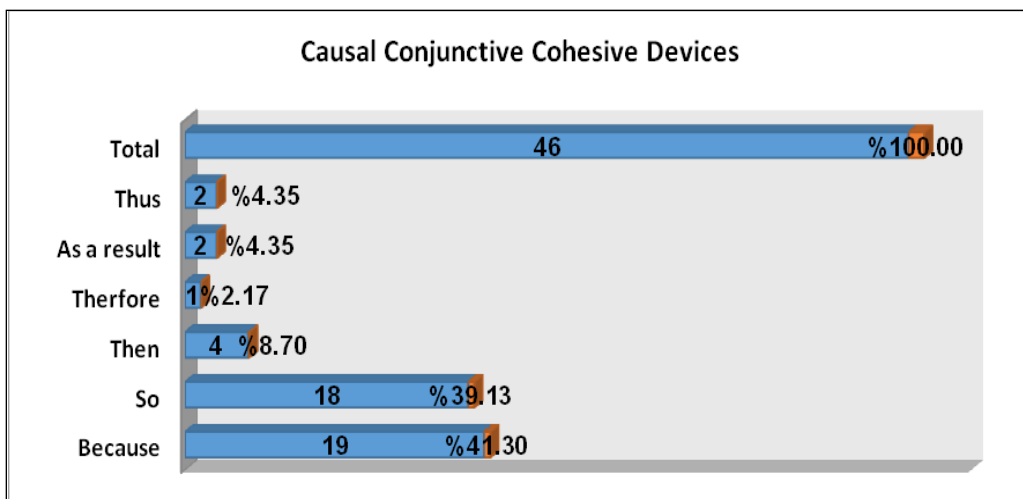


Fig.4. Learners' use of causal conjunctions

Fig.4. revealed the frequency and percentage of cohesive causal devices. In this bar, it was observed that six types of causal conjunction were found in the written script. "Because" and "so" were the most frequently causal conjunctions used among all the cohesive causal devices. This study revealed that "because" cohesive device was the most frequent type occurring 19 times (41.30%), followed by "so" 18 times (39.13%). The third casual conjunction was "then," which occurred 4 times (8.70%). Some of the casual devices were scarcely used by the learners, including "thus and "as a result." These two causal conjunctions had the same frequency and percentage of 4.35%. The least number of causal conjunctions used in this study was "therefore," which appeared only 1 time (2.17%).

4.2.4 Students' use adversative conjunctive cohesive devices

This part showed the total frequency and percentage of all the observed adversative conjunctive cohesive devices, see Fig.5.

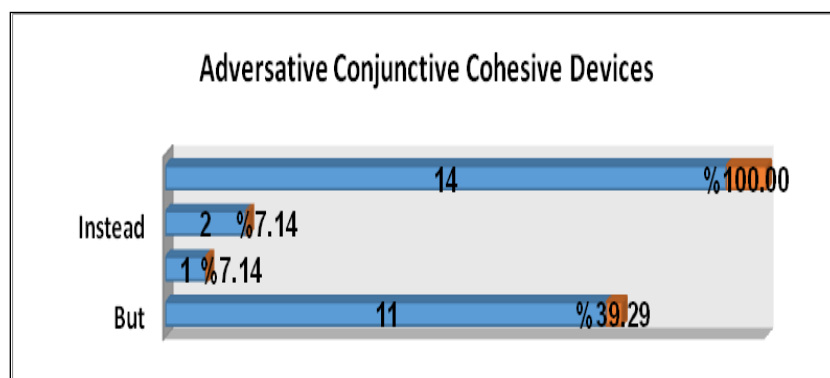


Fig.5: Learners' use of adversative conjunctions

Fig.5. revealed the frequency and percentage of adversative cohesive devices. This figure showed 'that' and 'but' was the most frequently adversative type used 11 times (39.29%). The second adversative conjunction was "instead," which appeared 2 times (7.14%), followed by "however." It was evident that the learners used 'but' most of the time compared to other adversative cohesive devices.

5. Results and Discussion

The researchers analyzed four conjunctive types, i.e., additive, temporal, causal, and adversative, found in learners' writings using the taxonomy (Halliday and Hasan 1976). Learners employed all four conjunctive types. However, in these types, learners do not have an imbalance in cohesive devices where some devices were highly or frequently used while the other conjunctions were rarely used or neglected. This was shown through the frequency of cohesive devices using "additive and adversative conjunctive devices," where "additive" is at this high rate. However, in comparison to the use of other elements in conjunction devices, it was found that other conjunctive cohesive devices were so scarcely used as in "adversative conjunctive devices."

This study provided further details of each conjunctive cohesive device found in learners' essays. In **additive conjunctive cohesive devices**, it could be recognized that there was an imbalance in additive cohesive devices where some devices were highly or frequently used while the majority of the other additive conjunctions were scarcely used or neglected. This was shown through the frequency of additive cohesive devices using "and" at a high rate.

In this study, there were other additive cohesive devices which the learners did not use in their essays either because they neglected them or might be that they were unaware of them like "*nor, or else, thus, similarly, that is, or else, on the other hand, besides, incidentally, in other words, by contrast alternatively, in the same way, and by the way.*"

In **cohesive temporal devices**, the same happens in temporal devices where there is an imbalance in cohesive temporal devices where using "first or second" was a high rate. In this study, there were some cohesive temporal devices which was not found in the text or might be neglected by the learners while composing their essays like "*an hour later, at the same time, at this moment, until then, next time, on other occasions, after a time, after that, at once, thereupon, before that, first...then, meanwhile, next day, previously, soon, then, next, just then, and up to now, etc.*"

In **cohesive causal devices**, some were highly or frequently used, while most of the other causal conjunctions were scarcely used or neglected as using "because" was with a high rate. In this study, there were some cohesive causal devices which was not found in the text or might be neglected by the learners while composing their essays like "*consequently, for, with reference to this, with this in mind, in this respect, it follows, on account of this, on this basis, on the other respect, to this end, and aside from this, as a result, for this purpose, in consequence, arising out*"

of this, hence, in such an event, in that case, in this regard, because of this, otherwise, that being so, then, under other circumstances, under the circumstances, for this reason.”

In **adversative cohesive devices**, in comparison to the use of elements in adversative conjunction devices, it was found that the majority of these adversative conjunctive cohesive devices were so scarcely used or neglected, or they have not been used at all. Examples of adversative conjunctive cohesive devices which was not present in the text and had the potential to enrich the learners' essays were “*despite this, rather, although, nevertheless, yet, though, in fact, at least, as a matter of fact, I mean, at the same time.*” The absence of such devices indicates learners' lack of knowledge about these devices.

6. Findings and Suggestions

Based on results of the study, a total of 388 conjunctive cohesive devices were found in the Yemeni third-year University learners' essays in their English written exams. As mentioned earlier, learners employed all four conjunctive types. Among the four conjunctive devices, the most dominant conjunctive cohesive device was additive, followed by conjunctive temporal devices. The third type of conjunctive cohesive device was causal conjunctive devices, and the least frequency was of the adversative conjunctive device.

This study showed that learners have not mastered using different types of conjunction cohesive devices like high-frequency occurrences of only one type of conjunctive device, and a low occurrence of other types was prevalent in the text. For example, the additive cohesive devices, as mentioned above was found 247 times (63.66%), while other conjunctive cohesive devices like adversative conjunctive devices were found only 14 times (3.61%).

This study revealed that though learners used all four conjunctive types in their writings, they neglected many conjunctive cohesive devices. They used higher rates of extensive elements in only one type and neglected the other ones. This imbalance use of other types of conjunctive cohesive devices was also common where some devices were highly or frequently used while the majority of the other conjunctions were neglected. The frequency of adversative conjunctive devices indicates that most of the adversative conjunctions were not used at all, and the case was the same with other conjunctive cohesive types where most of their devices were totally ignored, as discussed above.

Based on the frequency results of this study, it can be interpreted that either the students are unaware of some of the types of cohesive devices or are unable to use them in their writing. While analyzing conjunctive cohesive devices, it has been realized that the third-year university learners did not have enough knowledge of using all types of conjunctions subconsciously in their academic writings. Learners who may have little experience with using simple conjunctions to connect their ideas are not aware of the different types of conjunction cohesive devices. Therefore, they have not employed a majority of them in their writings.

Suggestions

Based on the results of this research paper, teachers, students, policymakers, or those interested can get some recommendations to overcome a challenge faced in using conjunctive cohesive devices in writings.

Teachers should create some activities in the class using authentic materials to raise their learners' awareness about the various types of cohesive devices. Extracts from newspapers or magazines can be given to the learners to find out all the cohesive devices they can see in the texts and put them under different categories. Strips of short stories (jumbled up) can be given to the learners by dividing them into groups or pairs to organize the strips in their correct sequence to complete the story. They should also encourage the students by giving good grades or grace marks for using different cohesive devices in their written exams and assignments.

Learners should not only depend on the classroom lessons regarding these conjunctive cohesive devices; instead, they should indulge in self-practicing these devices in their creative writing tasks to improve their discourse competence.

7. Conclusion

It can be concluded that learners have employed all four types of conjunctive devices in their writings. The paper also revealed that the learners used additive conjunctive devices most frequently followed by temporal and causal conjunctive devices. On the other hand, the adversative conjunctive device has been scarcely employed in the text. The additive conjunction 'and' was seen to have been vigorously used by the learners. In addition, it was found that some devices frequently occurred while most other types were left out in the learners' essays. These uneven occurrences of different cohesive devices confirm the students' lack of knowledge of using different cohesive devices available in the English language. The conclusion drawn was that the Yemeni EFL learners need to master organizing the text through different conjunctions. Some extra effort was recommended on language teachers to assist the learners to achieve the desired level of proficiency in composing a coherent text.

References

- Abu-Ayyash, A.S, Mckenny, J. A. (2017). The flesh and the bones of cohesive devices : towards a comprehensive model. *Journal of World Languages*, 4(2), 94–117. <https://doi.org/10.1080/21698252.2017.1417687>.
- Ahmed, A. H. (2010). Students' problems with cohesion and coherence in EFL essay writing in Egypt: Different perspectives. *Literacy Information and Computer Education Journal*, 1, 211-221.
- Alacon, J.B.,Morales, K.N. (2011). Grammatical cohesion in students' argumentative essay. *Journal of English and Literature*, 2, 114-127.

- Al-Jarf, R.S. (2001). Processing of cohesive ties by EFL Arab College students. *Foreign Language Annals*, 34, 141-151.
- Al-khalidy, H. O. (2018). The use of conjunctions as grammatical cohesion in the speeches of her Majesty Queen Rania of Jordan. AlBaha, Saudi Arabia: AlBaha University.
- Anderson, J. (1996). *The Architecture of Cognition*. Mahwah, NJ: Lawrence Erlbaum Publishers.
- Bamberg, B. (1984). Assessing coherence: A reanalysis of essays written for the national assessment of educational progress, 1969-1969. *Research in the teaching of English*, 18, 305-319.
- Bjork., Raisananen, C. (1997). *Academic writing: A university writing course*. Lund, Sweden: Student literature Publishing.
- Brown, G., Yule, G. (1993). *Discourse analysis*. Cambridge, UK: Cambridge University Press.
- Celce-Murcia, M., & Larsen-Freeman, D. (1999). *The grammar book: An ESL/EFL teacher's course* (2nd Ed.) Boston: Heinle & Heinle Publishers.
- Crewe, W. J. (1990). The Illogical of logic connectives. *ELT Journal*, 44 (4), 316-325.
- Elraggas, A. A. (2014). *Libyan Graduate Students Encounter English-Writing Difficulties While Attending U.S. Universities*. Terre Haute: ProQuest LLC.
- Ferris, D. R. (1994). Lexical and syntactic features of ESL writing by students at different levels of L2 proficiency. *TESOL Quarterly*, 28, 414-420
- Fitzgerald, J., Spiegel, D.L.(1986). Textual cohesion and coherence in children's writing. *Research in the Teaching of English*, 20, 263-280.
- Fraser, B. (1999). What are the discourse markers? *Journal of Pragmatics*, 31, 931-952.
- Ghasemi, M. (2013). An Investigation into the use of cohesive devices in second language writings. 3(9), 1615–1623. <https://doi.org/10.4304/tpls.3.9.1615-1623>.
- Granger, S., & Tyson, S. (1996). Connector's usage in the English essay writing of native and nonnative EFL speakers of English. *World Englishes*, 15 (1), 17-27.
- Halliday, M. A. K., and Hasan, R. (1976). *Cohesion in English*. London, England: Longman
- Hessamy, G., & Hamed, S. (2013). A Comparison of the use of cohesive devices in EFL learners' performance on independent vs. integrated Writing Tasks. *Studies in English Language Teaching*, 1(1), 121. <https://doi.org/10.22158/selt.v1n1p121>.

Huddleston, R. D., & Pullum, G. K. (2002). *The Cambridge Grammar of the English language*. New York: Cambridge University Press.

Khelifii, W. (2014). *The use of cohesive devices in Paragraph Writing case study: Second Year LMD students at Biskra University*. Algeria: Biskra University.

McCarthy, M. (1991). *Discourse analysis for language teachers*. Cambridge, UK: Cambridge University Press

McCulley, G.A.(1985). Writing quality, coherence, and cohesion. *Research in the Teaching of English*, 19, 269-280.

Zamel, V. (1983). Teaching those missing links in writing. *ELT Journal*, 37.

Articulation and Speech Intelligibility after Hemiglossectomy

V.Jaya*, V.Monish**,R.Johnsi Rani*

Abstract

The present paper investigates the articulation and speech intelligibility of patients after hemiglossectomy. Hemiglossectomy is removal of one side of tongue while leaving the other side of tongue intact. Articulation characteristics of patients after hemiglossectomy found to be disrupted. In reading task, the patients showed better speech intelligibility compared to spontaneous speech. Speech intelligibility was found to be reduced as a result of articulation errors in their speech. Effective rehabilitation can be planned based on the comprehensive speech assessment and articulation error analysis.

1. Introduction

The tongue is a muscular structure and active articulator in the oral cavity which is important for speech production. During production of speech, appropriate lingual mobility as well as strength is important for articulatory precision. The tongue contains two groups of muscles known as intrinsic and extrinsic muscle. The intrinsic muscles help in producing rapid, delicate, refined pattern of movement for articulation. The extrinsic muscle help in moving the tongue as a single unit, exhibit general posture for articulation and alter the position of tongue during articulation (Seikel, Drumright, King, & Seikel, 2015). The tongue is the most common site for intraoral cancer in most countries (Moore, Johnson, Pierce, & Wilson, 2000).

2. Review of Literature

Glossectomy refers to various surgical procedures for the removal of tumors of the tongue (Logemann, 1985; Pauloski, Logemann, & Rademaker, 2020). The types of glossectomy includes partial glossectomy (removal of part of tongue), hemi glossectomy (removal of one side of tongue while leaving the other side of tongue intact) and total glossectomy (removal of tongue completely) (OncoLink, 2020). The glossectomy influence the speech sound production. The residual tongue segment following glossectomy is unable to make adequate contacts in precise, rapid pattern which results in speech sound distortions. Changes in tongue shape and size also result in changes in vocal tract resonance, reduced pitch, reduced range of pitch, guttural voice quality, changes in nasality, and increased oral and pharyngeal noises (Gillis, & Leonard, 1983; Skelly, Spector, Donaldson, Brodeur, & Paletta, 1971). Speech intelligibility following glossectomy is associated with the amount of intact tissue (Hufnagle, Pullon, & Hufnagle, 1978;

*Faculty, Institute of Speech & Hearing, Madras Medical College, Chennai.

** Speech language pathologist, NIEPMD, Chennai.

Massengill, Maxwell, & Pickrell, 1970). The factors that influence the speech following glossectomy are the amount of tissue that was removed and its site (Massengill, Maxwell, & Pickrell, 1970), flexibility of the residual portion of tongue, especially in the middle and rear position (Michi, Imai, Yamashita, & Suzuki, 1989), the extent to which the remaining other structures (lips, teeth, palate, pharynx, larynx) required for speech remains intact, the type of reconstruction of the tongue that has been performed (LaBlance, Kraus, & Steckol, 1991).

Need for the study

There are very few research studies on speech characteristics of Tamil speaking individuals who have undergone hemiglossectomy. Hence, the present study was conducted to evaluate the articulatory performance and speech intelligibility of patient's following hemiglossectomy.

Aims of the study

The aims of this study were (i) To investigate the articulatory characteristics of patients after Hemiglossectomy and (ii) To compare the speech intelligibility of patients after hemiglossectomy on spontaneous speech task and reading task

3. Methodology

The following methodology was followed in this study.

3.1. Participants

In this study, ten patients who have undergone hemiglossectomy as a treatment for oral cancer were included. These patients were aged between 30 to 60 years. Among the ten patients, nine were male and one was female. All the patients had Tamil as their native language. They were using Tamil for their day-to-day communication. All of them were literate, were able to read and write in Tamil. Mini-Mental Status Examination (MMSE) developed by Folstein and McHugh (1975) test was administered to all the patients to rule out any cognitive impairment. Language use and comprehension is one of the several areas which are included in MMSE.

3.2. Tools and Procedure

Tamil articulation test (Usha, 1986) was used for assessing the articulation. The words which include the target phoneme were presented by the experimenter and the patients were asked to repeat the words. Speech samples were recorded. The speech samples of each patient were transcribed in IPA by the experimenter. The transcription of each word was marked as correct production of the target phoneme or incorrect target phoneme production. If incorrect, further it was analyzed for substitution, omission, distortion or addition of phoneme.

Evaluation of speech intelligibility

Speech intelligibility of the patients was assessed using various tasks such as spontaneous speech and reading task. The patient's spontaneous speech and reading were recorded. For reading task, standardized Tamil passage (Savithri, & Jayaram, 2008) was used. The recorded speech samples were given to three experienced speech language pathologists. For rating, Speech Intelligibility rating scale which was developed at Ali Yavar Jung National Institute of Speech and Hearing Disabilities, Mumbai(2003) was used and then average score was taken. Perceptual Speech Intelligibility rating scale is a seven point rating scale in which a score of 0 indicate normal, 1 indicate can understand without difficulty however feels speech is not normal, 2 indicate can understand with little effort, 3 indicate can understand with concentration and effort, especially by a sympathetic listener, 4 indicate can understand with difficulty and concentration by family, but not by others, a score of 5 indicate can understand with effort if the context is known, a score of 6 indicate cannot understand at all, even when the context is known.

4. Results

Articulation characteristics

Overall, in patients after hemiglossectomy, in articulation assessment distortion errors were observed in linguo-alveolar, linguo-velar, and linguo-palatal sounds. Most commonly observed distorted target consonant was /t/, followed by /d/, /l/, /r/, /k/, /g/, /tʃ/,/dʒ/. Most commonly substituted vowel was /a/ for /tʃ/, and /dʒ/.

Speech intelligibility

Ratings of speech intelligibility of the patients using Perceptual Speech Intelligibility rating scale indicated that on average the rating score was 3.2 (SD-1.16) for spontaneous speech and on average the rating score was 2.2 (SD-1.16) for reading task. Thus, the speech intelligibility was found to be better in reading task with a mean of 2.2 (the lower the rating score, better the speech intelligibility).

5. Discussion

This study investigated the articulation characteristics of patients after hemiglossectomy. Descriptive analysis revealed that in articulation assessment, distortion errors were observed in linguo-alveolar, linguo-velar, and linguopalatal sounds. Since the tongue movements were limited during speech production in these patients, the tongue was unable to be in the appropriate place and position for the production of sounds especially lingual sounds such as linguoal-veolar, linguo-velar, and linguopalatal sounds. In these hemiglossectomy patient, speech perception and language comprehension were intact. So, only phonetic errors were observed due to compromised lingual movements following hemiglossectomy.

In a study done by Jaya, Saravanan, Ranganathan and Gandhi (2016), the findings revealed that following surgery in individuals with tongue cancer, the most common articulation errors were

substitution, distortion as well as omission of bilabial, lingual-alveolar and linguo-palatine sounds, along with impaired speech intelligibility. Burtet, Grando, and Mituuti (2020) reported that distortion in lingual-alveolar phonemes such as /r/ and /l/ as well as lingual-palatals phonemes such as /s/, /z/, /ʃ/, /ʒ/ in addition to articulatory inaccuracy were found in patients who have undergone glossectomy.

The speech intelligibility of the hemiglossectomy patients was found to be better in reading task when compared to spontaneous speech. This result receives support from the study done by Nakamura, Iwano, and Furui (2008) in Japanese language in which they analyzed the differences in acoustic characters between spontaneous speech and reading. They highlighted that spectral reduction was the main reason for the less accuracy of recognition in spontaneous speech. Also, they mentioned that spontaneous speech and reading were significantly different linguistically and acoustically. Miller and Schwaneflugel (2006) mentioned that during oral reading, students frequently pause at different locations, like after commas, as well as at the end of sentences, due to their cognitive language needs. Chen (2009) reported that pauses could have the functions of speech planning, breathing, articulation and rhetoric effect. Pausing was important for intelligibility (Chen, 2006). Wang (2010) mentioned that in dysarthria, the intelligibility of speech is poor with spontaneous speech when compared with automatic speech such as reading, counting, and recitation when the speech content was given. In our study hemiglossectomy patients, during oral reading task, where the written text was provided, they were able to pause with sentence end, following commas. Pauses can be affected by the semantic and syntactic organization of the text (Breanitz, 1989). Pauses allowed the speaker to breathe, plan their speech, which aids the listener to detect the demarcation in the stream of speech (Cenoz,1998). Therefore, in reading task, the patients showed better speech intelligibility compared to spontaneous speech task which involves thinking process.

6. Conclusion

Speech intelligibility was found to be reduced as a result of articulation errors in their speech. Effective rehabilitation can be planned based on the comprehensive speech assessment and articulatory error analysis.

References

- Breanitz Z (1989). Vocalization and Pauses in Fast-Paced Reading. *J. General Psychol.* 117(2):153-159.
- Burtet, M. L., Grando, L. J., &Mituuti, C. T. (2020). Swallowing and speech of patients submitted to glossectomy due to tongue cancer: cases report. *Audiology-Communication Research*, 25.

- Cenoz J (1998). Pauses and communication strategies in second language speech. (ERIC Document Reproduction Service No. ED426 630.
- Chen HC (2006). Interlanguage phonetic timing patterns and their effects on native listener's perceptions. Unpublished Doctoral Dissertation of National Kaohsiung Normal University.
- Chen WC (2009). A comparative analysis of silent pauses in two-way sight translation. Unpublished Master's Thesis of National Changhua University of Education.
- Folstein MF, Folstein SE, McHugh PR: "Mini-Mental State": a practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res* 1975; 12:189-198.
- Gillis, R.E., & Leonard, R.J. (1983). Prosthetic treatment for speech and swallowing in patients with total glossectomy. *The Journal of Prosthetic Dentistry*, 50: 808-814.
- Hufnagle, J., Pullon, P., & Hufnagle, K. (1978). Speech considerations in oral surgery. Part2: Oral surgery. *Oral Medicine and Oral pathology*. 46(3): 354-361.
- Jaya V, Saravanan G, Ranganathan V, Gandhi A. Speech outcome in oral cancer patients - pre- and post-operative evaluation: a cross-sectional study. *Indian J Palliat Care*. 2016 Oct-Dec;22(4):499-503. <http://dx.doi.org/10.4103/0973-1075.191858>. PMID:27803574.
- LaBlance, G. R., Kraus, K., & Steckol, K. F. (1991). Rehabilitation of Swallowing and Communication Following Glossectomy. *Rehabilitation Nursing*, 16(5): 266-270. <https://doi.org/10.1002/j.2048-7940.1991.tb01231.x>
- Logemann, J. A. (1985). Aspiration in head and neck surgical patients. *Ann OtoRhinoLaryngology*, 94:373.
- Massengill, R., Maxwell, S., & Pickrell, K. (1970). A swallowing characteristic noted in a glossectomy patient. *Plastic and Reconstructive Surgery*, 45(1), 89-91.
- Michi, K., Imai, S., Yamashita, Y., & Suzuki, N. (1989). Improvement of speech intelligibility by a secondary operation to mobilize the tongue after glossectomy. *Journal of Cranio-Maxillo-Facial Surgery*, 17(4), 162-166.
- Miller J, Schwanenflugel PJ (2006). Prosody of Syntactically Complex Sentences in the Oral Reading. *J. Educ. Psychol.* 98(4):839-853.

- Moore, S. R., Johnson, N. W., Pierce, A. M., & Wilson, D. F. (2000). The epidemiology of tongue cancer: a review of global incidence. *Oral diseases*, 6(2), 75-84.
- Nakamura, M., Iwano, K., & Furui, S. (2008). Differences between acoustic characteristics of spontaneous and read speech and their effects on speech recognition performance. *Computer Speech & Language*, 22(2), 171–184. <https://doi.org/10.1016/j.csl.2007.07.003>
- Pauloski BR, Logemann JA, Rademaker AW, et al (1994) Speech and swallowing function after oral and oropharyngeal resections: One-year follow-up. *Journal of Head Neck*, 16, 313.
- Savithri, S. R., & Jayaram, M. (2008). Rate of speech/reading in Dravidian languages. *Journal of the All India Institute of Speech & Hearing*, 27, 29–39.
- Seikel, J. A., Drumright, D. G., King, D. W., & Seikel, J. A. (2015). *Anatomy & physiology for speech, language, and hearing*. Clifton Park, NY: Cengage Learning.
- Skelly, M., Spector, D., Donaldson, R., Brodeur, A., & Paletta, F. (1971). Compensatory physiologic phonetics for the glossectomee. *Journal of Speech and Hearing Disorders*, 36(1), 101-114.
- Surgical Procedures: Glossectomy. (2020). <https://www.oncolink.org/cancers/head-and-neck/treatments/surgical-treatments/surgical-procedures-glossectomy>.
- Usha, D. (1986). A Test of Articulation in Tamil. Unpublished Masters Dissertation; University of Mysore, Mysore.
- Wang, E. Q. (2010). Dysarthria. In Kompoliti, K, Metman, L, V, (Ed.) *Encyclopedia of Movement Disorders*, Volume 1. Elsevier Ltd. San Diego, CA.

A Cross-Linguistic Study of Telugu and Swahili Number Systems

¹Kalloji Susheel Kumar and ²Augustino Amos Kagwema

Abstract

*This paper presents a comparative analysis of number system of two agglutinating languages; Telugu, a Dravidian language spoken in Telangana-India and Swahili, a Bantu Niger-Congo language spoken in Tanzania, Kenya, Uganda, Rwanda and Burundi. The aims of this paper are twofold: 1) to examine the morpho-syntactic characteristics of the number system of these two languages and 2) to analyse the morphophonemic alternations appealing to number system of these languages. The findings show that both languages have two number systems, singular and plural, which can be described as [-dual] languages. It is observed that Telugu forms plural by means of suffixation and that the base form of common nouns is nominative singular. Contrarily, Swahili forms plural by prefixation and zero morpheme, the Swahili common noun root forms have dependent structure, some which are independent are neither plural nor singular. Unlike Telugu, Swahili number features have agreement with other elements making a phrase. The plural formation in these two languages is interesting in that Telugu utilizes a wide range of morphophonemic alternations when the plural suffix **-lu** is attached. Surprisingly, in Swahili there are many prefixes which are used for plural formation and their occurrence is determined by Noun class system. This study is very interesting in that it presents how different languages encode the same world view differently. For example, while Telugu views animals like dogs and tigers as singular and plural, Swahili looks at them as neither singular nor plural. The number feature for animals in Swahili is depicted through concord.*

Key words: Number, concord, noun phrase, Telugu and Swahili

1. Introduction

This paper presents a comparative analysis of number system of two agglutinating languages; Telugu, a Dravidian language (Krishnamurti, 2003) spoken in south India and Swahili, a Bantu Niger-Congo language spoken in Tanzania, Kenya, Uganda, Rwanda and Burundi. The aims of this paper are twofold: 1) to examine the morpho-syntactic characteristics of the number system of these two languages and 2) to analyse the morphophonemic alternations appealing to number system of these languages.

Swahili is a Niger-Congo Bantu language spoken in East Africa, predominantly Kenya and Tanzania (Schadeberg, 2001). Typologically, it is an agglutinating language i.e. morphemes are joined together, and each and every morpheme can be isolated from the word. This paper distills the number system of these two languages systematically and analytically to the point of making

¹ Assistant Professor, Department of Linguistics, Osmania University

² Assistant Lecturer, Mkwawa University College of Education – Tanzania

a significant contribution to our current understanding of cross-lingual studies as far as Swahili and Telugu are concerned.

This paper is organized in the following way; section 2 talks about the methodology adopted by the paper, section 3 presents the basic facts about nouns in these two languages, section 4 is the analysis part and section 5 is conclusion.

2. Methodology

The data and materials used in this paper were collected through elicitation and introspection and consulting the available text. Four (two boys, two girls) Telugu speakers were asked to give Telugu words in singular and plural form. The researcher also asked them to translate some English phrases and sentences which were in singular and plural forms. Also the researcher read some books on Telugu description to gain an understanding of the way Telugu language marks plural. Regarding Swahili data, the researcher used introspection since he is a native Swahili speaker and also he read some articles on Swahili number system.

3. Swahili and Telugu Nouns

3.1. Swahili Nouns

Swahili nouns are basically made up of bound roots and number prefixes or abstract noun prefix u-. However, some nouns which do not make distinction between singular and plural overtly have free roots; for example; shule ‘school’ kuku ‘chicken’ and nyumba ‘house’. Swahili Nouns are divided into different classes and every class is associated roughly with certain semantic features like human beings, animals, plants, artefacts, abstract concepts and the like. There are 18 classes in Swahili and they are numbered on the basis of Meinhof one of the earliest scholars of Bantu languages. The classification of Swahili nouns gives a distinction between singular (SL) and plural (PL) nouns. These classes are as presented below (cf. Petzell, 2005) in the following table -

Table 1: Swahili Semantic Categories and Number System

Semantic Categories	Noun Class	Numbering of Prefixes	Nominal Prefixes	Examples
Names of human beings	SG	1	m-, mw-	m-toto (child), mw-alimu (teacher)
	PL	2	wa-, w-	wa-toto (children), w-alimu (teachers)
Names of trees, nature, plants, body parts	SG	3	m-, mw-	m-guu (leg), mw-embe (mango tree)
	PL	4	mi-	mi-guu (legs), mi-embe (mango trees)

Names of fruits, nouns of Arabic origin, augmentatives	SG PL	5 6	(ji)- ma-	darasa (class), ji-tu (person) ma-darasa (classes), ma-jitu (persons)
Everyday objects, languages, diminutives	SG PL	7 8	ki-, ch-, vi-, vy-,	ki-ti (chair), ch-akula (food) vi-ti (chairs), vy-akula (food, pl.)
Abstract and concrete things, animals, natural elements	SG PL	9 10	(N)- (N)-	mbwa (dog), nyumba (house) mbwa (dogs), nyumba (dogs)
Nouns of objects, abstract nouns	SG PL	11 12	u-, (N)-	u-kuta (wall), u-koo (clan), u-nyayo (foot) kuta (walls), koo (clans), nyayo (feet)
Nouns of objects, abstract nouns	SG PL	13 14	u-, ma-	u-gonjwa (disease), u-nyoya (feather) ma-gonjwa (diseases), ma-nyoya (feathers)
Verbal Nouns		15	ku-	Kuimba (singing), kuandika (writing)
Locatives		16, 17, 18	pa-, ku-, mu-	pa-le (there), ku-le (there (far)), mu-le (there (inside))

3.2. Telugu Nouns

Telugu nouns have the basic that is identical with the nominative singular. Thus, the singular form of Telugu nouns is taken as the stem of the given noun. In forming plural, Telugu uses the plural suffix –lu attached at the end of the singular noun. When this particular suffix is attached it results to different changes in the shape of the root as it will be shown in the discussion below. Examples of Telugu noun stems are:

peeru ‘name’, uuru ‘village’ and guDi ‘temple’ whose plural forms are peeLLu, uuLLu and guLLu respectively.

4. Data analysis on the differences between Swahili and Telugu number system

4.1. Morphophonemic changes in plural formation

Plural formation in Telugu is mainly characterized by changes to the shape of the root due to the addition of a plural morpheme, -lu. These morphophonemic changes (sandhi) do not exist in Swahili as far as number is concerned. In Telugu, changes of this sort include: (cf. Krishnamurti, 1985)

- i. Stem final [i/u] preceded by T, NT or ND is lost before plural suffix -lu.
Examples: baNTu ‘soldier’ baNTLu ‘soldiers’
 paNDu ‘fruit’ paNDLu ‘fruits’
 kooTi ‘a crore’ kooTLu ‘crores’
- ii. Stems ending in Di, Du, lu and ru the final syllable becomes L before Lu
Examples: baDi ‘school’ baLLu ‘schools’
 naaDu ‘day’ naaLLu ‘days’
 kaalu ‘leg’ kaaLLu ‘legs’
 uuru ‘village’ uuLLu ‘villages’
- iii. Stem final llu or nnu following a short vowel becomes ND or L before Lu
Examples: kannu ‘eye’ kaNDlu/kaLLu ‘eyes’
 : illu ‘house’ iNDlu/iLLu ‘houses’
- iv. Stem final am is replaced by aa before plural -lu
Examples: pustakam ‘book’ pustakaalu ‘books’
 gurram ‘horse’ gurraalu ‘horses’

It is worth mentioning that, these are just examples of the many Telugu sandhi changes that take place as the result of the addition of the plural suffix -lu. Since Telugu nouns exhibit some phonological similarities, they can be classified as such. On the contrary, Swahili nouns are classified on the basis of some semantic features albeit not per se semantically determined.

4.2. Concord

In Swahili the number property of a noun is both inherent and agreement. In this respect, a noun in its isolation form can encode number in terms of singular and plural as determined by the Noun classes discussed earlier. Here the point of departure between Swahili and Telugu is on the range of affixes used to depict number. In Telugu, the feature [-plural] is indicated by the base form of the noun, for example, pilli ‘cat’, puli ‘tiger’, illu ‘house’. In Swahili, there are different prefixes that mark [-plural] depending on the class to which a noun belongs, for example, m- (m-toto, m-ti), ki- (ki-ti, ki-su), u- (u-kuta, u-gonjwa) etc.

For the feature [+plural] Telugu uses the suffix -lu to form plural. As discussed earlier, what happens when this affix is attached is the change of the shape of the noun determined by morphophonemic alternations. Unlike Telugu, Swahili utilizes a wide range of

prefixes to form plural. Again the prefixes used are determined by the Noun class to which the noun belongs, for instance, wa- (wa-toto), ma-(ma-gonjwa), vi-(vi-ti), mi-(mi-ti) etc

On the other hand, Swahili number system seems to be more sensitive to concord as compared to Telugu. In the Swahili noun phrase number property of the head noun is copied to other elements forming that particular NP. When the Noun is singular, other elements will have to take the singular form, so do the plural forms. A very intriguing issue here is that, adjectives modifying the noun agree in number with the noun, so do other modifiers.

Examples

- i. m-sichana m-zuri
sg. girl sg. beautiful
beautiful girl
- ii. wa-sichana wa-zuri
pl. girl pl. beautiful
beautiful girls
- iii. ki-le ki-tabu ch-angu ch-eusi
that sg. book sg. mine sg. Black
that black book of mine
- iv. vi-le vi-tabu vy-angu vy-eusi
those pl. book pl. mine pl. black
those black books of mine

In phrase i and ii above, the noun –sichana ‘girl’ governs the number of the adjective –zuri ‘beautiful’ thus, when the noun takes the singular prefix m- so does the adjective, likewise when it takes the plural prefix w(a)- so does the adjective. The adjective singular/plural prefixes are determined by the noun class prefix of the noun, so the same adjective may change the number marker depending on the class of the noun which it modifies. In iii and iv above the noun –tabu ‘book’ governs number in the premodifier demonstrative –le, postmodifiers possessive pronoun –angu ‘mine’ and adjective –eusi ‘black’. As such, when the noun takes the singular marker ki-, so do other elements in the phrase, similarly when it takes the plural marker vi-, so do other elements.

In Telugu NPs number is not taken to the modifiers especially adjectives. Thus the adjective does not take the number feature from the noun just like English does.

For example, andamaina ammai ‘beautiful girl’

andamaina ammailu ‘beautiful girls’

manchi abbai ‘good boy’

manchi abbailu ‘good boys’

Beyond the NP, Swahili nouns encode number to the verb by marking the subject and/or the object. The number of subject is marked in the verb so does the number of the object. Consider the following examples:

- a. mw-alimu a-me-m-tuma mw-anafunzi
sg. teacher SM PFT OM send sg. Student
‘the teacher has sent the student’
- b. w-alimu wa-me-wa-tuma w-anafunzi
pl. teacher SM PFT OM send pl. student
‘teachers have sent the students’
- c. kisu ki-na-i-kata kamba
sg. knife SM PT OM cut rope
‘the knife is cutting the rope’
- d. visu vi-na-zi-kata kamba
pl. knife SM PT OM cut pl. rope
‘the knives are cutting the ropes’

In a. above, the subject mwalimu ‘teacher’ and the object mwanafunzi ‘student’ are marked by a- and m- respectively to signal the feature [-plural]. When these elements turned into plural in b. the markers also changed to wa- and wa- respectively to signal plural. Similarly, in c and d above the same thing happens but two things are observed: One, the subject markers are ki- (for singular) and vi-(for plural), also the object markers are i- for singular and zi- for plural. This entails that; the number encoded to verbs by noun must reflect the noun class to which it belongs. Two, even when the object (also subject) does not have the overt marker for singular/plural, the markers encoded in the verb reveal the speaker’s implication whether it is singular or plural.

In the case of Telugu subject is also marked in the verb in terms of gender, that is masculine or non-masculine, which indicates number as well. However, the mechanism employed by Swahili to encode number of the subject and object in the verb is not the same as that of Telugu.

4.3. Object marking in Swahili and Telugu

Intriguingly, in Swahili some nouns are not marked for plural in isolation. That is to say, some nouns will encode number covertly when they are in combination with other words, like in NPs and sentences. For example, animals, birds, some kinship terms and some objects do not have overt plural markers. The plural for these nouns is signaled by other elements in combination with that noun.

For example, kaka ‘brother’ kaka yangu ‘my brother’, kaka zangu ‘my brothers’;

simba ‘lion’ simba ‘lions’ simba mkubwa ‘big lion’, simba wakubwa ‘big lions’.

As far as Swahili is concerned, these nouns can be thought of being neutral since they do not encode any number on their own overtly.

This is contrary to Telugu in which the nouns that are not marked for plural in Swahili they encode number in Telugu.

For example; illu ‘house’, iNDlu ‘houses’,

baDi ‘school’, baLLu ‘schools’.

This is the justification that different languages (cultures) have different world view. While Swahili speakers consider some of the things solely singular, Telugu make a distinction of singular and plural.

For example, cakkera ‘sugar’ cakkeralu ‘sugar (pl)’

5. Conclusion

The foregoing discussion has presented a comparative study of number system in Telugu and Swahili. It is noticed that these two languages make a distinction between singular and plural, that is they are [-dual] languages. However, these languages do differ in the way they encode number to nouns in isolation and nouns in combination with other elements in a phrase or sentence. There is a need to undertake a deep study on these two languages from different language families so as to add to our understanding the differences and similarities across languages of the world.

References

Katamba, F. (1993). Morphology. London: Macmillan Press LTD.

Krishnamurti, Bh. and Gwynn, J.L. (1985). A Grammar of Modern Telugu. Delhi: Oxford University Press.

_____ (2003). The Dravidian Languages. Cambridge: CUP.

Lodhi, A. (2002). “Verbal Extension in Bantu: The Case of Swahili and Nyamwezi”. Africa and Asia: Gotteborg Working Papers on Asian and African Languages and Literatures, 2, 4-26.

Petzell, M. (2005). Expanding the Swahili Vocabulary. In Africa & Asia Vol 5 pp 85-107. Gothenburg University.

Schadeberg, T. (2001). Number in Swahili Grammar. In AAP 68 Swahili Forum VIII • 7- 16

Evaluation of Language Skills in Children born with Prematurity

Jyoshna Tanigundala*, Lokesh Lingappa**, V Thiruvalluvan***

Abstract

Human language capacity is represented in the brain. During the foetal period the brain undergoes extensive developmental changes as new synapses are formed and axonal connections between neurons are myelinated, facilitating efficient recognition and analysis of complex information. There is a “sensitive period” for language acquisition in which human infants have the ability to learn any language. Language acquisition is the process by which humans acquire the capacity to perceive and comprehend language, as well as to produce and use words and sentences to communicate. Several linguistic theories (nature vs nurture) have been formulated regarding language acquisition. Research conducted on preterm children's linguistic skills has provided varying pictures and the question of whether and to what extent preterm children are delayed in early language acquisition remains largely unresolved. The aim of the current study was to examine the linguistic development of preterm born children. A total of 60 children (30 preterm and 30 term) were examined for their language abilities at the corrected age of around 15months. Preterm children exhibited a delay in language. In particular, communicative-linguistic age tended to lag approximately 3 to 5 months behind chronological age when children were at 15months of age. Findings suggest that despite the significant biological risk endangered by premature birth, linguistic development appears to proceed in a relatively normal fashion among preterm children as in full-term children.

1. Introduction

Language acquisition is one of the quintessential human traits (Friederici, 2011). The capacity to acquire and use language is a key aspect that distinguishes humans from other beings. Language acquisition is the process by which humans acquire the capacity to perceive and comprehend language, as well as to produce and use words and sentences to communicate.

Speech perception always precedes speech production, and the gradually evolving system by which a child learns a language is built up one step at a time, beginning with the distinction between individual phonemes. Language acquisition involves structures, rules and representation. The capacity to use language successfully requires one to acquire a range of tools including phonology, morphology, syntax and semantics. A major debate in understanding

*PhD Scholar, Department of Linguistics, Annamalai University, Chidambaram

** Department of Neurology, Rainbow Hospitals, Hyderabad

***Dean, Department of Linguistics, Annamalai University, Chidambaram

language acquisition is how these capacities are picked up by infants from the linguistic input which mean all words, contexts, and other forms of language to which a learner is exposed, relative to acquired proficiency in first or second languages. Linguist Noam Chomsky made the argument that the human brain contains a limited set of rules for organizing language. In turn, there is an assumption that all languages have a common structural basis. This set of rules is known as universal grammar which is hard-wired into the brain, and manifest without being taught. Humans are born with innate facility for acquiring language, termed as Language Acquisition Device (LAD). It is the instinctive mental capacity which enables an infant to acquire and produce language (Shatz Marilyn, 2007).

The language acquisition device has three components: syntactic, semantic and phonological. The semantic component consists of a non-specific set of semantic rules that assign meanings to the deep structure. The goal is to convert a deep structure into a meaningful representation. The phonological component forms by a set of morphophonemic rules that govern the conversion of morphemes into phonemes. They regulate the pronunciation of words and utterances.

Furthermore, Chomsky's linguistic theory states that all the rules that allow the comprehension and production of language are logical and unconscious. These rules would determine, for example, that people should pronounce "ig" as [ay] in English when it precedes a nasal word ending, as in the case of sign [sayn]. Chomsky proposed his theory to explain how people acquire, understand, and produce spoken language. This theory postulates that all human beings acquire maternal speech automatically.

Chomsky has focused on the hugely complex nature of human grammars, the finiteness and ambiguity of the input that children receive, and the relatively limited cognitive abilities of an infant. From these characteristics, they conclude that the process of language acquisition in infants must be tightly constrained and guided by the biologically given characteristics of the human brain. Otherwise, they argue, it is extremely difficult to explain how children, within the first five years of life, routinely master the complex, largely tacit grammatical rules of their native language (Sakai & Kuniyoshi, 2005). Additionally, the evidence of such rules in their native language is all indirect— adult speech to children cannot encompass all of what children know by the time they've acquired their native language.

However, the nature and nurture debate acknowledge that certain aspects of language acquisition must result from the specific ways in which the human brain is "wired" (a "nature" component, which accounts for the failure of non-human species to acquire human languages) and that certain others are shaped by the particular language environment in which a person is raised (a "nurture" component, which accounts for the fact that humans raised in different societies acquire different languages). The main argument given in favour of the LAD was the argument

from the poverty of the stimulus, which argues that unless children have significant innate knowledge of grammar, they would not be able to learn language as quickly as they do, given that they never have access to negative evidence and rarely receive direct instruction in their first language (VanPatten, et.al., 2013).

2. Review of Literature

During the foetal period the brain undergoes extensive developmental changes as new synapses are formed (Kostovic & Judas, 2010) and axonal connections between neurons are myelinated (Moore & Linthicum, 2007), facilitating efficient recognition and analysis of complex information. This was suggested to occur in humans usually by the gestational age of 27 week (Hepper & Shahidullah, 1994). Some plastic changes in neural assemblies during early development indicate that humans have some innate capability even before birth. Consistent with this, previous behavioural studies have shown that foetuses become attuned to a variety of features of the surrounding auditory environment. For example, foetuses habituate to the native language of the environment or of the mother (Moon et.al., 1993), familiar melodies or fragments of stories heard during pregnancy and even the mother's voice. These neural memory traces are a prerequisite for effective recognition, categorization, and understanding of speech, enabling newborns to generate specific learned behaviours. At a very young age, children can distinguish different sounds but cannot yet produce them.

The human brain may be automatically wired to learn languages, but this ability does not last into adulthood in the same way that it exists during childhood. (Singleton, et.al., 2004) Language acquisition has been studied from the perspective of developmental psychology and neuroscience. (White, et.al., 2013) which looks at learning to use and understand language parallel to a child's brain development. It has been determined, through empirical research that there is a "critical or sensitive period" for language acquisition in which human infants have the ability to learn any language. Several researchers have found that from birth until the age of six months, infants can discriminate the phonetic contrasts of all languages. Researchers believe that this gives infants the ability to acquire the language spoken around them. After this age, the child is able to perceive only the phonemes specific to the language being learned. The reduced phonemic sensitivity enables children to build phonemic categories and recognize stress patterns and sound combinations specific to the language they are acquiring. (Kuhl, et.al., 2006)

Prelinguistic language abilities that are crucial for language acquisition have been seen even earlier than infancy. There have been many different studies examining different modes of language acquisition prior to birth. The study of language acquisition in fetuses began in the late 1980s when several researchers independently discovered that very young infants could discriminate their native language from other languages. (Mehler, et al., 1988), infants underwent discrimination tests, and it was shown that infants as young as 4 days old could

discriminate utterances in their native language from those in an unfamiliar language, but could not discriminate between two languages when neither was native to them. These results suggest that there are mechanisms for foetal auditory learning, and other researchers have found further behavioural evidence to support this notion. Foetus auditory learning through environmental habituation has been seen in a variety of different modes, such as foetus learning of familiar melodies, story fragments (DeCasper & Spence, 1986), recognition of mother's voice (Kisilevsky, 2003), and other studies showing evidence of foetal adaptation to native linguistic environments (Moon, Cooper & Fifer, 1993).

Newer evidence shows that foetuses not only react to the native language differently from non-native languages, but those foetuses react differently and can accurately discriminate between native and non-native vowel sounds (Moon, Lagercrantz, & Kuhl, 2013). Furthermore, a 2016 study showed that newborn infants encode the edges of multisyllabic sequences better than the internal components of the sequence (Ferry et al., 2016). Together, these results suggest that newborn infants have learned important properties of syntactic processing in utero, as demonstrated by infant knowledge of native language vowels and the sequencing of heard multisyllabic phrases. This ability to sequence specific vowels gives newborn infants some of the fundamental mechanisms needed in order to learn the complex organization of a language.

From a neuroscientific perspective, neural correlates have been found that demonstrate human foetal learning of speech-like auditory stimuli that most other studies have been analysing (Partanen, et al., 2013). In a study conducted by Partanen, et al., 2013, researchers presented foetuses with certain word variants and observed that these foetuses exhibited higher brain activity in response to certain word variants as compared to controls. In this same study, "a significant correlation existed between the amount of prenatal exposure and brain activity, with greater activity being associated with a higher amount of prenatal speech exposure," pointing to the important learning mechanisms present before birth that are fine-tuned to features in speech (Partanen, et al., 2013).

Preterm birth is a phenomenon that affects a large and variable group of newborns due to its many underlying causes. There are around 15 million babies born preterm worldwide, each year according to World Health Organisation, 2010 (Blencowe, et al., 2010). Considering this large number, a broad number of studies has been performed to examine the consequences of prematurity on development. Also, pre-term infant's neurodevelopment is constrained by underlying brain structures which are, in turn, affected by experience-dependent process (Westermann, et al., 2007). Preterm infants are susceptible to many developmental disorders like motor delays, delays in language development, global cognitive impairment, visual perception problems, executive functioning deficits, and learning difficulties in school (Sansavini et al., 2011 & Delobel-Ayoub et al., 2009). More specifically infants born pre-term show an increased risk for behavioural and attention difficulties (Barre, Morgan, et al., 2011). Preterm-born

children (<37 weeks' gestation) have higher rates of language function problems compared with term-born children. Predicting language performances after preterm birth is challenging. It is described in the literature that early exposure to the extrauterine environment can be either detrimental or advantageous for neurodevelopment. However, the emphasis mostly lies on the fact that preterm birth may have an unfavourable effect on numerous aspects of development such as cognition, language, and behaviour. Furthermore, many studies have found a higher degree of language and social communication problems in pre-term born infants compared to full terms (Cusson, 2003 & Vohr, 2014). Deficits in expressive language, receptive language, word retrieval and short-term auditory memory were found (Foster-Cohen, et al., 2007). The extent of deficits a preterm born child may endure in life is associated with the complex interaction between multiple biological and environmental constraints following PT birth that occurs during a critical period of brain development and thus leads to atypical development (Westermann, et al., 2007, Sansavini, et al., 2011)

In a meta-analysis performed by Van Noort-vanderSpek, et al., 2012, which comprised of 17 studies on language development in pre-term infants, it was discussed that even in the absence of major disabilities, extreme pre-term survivors show difficulties in simple and complex language functions. For complex language functions, in fact, pre-term difficulties may even increase while growing up (Van Noort-vanderSpek, et al., 2012).

The goal of this research was to determine the developmental course of language functions in preterm-born children from 3 to 12 years of age. Computerized databases Embase, PubMed, Web of Knowledge, and PsycInfo were searched for studies published between January 1995 and March 2011 reporting language functions in preterm-born children. Outcome measures were simple language function assessed by using the Peabody Picture Vocabulary Test and complex language function assessed by using the Clinical Evaluation of Language Fundamentals. Preterm-born children scored significantly lower compared with term-born children on simple and on complex language function tests, even in the absence of major disabilities and independent of social economic status. For complex language function (but not for simple language function), group differences between preterm- and term-born children increased significantly from 3 to 12 years of age. They concluded that while growing up, preterm-born children have increasing difficulties with complex language function.

In PT infants a linear relationship was found between gestational age at birth and later language outcomes. The lower the gestational age at birth, the smaller the vocabulary size and quality of word use.

Foster-Cohen et al., 2007, examined the effects of being born very preterm on children's early language development using prospective longitudinal data from a representative regional cohort of 90 children born very preterm and a comparison sample of 102 children born full term. The MacArthur-Bates Communicative Development Inventory: Words and Sentences (CDI-WS) was

used to assess children's language development at age 2. Clear linear relationships were found between gestational age at birth and later language outcomes, with decreasing gestational age being associated with poorer parent-reported language skills. Importantly, associations between gestational age at birth and language outcomes persisted after statistical control for child and family factors correlated with both preterm birth and language development. These findings demonstrate the presence of pervasive delays in the early language development of children born very preterm. They also highlight the importance of gestational age in predicting later language risk in this population of infants (Sansavini, Guarini & Savini, 2011).

Stolt, et al., 2007 examined the difference between the lexicon size of Pre term born children in comparison to full-term peers at 2 years of age, but no significant difference was found. In this study they focused on the aspects of the lexicon in 66 prematurely born very-low-birth-weight and 87 full-term Finnish children at 2;0, studied using the "MacArthur Communicative Developmental Inventory". The groups did not differ in vocabulary size. Furthermore, the female advantage in vocabulary size was not seen in preterm children. There were significant differences in the percentage of nouns and grammatical function words between the two groups. The results suggest that prematurity "cuts off" the female advantage in vocabulary development. Furthermore, it also seems that there are differences between prematurely born and full-term children in the composition of the lexicon at the age of 2. The findings support the universal sequence in the development of lexical categories (Stolt, Klippi & Launonen, et al., 2007).

Contradictory results were found in a study by Soraya, et al., 2012 when Pre term and full-term born children were divided into three age groups (18-24 months, 24-30 months and 30-36 months). Both the Pre term and full terms showed an expansion of their expressive lexicon with increasing age. However, the lexicon of PT born children was significantly smaller than those of their full-term peers (Soraya, et al., 2012).

3. Methodology

A total of 60 children participated in this study: 30 preterm children (12 female; 18 male) and 30 full-term children (12 female; 18 male). Children with gestational age of below 35 weeks were considered as preterm children under study group. Preterm children had an average gestational age of 32 weeks (SD-2) and an average weight at birth 2200 gr. (SD-2). Whereas children born above 38 weeks were considered as term children under control group. The average gestational age of full-terms was 39 weeks (SD-3) and their weight at birth was 3500 gr. (SD-3). All preterm and full-term children had a normal IQ (>85) evaluated by the Bayley Scales (III version) at 15 months of age. The preterm group and the full-term group were matched on age and sex. All children with congenital malformations like cleft lip and palate, ear pits and tags, syndromes, significant medical conditions like meningitis, severe HIE, IVH and PVL > grade 2, severe BPD,

abnormal BERA results (Absence of Peak V at 40dBnHL was considered as abnormal BERA test results) and non-availability of data were excluded from the study.

Informed consent was obtained from parents before collecting data. All eligible infants in both study and controlled groups underwent assessment for comprehension and expression of language skills using Receptive Expressive Emergent Language Scales (REELS) at 15 months of corrected age. The REEL-3 is designed to identify infants and toddlers with language impairments from birth through 3 years. All children were native speakers of Telugu. It is based on a contemporary linguistic model.

4. Results

Aim of the current study was to compare receptive and expressive language abilities of both term and preterm children around 15 months of corrected age. Also, we considered some subjective factors like language stimulation at home, working hours of parents and exposure to social life. Our data has showed that language development in term children was comparatively better than that of preterm children around age of 15 months. The average age of receptive language development in term children was 14-16 months whereas the same in preterm children was around 12-14 months. Similarly, the average expressive language age in term children was 12-14 months where as in preterm it was 8-9 months. The preterm children scored slightly low when compared to full term born children in both comprehension and expression of language. Preterm children exhibited more deficits in expressive language skills compared to their comprehensive language abilities. At 15 months the difference between pre-terms and full-terms was significant for language comprehension [$p < 0.05$]. Results showed that preterm produced a lower number of words than full-term children at 15 months of age. The differences between preterm and full-terms was significant at 15 months [$p < 0.05$].

There was no difference between term and preterm groups in other subjective factors like language stimulation at home and working culture of parents, except for restricted social life. Parents of preterm children were more protective and restricted them to home environments. Figure 1 shows the language comprehension and Figure 2 shows the language expression of preterm and full-term children at 15 months.

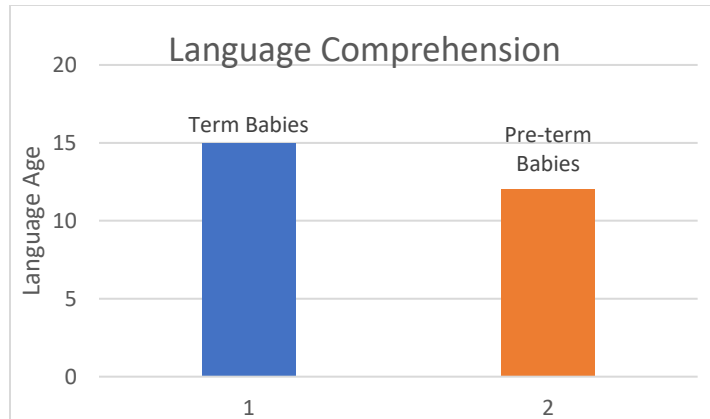


Fig 1: Language Comprehension in Term and Preterm Babies

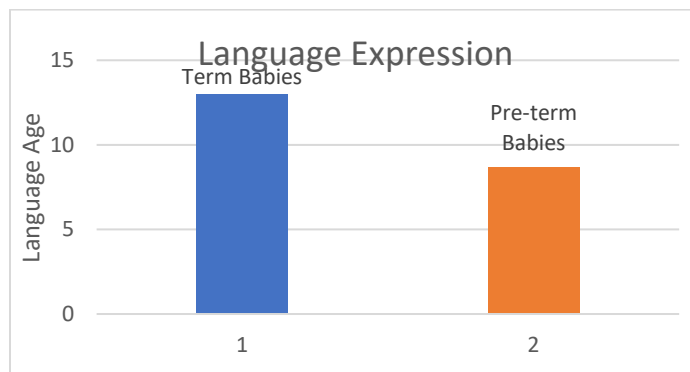


Fig 2: Language Expression in Term and Preterm Babies

5. Discussion

Preterm children were bound to have neurological immaturities and medical complications leading to longer hospital stays. In preterm children, altered brain maturation might lead to atypical functional organization and structural changes, which was associated with abiding language impairments. In addition, environmental factors such as a long stay in NICU with underexposure to significant auditory stimuli and nonoptimal infant-caregiver interactions have been associated with weaker language outcomes. In many of the preterm cases we even noticed that parents were over protective and raised the preterm children with at most care ultimately leading to lesser exposure thus depriving them from social experiences.

According to the research discussed, it can be concluded that first years of life is crucial for gaining adequate language, social and adaptive skills. Also, there is evidence on beneficial effects of early exposure to language, voices, and music in preterm children.

In spite of all these factors, there was not much difference in language development between term and preterm children around 15months of age. The results implicate that preterm child were

slightly slower than term children in language development especially at early stages of language acquisition.

The current data supports nature than nurture in initial phases of language acquisition. As Noam Chomsky quoted humans have an innate capacity to learn language, preterm children were able to acquire language in a more similar manner like their term counterparts except for a delay of 2-3 months in receptive and 4-5 months in expressive domains of language development. The notion of Language acquisition device (LAD) and universal grammar might possibly hold true to a greater extent. It is the instinctive mental capacity which enables an infant to acquire and produce language (Shatz Marilyn, 2007).

As the current study was a cross sectional study performed around 15months of corrected age we couldn't gather information about how the complex language structures develop in preterm children. We hypothesize that the rate of language acquisition might differ in both the groups as nurture might play a role in later phases of language development. Thus, leading to increased difference between both the groups when children start acquiring complex syntactic structures of language.

We believe that nature plays an important role during initial phases of language acquisition followed by nurture for acquiring complex structures of language. However, we need a much larger sample along with longitudinal analysis on language acquisition between term and preterm children in order to have a deeper understanding of the language acquisition process in children.

Clinical and Theoretical implications

This study confirms the importance of longitudinal studies in this field and the usefulness of corrected age in assessing the early language development of preterm children comparing them with full-term children, to observe the early recovery and the qualitative differences in language production. Secondly, it will help us to understand the significance of nature vs nurture notion in the process of language acquisition.

REFERENCES

- Barre, N., Morgan, A., Doyle, L.W., & Anderson, P.J. (2011). Language abilities in children who were very preterm and/or very low birth weight: a meta-analysis, *The Journal of Pediatrics*, 158(5), 766-774.
- Blencowe, H., Cousens, S., & Oestergaard, M.Z., et al (2012). National, regional, and worldwide estimates of preterm birth rates in the year 2010 with time trends since 1990 for selected countries: a systematic analysis and implications. *The Lancet*, 379 (9), 2162-2172.

- Chomsky, N. (2006). *Language and Mind*. Cambridge University Press.
- Cusson, R.M. (2003). Factors influencing language development in preterm infants, *Journal of Obstetric, Gynecologic & Neonatal Nursing*, 32 (3), 402-409.
- DeCasper, Anthony; Spence, Melanie. (1986). Prenatal maternal speech influences newborns perception of speech sounds. *Infant Behavioral Development*. 9 (2):133–150.
- Delobel-Ayoub, M., Arnaud, C., White Koning, M., et al (2009). Behavioral problems and cognitive performance at 5 years of age after very preterm birth: the EPIPAGE Study, *Pediatrics*, 123(6), 1485-1492.
- Ferry, Alissa; Flo, Ana; Brusini, Perrine; Cattarossi, Luigi; Macagno, Francesco; Nespor, Marina; Mehler, Jacques. (2016). On the edge of language acquisition: inherent constraints on encoding multisyllabic sequences in the neonate brain. *Developmental Science*. 19 (3): 488–503.
- Foster-Cohen, S., Edgin, J.O., Champion, P.R., & Woodward, L.J. (2007). Early delayed language development in very preterm infants: evidence from the MacArthur-Bates CDI, *Journal of Child Language*, 34(3), 655-675.
- Friederici, AD. (2011). The brain basis of language processing: from structure to function. *Physiol Rev*. 91 (4): 1357–92.
- Hepper, P. G., & Shahidullah, B. S. (1994). Development of fetal hearing. *Archives of Disease in childhood – Fetal and Neonatal Edition*, 71(2), F81-F87.
- Kisilevsky, B., Hains, S. M. J., Lee, K., Ye, H., Wang, Z. (2003). Effects of experience on fetal voice recognition. *Psychological Science*. 14 (3):220–224.
- Kostovic, I., & Judas, M. (2010). The development of the subplate and thalamocortical connections in the human foetal brain. *Acta Paediatrica*, 99(8), 1119-1127.
- Kuhl, P., Stevens, E., Hayashi, A., Deguchi, T., Kiritani, S., Iverson, P. (2006). Infants show a facilitation effect for native language phonetic perception between 6 and 12 months. *Developmental Science*, F13-F21.
- Linsell, L., Malouf, R., Johnson, S., Morris, J., Kurinczuk, J.J., & Marlow, N., (2016)

- Prognostic factors for behavioral problems and psychiatric disorders in children born very preterm or very low birth weight: a systematic review, *Journal of Developmental and Behavioral Pediatrics*, 37(1), 88-102.
- Mehler, J., Jusczyk, P., Lambertz, G., Halsted, N., Bertoni, J., & Amiel-Tison, C. (1988). A precursor to language acquisition in young infants. *Cognition*, 29(2), 143-148.
- Moon, Christine, Cooper, Robin, Fifer, William. (1993). Two-day-olds prefer their native language. *Infant Behavioral Development*. 16 (4): 495–500.
- Moon, Christine, Lagercrantz, Hugo, Kuhl, Patricia. (2013). Language experienced in utero affects vowel perception after birth: A two-country study. *Acta Paediatr.* 102 (2): 156–160.
- Moore, J. K., & Linthicum, F. H. (2007). The Human Auditory System: A Timeline of Development. *International Journal of Audiology*, 46, 460-47.
- Partanen, E., Kujala, T., Tervaniemi, M., & Huotilainen, M. (2013). Prenatal Music Exposure Induces Long-term Neural Effects. *PLoS ONE*, 8(10).
- Sakai, Kuniyoshi, L.(2005). Language Acquisition and Brain Development. *Science*. 310 (5749), 815-9. doi: 10.1126/science.1113530.
- Sansavini, A. Guarini, A., & Caselli, M. C. (2011). Preterm birth: neuropsychological profiles and atypical developmental pathways, *Developmental Disabilities Research Reviews*, 17(2), 102-113.
- Sansavini, A., Guarini, A., Savini, S., et al (2011). Longitudinal trajectories of gestural and linguistic abilities in very preterm infants in the second year of life, *Neuropsychologia*, 49(13), 3677-3688.
- Shatz, M. (2007) On the Development of the Field of Language Development. *Blackwell Handbook of Language Development*.
- Singleton, David and Ryan, Lisa (2004). *Language Acquisition*. Bristol, Blue Ridge Summit: Multilingual Matters. doi:10.21832/9781853597596.
- Soraya, M., Bakhtiyari, B.M., Badiie, Z., Kazemi, Y., & Soleimani, B. (2012). A comparative study of size of expressive lexicon in prematurely born children with full-term 18-36 month's children, *Auditory and Vestibular Research*, 21(1), 76-82.

- Stolt, S., Klippi, A., Launonen, K., et al (2007). Size and composition of the lexicon in prematurely born very-low-birth-weight and full-term Finnish children at two years of age, *Journal of Child Language*, 34(2),283-310.
- Van Noort-van der Spek, I.L., Franken, M.C.J.P., & Weisglas-Kuperus, N. (2012). Language functions in preterm-born children: a systematic review and meta-analysis, *Pediatrics*, 129(4), 745-754.
- VanPatten, B., Collopy, E., Price, J.E., Borst, S., & Qualin, A. (2013). Explicit Information, Grammatical Sensitivity, and the First-Noun Principle: A Cross-Linguistic Study in Processing Instruction. *The Modern Language Journal*, 97(2), 506-527.
- Vohr, B. (2014). Speech and language outcomes of very preterm infants, *Seminars in Fetal and Neonatal Medicine*, 19(2), 78-83.
- Westermann, G., Mareschal, D., Johnson, M.H., Sirois, S., Spratling, M.W., et al. (2007). Neuroconstructivism, *Developmental Science*, 10(1), 75-83.
- White, E. J., Hutka, S. A., Williams, L. J., Moreno, S. (2013). Learning, neural plasticity and sensitive periods: implications for language acquisition, music training and transfer across the lifespan. *Frontiers in Systems Neuroscience*, 20; 7:90. doi: 10.3389/fnsys.2013.00090.

Certain Grammatical Aspects of Lambada Language in Telangana

Korra Balu Naik*

Abstract

Banjara language belongs to the central group of Indo-Aryan Family of languages. Banjara being a Nomadic tribe are scattered throughout the central India with heavy population concentration in Maharashtra, Karnataka, Telangana and Andhra Pradesh. The tribe is known by various names Banjara, Wanjari, Brinjari, Lambadi, Lamans, Lambanis, Lamanis, suga:li, Gurmati and Singali. This paper is an outcome of my recently conducted doctoral research in the Telugu University, Hyderabad. The main objective of this research paper is to discover some particular linguistic features in Lambada language which is spoken by Lambada people living in Telangana state. According to social context in Telangana, most of the Lambadas are bilingual; some are multilingual as well. Apart from their mother tongue, almost all the Lambada people are good at speaking Telugu since the official and predominant language in Telangana is Telugu. As there is an inevitable bilingual situation, there is always the possibility of influence in terms of sociolinguistic interface. In this paper, the overall aim is to unfold some special grammatical features which appear particularly in Telangana.

Keywords: Adjective, Adverbs, Causatives, Lambada, Passive Construction, Case, Converb.

1. Introduction

Lambada / Banjara language is originally known as Goarboli. It is a convergence of Gujarati, Hindi, Marvadi and Sanskrit. Since the communities used to be nomadic, the factors like language need and language influence gave scope to lot of convergence. In this way, everywhere the community settled, their language adopted some elements of contacted local language. Telangana State is geographically surrounded by four adjacent states, namely, Maharashtra, Chhattisgarh, Karnataka and Andhra Pradesh. Since the local language in Telangana is Telugu, most of the Lambada people are bilinguals, i.e. Telugu as second acquired language. Apart from this bilingual situation, since the state has language contact with that of adjacent states, there is a possibility of multilingualism also. However, the influence of other languages belonging to the adjacent states is perceivable in Lambada language. Influence of Telugu is conspicuous in Telangana Lambada Language. Due to the linguistic sharing influence, variation can be clearly observable in the usage of various aspects of language. However, as language is the subject of discussion, the following are to be considered in sociolinguistic view.

2. Review of Literature

*Assistant Professor, Dept. of Linguistics, UCASS, Osmania university, Hyderabad.

For this kind of interdisciplinary research, a researcher needs to have orientation in multiple fields of knowledge. Hence, certain books and research works in the fields of Lambada history, culture, literature, and language are studied as background knowledge for this study.

Culture Based Studies

- Gona Nayak(1993) worked on culture of Sugalis.
- D. Suryadanjay (2006) investigated life and literature of Banjaras in Nalgonda district.
- J. Shankaraiah (1993) studied customs and traditions of Lambadas in karimnagar district.
- Nagaiahbukya (2010) studied the significance of Lambada festivals in their culture. This study is restricted to Nalgonda district.

These culture-based research works are found to be very useful in present study to understand the cultural significance in Lambada communities. For the present study concerned, many words and expressions used on various cultural occasions are observed in research point of view.

Art and Literature Based Studies

- N. Lalitha (2011) studied lambada songs
- J. Shankaraiah(2000) studied songs of Lambada people who settled in Andhra Pradesh and Telangana.
- T. Suryanarayana (2006) investigated Banjara songs in Ananthapur district of Andhra Pradesh.
- L. Devendar (2011) studied various songs and dances which are generally performed on festivals.
- L. Nehru (2012) investigated about the influence of Telugu on Lambada folk songs. This study was conducted in Warangal district.

In spite of no direct relevance with present research view, all these works mentioned above reveal the connection with culture and lifestyle of Lambada community. Hence, this art and literature-based studies are also useful in this research as part of background literature.

Language Based Studies

- K. Padmavathi Bai (2000) studied proverbs used by Banjara people
- P. Raghunatha Reddy (2004) investigated Sugali language.
- Banoth Laxman (2009) studied riddles commonly used by Telugu speaking Lambada people.

The language-based studies, mentioned above are very useful as background literature for this research. Some of these have much relevance to the ethno linguistic study since these researches provide some culture specific insights (i.e. about proverbs and idioms) of Lambada language.

Upadyay (1975) explained the grammar of Lambada language. The book included phonology, morphology, syntax and vocabulary. Naik (1998), in his book ‘Banjara charithra samskruti pragathi’, described various aspects such as history, tradition and culture of Lambada community. This book is a comprehensive description in Telugu language about life and living of Lambadas. Apart from these books, there are some studies to focus in this background. Most of these are written in Telugu language.

3. Methodology

Researcher is fluent speaker of Banjara and it is also his mother tongue. The data was collected from his native village. It was validated by other speakers from his community. The data for this study was collected through face-to-face interviews. In order to avoid subjectivity, researcher’s native experience is used only as supporting clarification to the information given by the informants. By spending days and weeks along with different tanda people, the questions were asked in casual and natural settings. As a part in casual conversation, the basic questions and their linked questions were asked. Since the researcher belongs to Lambada community, the interviews were done in the mother tongue, i.e. Lambada language. This facilitated the questioning and answering without communication gap. In this way, the information given by the informants was recorded for further purpose. Both cultural information and linguistic information are collected for this research.

4. Results & Analysis

In this article analysis of the data was restricted to a few grammatical aspects :adverbs and adjective, compound verb structures, causative, passive construction, converb, case realization, tense and aspects, negation in lambada. In addition to this few observation maid in relation to the proficiency of lambada speakers has been discussed.

4.1. Grammatical aspects of Lambada

The following grammatical aspects are discussed in this paper, which are presented in the following sections with some examples.

4.1.1. Synonymy of Adverb and Adjective

In Telangana Lambada language, there is no specific distinction between adverbs and adjectives. Most of adjectives and adverbs are synonymously used according to context. The following are some examples of adverbs used in the language.

Table 1: Adverbs and Adjectives in Lambada

Adverb	Adverb in Lambada	Adjective	Adjective in Lambada
Slowly	i:lo	Slow	i:lo

Long	la:mo	Long	la:mo
Good	accho	Good/well	accho
Deeply	u:n o	Deep	u:n o
Small	na: ikya	Small	na: ikya

Examples:

1. u: |i:lo cha:lo 'He walked slowly'
He slow-adv walked
u: |i:lo a:dmi 'He is a slow person'
He slow-adj person
2. u: kurci:n la:mo ki:do 'He made a chair very long'
He chair-ACC long-adv made
u: kurci la:mo cha 'That is a long chair'
That chair long-adj Cop
3. o: accho ramm-e 'They played well'
They well-adv play-PL
o: accho a:dmi 'They are good'
They good-adj person-PL
4. u: u:n| o go 'He went depth'
He deep-adv go-PST
u: u:n| o wa:va| i 'it is a deep well'
hat deep-adv well

Many adjectives and adverbs have been adopted from Telugu to meet the sociolinguistics needs of Banjara in Telangana.

4.1.2 Causatives in Lambada

Causative is an operation in which the subject of a clause causes someone or something to take action instead of the subject itself. Causative construction in Lambada language generally adds the suffix 'a' to the basic verb. See the examples below.

Table 2: Causatives in Lambada

kar – do	kara- make someone do
gha:}- pour	gha)a- make someone pour
paka - catch	paka a- make someone catch
sa:ma}- listen	sama)a:- make someone listen
ko- eat	kora:- make someone eat

Pi:- drink	Pira:- make someone drink
------------	---------------------------

4.1.3 Passive Construction

Generally, in a clause with passive voice, the grammatical subject expresses the *theme* or *patient* of the main verb. This means that the person or thing that undergoes the action or has its state changed. It is observed that, in Telangana Lambada language, there is no particular grammatical pattern in the use of Passive Voice. According to the contextual need, people use the phrase ‘hate:ma’ (in the hands of) to reflect the sense of passiveness in sentences but the sentence construction is in Active Voice. The following are some examples.

5. ghar chore:r **hate:ma** balgo ‘The house was burnt by the dacoits’
house dacoit-LOC by hand burn-PST
6. ra;vana rame:r **hate:ma** margo ‘Ravana was killed by Ram’
ravana Ramudu-ACC by hand kill-PST
7. kurci chutara:r **hatema** banjgi
Chair child-PL by hand break-PST
‘The chair was broken by the children’

4.1.4 Compound Verb Structures

Compound verb is also called complex predicate. Compounding is a multi-word compound that functions as a single verb. One component of the compound is a light-verb, which carries any inflections, indicating tense, mood, or aspect, but provides only fine shades of meaning. Some compounding types such as verb + verb, noun + verb is frequently found in Lambada language. The following are some examples.

Table 3: Compound Verb in Lambada

Expression in English	Expression in Lambada
He slept	wu so:go He sleep(V)+went
He died	wu margo He die(V)+went
She ran away	wu da:nsgi She run(V)+went-
I helped him	ma sahayam kido i help(N)+did
He lent money	wu ba:kidi:no He loan(N)+gave

4.1.5 Converbs

Converbs are generally the verbs that serve to indicate adverbial meaning which acts as a subordination in a sentence. In Lambada language also some converbs are found. In Lambada language, this type of verbs is a combination of two verbs with a connective ‘and’ between. The main carrier of meaning is one verb; the other verb acts to provide a contextual intensified sense to the carrier. Converb constructions in Lambada language generally adds the suffixation ‘an’ to main verb. Some examples are given below.

Table 4: ConVerb in Lambada

Expression in English	Expression in Lambada
Go and see.	dza:n de:kh
See and walk	de:kan cha:l
Eat and see	ka:n de:k
See and tell	de:kan ka
Come and go	a:n jo

4.1.6 Case Realization

Case is a linguistic term regarding a manner categorizing nouns, pronouns, adjectives, participles, and numerals according to their traditionally corresponding syntactical functions within a given phrase, clause, or sentence. In Lambada language, Suffix ‘ne’ is found both in accusative and objective and dative case. Locative and instrumental cases are also found in the language. See the pronominal cases below.

Table 5: Case Realization in Lambada

Subjective	Lambada	Objective	Lambada	Possessive	Lambada
I	ma	Me	mann	Mine	ma:r
You	tu	You	to:ne	Yours	ta:r
He	u:	Him	wo:ne	His	wo:re
She	u:	Her	wo;ne	Hers	wo:re
It	u:	It	wo:ne	It’s	wo:re
We	ham(excl) apan(Incl)	Us	hame:n apane:n	Ours	hama:r apane:r
They	o:	Them	uunde:n	Theirs	unde:r

4.1.7 Feature of Tense and Aspect

In Lambada, like Telugu language, simple present and present continuous are in synonymous relation according to context of situation. Structurally there is no difference in present

continuous and past continuous tenses. In case of necessary identification, time adverbials are used. The aspects Present perfect and past perfect are substituted with simple past in Lambada language. The aspect present perfect continuous, past perfect continuous and future perfect continuous are substituted with present continuous tense in this language. The table below shows the usage of tense and aspects in the Lambada language.

Table 6: Tense and Aspect in Lambada

Tense/ Aspect	Present	Past	Future
Simple	I learn language ma wa:te si:kro:chu	I learnt language ma wa:te si:k li:do	I will learn language ma wa:te si:kuchu
Continuous	I am learning language ma wa:te si:kro:chu	I was learning language ma wa:te si:kro:chu	I will be learning language ma wa:te si:kto runchu
Perfect	I have learnt language (not found in Lambada)	I had learnt language (not found in Lambada)	I will have learned language ma wa:te si:kle:n ru:chu
Perfect continuous	I have been learning language (not found in Lambada)	I had been learning language (not found in Lambada)	I will have been learning language (not found in Lambada)

4.1.8 Negation in Lambada

Unlike that of English, negation or prohibition in Lambada language operates at morpheme level as suffixation to words. The language has four types of morphological/word affixations which are realized as negative markers. The affixations/ words are: *+mat*, *+yi*, *+koni* and *+ni*.

Table 7: Negation in Lambada

Lambada Gloss	English Gloss
ma ro:vuni I cry don't	I don't cry.
ham to:ne kayi ha)ki pa ani we you-dat upset will not	We will not upset you.
ma ka:le:n ka:do koni I yesterday eat-did not	I did not eat yesterday.
o: unde:r ka:m ki:de koni they their job finished-not	They have not finished their job.
o: etha che:yi they here not	They are not here.

ma:yi a: mat enter do not	Do not enter.
ko: mat eat do not	Do not eat.
hame:n ab ti:rika che: yi let us now rests	Let us not rest now.
ma dha:n ka: vuni I food will not	I will not eat food.

5. Conclusion

As mentioned in the introduction, this research paper reflects on some grammatical aspects of Lambada language. Here the term special indicates that the features are in some way different to other local languages as Lambada language is influenced from decades along with their nomadic culture. However, this paper provides the description about Telangana Lambada language in its social and grammatical interlinked context. In Telangana Lambada language, there is no specific distinction between adverbs and adjectives. Most of adjectives and adverbs are synonymously used according to context. Causative construction in Lambada language generally adds the suffix ‘a’ to the basic verb. There is no particular grammatical pattern in the use of Passive Voice. According to the contextual need, people use the phrase ‘hate: ma’ (in the hands of) to reflect the sense of passiveness in sentences but the sentence construction is in Active Voice. Some compounding types such as verb + verb, noun + verb is frequently found in Lambada language. Converb constructions in Lambada language generally adds the suffixation ‘an’ to main verb. In Lambada language, Suffix ‘ne’ is found both in accusative and objective and dative case. Locative case and instrumental case are also found in the language. The language has four types of morphological/word affixations which are realized as negative markers. The affixations/words are: +**mat**, +**yi**, +**koni** and +**ni**.

Reference:

Balu Naik, Korra.(2021). A Socio-Cultural Perspective of Lambada Language in Telangana. Unpublished PhD Thesis, PSTU, Hyderabad.

Krishnamirthy, Bh.(2003). *The Dravidian Languages*. Cambridge: Cambridge University Press.

Krishnamurthy, Bh. and J.P.L .Gwynn (1985). A Grammar of modern Telugu. Delhi:Oxford University press.

Naik, D. B. (2000). *The art and literature of Banjara Lambanis: a socio-cultural study*. Abhinav Publications.

Upadyay Umashankar (1975). A Descriptive study of the Banjara Language Grammar Texts and Vocabulary, unpublished PhD thesis, Dept. of Linguistics, UCASS, Osmania University.

V. Gopal (1996). A Sociologic Investigation of Banjara language. MPhil Thesis, PSTU, Hyderabad.

Venkatesh (2004). Influence of Telugu language on lambada language. MPhil Thesis, PSTU, Hyderabad.

A Study on Auditory, Visual and Auditory-Visual Speech Perception in Individuals with Cochlear Implants and Hearing Aids

Aparna Ravichandran*

Abstract

Speech Perception is the process by which the sounds of language are heard, interpreted and understood. Visual information has proven to be useful in environments where auditory cues are not sufficient (noisy environments, loss of hearing, etc) and the intelligibility of the auditory speech is notably better than auditory alone speech perception (Munhall et al, 2002). This study examined how pre-lingually deafened children combine visual information with auditory speech cues provided by their cochlear implants and also assess the performance of hearing aids versus a cochlear implant in children through speech modalities. Two experimental groups comprising total of 60 children (30 with hearing aids and 30 with cochlear implants (unilateral) and 30 normal control group were considered. The routine audiological testing was done for all the participants in a room with ambient noise levels within permissible limits and ling six sound tests was done to check the performance of the hearing aids and the implants. Twenty-five phonemically balanced di-syllabic words were presented through loudspeakers via laptop. Participants were presented with stimulus under all three modalities viz. auditory, visual and auditory-visual modality. Visual and auditory distracters were provided when stimulus was presented in the above conditions and responses were recorded and analyzed. Results indicated that there was a statistically significant difference in scores for children using hearing aids and children using cochlear implants ($p < 0.005$); children using hearing aids and normals ($p < 0.005$) and children using cochlear implants with normal children ($p < 0.005$) in auditory alone and auditory-visual modalities. For visual modalities, no statistical significance was seen across the groups. In conclusion, it can be noted that children using CI tend to rely more on acoustic cues and have difficulty following visual cues alone however in auditory visual and auditory alone they have performed better than HA individuals who have good scores in audiovisual mode.

Keywords: Cochlear implant, Hearing aid, Speech perception, Modalities

1. Introduction

Speech perception explains the term as “the auditory perception and comprehension of speech (Massro, 2001). Speech is the integrated use of multiple sensory modalities; auditory and visual. Visual information has been proven to be useful in environments where auditory cues are not sufficient (noisy environments, loss of hearing, etc.) (Munhall, 2002). Speech perception is often considered to be specific to the auditory modality. One reason for this assumption is that infants born

*Lecturer (Sp & Hg), Ali Yavar Jung National Institute of Speech & Hearing Disabilities, Secunderabad.

profoundly hearing impaired have difficulty acquiring speech and language. Nevertheless, there is strong evidence that vision also plays important role in speech perception. Hearing people use speech- read information as a source of information for speech perception and if speech-read information is available, its processing is mandatory (McGurk and McDonald, 1976). Within weeks of birth, hearing infants are aware of the congruence of lip movements and speech sounds and are influenced by conflicting auditory and visual information (Burnham and Dodd, 2004). In normally-hearing adults, most speech information can be obtained through the auditory channel, yet visual information can improve speech intelligibility when presented simultaneously with a noisy or degraded acoustic signal (Benoit, Mohamadi and Kandel, 1994; Grant and Braida, 1991; Maclord and Summerfield, 1987; Ross, Saint-Amour, Leavitt, Javitt and Foxe, 2007). Moreover, visual information is useful for speech detection and intelligibility even when acoustic information is perfectly clear (Arnold and Hill, 2001; Campbell, 2008; Reisberg, McLean and Goldfield, 1987). Visual cues also facilitate speech perception when speech is perfectly clear but characterized by a high level of semantic complexity (Kim and Davis, 2003; Reisberg et al. 1987).

Some aspects of the speech perception process that we may observe when studying the sensory aspects of speech perception may result from a conflation of auditory and cognitive effects. Studies have shown that “clear speech” is significantly more intelligible than conversational speech for hearing-impaired listeners within a quiet background as well as for normal and hearing-impaired within a noisy background (Picheny et al. 1985; Uchanski et al. 1996; Payton et al. 1994) Clear speech contains spectral and temporal characteristics that make it highly intelligible.

There are numerous benefits of auditory-visual speech perception over listening alone or visual perceptual alone. The addition of visual cues causes an increase in the speech-to-noise ratio by 15dB (Sumbly and Pollack, 1954). Depending by the speech of the talker, each 1 dB improvement in S/N can correspond to a 5 to 10 percentage point increase in intelligibility (Miller et al 1951; Grant and Braida, 1991).

Hearing children and those whose hearing is profoundly impaired, have enhanced speech perception when they can be speech-read as well as listen to an auditory input (Erber 1972, Lachs et al. 2001, Bergeson et al. 2005). These findings suggest that children with profound hearing impairment, like hearing children, can perceive speech modality.

Hearing aids and cochlear implants are the treatment of choice in children with profound to severe congenital sensorineural hearing loss. These two devices mainly minimize the negative environmental effects, such as noise and acoustic absorbance, on acoustic signals and transfer the acoustic signals and transfer the acoustic information to auditory cortex in a natural, clear and in most recognizable pitch and formant. The benefits obtained from early amplification of auditory-verbal programs on speech and music perception have been well documented for profoundly hearing-impaired children.

Cochlear implants (CIs) have provided satisfactory speech perception in quiet listening conditions for the recipients. Its performance in delivering speech in background noise has been less than ideal (Drennan and Rubinstein, 2008).

Yucel (2005) studied 36 adolescents, 12 with cochlear implants, 12 with hearing aids and 12 with normal hearing. Speech perception tests were used to compare the performance of the 3 groups. The aided thresholds of the hearing aid users were better at low frequencies. In contrast, the cochlear implant group's thresholds were better at high frequencies. Results showed the hearing aid users had similar scores to the normal hearing group in vowel identification and pattern perception. In addition, the hearing aid group performed better than did the cochlear implant group in vowel identification, pattern perception, and daily sentences task. No significant differences were found between the hearing aid and cochlear implant groups in multisyllabic, phonetically balanced words, and consonant identification tasks, whereas the hearing aid group, who had better performance in multisyllabic word discrimination.

Although there has been a great deal of recent empirical work and new theoretical interest in audio visual speech perception in both normal hearing and hearing-impaired adults, relatively little is known about the development of these abilities and skills in deaf children with cochlear implants this study examined how pre-lingually deafened children combine visual information available in the talker's face with auditory speech cues provided by their cochlear implants to enhance spoken language comprehension.

Hence, the study is aimed to assess and compare the performance of children with hearing impairment using hearing aid and cochlear implant through different speech modalities i.e. auditory modality, visual modality and combined audio-visual modality in the following manner (a) To assess the performance of the children with normal hearing and children with hearing impairment using hearing aids and cochlear implants on auditory modality. (b) To assess the performance of the children with normal hearing and children with hearing impairment using hearing aids and cochlear implants on visual modality. (c) To assess the performance of the children with normal hearing and children with hearing impairment using hearing aids and cochlear implants on combined audiovisual modality. (d) To compare the performance of the children with normal hearing, children hearing impairment using hearing aids and cochlear implants under auditory, visual and combined audiovisual modality.

3. Methodology

3.1: Participants

The participants in the study were divided into experimental groups and control group. Group I comprises of 30 children with severe to profound hearing impairment using bimodal cochlear implants of which 27 children using unilateral CIs (Med-EL implant), 2 participants used Nucleus 22 devices, and 1 had Bionics device. All children had digital BTE in the other ear and attended speech therapy and used oral communication with an auditory experience of minimum

2 to 3 years with cochlear implant with a mean auditory age 3.5 years and chronological age of 6.6 years. The average implant is 2.6 years who attended regular speech therapy in Telugu language for a minimum duration of 3-4 hours per day where the device was kept on for 10-12 hours a day. IQ of participants are normal.

Group II consisted of children with profound hearing loss using bilateral digital BTE hearing aids. All children had an experience (auditory age) of minimum of 2-3 years with the mean of 3.42 years and mean chronological age of 6 years. IQ of participants are normal and also, they are attending regular therapy.

Group III consisted with normal hearing children with age range of 2-3 years and a mean age of 3,6,5 years. Participants had no history of ontological abnormalities, speech and language deficit and having normal intelligence quotient. Participants also had 20 dBHL hearing threshold average bilaterally.

3.2: Instrumentation and Tools

In the present study hearing status was determine by a clinical diagnostic audiometer and Immitance audiometer was used to evaluate the middle ear function. A laptop connected to JBL loudspeaker was used to present the recorded stimuli in a sound treated room. Twenty-Five PB words were randomly selected from pool of wordlist from “A test Battery to assess Speech Recognition” developed by Kumar and Mohanty in 2011. The wordlist contains phonemically balanced di-syllabic words in Telugu; 4 sets of word-lists with 25 words each. Word list 1 was used as stimuli.

3.3: Procedure

The stimulus was video recorded spoken by an adult native Telugu speaker. Each subject was presented with stimulus under all three modalities auditory, visual and combined audio-visual modality at least once. During the study each subject received acoustic stimuli from both the ears. The examiner held two individual sessions, 1 week apart, the order of item presentation was randomized and the order of the presented conditions were also different for the children. After each item presentation, then child was asked to repeat the words heard. Before the study, signed consent forms were obtained from all parents.

For the auditory condition, the screen was darkened, and the child listened to the test items at a normal conversational level (72 dB SPL at the participant’s seat) through loudspeakers. For the visual condition, the child only watched the screen without sound.

For the auditory-visual condition, the child watched the screen while listening and had to respond. The participant was seated in front of the screen at a distance of 5ft. The required intensity level of the presentation (<25 or >90 dB SPL) was measured at the participant’s ear. Participants who had poorer speech intelligibility were asked to write down their own responses.

Each correct response was given a score of 2 and an incorrect response of 1. Each test words were presented only once, therefore maximum score for each word will be between 40 and minimum score will be 20.

4. Result and Discussion

Data obtained was analyzed via appropriate statistical analysis, where MANOVA was done and a comparison was made between the hearing-impaired participants in their performance on overall perception of speech through different sense modalities that is auditory alone, visual alone and audiovisual mode.

Table 1: Comparison of different modalities for different groups

Parti cipa nts	A Alone		V Alone		AV		F Value	Willks Lamb da	Sig.
	M	SD	M	SD	M	SD			
N	50	0	27.26	5.96	50	0	154.39	0.02	0
CI	45.06	3.16	27.03	2.93	47.63	2.20			
HA	21.36	2.41	32.4	2.24	41.56	2.07			

The data of the children with normal hearing and children with hearing impairment using hearing aids and cochlear implants on auditory modality was analyzed and results are shown in Table 1. It can be noted from the table that the mean scores of the cochlear implant group is 45.06, 27.03 and 47.63 for the auditory alone, visual alone and audiovisual mode and for hearing aid group the mean scores are 21.36, 32.40 and 41.56 for the auditory, visual and audiovisual mode respectively, whereas for normal individuals the score in three modalities is 50.00, 27.26 and 50.00 respectively.

To find out the significant differences between all three groups between all three modalities, a MANOVA test was used for analysis. The results MANOVA show that there was a statistically significant difference in all the three modalities based on subject scores with $F(6, 170) = 154.39$. Willks Lambda= 0.024 and $p < 0.005$.

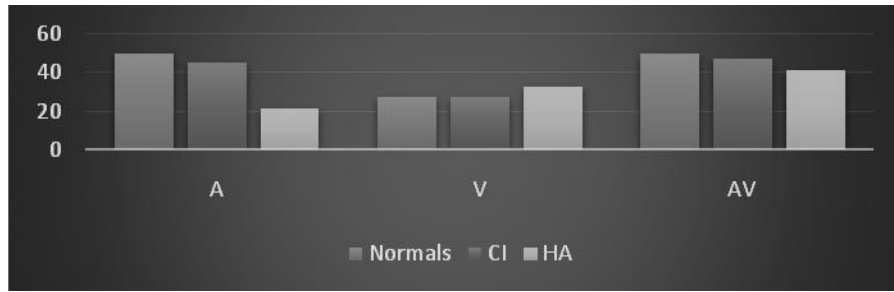


Fig 1: Comparison of different modalities for different groups

Post-hoc analysis was done to check between group differences Tukey's LSD post-hoc tests results are shown in Table 2.

Table 2: Comparison between groups on post hoc analysis

Domain	Groups	Mean Difference	Standard Error	Significance
A ALONE	HA VS CI	-23.7	0.59	0
	HA VS N	-28.6	0.59	0
	CI VS N	-4.9	0.59	0
V ALONE	HA VS CI	5.3	1.05	0
	HA VS N	5.1	1.05	0
	CI VS N	-0.2	1.05	0.97
AV MODE	HA VS CI	-6.06	0.45	0
	HA VS N	-8.4	0.45	0
	CI VS N	-2.3	0.45	0

Results show that there is significant difference in scores among children using Hearing aids with children using cochlear implants, ($p < 0.005$) and children using hearing aids with normal hearing children ($p < 0.005$) in auditory alone and auditory visual modalities. However, in visual modality there was no statistically significant difference between children using cochlear implant and normal hearing children ($p > .005$, $p = .973$) as compare to children using hearing aid and children using cochlear implant and children using hearing aid versus normal hearing group had statistically significant scores ($p < 0.005$). This indicates that children using cochlear implants tend to rely more on the acoustic cues and have difficulty following speech through visual alone however, in auditory visual and auditory alone mode these children have performed significantly better than children using hearing aids. Whereas the group of children using hearing aid showed poorest performance through auditory alone and best performance through audiovisual mode.

Findings reveal that all participants performed better in the perception of speech through the audiovisual mode than in each sensory mode alone. The finding that perception through the audiovisual condition surpassed perception through each channel alone, even when the auditory information was limited, is consistent with previous results (Lachs et al. 2001; Walden, Grant and Cord, 2001)

The results of the present study are in congruence with the study done by Schorr, Wassenhove and Knudsen (2005), Liu, Lee and Tsou (2014) indicating better performance in audiovisual modality. Similar findings also were reported by Rhone, Chatterjee and Idsradi (2013). Results suggest that listeners with children using Cochlear Implant are able to accommodate various sources of acoustic variability either by attending to appropriate acoustic cues or by inferring them via visual signal better than Hearing aid users.

To assess the performance of the children with normal hearing and children with hearing impairment using hearing aids and cochlear implants on visual modality it can be noted from the table that the mean scores of the cochlear implant group is 45, 27 for the auditory alone, visual alone and for the hearing aid group the mean scores are 21, 32 for the auditory alone, visual alone respectively, whereas the score for the normal subject in the auditory and visual modalities is 50, 27.2 respectively.

To find out the significant differences in all the three groups between auditory alone and visual modalities, an ANOVA test was used for analysis. The results ANOVA are shown in Table 3. There was a statistically significant difference in both modalities based on subject scores with F value of 2230.2, Willks Lambda= 0.008 and $p < .005$ showing a high statistical significance (sig= 0)

Table 3: Comparison of Auditory alone and Visual alone modalities.

Participants	A Alone		V Alone		F Value	Willks Lambda	Sig.
	M	SD	M	SD			
N	50	0	27	6	2230.2	0.008	0
CI	45	3	27	3			
HA	21	2	32.4	2			

The mean scores of performances of the children using cochlear implant, children using hearing aid and normal hearing children, is represented graphically to compare the performances of the participants in auditory alone modality with visual alone modality. The findings suggest that children with normal hearing, children using cochlear implant and children using hearing aids had better scores obtained to auditory alone modality when compared with the visual modality

alone. Within cochlear implant and normal hearing group, the scores reveal normal hearing group are better performers than cochlear implant and are better performers than hearing aid.

However, the hearing aid group showed better performance through visual modality and declined performance through the auditory alone than cochlear implant and normal hearing group who obtained poorer scores through visual modality. It clearly illustrates that the children with profound hearing loss using the hearing aid benefit more with visual cues rather than acoustic cues alone and use visual modality for better speech perception.

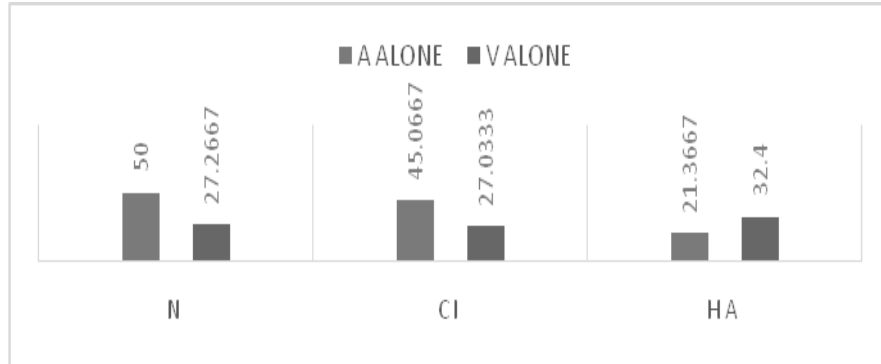


Fig 2: Comparison of Auditory alone and Visual alone modalities.

Although intergroup differences did emerge in visual perception in children using cochlear implant and normal hearing children of the speech stimuli, no such differences appeared for in auditory performance. The correlations we found in the gains from information and performance on auditory-alone and visual alone measures of speech perception in deaf children with cochlear implants suggest that the ability to combine multiple sources of information reflects generalized phonological processing skills that utilize phonetic information in any of its sensory forms.

The results are further supported by the finding from the study done by Schorr et al, (2005) and Rouger et al (2007) that the optical cues, when available is unaffected by noise. Therefore, the implant users and the hearing aid users rely more than normal listeners on visual cues, forcing them to become better multi-sensory integrators.

Table 4: Comparison of Visual Alone and Audiovisual(AV) Modalities

Participants	V Alone		AV		F Value	Willks Lambda	Sig.
	M	SD	M	SD			
N	27.26	5.96	50	0	466.6	0.03	0
CI	27.03	2.93	47.63	2.20			
HA	32.4	2.42	41.56	2.07			

To check the performance between all 3 groups in visual modality and audiovisual modality, the data was analyzed and results are shown in figure 6 which shows the mean scores obtained in all the three groups in visual modality and audiovisual modality. It can be noted from the table that the mean scores of the children using cochlear implant is 27 and 47 for the visual alone and audiovisual mode and for hearing aid group the mean scores obtained are 32.4 and 41.56 for the visual alone and audiovisual mode is respectively. Whereas the score for the normal subject in the visual and audiovisual modalities is 27.2, 50 respectively.

To find out the significant differences in all three groups between visual modality and audiovisual modality. ANOVA test was used for analysis as shown in Table 4. The results in visual and audiovisual mode shows a high significance with F value of 466.6, Willks Lambda= 0.038, $p < 0.005$ (sig. = 0)

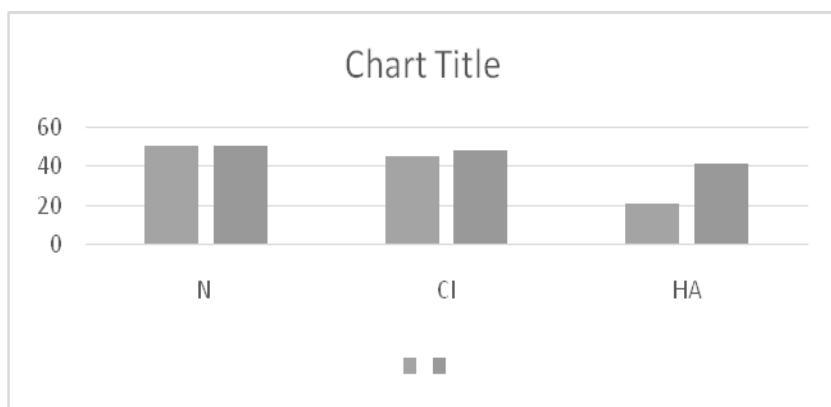


Figure 3. Comparison of Visual alone and Audiovisual Modalities

Figure 3 shows the mean scores of performances of the cochlear implant, hearing aid and normal hearing participants in audiovisual modality with visual modality. The findings suggest that normal and cochlear implant group had better scores obtained to audiovisual modality when compared with the visual modality alone. The scores reveal normal hearing group are better performers than cochlear implant group. It can also be seen from the graph that cochlear implant group obtained better scores than hearing aid group when they were compared for audiovisual modality however on visual modality children with visual cues rather than acoustic cues alone and use auditory visual cues for better speech perception.

The results are further supported by the finding that the productive speech capabilities of children with cochlear implants, as measured by speech intelligibility, are also strongly correlated with the ability to perceptually combine multiple sources of information about speech (Lachs, Pisoni and Kirk, 2001) who examined how pre-lingually deafened children combine visual information available in the talker's face with auditory speech cues provided by their cochlear implants to enhance spoken language comprehension and concluded that the relationships observed between auditory alone speech perception, audio visual benefit and

speech intelligibility indicate that these abilities are used in both speech perception and production.

Table 5: Comparison of Auditory alone and Audio-visual modalities

Participants	A Alone		AV		F Value	Willk Lambda	Sig
	M	SD	M	SD			
N	50	0	50	0	621.38	0.04	0
CI	45.06	3.16	47.63	2.20			
HA	21.36	2.41	41.56	2.07			

To check the performance between all 3 groups in auditory and audio-visual modalities, the data was analyzed and results are shown in Table 5 and figure 4 . It can be noted from the table that the mean scores of the cochlear implant group is 45.06 and 47.63 for the auditory alone, and audiovisual mode respectively and for hearing aid group the mean scores are 21.36 and 41.56 for the auditory alone and audiovisual mode respectively. Whereas the score for the normal subject in the sense modalities is 50 and 50 respectively.

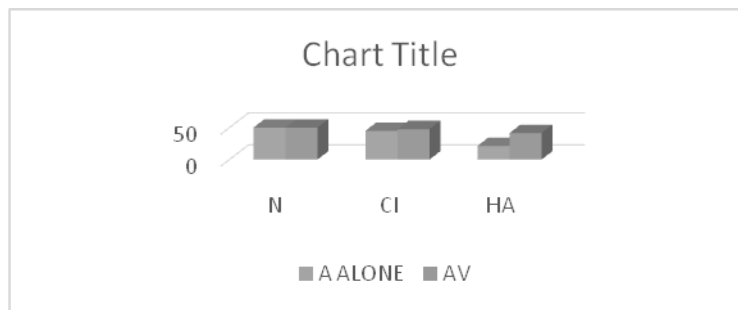


Fig 4: Comparison of Auditory Alone and Audio-Visual Modalities

To find out the significant differences between all three groups in auditory and audio-visual modalities, ANOVA test was used for analysis. The results ANOVA shows that there was a statistically significant difference in the auditory and audiovisual modalities based on subject scores with F value of 621.3, Willks Lambda= 0.044 and $p < 0.005$ (sig.=0)

Figure 4 shows mean performance scores of the children using cochlear implant, children using hearing aid group and normal hearing children to compare the performances of the participants in audiovisual modality when compared with the auditory modality alone. Within group comparison, the scores reveal normal hearing group are better performers than children using cochlear implants. Children using cochlear implants however obtained better scores than children

using hearing aid on audiovisual modality and auditory modality alone. However the hearing aid group showed better performance through audiovisual modality and poor performance through the auditory modality alone than the children with cochlear implant and normal hearing children who obtained good scores than children using hearing aid group through auditory modality alone and audiovisual mode and results indicate that normal hearing children obtained highest scores through audiovisual and auditory alone modalities as compared to children with hearing aids and children with cochlear implants.

The finding that perception through the audiovisual condition surpassed perception through each channel alone, even when the auditory information was limited, is in congruence with consistent with previous results obtained by Lachs et al 2001; Walden, Grant and Cord, 2001 who studied the audiovisual enhancement in children with cochlear implant and confirmed that children with hearing loss who use cochlear implant display Audiovisual enhancement over lip reading (V-alone) or listening (A alone) to consonants, words and sentences. The findings are also congruent with the results obtained by Bacon, Leybaert and Champoux in 2012 who investigated Audiovisual segregation in Cochlear implant users who were administered in (a) Noise (b) reverse speech sound (c) non-altered speech sound and found that CI users proficient at speech recognition performed like normal in all conditions.

The responses noted in the three groups can be explained by the theoretical accounts of the McGurk effect include an associative pairing between the auditory and visual speech signal in memory, due to their co-occurrence in natural speech (Diehl, & Kluender, 1989; Massaro, 1998; Stephens & Holt, 2010). In contrast, the motor theory of speech perception (Lieberman et al., 1967) indicates that speech perception and action is based on articulation or motor movements of the vocal apparatus. Goldstein and Fowler (2003) propose there is a “common currency” between the seen and heard speech signal with the underlying currency the articulatory motor gestures that produce speech, whether visual or acoustic. In this manner, AV speech is detected and integrated as both vision and audition specify the underlying motor movements used to produce speech.

In summary, visual gain and the McGurk effect are the primary methods by which we have come to understand AV speech perception. Audiovisual gain reflects the ability of perceivers to combine and use diverse information from disparate sensory modalities to recognize spoken words, syllables, and phonemes (Braidia, 1991; Fowler and Dekle, 1991; Green and Gerdeman, 1995; Green and Kuhl, 1991, Kuhl and Meltzoff, 1984; Massaro and Cohen, 1995; Rosenblum et al 1996; Summerfield 1987; Vatikiotis-Bateson, Munhall, Hirayama, Lee & Terzopoulos, 1997)

The following were the limitations of this study: (a) Data was collected in a small sample size; (b) It was not compared across gender; (c) An alternate forced choice method was used to elicit response; (d) Further analysis based on age of identification, chronological age, auditory age, age of implant was not studied.

5. Conclusion

To summarize, Hearing aid users achieve good speech perception scores when combined with visual cues which enable them to communicate in a functional way. When the listening conditions are poorer, as in low intensity or the presence of noise, hearing aid users miss a great deal of the information (Berg, 1995) when presented to them in auditory mode, and showed inclination in performance when presented in visual alone modality. Yet the present results show that in such difficult conditions (low signal intensity), participants with cochlear implant performed auditorily better than their counterparts with profound hearing loss who wore hearing aid. Although intergroup differences did emerge in auditory performance and in audiovisual performance such differences appeared for visual perception in cochlear implant and normal group for any of the speech materials. So, some of the present study's results indicate that the CI group's performance surpassed that of the hearing aid group. Thus, these outcomes suggested the advantage of the cochlear implant over the hearing aid for "late" implant recipients especially in difficult listening conditions (low level of speech presentation). The findings indicate that all the participants relied on the visual information in difficult auditory conditions. Taken together, the study confirms that children with hearing loss who use cochlear implants display AV enhancement over simply lip reading (V alone) or listening (A alone) to speech even in adverse listening conditions. This last outcome suggests that intervention with CI users should include exposure to visual as well as auditory information and should also emphasize AV integration.

Thus, the findings of the current study can be concluded that perception scores through the audiovisual condition were higher for children using cochlear implant than perception through each channel (auditory, visual, audiovisual alone) when the auditory information is limited.

References

- Arnold, P., & Hill, F. (2001). Bisensory augmentation: A speechreading advantage when speech is clearly audible and intact. *British Journal of Psychology*, 92(2), 339-355.;
- Benoit, C., Mohamadi, T., & Kandel, S. (1994). Effects of phonetic context on audio-visual intelligibility of French. *Journal of Speech, Language, and Hearing Research*, 37(5), 1195-1203.
- Berg, T. (1995). Sound change in child language: A study of inter-word variation. *Language and Speech*, 38(4), 331-363.
- Bergeson, T. R., Pisoni, D. B., & Davis, R. A. (2005). Development of audiovisual comprehension skills in prelingually deaf children with cochlear implants. *Ear and hearing*, 26(2), 149.
- Braida, L. D. (1991). Cross-modal integration in the identification of consonant segments. *The Quarterly Journal of Experimental Psychology Section A*, 43(3), 647-677.
- Burnham, D., & Dodd, B. (2004). Auditory-visual speech integration by prelinguistic infants: Perception of an emergent consonant in the McGurk effect. *Developmental*

Psychobiology: The Journal of the International Society for Developmental Psychobiology, 45(4), 204-220.

- Campbell, R. (2008). The processing of audio-visual speech: empirical and neural bases. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 363(1493), 1001-1010.
- Diehl RL, Kluender KR (1989). On the objects of speech perception. *Ecological Psychology*, 1(2):121-144.
- Drennan, W. R., & Rubinstein, J. T. (2008). Music perception in cochlear implant users and its relationship with psychophysical capabilities. *Journal of rehabilitation research and development*, 45(5), 779.
- Erber, N. P. (1972). Auditory, visual, and auditory-visual recognition of consonants by children with normal and impaired hearing. *Journal of Speech, Language, and Hearing Research*, 15(2), 413-422.
- Fowler, C. A., & Dekle, D. J. (1991). Listening with eye and hand: cross-modal contributions to speech perception. *Journal of experimental psychology: Human perception and performance*, 17(3), 816.
- Grant, K. W., & Braida, L. D. (1991). Evaluating the articulation index for auditory-visual input. *The Journal of the Acoustical Society of America*, 89(6), 2952-2960.
- Green KP, Kuhl PK, Meltzoff AN, Stevens EB (1991). Integrating speech information across talkers, gender, and sensory modality: Female faces and male voices in the McGurk effect. *Perception & Psychophysics*, 50(6):524-536.
- Green, K. P., & Gerdman, A. (1995). Cross-modal discrepancies in coarticulation and the integration of speech information: the McGurk effect with mismatched vowels. *Journal of Experimental Psychology: Human Perception and Performance*, 21(6), 1409.
- Kim, J., & Davis, C. (2003). Task effects in masked cross-script translation and phonological priming. *Journal of memory and language*, 49(4), 484-499.
- Kuhl P K, Tsuzaki M, Tohkura Y, Meltzoff A N (1994). Acoustical Society of Japan, editor. Proceedings of the International Conference of Spoken Language Processing. Tokyo: the Acoustical Society of Japan;. Human processing of auditory-visual information in speech perception: potential for multimodal human-machine interfaces; pp. 539-542.
- Kuhl, P. K., & Meltzoff, A. N. (1984). The intermodal representation of speech in infants. *Infant behavior and development*, 7(3), 361-381.
- Lachs, L., Pisoni, D. B., & Kirk, K. I. (2001). Use of audiovisual information in speech perception by prelingually deaf children with cochlear implants: A first report. *Ear and hearing*, 22(3), 236.

- Landry, S., Bacon, B. A., Leybaert, J., Gagné, J. P., & Champoux, F. (2012). Audiovisual segregation in cochlear implant users. *PLoS One*, 7(3), e33113.
- Liberman AM, Cooper FS, Shankweiler DP, Studdert-Kennedy M (1967). Perception of the speech code. *Psychological Review*, 74(6):431.
- Liu, S. Y., Yu, G., Lee, L. A., Liu, T. C., Tsou, Y. T., Lai, T. J., & Wu, C. M. (2014). Audiovisual speech perception at various presentation levels in Mandarin-speaking adults with cochlear implants. *PloS one*, 9(9), e107252.
- MacLeod A, Summerfield Q (1987). Quantifying the contribution of vision to speech perception in noise. *British Journal of Audiology*, 21(2):131–141.
- Massaro DW (1998). *Perceiving Talking Faces*. Cambridge, MA: MIT Press.
- Massaro, D. W., & Cohen, M. M. (1995). Speech perception in perceivers with hearing loss: Synergy of multiple modalities. *Journal of Speech, Language, and Hearing Research*, 42, 21–41.
- Massaro, D. W., & Massaro, D. W. (2001). Speech perception. In *International encyclopedia of social and behavioral sciences*.
- McGurk H, MacDonald J (1976). Hearing lips and seeing voices. *Nature*, 264:746–748. McGurk and McDonald.
- Miller, G. A., Heise, G. A., & Lichten, W. (1951). The intelligibility of speech as a function of the context of the test materials. *Journal of experimental psychology*, 41(5), 329.
- Munhall KG, Kroos C, Vatikiotis-Bateson E (2002). Audiovisual perception of band-pass filtered faces. *Journal of the Acoustical Society of Japan*, 21:519–520.
- Payton KL, Uchanski RM, Braida LD (1994). Intelligibility of conversational and clear speech in noise and reverberation for listeners with normal and impaired hearing. *The Journal of the Acoustical Society of America*, 95(3):1581–1592.
- Picheny, M. A., Durlach, N. I., & Braida, L. D. (1985). Speaking clearly for the hard of hearing I: Intelligibility differences between clear and conversational speech. *Journal of Speech, Language, and Hearing Research*, 28(1), 96-103.;
- Rathna Kumar, S. B., Mohanty, P., & Prakash, S. G. R. (2010). Speech recognition performance in children with cochlear implants using bimodal stimulation. *Indian Journal of Otolaryngology and Head & Neck Surgery*, 62(4), 342-345.
- Reisberg D, Mclean J, Goldfield A (1987). Easy to hear but hard to understand: A lip-reading advantage with intact auditory stimuli. In: Dodd B, Campbell R, editors. *Hearing by eye: The psychology of lip reading*. 97–114.
- Rosenblum LD, Saldaña HM (1996). An audiovisual test of kinematic primitives for visual speech perception. *Journal of Experimental Psychology: Human Perception and Performance*, 22(2):318.

- Ross LA, Saint-Amour D, Leavitt VM, Javitt DC, Foxe JJ (2007). Do you see what I am saying? Exploring visual enhancement of speech comprehension in noisy environments. *Cerebral Cortex*, 17:1147–1153.
- Rouger, J., Lagleyre, S., Fraysse, B., Deneve, S., Deguine, O., & Barone, P. (2007). Evidence that cochlear-implanted deaf patients are better multisensory integrators. *Proceedings of the National Academy of Sciences*, 104(17), 7295-7300.
- Schorr EA, Fox NA, van Wassenhove V, Knudsen EI (2005). Auditory-visual fusion in speech perception in children with cochlear implants. *Proceedings of the National Academy of Sciences of the United States of America*, 102(51):18748–18750.
- Stephens JD, Holt LL (2010). Learning to use an artificial visual cue in speech identifications. *The Journal of the Acoustical Society of America*. ;128(4):2138–2149.
- Sumby WH, Pollack I (1954). Visual contribution to speech intelligibility in noise. *The Journal of the Acoustical Society of America*, 26(2):212–215.
- Summerfield, Q. (1987). Some preliminaries to a comprehensive account of audiovisual speech perception. In B. Dodd & R. Campbell (Eds.), *Hearing by eye: The psychology of lip reading* (pp. 3–51). Hillsdale, NJ: Erlbaum.
- Uchanski, R. M., Choi, S. S., Braida, L. D., Reed, C. M., & Durlach, N. I. (1996). Speaking clearly for the hard of hearing IV: Further studies of the role of speaking rate. *Journal of Speech, Language, and Hearing Research*, 39(3), 494-509
- Vatikiotis-Bateson E, Eigsti IM, Yano S, Munhall KG (1998). Eye movement of perceivers during audiovisual speech perception. *Perception & Psychophysics*, 60(6):926–940.
- Walden, B. E., Grant, K. W., & Cord, M. T. (2001). Effects of amplification and speech reading on consonant recognition by persons with impaired hearing. *Ear and Hearing*, vol.22, 333–341.
- Yucel, G., Petty, C., McCarthy, G., & Belger, A. (2005). Graded visual attention modulates brain responses evoked by task-irrelevant auditory pitch changes. *Journal of cognitive neuroscience*, 17(12), 1819-1828.

Echo Formations and Expressives in the Kunha Language of Odisha

Anup Kumar Kujur*

Abstract

The present paper highlights the construction of echo words and expressives in the North Dravidian language called Kunha [kũŋhã] spoken by the Kisan tribe of Odisha state. A constant interaction is observed between the speakers of Kũŋhã and those of the Indo-Aryan language family, i.e., Oḍia, Hindi and Sadri, and the Mũŋḍa language family i.e., Mundari [mũŋḍari], Munda [mũŋḍa] and Kharria [kʰaɾia], and Kuɾux a North Dravidian language. There is an equal chance of influencing the Echo formation and expressives of Kũŋhã from any of these languages; however, the major sound changes in echo formations are related to the phenomenon of vowel replacement predominantly witnessed in the Mũŋḍa languages. A vowel irrespective of its quality in a base word is largely reduplicated to [u] in the echo words. The instances of consonant replacement in the echo words are loanwords majorly taken from Indo-Aryan languages. The expressives take -ãINF to act as conjunctive participles and causative marker [-r] to function as verbs in Kũŋhã language.

Keywords: North Dravidian, Kũŋhã, Mũŋḍa, Vowel Replacement, Indo-Aryan, Language Contact

1. Introduction

Kunha (henceforth called *Kũŋhã*) is a speech variety of Kuɾux. It belongs to the North Dravidian language family spoken in the north-western districts of Odisha, e.g., Sundergarh, Keonjhar, Mayurbhanj and undivided Sambalpur. The language is also widely known as Kisan in the existing literature and recorded as Kisan (ISO 639-3:xis) by Ethnologue 2018, languages of the world. Since the identification of the language, the name ‘Kisan’ has been used for both language as well as tribe. Ota and Patel (2021: 9) consider the term Kisan for both tribe and language. This is purely from the non-native speaker’s point of view. The research work carried out in Gangpuria belt of Odisha, reveals that the speakers of Kisan tribe want their language to be referred as Kũŋhã. Keeping the native speaker’s perspective towards the name of the language, the original name ‘Kũŋhã’ or ‘Kũŋũ’ henceforth will be used to refer to the language only and not to tribe as given by the non-native speakers. The research paper urges and pleads the readers to refer the term ‘Kisan’ strictly to the tribe only.

As per the Census of India 2011, Kũŋhã occupies fifth and Kuɾux/Oraon is ranked seventh among the indigenous communities of Odisha in terms of their population. The total number of speakers of the Kũŋhã is 1, 94,716 and Kuɾux/Oraon is 1, 36, 03. Together they consist of a

* Dept. of Linguistics, Berhampur University, Odisha.

larger group among the indigenous communities. The total population of Kũṅḥã speakers alone is 2, 06,100 with 1, 02,398 male and 1, 03,702 female speakers spread across country in various states of Indian Union. Among all the states, Odisha has the highest number of Kisan speakers with 94.47%. Out of 94.47% of Kũṅḥã speakers, 81.87% of the speakers are reported to be either bilinguals or multilingual. As Sapir (1921) rightly pointed out that bilingual individuals are initiators for linguistic as well as social change. Further, he comments that they are also carriers of the linguistic features from one language family to the other prevalent in the area. Reddy (2005:424) calls those people as illiterate bilinguals who do not have any formal education in order to learn two or more languages. Instead, they would learn the other tongues in order to maintain the peace, harmony and trade among the tribes.

Based on the percentage of census of India, one can easily understand the prevailing situation of Kũṅḥã speakers and their switch over to Odia language. The speakers are fluent in Hindi, Odia, English and other languages in the area. Comparing all the languages, the speakers are more inclined towards Odia than Hindi and English. 93. 21% of Kũṅḥã speakers have switched over to Odia and using it as a second language for education, and other trade purposes. Next to Odia, the Kũṅḥã speakers use Hindi. The following figure illustrates the phenomenon.

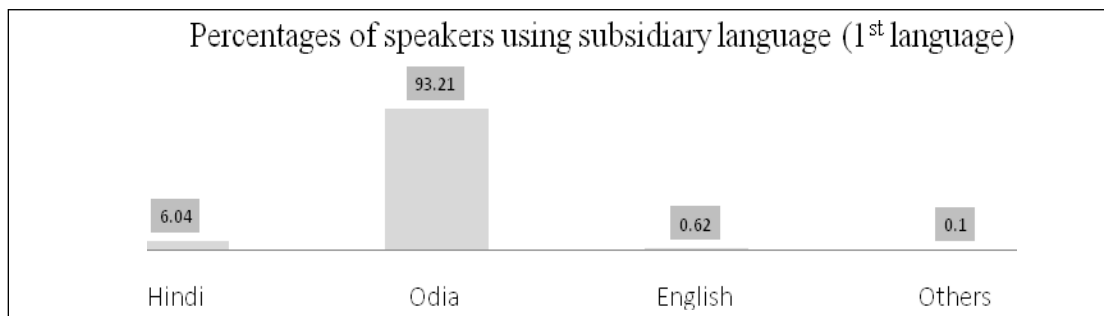


Fig 1: Other Languages spoken by Kũṅḥã Speakers

The reason for this kind of intense bi/multilingualism of Kũṅḥã speakers is due to the surrounding languages belonging to various families of languages. Due to this reason, many of the vocabulary in Kũṅḥã language can be attributed to one of the languages surrounded in the area. This is clear evidence of unidirectional convergence into Kũṅḥã language. The following graph illustrates the phenomenon, how the other languages have surrounded the Kũṅḥã language.

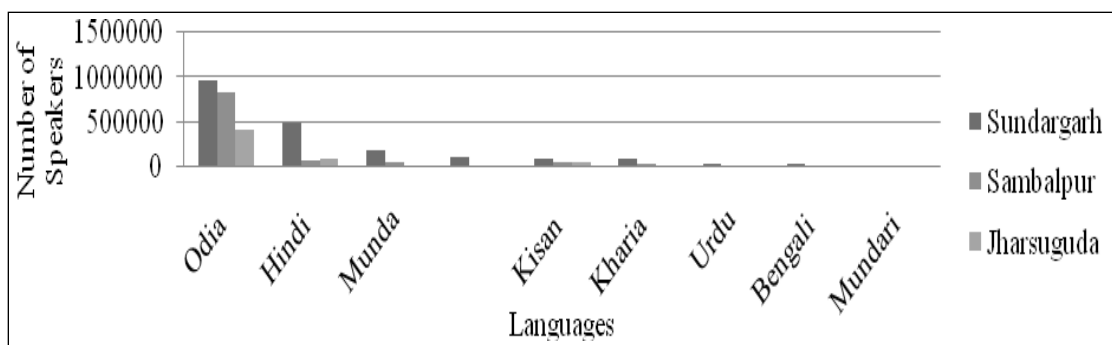


Fig 2: Major and Indigenous Languages in around Kũñᵃ language of the North-Western State of Odisha

The above discussion clearly substantiates the potential existence of prolonged contact among all the languages in contact and leads to the situation of deep influence from these surrounding languages, especially from Odia and other indigenous languages of the region. Reasons for deep influence are linguistic as well as socio-political. Due to this prolonged contact and deep convergence, Kũñᵃ has emerged as a new speech variety, which is referred to as Kũñᵃ by the native speakers of the language. The prolonged contact situation has succeeded in triggering linguistic changes in vocabulary and the structure of the language. The linguistic analysis of the language at various levels viz. phonology, morphology, syntax, semantics provide many linguistic resemblances of contact languages of the region. Though there is a deep convergence, the language preserves few of its original features as well as cultural traits. However, being in contact with other culturally dissimilar language families and the introduction of Christianity and Hinduism have brought about considerable changes to the present culture of Kũñᵃ speakers.

2. Review of Literature

As per the existing literature is concerned, two types work can be observed in the language viz. works related to Kuṛux/Oraon and works related to Kisan. Risely is the first person to make an attempt on the language in 1891. He attributes the Kisan tribe to that of Biahuts which is a sub caste of Kalwars of Bihar. It has erroneously been classified in the Linguistic Survey of India by Konow (1906) to be part of the Austro-Asiatic family of languages. Hahn (1908, 1911) has attempted to document Kuṛux language with production of a grammar. Roy (1915) variously names them as Kisans ‘cultivators’, *koṛās* ‘diggers’ or *d^hangar-koḍās* based on their occupation carried out in the princely state of Orissa. Grignard (1924) has attested a few folk songs and developed a dictionary of Kuṛux language, which is even referred by many scholars and academia. A report of Mitra (1961) in the Census of India separates Kisan speakers from that of Kuṛux/Oraon of North Dravidian group. Perumalsamy (2002; 2004) in the works of Census of India (2011) reports that Kisan (also known as Kũñᵃ) to be a distinct speech variety which is different from Kuṛux/Oraon. He claims it to be a part of North Dravidian family of languages with no evidence of written literature or script.

Emeneau (1956, 1969) discusses some of the structural features of Kuṛux language. Further, he states that echo-word formation, which has to be noted across the South Asian Language, might be notably one of the areal features of South Asia. Bhatt (1970) has worked on the phonology of Kuṛux language. Keeping in view of the less works on North Dravidian Languages, Subrahmanyam (2016) emphasizes that, new works on Dravidian languages have to be carried out by the new scholars at various universities of India.

In the recent times, Abbi (1994) has worked on the direction of reduplication of Indian languages where she mentions about reduplication in Kuṛux language. Further, she remarks that the reduplication in Kuṛux is either total or partial. She proposes that perhaps it is one of the major characteristic features of South Asian languages. In the discussion of expressive in Indian languages Kobayashi (2012) suggests that Kuṛux consists of more expressives in comparison to Malto, which is also a North Dravidian Language. Except these works, there are no particular works especially referring to Kũṛhã language or expressive of Kũṛhã language. Since it is one of the areal features of South Asian languages, there is a need to discuss the direction of expressives and the present work highlights the expressives and echo-formations in Kũṛhã language.

3. Methodology

The Data for the present work are collected from the following areas viz. Hamirpur, Khairbahal, Rajgangpur of Sundargarh district of Odisha. Word list prepared especially for the Scheme for Protection and Preservation of Endangered languages of India (SPPEL) by Central Institute of Indian Languages, Mysore is used to elicit the data from the informants. The questionnaire consists of lexical and syntactic items belonging to various semantic domains of the language. A well advance informed consent is obtained from the community members. The informants are aged between 60-65 years of age. Male and female both are taken into consideration in obtaining the data. The natural and spontaneous speech is collected from the daily conversations of the Kũṛhãspeakers during the fieldwork. The elicited data is transcribed into narrow transcription for the further linguistic analysis and supplemented using the researcher's intuition as a native speaker of Kũṛhã.

4. Expressives in Kũṛhã

Expressives are one of the grammatical constructions available in South Asian languages. Reddy (2012) advocates that expressive morphology in Dravidian and South Asian languages being a special characteristic feature. So, when we are working on South Asian languages, one has to give a particular attention to the expressive constructions, because these words are likely to be loaded with cultural, religious and socio-political concepts.

Onomatopoeia or sound symbolism or imitatives are part of expressives. They are formed from a sound in a given language associated with what it is named, in other words Onomatopoeia words are constructed based on the imitation of sounds from the nature. Abbi (1992) states that

onomatopoeic expressions are used to imitate certain sounds, mental and physical feelings etc. Sound symbolism is considered a ‘phenomenon in which the affective component of meaning exceeds the referential component in particular utterances’. Abbi (1994) discusses that a syllable or constituent in an Onomatopoeia word is repeated for rhyming purpose. The repeated word acquires its meaning only after repetition and the entire repeated construction works as a unit of morpheme as well as a single unit of a word. Further, she views expressives to be endangered structures and gradually dying (2018). Masica (1992) proposes that Indian language in general display a ‘predilection for onomatopoeia’. In Indian languages, the bulk of expressives are reduplicated and form a single lexical category. All five senses of perception, i.e., smell, sight, touch, hearing, and taste, can be depicted using expressives that can be expanded to describe feelings, circumstances, and traits. The following are few of the expressives in Kũṅḃũ and they can feature both in open and closed syllables.

Table 1: Expressives in Kũṅḃũ

Senses	Expressive	Gloss
Hearing	<i>sẽsẽ</i>	‘sound of boiling water ready for cooking rice’
	<i>d^haed^hae</i>	‘sound of beating someone’
Sight	<i>p^hharp^hhar</i>	‘non-sticky’
	<i>p^hudp^hud</i>	‘indicating lack of water while cooking’
Touch	<i>kãṅkãṅ</i>	‘extreme cold’
	<i>caṭcaṭ</i>	‘extreme heat’
Smell	<i>caṅk^hacaṅk^ha</i>	‘smell of sour’
Taste	<i>ṭaẽṭaẽ</i>	‘taste of sour’

5. Structure of expressives

Abbi (1987, 1990, 1992, 2018) states that ‘as a linguistic structuring that is ubiquitous and widespread in all South Asian languages than non-reduplicated languages and expressives are viewed through the lens of reduplication. Whether the expressive form is reduplicated or not, each form is a single structural category and a unit of lexeme. Almost all reduplicated expressives are created by iterating a meaningless syllable. As a result, the resulting structure takes on meaning and becomes a single morpheme and lexeme in that language’. Further, she argues that all expressives are examples of morphological reduplication, as opposed to lexical reduplication, in which the units preceding iteration are meaningful words of the language in question. Subsequently, she mentions that they function and behave similarly to normal words, and hence they must be included in the lexicons of Indian languages. In supplementation, she further argues that Indian languages, unlike many other languages in the world, have expressives

that can be used to build predicates. The expressives in world languages change depending on the types of language families. In Indo-Aryan and Dravidian, it can be suffixed by a conjunctive participle. Various morphological paradigms in Kũñḥã can be seen in the following discussion:

Root	<i>sār</i>	‘semantically meaningless’
Stem	<i>sārsār</i>	‘rustle’
Infinitive	<i>sārsār-r-na</i>	‘rustle-CAUS- <i>n</i> INF’

In the above examples, especially in the infinitive construction, [-r] is used as a causative marker and mandatorily used for the construction of infinitive expressive which behaves like any other regular verb.

Expressives are used in different ways as nouns, verbs or adverbs in Kũñḥã language. Since they are used as regular grammatical paradigms, they represent an important element of the vocabulary. To put it another way, they do not always have morpho-syntactic qualities that distinguish them from the rest of the lexical items in this language. The following examples will illustrate the phenomenon

1. *at^ha* *d^huka-ti* *sārsār-r-al-i(d)*
leaves air.INS EXPR (hear)-CAUS-PST.3SG.NM
‘Leaves rustled due to air.’
2. *cēpu* *tipirtipir* *barc-a(d)*
rain EXPR come.PS- PST.3SG.NM
‘It (rain)drizzled.’
3. *tūsa-nu* *j^hauj^hau* *mend-r-a(d)*
well- EXPR hear-CAUS-PST.3SG.NM LOC
‘A sound of falling was heard in a well.’
4. *bali-n* *q^haud^hau* *nānc-as*
door- EXPR do.PS-PST.3SG.M ACC
‘(He) banged the door.’
5. *caṭcaṭ-r-a* *māṇḍi-n* *cic-ka-nar*
EXPR- food-ACC give-PRF-PRES.3PL CAUS- *ā*INF
‘A very hot food has been given.’

In the above discussion, the expressive *sārsār* in example (1) demonstrates the ability to be employed as a finite verb. In example (2) *tipirtipir* denotes the potentiality of being used as an adverb. In example (3) *j^hauj^hau* exhibits the potentiality of being used as a noun. In example (4) the expressive *q^haud^hau* shows the capacity of being able to act as a conjunct verb and in example (5) *caṭcaṭ-r-a* functions as a conjunctive participle in the sentence. These features highlight the

intricacies of the expressive grammatical categories, indicating that they deserve a position in the grammar due to their morphological, syntactic, and semantic behaviour.

6. The structure of echo-forms

An echo formation is a slightly altered version of the underlying word that is partially repeated. The complete reduplicant and reduplicator construction is referred to as an echo construction or echo formation. Abbi (2018) states that the complete reduplicated or a partial reduplicated construction is referred to as an echo construction or echo formation and the replicated piece is known as a ‘echo word’. Further, she describes the presence of five prevalent ways of forming echo words across South Asian languages. The following are the five ways:

- a. The Indo-Aryan languages allow the initial sound of the base word to be replaced by a specific sound that is unique to that language, for examples, *k^hanavana* ‘food etc.’, *sonavana* ‘sleep etc.’ where the initial [k^h], [s] etc. of the base word is replaced by [v] keeping intact the canonical form of the reduplicant. The phenomenon of replacing the initial consonant sound of the base word is prevalent in the Indo-Aryan loanwords of Kūṅḥã language such as *tirmir* ‘imbalance etc.’, *teṛ^hameṛ^ha* ‘zig zag’, *j^helermeler* ‘dazzling and disorder’ where [t], [t̪], [j^h] > [m]. So far, there is no evidence of consonant replacement in the echo formations involving any indigenous forms of Kūṅḥã.
- b. The echo-formations of Dravidian languages like Tamil as *puli* ‘tiger’ > *puligili* ‘tiger etc.’ (Krishnamurti 2003) or Telugu *āta* ‘play’ > *ātagīta* ‘play and related activities’ where a syllable is repeated. Despite being a Dravidian language, these types of echo-formations are not evident in Kūṅḥã.
- c. The third technique is to have the reduplicant and reduplicator in reverse order. Unlike the conventional pattern in South Asian languages, some languages, such as the Dravidian language Telugu but not Tamil, have not many but few examples of echo words preceding the base and not following it. The form *-tta* is added to the first syllable of the base word as in *pattapagalu* < *pagalu* ‘broad day time’. There are evidences of such echo constructions in Kūṅḥã where the echo word precedes the base, e.g. *asepase* borrowed from Indo-Aryan language Sadri *aspas* ‘nearby, near around’, *ak^hepak^he* from Odia *ak^hopak^ho* ‘neighboring etc.’.
- d. In South Asian languages, a fourth approach is used to construct echo words, which involves vowel alternation of the base word’s first syllable and replicating the rest of the term. This is more widespread in Indo-Iranian as well as Western Indo-Aryan languages. Kūṅḥã exhibits vowel alternations as *inhaṛk^ha* ‘bitter’ > *haṛk^hahuṛk^ha* ‘bitter or related to it’, *k^hadan* ‘mines’ > *k^hadank^hudan* ‘mines etc.’. *j^hara* ‘liquor made out of rice’ > *j^haraj^hura* ‘liquor made out of rice and so on’, *māṅḍi* ‘rice or food’ > *māṅḍimūṅḍi* ‘food etc.’ (borrowed from Munda language) where a vowel, for example [a] here, in the first syllable of a word changes to another vowel like [u] in the same position of reduplicated word.
- e. The fifth strategy includes forming echo words by expressive morphology such as *ciṛciṛ* ‘for extreme (heat), angry (talk)’ *jaṛāṅgajāṅg* ‘severely (thrashing), loud (fall)’.

7. Position of affixation in the formation of echo words

Languages differ in the formation of morphological structures where echo-words also differ in their formation. Some languages change the consonants of the initial segments as one can see in Indo-Aryan languages *cai-vai* ‘tea and the like’. Some languages alter the change of the syllable like Dravidian *paṭa-giṭa* ‘song and the like’ and some languages change their bases especially the vowels in the bases like Munda languages in Central India. In the creation of echo word, Kūṅhã copies the base’s derivational affixes as in *on-ã* ‘eat-ãINF’ >*on-ã on-ã* ‘eating and such activity’ or *tēṅg-a* ‘tell-ãINF’ >*tēṅg-atēṅg-a* ‘telling and such activity’. There are ample examples marked at the terminal position of the entire construction as in *hãnnũ-nu* ‘eye.LOC’ >*hãnnũhũnnũ-nu* ‘eyes and related places’, *cūca-ti* ‘stone-INS’ >*cācacūca-ti* ‘with stone and related items’. Kūṅhã duplicates base forms in order to create echo-forms along with affixes as a part of full reduplication. It is also observed that non-verbal echo-forms with affixes can be seen only at the terminal position as a part of partial reduplication. The following examples will illustrate the phenomenon:

6. *hadhudd-r-a* < *hadduhudda* < *haddu*
 child’EF- child.EF child ãINF CAUS
7. *ladlud-r-al-i* < *ladaludi* < *lad-na*
 carry.EF- carry.EF carry-ñINFPROG.PST.3SG.NM CAUS

8. Echo formations in Kūṅhã

Though Kūṅhã belongs to the North Dravidian family of languages, it has acquired Munda language feature i.e., of vowel change in the base instead of syllable replacement. In the below examples /a/, /e/, /i/ or /o/ in base words have been changed to /u/ in the word-initial position. The following table illustrates the phenomenon.

Table 3: /a/, /e/, /i/, /o/ > /u/ in the word-initial position

Base	Gloss	Reduplication	Gloss
<i>ãṛi</i>	‘elevated part of land’	<i>ãṛiũṛa</i>	‘elevated part of land & such’
<i>accu</i>	‘thorn’	<i>accuucca</i>	‘thorn and such’
<i>ãmmu</i>	‘water’	<i>ãmmuummã</i>	‘water and such’
<i>aṛ^ha</i>	‘curry’	<i>aṛ^hauṛ^hu</i>	‘curry and such’
<i>eṛpa</i>	‘house’	<i>eṛpauṛpu</i>	‘house and such’
<i>em-ã</i>	‘to bathe’	<i>emãum-ũ</i>	‘bathing and such’
<i>ēd-a</i>	‘to show’	<i>ēdaũd-u</i>	‘showing and such’

In the table (3), the vowels /a/, /e/, /i/ and /o/ reduplicate to high back vowel /u/ in the initial position of echo words irrespective of the categories of base words.

Table 4: /a/, /e/, /i/, /o/ > /u/ in the word-medial position

Base	Gloss	Reduplication	Gloss
<i>baṛa</i>	‘banyan’	<i>baṛabuṛu</i>	‘banyan and such’
<i>bēṅja</i>	‘marriage’	<i>bēṅjabūṅju</i>	‘marriage and such’
<i>b^hāṅḍa</i>	‘pot’	<i>b^hāṅḍab^hūṅḍu</i>	‘pot and such’
<i>b^heṛi</i>	‘sheep’	<i>b^heṛib^huṛa</i>	‘sheep and such’
<i>boḍ^hol</i>	‘custard apple’	<i>boḍ^holbūḍ^hal</i>	‘custard apple and such’
<i>cēpu</i>	‘rain’	<i>cēpucūpa</i>	‘rain and such’
<i>ciṛ^ha</i>	‘clothes’	<i>ciṛ^hacuṛ^ha</i>	‘clothes and such’
<i>doṛko</i>	‘ridged guard’	<i>doṛkoduṛka</i>	‘ridged guard and such’

In the table (4), irrespective of vowel quality such as /a/, /e/, /i/, /o/, it reduplicates to high back vowel/u/ in the medial position of echo words.

So, based on the above examples discussed in the table 3 and the table 4 respectively, one can summarize the pattern followed the echo-words as if V² in echo word will automatically reduplicate to /u/ or /a/ if v¹ changes /u/ in VCCV or (C)V̄CV structure.

Table 5: /i/, /e/, /o/ and /u/ > /a/ in the word-final position

Base	Gloss	Reduplication	Gloss
<i>geṛē</i>	‘duck’	<i>geṛē guṛā</i>	‘duck and such’
<i>tetle</i>	‘tamarind’	<i>tetletutla</i>	‘tamarind and such’
<i>cāli</i>	‘portico’	<i>cālicūla</i>	‘portico and such’
<i>dāli</i>	‘lentil’	<i>dālidūla</i>	‘lentil and such’
<i>piṛi</i>	‘mat’	<i>piṛipuṛa</i>	‘mat and such’
<i>kisko</i>	‘yam’	<i>kiskokuska</i>	‘yam and such’
<i>doṛko</i>	‘ridged guard’	<i>doṛkoduṛka</i>	‘ridged guard and such’
<i>b^husu</i>	‘straw’	<i>b^husub^husa</i>	‘straw and such’
<i>c^hublu</i>	‘piece of cloth’	<i>c^hubluc^hubla</i>	‘piece of clothes and such’
<i>pūpu</i>	‘flower’	<i>pūpupūpa</i>	‘flower and such’

The table (5) displays that /i/, /e/, /o/ and /u/ in the base changes to /a/ in the final position of echo words.

Table 6: /a/, /o/ > /u/ in the word-final position

Base	Gloss	Reduplication	Gloss
<i>gohla</i>	‘plough’	<i>gohlaguhlu</i>	‘plough and such’
<i>happ-a</i>	‘to drink’	<i>happahuppu</i>	‘drinking and such’
<i>iṛy-a</i>	‘to roast’	<i>iṛyauṛyu</i>	‘roasting and such’
<i>kalma</i>	‘bitter guard’	<i>kalmakulmu</i>	‘bitter guard and such’
<i>kīṛa</i>	‘hunger’	<i>kīṛakūṛu</i>	‘hunger and such’

<i>lo:ho</i>	‘creeper’	<i>lo:holūhu</i>	‘creeper and such’
--------------	-----------	------------------	--------------------

The table (6) shows that both /a/ and /o/ can change to /u/ in the final position of echo words.

Table 7: /a/ > /i/ in the word-final position

Base	Gloss	Reduplication	Gloss
<i>alk^h-a</i>	‘to laugh’	<i>alk^haalk^hi</i>	‘laughing and such’
<i>dem-ã</i>	‘to beat’	<i>dema demĩ</i>	‘beating and such’
<i>q^hũᅇᅇdra</i>	‘cloudy’	<i>q^hũᅇᅇdraq^hũᅇᅇdri</i>	‘cloudy and such’
<i>ēk-a</i>	‘to walk’	<i>ēkaēki</i>	‘walking and such’
<i>ēr-a</i>	‘to see’	<i>ēraēri</i>	‘seeing and such’
<i>kuda</i>	‘hurry’	<i>kudakudi</i>	‘hurry and such’
<i>sek-a</i>	‘to warm’	<i>sekaseki</i>	‘warming and such’
<i>ūr-a</i>	‘to blow’	<i>ūrauri</i>	‘blowing and such’

The vowel /a/ reduplicates to high front /i/ in the echo words if the base word occurs with /a/ in the final position as in the table (7).

9. Percentage of Echo-forms

The outcome of vowel alteration in the initial positions is around 61.53 percent where $a > u$, followed by $e > u$ with 23%. Among the vowel alteration, $a > u$ is the most common alteration with 49.27 percent, followed by $e > u$ or $o > u$ with 14.49 percent each. The vowel alteration in the final position shows that most changes indicate the pattern of $u > a$ and $a > u$, which is 32.94 percentage each. The sound change $i > a$ has 12.94 percent and $a > i$ is 10.58 percent. Regardless of their quality, vowel changes result in high back vowel u in every position of reduplicated words. However, significant changes could also be observed with $u > a$ predominantly in the word-final positions.

As discussed by Reddy (2016), the echo formation features in Central Dravidian languages have retained in the usage of frequent words related to body parts; nevertheless, many of the Central Dravidian branch of languages viz. Polari Gadaba, Manda etc. have adopted the echo formation system of Munda language i.e., replacement of vowel. As a result, despite its resistance to change, they exhibit a few traces of original reduplication traits.

Kũᅇᅇ co-exists with various other languages viz. Sadri, Hindi and Odia of Indo-Aryan family, Kuᅇᅇ of Dravidian, and Mundari and Kharia of Munda family. Due to the prolonged contact among these languages irrespective of dissimilar genetical affiliations, there has been a tremendous influence from Munda and Indo-Aryan languages. The influence of Munda languages especially in the case of echo forms is noteworthy. The following chart illustrates how

echo words are deeply influenced by the surrounding languages and the changes at various levels of word can be observed:

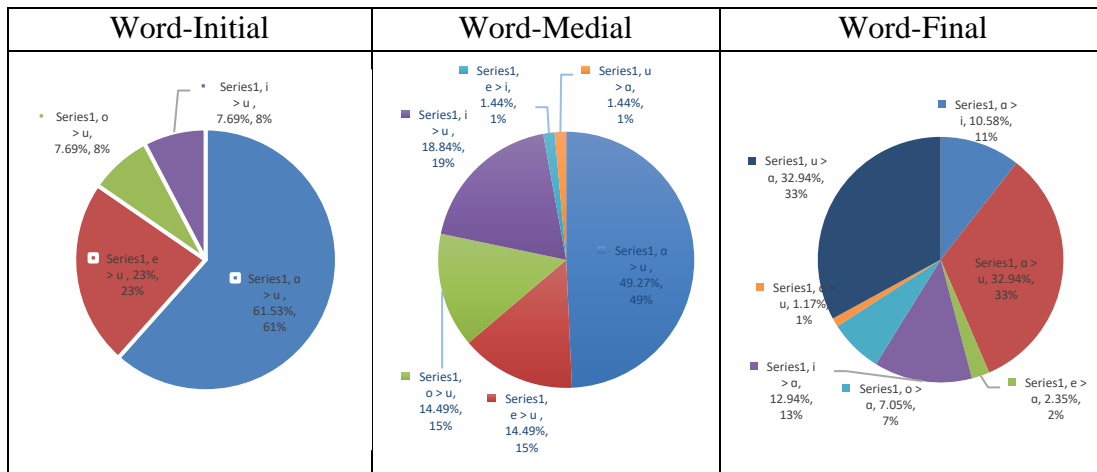


Fig.3: Vowel alternation at word initial, medial and final positions

10. Conclusion

Research on indigenous languages of India is always fascinating and noteworthy. They unveil many underlined features of the languages and their relation to their proto-language. The intensive study into the echo-formations and the expressive constructions of these languages provide a wide variety of knowledge, endorsing to the linguistic area postulated by Emeneau (1956). Grammars alone indeed do not provide enough attention to expressive morphology because it lies in social identities. Since indigenous people are conversant in more than one language of the area, the features of one language are being carried to the other languages. Some of these features are reflected in the morphology of echo-forms and expressives. Since, these languages maintain the tradition of orality; there is a possibility of effortlessly transferring the linguistic features. Since, many young speakers of Kisan community are adopting the dominant languages of the region as their first language, these expressives morphology may disappear or be replaced with some other structures in the area. Therefore, there is a real danger of their disappearance, if they are not documented properly. Consequently, one may not know the diachronic changes that had taken place in the course of time. Finally, there will be loss of social knowledge and identity that are linked to these structures in the Kũñḥ language. Study on other surrounding languages may likely to follow the same pattern in the construction echo-forms and expressives if further research is carried out.

Abbreviations

3	third person	EF	echo formation
ACC	accusative	EXPR	expressive
CAUS	causative	INF	infinitive
CP	conjunctive participle	INS	instrumental

LOC	locative	PRF	perfective
M	masculine	PROG	progressive
NM	non-masculine	PS	past stem
PL	plural	PST	past marker
PRES	present	SG	singular

References

- Abbi, A. (2018). Echo Formations and Expressives in South Asian languages. In *Non-Prototypical Reduplication*, edited by Aina Urdze, Berlin, Boston: De Gruyter Mouton, pp. 1-34.
- Abbi, A. (1992). *Reduplication in South Asian languages: An areal, typological and historical study*. New Delhi: Allied Publishers.
- Abbi, A. (1990). Reduplication in Tibeto-Burman languages of South Asia. *South East Asian Studies* 28(2). 171–181.
- Abbi, A. (1987). Semantic correlates of the Indian linguistic area: A study in reduplicative structures. In Elena L. Bashir, Madhav K. Deshpande & Peter E. Hook (eds.), *Select papers from SALA-7: South Asian Languages Analysis Roundtable Conference held in Ann Arbor, Michigan, May 17–19, 1985*, 1–12. Bloomington, Ind.: Indiana University Linguistics Club.
- Abbi, A. (1994). *Semantic universals in Indian languages*. Simla: India Institute of Advanced Study.
- Bhat, D. N. S. (1970). Kudux Indicatives. *Indo-Iranian Journal*, 12 :3 pp. 216-223.
- Chambers, J.K., & Trudgill, P. (2004). *Dialectology* (2nd ed.). Cambridge: Cambridge Textbooks in Linguistics.
- Diffloth, G. (1976). Expressives in Semai. In Philip N. Jenner, Lawrence C. Thompson & Stanley Starosta (eds.), *Austroasiatic studies*. Part 1, 249–264. Honolulu: University of Hawai'i Press.
- Emeneau, M.B. (1956). India as a Linguistic Area. *Language*, 32(1): 3-16.
- Emeneau, M.B. (1969). Onomatopoeics in the Indian linguistic area. *Language* 45, 274–299.
- Goswami, G.S. (1989). *Kisan, Grammar, Texts, Dictionary*. Bhubaneswar: Academy of Tribal Dialects & Culture.
- Grignard, A. (1924). *A Grammar of the Oraon Language and Study in Oraon Idiom*. Calcutta: Catholic Orphan Press.

- Hahn, F. (1908). *Grammar of the Kurukh Language*. Bengal: Secretariat Press.
- Hahn, F. (1911). *Kurukh Grammar*. Calcutta: Bengal Secretariat Press.
- Kobayashi, M. (2012). *Texts and Grammar of Malto*. Vizianagaram: Kotoba Books.
- Konow, S. Korwā. (1906). In *Mundā and Dravidian Languages*, edited by George A. Grierson. Calcutta: Office of the Superintendent of Government Printing. pp. 147-162.
- Krishnamurti, B. (2003). *The Dravidian Languages*. Cambridge: Cambridge University Press.
- Linguistic Survey of India Special Studies: Orissa*. (2002). Kolkata: Language Division, Registrar General of India.
- Masica, C. P. (1992). *The Indo-Aryan Languages*. Cambridge: Cambridge University Press.
- Mohan, S. (1999). *Morpho-semantic study of echo words in Hindi. Case of speech act phenomenon*. Unpublished M.Phil. Dissertation. Jawaharlal Nehru University. New Delhi.
- Office of the Registrar General and Census Commissioner, India. Ministry of Home Affairs, Government of India. Accessed on 11th March, 2022. <http://censusindia.gov.in/2011-Common/CensusData2011.html>
- Ota, A. B. & Patel, P. (2021). Status of Saora Languages and its Dialectical Variations. In Ota, A. B. (ed). *Adivasi*. Bhubaneswar: Scheduled Castes, Tribes Training, and Research Institute (SCSTRTI).
- Perumalsamy, P. (2004). Kisan Mother Tongue, Its Reflection in the Recent Censuses and Its Basic Linguistic Features. *Working Papers on Linguistics and Literature, Vol. IV*. Coimbatore: Bharathiar University.
- Perumalsamy, P. Kisan. (2002). In *Orissa, Linguistic Survey of India*, edited by J.K. Banthi. Calcutta: Office of the Superintendent of Government Printing. pp. 497-512.
- Ramaiah, L.S. & Reddy, B.R. (2005). *Tribal and Minor Dravidian Languages and Linguistics. An International Bibliography of Dravidian Languages and Linguistics, Series Vol. vi*. Chennai: T.R Publications Pvt. Ltd.
- Reddy, B.R. (2016). Odisha as mini-Linguistic area. *Indian Linguistics*, 77, 1-19.
- Risley, H.H. (1891). *The Tribes and Castes of Bengal*. Calcutta: The Bengal Secretariat Press.
- Roy, S.C. (1915). *The Oraons of Chota Nagpur: Their History, Economic Life, and Social Organisation*. Ranchī Bar Library.

Sapir, E. (1921). *Language: An Introduction to the Study of Speech*. New York: Harcourt, Brace & World Inc.

Simons, Gary F. and Charles D. Fennig (eds.). (2018). *Ethnologue: Languages of the World*, Twenty-first edition. Dallas, Texas: SIL International. Accessed on 11th March, 2022. Online version: <http://www.ethnologue.com>.

Subrahmanyam, P. S. (2016). *Aspects of Dravidian Linguistics*. Kuppam: Dravidian University Publications.

Errors Analysis of Initial consonant clusters in Persian speakers' English

Sanaz Montazer*, Swathi, C.S. **, Ali Mirzavandi*

Abstract

Persian learners of English may re-syllabify the words in English based on phonological constraints, especially when it comes to words with initial consonant clusters. While vowel epenthesis appears to be the most common repair used to align such clusters with Persian phonotactics, though the placement of the epenthetic vowel varies. This study looks at the errors made by Persian speakers who were learning or speaking English as a second language (ESL). For this purpose, two hypotheses were proposed. The first was based on the Sonority Principle, where it was expected that in the acquisition of the 'sC' onset clusters, it would follow the sequence of /sl/ > /sn/ > /st/. The second was that epenthesis would occur more frequently after word-final consonants than after word-final vowels. In this paper, the changes were investigated by administering two kinds of tests (LexTALE and Reading passage Test) among two groups of learners - beginners and advanced speakers. The findings of this study revealed that Persian speakers of English largely re-syllabified initial consonant clusters based on the phonological restrictions of Persian. Analyses of 'sC' clusters revealed that prothesis was observed in 's' plus stop, lateral, or nasal clusters, whereas anaptyxis was seen in other clusters 's' plus 'r', i.e., obstruent plus sonorant. According to the second linguistic factor- preceding phonological environment, the findings corroborated with other studies, that preceding vowels incurred lower epenthesis. To conclude, the findings of this study seem to support the sonority application to initial consonant clusters to Persian Language and also support the original prediction that vocalic environments will have a facilitating effect.

Keywords: Phonotactics, Epenthesis, Initial Consonant Cluster, Persian Language, Syllable Structure

1. Introduction

English is an international language which is learnt by speakers of different languages. Every language has its own phonology, which may be similar to other languages in some aspects, but at the same time can be different as well. When words that are different in their phonological systems are learnt, they may create some difficulties for the learners. It may lead to re-syllabification of words being learnt due to different phonological rules of respective languages.

Re-syllabification is systematic process and not random, i.e., it happens in accordance with the

*M.A. Linguistics, and ** Assistant Professor, Dept. of Linguistics, UCASS, Osmania University, Hyderabad.

phonological rules of the learners' first language (or previously learned languages), at least in their initial state. In other words, there is a huge possibility of transfer from the learner's first language to the initial state of grammar (Schwartz & Sprouse, 1996). When compared to a language like English, which has a complex syllable structure, Persian has a simpler syllable structure, especially when it comes to the syllabification of consonant clusters, due to different phonotactics constraints in both languages with regards to consonant clusters. This process could lead to either the deletion of some consonants or the epenthesis of a vowel sound between two consonants in a consonant cluster. Also, due to these interlanguage differences, many students who were learning English in Iran, as well as Persian speakers of English abroad, have difficulties with pronunciation that have an effect on their intelligibility of speech that could lead to problems in comprehension when they interact with English speakers.

Thus, the aim of this study was to note the errors in the production of Initial Consonant Clusters in Persian learners of English. In line with this, the first hypothesis was that the learners should acquire the syllable clusters that are adhering to Sonority Sequencing Principle earlier than those that are violating. The second hypothesis was that epenthesis would occur more frequently after word-final consonants than after word-final vowels.

2. Literature review

Carlisle (1988) noted that Spanish speakers apply prothesis to deal with initial /s/ clusters, while learning English. While speakers of Korean consistently use epenthesis (Nam and Southard 1994) It is not uncommon that different types of clusters are resolved in different ways in different languages (Abrahamsson, 1999; Fleischhacker 2001, 2005; Gierut, 1999; Greenberg, 1965.). Fatemi, Sobhani & Abdolhassani (2012) noted the difficulties of Persian Learners of English in pronouncing some English consonants clusters.

In the current study, how Persian learners of English typically deal with clusters in the target language were analyzed.

2.1. English Sound Systems

Based on the sound patterns of English, the following consonants and vowels can be listed.

Vowels of English

The following figure lists the vowels of English language.

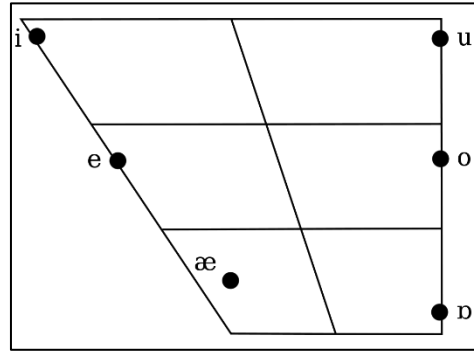


Fig 3: Vowels of Persian

Three short vowels (/æ/, /e/, and /o/) and three long vowels (/ɒ/, /i/, and /u/) are used. The three short vowels are only short when they are in an open syllable (i.e., without a coda) that is non-final (independent of stress); صدا[se'dvɒ] "sound", خدا[xo'dvɒ] "God". They are around 60% as long as a long vowel in an unstressed closed syllable. Otherwise, all vowels are long, for example, سفت‌تر[sɛftʰæːr] "firmer". When short vowels are in open syllables, they are similarly unstable and tend to blend in quality with the next long vowel (both in informal and formal speech, International Phonetic Association (1999).

Consonants of Persian

There are eight plosive consonants in Persian: two bilabials, two dentals, two palatals, one uvular, and one glottal. The following table depicts twenty-five consonants in Persian.

	BiLabial	Alveolar	Post-Alveolar	Palatal	Velar	Uvular	Glottal
Nasal	m	n					
Stop/Affricate	p b	t d	tʃ dʒ		k g	(q)	ʔ
Fricative	f v	s z	ʃ		x~χ ɣ~ʁ		h
Trill		r					
Tap		ɾ					
Approximant		l		j			

Fig 4 : Consonants of Persian

Note: In Central Iranian Persian /ɣ/ and /q/ have merged into [ɣ~q]; as a voiced velar fricative [ɣ] when positioned intervocalically and unstressed, and as a voiced uvular stop [q] otherwise. Many dialects within Iran have well preserved the distinction.

(<http://dialectblog.com/the-international-phonetic-alphabet/ipa-tutorial/lesson-2/>)

Thus, دو‌هست /de'vi:st/ "two hundred" ranges between [dɛ'vistʰ] and [di'vistʰ]; شلوغ /ʃo'lu:ɣ/ "crowded"

between [ʃoˈluːg] and [juˈluːg]; رسیدن/ræsiˈdæːn/ "to arrive" between [ræsiˈdæːn] and [resiˈdæːn]; and so on.

Except for ٚ[tʰo] "you" and nouns of foreign origin, word-final /o/ is uncommon. With the exception of نه[næ] "no," word-final /æ/ is exceedingly infrequent in Iranian Persian. The word-final /æ/ in Early New Persian has mainly transitioned to /e/ in current Iranian Persian, and [e] is also an allophone of /æ/ in word-final position. However, word-final /æ/ is kept in Eastern dialects. The most prevalent short vowel that is uttered in last open syllables is /e/. (Campbell, 1995).

2.3. Syllable structure of English

In English, the word or syllable can begin with a vowel, one, two, or three consonants. Because no English word starts with more than three consonants, the maximum number of segments in the word-initial consonant cluster is three. At the beginning of English words (syllables), there are 55 two-consonant clusters. In many cases the first element is /s/ and the second consonant is approximant /l, r, w, j/ (cf. Roach 2002).

Thus, a syllable in English can be composed of a vowel followed by one consonant (CV), as in pie-/pai/, two consonants (CCV), as in try-/traɪ/, or three consonants (CCCV), as in spray-/sprai/. A syllable begins and ends with a vowel sound (V), which may be preceded and/or followed by a consonant (C) or a cluster of consonants (CC or CCC). Some syllables have only one vowel sound (V), such as I and eye -/aɪ/, owe -/ə/. The syllable's vowel may also be followed by one consonant (VC), as in at-/æt/, two consonants (VCC), as in its-/ɪts/, three consonants (CVCCC), as in text - /tekst/, or four consonants (CVCCCC), as in texts-/teksts/. As this study is restricted to Initial Consonant Clusters, they are listed below.

Initial CC clusters in English

The following initial consonant clusters can be seen in English with two and three consonant combinations.

- Starting with oral plosive: pr, pl, pj, pw, pf, ps, pʃ, br, bl, bj, tr, tw, tj, dr, dj, dw, kr, kl, kw, kj, km, kn, kv, gr, gl, gw
- Starting with nasal plosive: nj, mj, mw
- Starting with fricative: fl, fr, fj, vj, vw, θr, θw, θj, st, sp, sk, sl, sw, sn, sm, sf, sj, sr, sv, zl, ʃr, ʃm, ʃn, ʃp, ʃw, hj.
- The number of the initial three- consonant clusters in English is quite limited, there are 9 of them, all starting with /s/: spl, spr, spj, str, stj, skl, skr, skw, skj.

As it would be a huge task to note the changes and phonological processes occurring in all the initial consonant clusters listed above, hence in this study only initial consonant clusters with 'sC' have been taken up.

2.4. Syllable structure of Persian

Persian syllables may be structured as follows: (C)(S)V(S)(C(C)), where, 'S' stands for Semivowel. In Persian, both single-consonant onsets and complex codas are permitted, albeit both are optional. If it is considered that vowel-initial syllables must be preceded by a glottal stop then the onset is not discretionary, but rather required on the surface (Samareh, 1977).

Jabari Akbar, (2011) noted that many syllable forms are permitted in Persian: An optional syllable onset of one consonant; an obligatory syllable nucleus of a vowel optionally preceded and/or followed by a semivowel; and an optional syllable coda of one or two consonants comprise the Persian syllable structure.

However, the following limitations have also been noted:

- Onset Consonant (C): Can be any consonant. (Onset is composed only of one consonant; consonant clusters are only found in loanwords, sometimes an epenthetic /æ/ is inserted between consonants)
- Nucleus: Semivowel (S) or Vowel (V)
- Coda: First consonant (C) can be any consonant and Second consonant (C) can also be any consonant (but mostly /d/, /k/, /s/, /t/, & /z/).

English, like Farsi, belongs to the Indo-European language family, and its alphabet is based on Latin, with vowels and consonants represented as letters in its orthography. It's worth noting that in alphabetic languages like English, the number of vowels in a word may be used as an index for estimating how many syllables the word has.

Phonological Differences Between Persian and English

While comparing the Persian vowel system to that of English, the following three areas show considerable differences: 1) the number of vowels, 2) the contrasts between tense and lax, and 3) the pure/glide sounds. There are also noteworthy changes in consonant distributions between Persian and English, such as quantity, clusters, and mode and location of articulation. English and Persian curriculum types also pose a lot of issues in spoken language. The disparities in word stress patterns between Persian and English were especially challenging for Iranian students.

Each Persian syllable follows one of these patterns (i.e., CV, CVC or CVCC). For example, ma /ma/ stands for 'we,' toop /tup/ for 'ball,' and mard /maerd/ for 'man.' Another important point to note is that in Persian, syllable-initial consonant clusters are impossible, while syllable-final consonant clusters usually include no more than two consonants. Thus, it may result in the deletion of certain consonants or the epenthesis of a vowel sound between two consonants in a consonant cluster.

3. Methodology

3.1. Participants

The selection criteria for the target participants of this study were that, they were adult learners of English (L2), who started learning it at school age, which was about 10-12 years in Iran. All participants were Persian native speakers (L1) in the age range from 25 to 38 years. A convenient sampling method was used and participants, old who were perusing their master's degree in India were considered. They were from various courses such as MBA, M.COM, M.A Psychology, English and Linguistics. All participants were administered LexTALE test, which assesses the passage of English Language use. They were then divided into two groups based on their performance on LexTALE. The first group consisted of five students with below Intermediate English proficiency, and the second group had five students with Intermediate level of English proficiency.

3.2. Tools

Two tools were used in this study in line with the objectives of the study.

3.2.1. Test for Advanced Learners of English (LexTALE)

The LexTALE is a quick and practically feasible test of vocabulary knowledge for beginner to highly proficient speakers of English as a second language developed by Kristin Lemhofer and Mirjam Broersma (Lemhofer & Broersma, 2011). It consists of a simple un-speeded visual lexical decision task. In contrast to other vocabulary or proficiency tests, it has been designed to meet the needs of cognitive researchers. On average, the LexTALE takes about five minutes to complete. The scores were found to be good predictors of vocabulary knowledge, to give affair indication of general English proficiency. The list is enclosed as appendix-I.

3.2.2. Reading Passage Test (RPT)

For the purpose of this study participants were tested by a formal task, which involved reading a list of 30 topically unrelated sentences. These sentences were constructed from words containing three onset clusters /st/, /sn/, /sl/ , occurring immediately after a vowel or a consonant which were selected from Oxford Dictionary. They were presented to participants in a randomized order by using a Random Number Generator software. The production of each learner was recorded and transcribed. The decision to include a relatively even number of vowels and consonants before each of the target sC clusters was motivated by findings from a number of IL studies and the established phonological phenomena are largely determined by preceding phonological environment. (Cardoso, 2005, 2007; Escartin, 2005). Reading task could be completed in 10 to 15 minutes.

Some of the sentences used to form the Reading Passage Test were as follows -

The word **slate** is also used for some objects made from it.

She gave her son a **slap** for behaving badly.

It is a **slab** of stone; it is not a wooden substance.

A **small** fish is bigger than big slug.

A **snail** leaves a **slimy** trail on the sidewalk.

Did you see that **small snail**?

3.3. Procedure

The participants were individually tested in different places like, University classes, offices, institutions or hostels, depending on their availability and other factors. Each session started with a presentation of the general goals of the study with no revelation of the precise focus of the investigation. After they consented to participate in the study each participant was handed out a written LexTALE questionnaire which s(he) had to fill out. Following this, each participant was asked to read the Reading Passage Test (RPT) which contained 60 randomized sentences. The participants were asked to read them loudly while a sound recorder was recording the productions.

3.4. Data Recording, Transcription and Analysis

In the first part of this study, each participant was handed a written LexTALE questionnaire which s(he) had to fill out, but in the second part, the data were recorded via a MP3 sound recorder. The recorded data was transcribed by the third author via Transcriber (version 1.5.1), an application for labelling, segmenting and transcribing speech. In particular, participants' responses in relation to preceding phonological environments, type of onset clusters and presence or absence of epenthetic vowel were transcribed.

Some of the expected errors in the data would be analyzed according to Grunwell (1987), which could be

- **Cluster reduction:** This is defined as deletion of one or more consonants from a target cluster so that only a single consonant occurs at syllable margins. For Eg. 1. slap pronounced as [sap]
- **Cluster Simplification:** The error occurs when two elements of a cluster are produced with one or both being produced in a manner not matching the target phoneme. For example, green pronounced as [gwin]; bread pronounced as [bwed].
- **Coalescence:** This occurs when the yielded pronunciation contains a new consonant composed of features from the original consonants-e.g., swim pronounced as [fim] because the [+fricative] feature of /s/ co-occurs with the [+labial] feature of /w/, resulting in a labial fricative, [f].

Pronunciation of each target word containing the three onsets' clusters /st/, /sn/, /sl/ were analyzed in the current study.

4. Results and discussions

A comparison of English and Persian language syllable structures and sound systems were analyzed. In relation to production of vowels, it was observed that there are six different vowels in Persian, which are divided into three lax vowels ([ɑ], [ə], [o]) and three tense vowels ([æ], [i], [u]). Because the lax vowels are not written in Persian, they can be heard with a variety of vowel combinations, which can cause confusion for Persian learners. The word 'krm' for example, has five lexical constituents, and the reader selects which one to use in the sentence based on the context. Hence, the difficulty in production was noted in this data also, though this was not the objective of the study, it has been documented as it was observed.

Analyses of English clusters by Persian learners revealed the following - Prothesis was observed in 's' plus stop, lateral, or nasal clusters (for eg., 'sport' - [sɔpɔrt], 'slide' - [slayd], 'snow' - [snɔw]) whereas anaptyxis was seen in other clusters ('s' plus 'r', i.e., obstruent plus sonorant) (for eg., 'class' - [kɛlas]). In sonority-based techniques, the difference in epenthesis placement has not been dealt with, but it may be explained by considering the perceptual similarity between the target word and the actual reality. This idea was validated by this experiment that showed the role of perceptual similarity. Also, features like Cluster reduction, Cluster Simplification and Coalescence were not observed in the data.

The first hypothesis, based on the effects of sonority on Interlanguage, posited that the acquisition of the 'sC' onset clusters would follow the sequence /sl/ > /sn/ > /st/ (where '>' indicating that 'more easily articulated and thus acquired earlier'). Specifically, the original prediction was that L2 learners should acquire the less marked and sonority-abiding clusters (i.e., /s/ + liquid and /s/ + nasal onset clusters) before the more marked and sonority-violating clusters (i.e., /s/ + stop onset clusters), based on Clements (1990) Sonority Sequencing Principle (SSP). In this study, it was observed that the least marked clusters /sl/ was articulated correctly relative to the more marked /sn/ clusters upholding the predictions of Clements (1990) and the Minimal Sonority Distance. Also, the results from the current study indicated that, /s/ + stop onset clusters induce nearly as much error (i.e., epenthesis) as /s/ + nasal sequences do. In addition, the findings also showed that /s/ + liquid onset sequences do exhibit a significant effect on the occurrence of epenthesis very much more than /s/ + stop clusters and /s/ + nasal sequences respectively.

In relation to the second linguistic factor-preceding phonological environment. According to our hypothesis in this study which predicted that epenthesis would occur more frequently after word-final consonants than after word-final vowels. The findings of the present study corroborated our initial hypothesis, as confirmed by the results for the preceding consonant set.

The results with respect to preceding vowels also support the original prediction that vocalic environments should have a facilitating effect, incurring the lowest amount of epenthesis.

Table1: Phonological environment and Probability of Epenthesis

Preceding Environment	Probability of epenthesis
Consonant	0.58
Vowel	0.15

It is important to emphasize at this point that the general findings of this study vis-à-vis preceding phonological environment is not in any way a revelation: The number of other variation studies have reached the same conclusion (Cardoso,1999, 2005, 2007, 2008; Escartin,2005).

The analysis of findings revealed that due to the non-presence of onset-consonant clusters in Persian, there is a possibility that Persian learners of English at initial state faced problems with these clusters.

5. Summary and Conclusion

In this paper, Persian speakers' production for three homorganic sC onset consonant clusters (/st/, /sl/ and /sn/) were examined using tools developed for the purpose of this study. The overall results suggested that, similar to what is usually observed in natural languages, the phenomenon of epenthesis is systematic (i.e. Predictable), and more importantly, motivated by a combination of linguistic and extra linguistic variable constraints. In particular, the results reveal that epenthesis in Persian -based IL is more likely to occur: (1) when the sC sequence is preceded by consonants, (2) in the IL of less proficient speakers, (3) and in /s/ + stop and /s/ + nasal sC clusters. The results involving markedness on sonority-namely that epenthesis is more likely to occur in /st/ and /sn/ sequences more than /sl/ respectively.

Accordingly, it was argued that these idiosyncratic results were following from articulatory factors which make /st/ and /sn/ more marked (more likely to induce epenthesis) than /sl/; that is both /st/ and /sn/ sequences were considered more difficult to produce because their articulation entails a more effortful gesture from [+continuant] /t/ or /n/. Finally, it was noted that whereas the observed sC learning hierarchy (sl>sn>st) had already been reported in L1 acquisition. This hierarchy had not yet been documented in L2 acquisition research especially among users of languages other than English. Due to the non-presence of onset-consonant clusters in Persian, Persian learners of English in the initial stages faced problems with these clusters and demonstrated transfer of their L1 phono tactic rules by exhibiting epenthesis. For future research the Persian speakers' production strategies described in this paper can be

explained through Optimality Theory for competing constraints.

Appendix - I

List of words from LexTALE test

Majority	0	staunch	19	Paltry	40
Nourishment	0	allied	20	Denial	41
Energy	0	slain	21	generic	42
Prom	1	recipient	22	sensible	43
Turmoil	2	expiate	23	scornful	44
Carbohydrate	3	eloquence	24	stoutly	45
Scholar	4	cleanliness	25	Ablaze	46
Turtle	5	dispatch	26	Kershaw	47
Flick	6	recondite	27	moonlit	48
Description	7	ingenious	28	Lofty	49
Cylinder	8	bewitch	29	hurricane	50
Censorship	9	slave	30	Flaw	51
celestial	10	plaintively	31	alteration	52
Rascal	11	kelp	32	unkempt	53
Purge	12	interface	33	breeding	54
Plush	13	hasty	34	festivity	55
Muddy	14	lengthy	35	screech	56
Quirky	15	fray	36	savoury	57
Podium	16	crumpet	37	plaudit	58
Listless	17	upkeep	38	Shin	59
Wrought	18	majestic	39	Fluid	60

References

Abrahamsson, N. 1999. Vowel epenthesis of /sC(C)/ onsets in Spanish /Swedish inter phonology: A longitudinal case study. *Language Learning*, 49(3), 473-508.

Akbar Jabbari, A. and Samavarchi, L. (2011). Persian Learners' Syllabification of English Consonants Clusters, *International Journal of English Linguistics*, Vol1, No.1.

Campbell, George L. 1995. "Persian". *Concise compendium of the world's languages* (1st publ. ed.). London: Routledge. p. 385. ISBN 0415160499.

Cardoso, W. 1999. MA quantitative analysis of word final /r/ deletion in Brazilian Portuguese *Linguistics Atlantica*,21,13-52.

Cardoso, W. 2005. The variable acquisition of English word-final stops by Brazilian Portuguese speakers. In L. Dekydtspotter, R.A. Sprouse and A. Liljestr nd (Eds.), *Proceedings of the Generative Approaches to Second Language Acquisition Conference (GASLA 7)* (pp.38-49). Somerville, MA: Cascadilla Proceedings Project.

Cardoso, W. 2007. The variable development of English word-final stops by Brazilian Portuguese speakers: A stochastic optimality theoretic account. *Language Variation and change* ,19,1-32.

Cardoso, W. 2008. The Development of sC Onset Clusters in Interlanguage: Markedness vs. Frequency Effects. In R. Slabakova, J. Rothman, P. Kempchinsky and E. Gavruseva (Eds.), *Proceeding of the Generative Approaches to Second Language Acquisition (GASLA 9)* (pp.15-29). Somerville, MA: Cascadilla, Proceeding Project.

Carlisle, R. S. 1988. The effects of markedness on epenthesis in Spanish/English interlanguage phonology. *Issues and Developments in English and Applied Linguistics*, 3, 15-23.

Clements, G. 1990. The role of sonority cycle in core syllabification. In J. Kingstone and M Beckman (Eds.), *Papers in Laboratory phonology 1: Between the grammar and physics of speech* (pp.282-333), Cambridge, MA: Cambridge University Press.

Escartine, C. 2005. The Development of sC onset Clusters in Spanish Language. Unpublished master's thesis, Concordia University, Montreal.

Fatemi, Mohammad Ali, Sobhani, Atefeh & Abdolhassani, Hamzeh. (2012). Difficulties of Persian Learners' of English in Pronouncing some English Consonants Clusters, *World Journal of English Language*, Vol 2, No.4.

Fleischhacker, Heidi. 2005. Similarity in Phonology: Evidence from Reduplication and Loan Adaptation.

Gierut, J. 1999. Syllable onsets: Clusters and adjuncts in acquisition. *Journal of Speech, Language and Hearing Research*, 42,708-726.

Greenberg, J. 1965. Some generalizations concerning initial and final consonant sequences. *Linguistics*, 15,5-34.

Grunwell, P. 1987. Phonological assessment, evaluation and explanation of speech disorders in children. 3rd September 1987.

Lemhofer, K. & Broersma, M. 2011, Introducing LexTALE: A quick and valid Lexical Test for Advanced Learners of English.

Nam, Ji Young, and Bruce Southard. 1994. Orthographic representation and resyllabification of English loanwords in Korean. *Language and Speech* 37, 259-281.

Samareh, Yadollah. 1977. The arrangement of segmental phonemes in Farsi. University of Tehran Press.

Schwartz, Bonnie D, and Sprouse, Rex A. 1996. L2 cognitive states and the Full Transfer/Full Access model. January 1, 1996.

Roach, Peter. 2002. *A little Encyclopaedia of Phonetics*. University of Reading, UK.

Socio-linguistic Aspects in Kāraka Prakaraṇam

Varalakshmi. K.*

Abstract

The aphorisms of kāraka theory of Aṣṭādhyāyī of Pāṇini, fixes various factors in a given sentence, associated with the action. After fixing the factors, it further ordains different case affixes. Socio-linguistic aspects like religious faiths and practices, Astrological aspects, code of conduct, cultural aspects, attitudes, behavior etc., to have significance in determining the factors in sentence. A sincere attempt is made in this paper to present such aspects.

Key words: Pāṇini, Aṣṭādhyāyī, Kāraka, Hetau

1. Introduction

Sanskrit language, formalized by the systematic treatise Aṣṭādhyāyī of Pāṇini, is a vehicle of ancient Indian culture, philosophical ideas and arts. kāraka theory of Aṣṭādhyāyī, plays an important role and forms a backbone of the structure of the Sanskrit language. Aṣṭādhyāyī of Pāṇini, is a treatise on grammar which comprises around 4000 aphorisms. It is divided into eight chapters. It defines morphology and syntax of the Sanskrit language. This paper makes an attempt to present Socio-linguistic aspects found in kāraka theory of Aṣṭādhyāyī of Pāṇini.

2. Methodology

Grammatical aphorisms mentioned in this article are taken from Aṣṭādhyāyī of Pāṇini. Whereas, examples for the aphorisms are taken from Siddhāntakaumudī of Bhaṭṭojidīkṣita. Kārakārthaprabodhinī and Key to Kārakā are referred to present Socio-linguistic aspects in Kārakā Prakaraṇam. The sources of all the examples cited in this article have been included at the end as an Appendix.

3. Analyses of Data and Discussion

According to some grammarians, kāraka (factor) is the one which has connections with the actions conveyed by the verbs. 'kriyānvayitvaṃ kārakatvaṃ'. Some other grammarians opine that kāraka is the one which causes the performance of an action denoted by the verb. 'kriyājanakatvaṃ kārakatvaṃ'. A sentence is defined in terms of action and kāraka (factor) and their anvaya (relations).

3.1. Major Categories

kārakavibhaktiḥ and upapadavibhaktiḥ are the two major categories of cases. kārakavibhaktiḥ

*Deputy Director, Sanskrit Academy, Osmania University, Hyderabad

denotes kāraka relations. In upapadavibhaktiḥ, cases are governed by adjacent word.

3.2 Six kārakas & Seven Cases

The six categories of kāraka are kartṛkāraka, karmakāraka, karaṇakāraka, sampradānakāraka, apādanakāraka, adhikaraṇakāraka. Accusative, Nominative, Instrumental, Dative, Ablative, Genitive And Locative are seven cases in Sanskrit grammar.

kartṛkāraka is the one which is independent in the fulfillment of the action denoted by the verb. It takes nominative case in active voice and instrumental case in passive voice. Karmakāraka is the most desired object that the agent tries to obtain through his action. It takes accusative case. The most useful factor in accomplishing an action is called karaṇakāraka, which takes instrumental case. The factor, associated with the action ‘giving in charity’ is termed as sampradānakāraka, which takes dative case. A noun whose relation to an action is that of a fixed point, from which departure takes place, is called apādanakāraka, to which ablative case is employed. The location, where action takes place, is called adhikaraṇakāraka, to which locative case is ordained. The Genitive case is employed when the mere relationship of kārakas is intended to be expressed.

2. Socio-linguistic Aspects in Accusative Case

That factor which is very much desired by the agent to be acquired through an action is called karma and accusative case is employed to it. ‘karturīpsitatamaṃ karma’¹. ‘anabhihite’ ‘karmaṇi dviṭīyā’². The nominal base form ‘grāma’ is employed accusative case based on the kāraka relation.

Ex 1: /devadattaḥ grāmaṃ gacchati/ - ‘Devadatta is going to village’.

This is an example of kārakavibhaktiḥ. ‘karmapravacanīyāḥ’ is a technical term used in aṣṭādhyāyī. It means that which speaks about an action. Some of the 22 indeclinable or particles are called ‘karmapravacanīyā’ as per the rule ‘karmapravacanīyāḥ’ and based on another rule ‘karmapravacanīyayukte dviṭīyā’³, accusative case is employed at the end of a nominal base form which is in connection with the word having the technical term karmapravacanīyāḥ. In this context the cases are governed by the adjacent word. Such cases are called ‘upapadavibhaktiḥ’.

It is observed that the technical term ‘karmapravacanīyāḥ’ is assigned to some particles related to Socio-linguistic aspects. Two aphorisms stand as an evidence to this aspect are as follows: ‘hīne’⁴, The particle ‘anu’ is called ‘karmapravacanīyāḥ’ when it is to be conveyed that something or somebody is lower in status or nature.

Ex 2: /anvarjunaṃ yoddhāraḥ/ - ‘All warriors are inferior to Arjuna’.

‘karmapravacanīyayukte dviṭīyā’⁵. as per this rule, accusative case is employed at the end of the nominal base form ‘anvarjuna’ which is in connection with the word ‘anu’ in the sense of inferior and having the technical term ‘karmapravacanīyāḥ’. In another context like ‘upodhike

ca', the particle 'upa' is called 'karmapravacanīyāḥ' when it conveys the meaning 'superior to' and 'inferior to'. In the sense of 'inferior to' the particle 'upa' governs accusative case.

Ex 3: /upaśākaṭāyanaṃ vaiyākaraṇāḥ/ - 'All grammarians are inferior to Sakatayana'.
'karmapravacanīyayukte dviṭīyā'. as per this rule, accusative case is employed at the end of the nominal base form 'upaśākaṭāyana' which is in connection with the word 'upa' in the sense of inferior and having the technical term 'karmapravacanīya'.

3. Socio-linguistic Aspects in Karana Karaka

The general rule of Karana karaka (instrument) is that which is most useful in fulfilling an action. 'sādhakatamaṃ karaṇam'⁶. Third case affix is employed to denote the instrument.

Ex 4: /devadattaḥ paraśunā chinatti/ - 'Devadatta is cutting with axe'.

3.1 One of the exceptional rules of Karana karaka (instrument) 'yenāṅgavikāraḥ'⁷ is based on the deformity of the body. Third case is employed to the word expressing defective limb by the defect of which the whole body is said deformed.

Ex 5: /akṣṇā kāṇaḥ/⁸ - 'Blind of one eye'.

3.2. Another supplementary rule 'aśiṣṭavyavahāre dāṇaḥ prayoge caturthyarthe ṭṭīyā.'⁹ is employing third case in the sense of dative case, when the verbal root 'dā' 'to give' is used and an immoral conduct is implied.

Ex 6: /dāsyā saṃyacchate kāmukaḥ/¹⁰ - 'The lustful man offers money to female slave to lure her'.

The instrumental case in the meaning of dative case, is employed to the nominal base form 'dāsī' since immoral conduct is implied. Verbal affix of 'ātmanepadī' class is also employed to the verbal root which denotes the agent as the enjoyer of the fruit of action.

Ex 7: /dharmye tu bhāryāyai saṃyacchati/¹¹. 'The man gives money to his wife'.

Dative case is employed to the nominal base form 'bhāryā' as moral conduct is implied. Verbal affix of 'parasmaipadī' class is employed to the verbal root 'dā' 'to give', which indicates the agent as non enjoyer of the fruit of action. Injunctions of manudharmaśāstram state that bliss prevails in that family where a husband is devoted to his wife and wife is also devoted to her husband.

'santuṣṭo bhāryayā bharttā bhartrā tathaiva ca.
yasminneva kule nityaṃ kalyāṇaṃ tatra vai dhruvam'¹².

Codes of conduct laid down in dharmasāstrams are also taken into consideration by the ancient Indian grammarians while formulating the rules for karaka theory.

4. Socio-linguistic Aspects in Sampradana Karaka

‘sampradānakāarakam’ Dative factor is connected to the action ‘giving in charity’. The recipient, whom the agent wants to get benefitted with the object of his action of giving in charity, is called ‘sampradānakāarakam’ Dative factor. The factor termed as ‘sampradānakāarakam’, is employed fourth case affix.

‘karmaṇā yamabhipraiti sa sampradānam’¹³. ‘caturthī sampradāne’¹⁴.

Ex 8: /mahārājaḥ brāhmaṇāya gāṃ dadāti/ - ‘The kings gives a cow in charity to a Brahmin’.

4.1.The above rule is extended to some other roots in different senses. Some of these verbal roots possessing the meanings related to religious faiths are governing the Dative factor.

‘rādhiḥśyoryasya vipraśnaḥ’¹⁵. The word ‘vipraśnaḥ’ means asking various questions. This aphorism mentions two verbal roots ‘rādhi’ ‘to propitiate’ ‘īkṣa’ ‘to look to’. In the case of these two verbal roots, the person, about whose good or bad fortune aspects are enquired, is called ‘sampradānam’.

Ex 9: /kṛṣṇāya rādhyati īkṣate vā/¹⁶ – ‘Sage Garga looks to Krishna’.

The implied meaning of the sentence is sage Garga, being asked by Krishna’s parents, reflects upon the good or bad fortune of Krishna. In this example the Astrological aspects are considered in determining the dative factor and in employing the fourth case affix .

4.2.The aphorism ‘anupratigrṇaśca’¹⁷ | mentions about a verbal root ‘gṛ’ preceded by prefixes ‘anu’ and ‘prati’ possessing the meaning ‘to encourage by repeating’ in the context of the recitation of vedic hymns. The agent of previous action of recitation of vedic hymn becomes dative factor or ‘sampradānakāarakam’ when the root ‘gṛ’ with ‘anu’ and ‘prati’, is used.

Ex 10: /hotre anugṛṇāti pratigrṇāti vā/¹⁸ – ‘By repeating the invocation, the chief priest namely ‘adhvaryu’ encourages another priest called ‘hotṛ’ the reciter of the invocation’.

The ‘hotṛ’ invokes first. The chief priest namely ‘adhvaryu’ then follows him in invocation and by so doing encourages the priest ‘hotṛ’. In this context, the agent of the first action of recitation of vedic hymn, the priest ‘hotṛ’ is called ‘sampradānakāarakam’ and dative case is employed to the word ‘hotṛ’. The above mentioned aphorism and example prove that vedic sacrificial rites are also included in fixing the kāraka factor and assigning the case affix.

4.3. 'parikrayaṇe sampradānamanyatarasyām'¹⁹. The term 'parikrayaṇa' means employing a servant on stipulated wages for a limited period. The factor which is most useful in 'parikrayaṇa' is optionally called 'sampradāna'. This ordains dative case affix.

Ex 11: /śatena śatāya vā parikrītaḥ/²⁰ – 'He was hired as a servant for hundred'.

In the above example, the social practice of hiring a servant for a stipulated wages for a limited period is ordaining kāraka factor and case affix.

4.4. 'namaḥ svastisvāhāsavadhāZlaṃvaṣaḍyogācca'²¹. . The Dative case affix is employed to the nominal base words which are connected with the terms, associated with performance of religious deeds. Since the fourth case affix is governed by the adjacent words, this is called 'upapadavibhaktiḥ'.

Ex 12: /haraye namaḥ/ - 'Salutations to Hari'. /svasti prajābhyaḥ/ - 'May there be prosperity to the subjects'. /agnaye svāhā vaṣaṭ vā/ - 'May this oblation go to the fire god'. /pitṛbhyaḥ svadhā/²² - 'May this oblation go to manes'. The above examples show that religious deeds, rituals and social practices play an important role in the determination of the dative factor and in ordaining fourth case affix.

5. Socio-linguistic Aspects in apādānam Karaka

'dhruvamapāyeZpādānam'²³. apāya means separation. ध्रुवम् means fixed point. The fixed point of separation is called apādānam. 'pañcamyapādāne'²⁴ when action expressed by the verb results in separation of the agent and object, the fixed point of separation is called apādānam or ablative. Fifth case affix is employed to the ablative factor.

Ex 13: /devadattaḥ grāmāt āyāti/ - 'Devadatta is coming from the village'. The village is a physical point of separation. Hence it is an ablative factor. Fifth case affix is employed to the nominal base form of village.

5.1. 'jugupsāvīrāmapramādārthānāmupasaṅkhyānam'. Vā According to this supplementary rule of kātyāyana, psychological point of separation is also considered as ablative factor. When the verbs denoting aversion, refraining and negligence, are used, the objects of these verbs, are called ablative factors apādānakāraka.

Ex 14: /pāpāt jugupsate viramati vā/ - 'He refrains from committing sin. He ceases from sin'. /dharmāt pramādyati/²⁵ - 'He deviates from the path of Dharma'.

5.2. 'parājerasoḍhaḥ'²⁶. when the verbal root 'ji' preceded by the prefix 'parā' in the sense 'to be tired' is employed, the object which causes tiresomeness is called ablative factors apādānakāraka.

Ex 15: /adhyayanāt parājayate/²⁷- ‘He gets tired of study’.

In this example psychological detachment of mind from studies is denoted by the verb ‘parājayate’. The object adhyayana of the verb, is called ablative factor or apādānakāraka and fifth case affix is employed to it.

Psychological aspects like aversion, refraining, negligence and tiresomeness of the human beings are determining the ablative factor and ordaining fifth case affix.

6. Socio-linguistic aspects in Genitive Case

The genitive case is employed at the end of a nominal base word to indicate the general relation like a servant and master or property and proprietor etc. ‘śeṣe ṣaṣṭhī’²⁸ ‘rājñāḥ puruṣaḥ’²⁹The servant of the king.

Apart from general relations, aspects related to yajnas are also considered in the employment of sixth case affix.

6.1. ‘preṣyabruvorhaviṣo devatāsampradāne’³⁰. The aphorism contains two verbal roots ‘preṣya’ to send and brū to utter clearly. The object of these two verbs denoting sacrificial offering takes sixth case affix, when deity is the receiver of the offering.

Ex 16: /agnaye chāgasya haviṣo vapāyā medasaḥ preṣya anubrūhi vā/³¹ – ‘Send to fire as oblation the goat, the fat, and the marrow’.

These are the words of the chief priest addressed to another priest participating in the performance of yajña. ‘vapā’ is part of ‘medas’ fat of the goat. That ‘vapā’ is the offering ‘haviṣ’ to the fire god. ‘vapā’ and ‘medas’ are offering in the sacrifice. They are objects of the two roots ‘preṣya’ and ‘brū’. Hence sixth case affix is employed to the words ‘vapā’ and ‘medas’.

In the above example sixth case affix is employed based on the rule ‘preṣyabru’. This rule is formulated to employ sixth case affix, purely based on the procedure of the performance of yajñas. Religious practice like sacrificial offering to Deity is considered in kāraka theory.

6.2. ‘caturthī cāśiṣyāyuṣyamadrabhadrakuśalasukhārthahitaiḥ’³².

‘āyuṣya’ long life, ‘madra’ joy, ‘bhadrā’ good fortune, ‘kuśala’ welfare, ‘sukha’ happiness, ‘artha’ prosperity, ‘hita’ good. Fourth case affix or sixth case affix is employed to the nominal base form when associated with the above words denoting blessings. This is a ‘upapadavibhaktiḥ’.

Ex 17: /āyusya cirañjīvitam kṛṣṇasya kṛṣṇāya vā bhūyāt/. /madraṃ bhadraṃ kuśalam sukham śaṃ arthaḥ prayojanaṃ hitaṃ pathyaṃ vā bhūyāt/³³- ‘May Lord Krishna live long’. ‘May Lord Krishna be happy’.

In the above example sixth case affix is employed based on the rule ‘caturthī cāśiṣyāyusya’. This rule is formulated to employ sixth case affix, purely based on the social customs.

7. Socio-linguistic aspects in Adhikarana Karaka

‘ādhāro adhikaraṇam’³⁴. The location, where action is performed, is ādhāra. That is adhikaraṇakāraka, where the subject or the object of the action is situated.

Seventh case affix is employed to the locative factor. ‘saptamyadhikaraṇe ca’³⁵. ‘bālaḥ kaṭe śete’. The boy is sleeping on the mat.

This rule is extended to some other aspects too. One of them is Astrological aspect.

7.1. ‘nakṣatre lupi’³⁶. when an affix, denoting the time of an Asterism, is elided by lup; the seventh and the third case affixes are employed after the word.

Ex 18: /mūlenāvāhayeddevī śravaṇena visarjayet/ or /mūle āvāhayeddevī śravaṇe visarjayet/³⁷. ‘The goddess sarasvatī should be installed at the time, connected with the ‘mūlanakṣatra’ and should be sent back at the time connected with ‘śravaṇanakṣatra’.

In the above example two terms ‘mūla’ and ‘śravaṇa’ are employed. Actually ‘mūla’ and ‘śravaṇa’ are the names of two nakṣatras. But in this context ‘mūla’ and ‘śravaṇa’ denote the time connected with ‘mūla’ and ‘śravaṇa’ ‘nakṣatras’. The present aphorism is employing seventh and third case affixes after the words मूल and श्रवण नक्षत्रs which indicate the time of an Asterism.

Conclusion

India has her own social rules and regulations, faiths and practices which are handed down from generation to generation. Sanskrit language and literature are like reflections of these aspects. Astronomical, Astrological, ritualistic, behavioral and societal factors influenced Sanskrit language. Kāraka theory of Aṣṭādhyāyī of Pāṇini, unfolds the historical and cultural backgrounds of our nation.

Bibliography

Ravva Srihari (2015). Paniniya Astadhyayi. Telugu Academy, Hyderabad,

Srisa Chandra Vasu, siddhāntakaumudī bhaṭṭojidīkṣita, Motilal Banaras, Delhi

Shivani, V. and Santosh, M. (2017). Key to Karaka. Chinmaya International Foundation, Kerala.

Shivani,V. (2018). Kārakārthaprabodhinī, Dvaita. Philosophy Resource Centre: Manipal Universal Press.

Appendix - I

The following are the references of all the examples given in this article.

1. Aṣṭādhyāyī 1.4.49
2. Aṣṭādhyāyī 2.3.1, 2
3. Aṣṭādhyāyī 1.4.83, 2.3.8
4. Aṣṭādhyāyī 1.4.86
5. Aṣṭādhyāyī 2.3.8
6. Aṣṭādhyāyī 1.4.42
7. Aṣṭādhyāyī. 2.3.20
8. Siddhāntakaumudī 565
9. Siddhāntakaumudī 568
10. Siddhāntakaumudī 568
11. Siddhāntakaumudī 568
12. Manu 3.30
13. Aṣṭādhyāyī 1.4.32
14. Aṣṭādhyāyī 2.3.13
15. Aṣṭādhyāyī 1.4.69
16. siddhāntakaumudī 577
17. Aṣṭādhyāyī 1.4.41
18. siddhāntakaumudī 579.
19. Aṣṭādhyāyī 1.4.44
20. Siddhāntakaumudī 580
21. Aṣṭādhyāyī 2.3.16
22. Siddhāntakaumudī 583
23. Aṣṭādhyāyī 1.4.24
24. Aṣṭādhyāyī. 2.3.29
25. Siddhāntakaumudī 587
26. Aṣṭādhyāyī 1.4.26
27. Siddhāntakaumudī 589
28. Aṣṭādhyāyī 2.3.50
29. siddhāntakaumudī 606
30. Aṣṭādhyāyī 2.3.61
31. Siddhāntakaumudī 621
32. Aṣṭādhyāyī 2.3.73
33. Siddhāntakaumudī 631
34. Aṣṭādhyāyī 1.4.45
35. Aṣṭādhyāyī 2.3.36
36. Aṣṭādhyāyī 2.3.45
37. Aṣṭādhyāyī 642

Bilingual Education: An Indian Tribal Context

Sudheer Bhan*

Abstract

Indigenous or Tribal communities are an integral and essential aspect of Indian Biodiversity. They are predominant in several states of India. Since state language is different than tribal Languages in these states, Tribals have to be educated in Bilingual mode of education. Present study examines the scenario of Bilingual education in schools of predominantly indigenous/tribal regions across 13 states of India. The study reveals that Bilingual Tribal education programs have been largely successful in states of Orissa, Nagaland, Tripura, Mizoram and Meghalaya due to Tribal language as medium of Instruction till 5th standard followed by education in state language in later classes. However, Languages like Ao and others are endangered in Arunachal Pradesh due to total English medium and very few tribal mother tongues as school subjects. Inadequate teaching material (Text books) and lack of insufficient Tribal teachers has also contributed to the failure of Bilingual education programs in Manipur and Gujrat. Gadaba speakers in Nilgiri hills of Tamil Nādu protested against Education in their mother language till 5th standard and insisted only on regional Tamil medium for mainstream education and advancement in life. Finally, study shows Transitional or Assimilationist model is successful in developing bilingual competence in Tribal pupils. Present paper evaluates the condition of Tribal mother tongues in Indian educational System in seven States of North East, Gujrat, Chhattisgarh, Jharkhand, West Bengal, Orissa and Union Territory of Andaman and Nicobar and brings out the lacunas in implementation of Tribal languages in School curriculum.

Key Words: Indian Education System, Tribal Mother Tongues, Bilingual Education

1. Introduction

Bilingual Education plays an important role in revitalization and survival of Languages of indigenous or Tribal people. These individuals differ in their cultures, customs, beliefs, Languages, way of living and community life from other mainstream language communities. Children in bilingual communities should have the opportunity to be educated in two languages--- The language of the home and language of other groups in the community. However, in most bilingual communities, the two (or more) languages do

* Helen Keller's Institute of Research and Rehabilitation for Disabled Children, Secunderabad.

not have equal status. Side by side with majority language, which has prestige and positive socio-economic connotations; there are minority languages, often associated with low socio-economic status and lack of educational achievements. They are more or less stigmatized and not considered as suitable vehicles for communication in school or subjects to be taught. Hence, there are instances of children all over the world, who are confronted with a language in school, they do not speak as native speakers of their language or not at all.

A system in which a minority language has a certain role alongside the majority language is called Bilingual Education. Before going in to the tinges of bilingual tribal education, we should first discuss the various arguments in favor of and against the minority language teaching. Bilingual education refers to any education program that involves two (or more) languages in the process of teaching. It involves teaching academic content in two languages—a native language and secondary language with varying amounts of each language used in accordance with the program model. The goal of bilingual education programs shall be to enable English Language learners to become competent in listening, speaking, reading and writing in the English language through the development of literacy and academic skills in the primary (native) Language and English.

Following are some of the arguments given in favor of introducing minority /Tribal languages in school education.

- a) The children's first language must be the medium of instruction in the early stages and majority language can be learned as a subject. It will ensure academic progress. Similarly reading and writing in the first language should precede literacy in the second. Larson et. Al. (1981) study indicates the negative effects of the completely Spanish curriculum on Amuesha speaking children living in the Peruvian jungle. The Amuesha children know little or no Spanish and sometimes spent years in school, before finishing first grade, because they first had to try to understand what the teacher was saying. As a result of the communication problem, the situation seemed so hopeless that the Amuesha children in one such school were sent out to work in the teacher's garden most of the day, while the Spanish speaking children had classes.
- b) The minority child's general cognitive development will be retarded, if he or she does not receive education in the mother tongue.
- c) The minority language teaching is a requirement for a healthy development of a positive self-image.
- d) The use of the minority language as a medium of instruction will relieve the cultural shock, which minority children can experience at the transition from home to the school.

The arguments in favor of majority language teaching are: cultural identity, social and political unity of a country will be promoted, if everyone is educated in this same(majority) language. It will ensure positive socio-economic future for minority children.

2. Types of Bilingual Education

Bilingual education can be classified on the basis of the following criteria:

- Are both languages used during the whole curriculum or only in certain stages?
- Do both languages function as media of communication in the classroom?
- Is there a one-to-one relation between subject (like arithmetic or geography) and language or are both languages used alternately as media of instruction for all subjects, except, when the languages themselves are subjects?
- Does the bilingual program aim at literacy in both the languages?
- Do only minority children participate in the bilingual program or majority language speaking children as well?

Based on these criteria, following are the models of bilingual education programs used across the world (1) Transitional or the assimilation model (2) Pluralistic or maintenance model and (3) Immersion model.

1)Transitional or Assimilationist model (Krashen et. al., 1982; Collier, 1989)

In this model, the minority language is used in the early grades to bridge the gap between the home and the school. Assimilation is accomplished through “human linguistic” of minority languages.

2)Pluralistic or maintenance model (Cummins-1981)

In this model, the minority language is used as an initial medium of instruction as well as in later classes (as a second language) e.g. In India, the children receive initial education through their native language, while Hindi and English are studied in secondary education. However, when their native language is not a regional language of wider use, then the regional language also has to be introduced in secondary education. The situation is even more complex, when the native language does not exist in written form, like some tribal languages. Because in such cases, elementary education will take place in the regional language, which the child may know only slightly.

3)Immersion Model (Taylor-1992)

In this model of bilingual education, all instruction in kindergarten and Grade 1 is in the second language. First language skills (reading, writing and so on) are introduced in second, third and fourth grades. In the 5th grade, content subjects

such as Geography or History may be taught in the first language. In kindergarten, the children are permitted to use their mother tongue until they are proficient enough in the second language in first year and beyond, the teacher requests that only second language be spoken in class, except during classes, in which the children's first language is the subject. Finally, the teachers are bilingual and students participate in the immersion program voluntarily and only with the consent of their parents. Immersion education has been organized virtually only for speaking a prestigious language, such as English-speaking students in Francophone-Quebec, Canada.

3. Bilingual Education in Tribal Regions of India

A brief review of Bilingual Education among the tribal regions is listed here.

a) In Nilgiri Hills, Tribal languages (like Gadaba) were introduced as medium of instruction, followed by Tamil medium at secondary level. It was found that parents had a negative attitude towards it. They did not want their children to be educated in mother tongue and insisted upon regional Tamil medium.

b) The Bilingual Education Programs in tribal region is Gujarat, can be divided into two groups (1) Primitive Tribes, who are mostly monolingual. They are not educated due to their geographical inaccessibility e.g. Bhils. (2) Advanced Tribes, who are mostly bilingual and multi lingual. Among advanced tribes, we have Dangs in Dang Dist. & Rathwas and others in Chhota Udaypur, Panchmahal Districts. In Dang District, Dangi has been introduced as second language up to primary level and Marathi/Gujarati as medium of instruction throughout the school. Here the bilingual program has been successful.

c) In Chhota Udaypur and neighbouring Panchmahal Districts, no tribal languages are used as medium of instruction or as second language or as one of the subjects. The school text books in Gujrati are prepared by college teachers, who hardly have any knowledge of tribal cultures. Tribal languages in this region are comprehensible and considered as dialects of Gujrati. But still, there has been a very high rate of dropouts in schools. The Assimilationist model followed here may lead to the linguisticide of tribal languages gradually.

d) In Meghalaya, the language of instruction in schools is mainly English. Tribal Languages like Garo, Khasi and Pnar are taught as optional subjects. Medium of Instruction in Mizoram and Arunanchal Pradesh is first language (tribal mother tongue) till 3rd grade and second language - English starts from 4th grade onwards. These states follow Assimilationist model of Bilingual education and thus lead to linguisticide of minority or first languages.

e) Since February 2022, Tribal schools in Assam have, Rabha and Deuri languages till class 6th, the Karbi language till class 8th, the Bodo and Garo languages till class 12th as medium of instruction and Dimasa as a subject language. In rest of the schools, Assamese and Bengali are medium of instruction and English and Hindi are second and third languages.

f) Nagaland has 17 recognized Tribal Mother Tongues, out of which four of them, viz. Angami, Ao, Lotha and Sumi are allowed to go beyond class 8th. Among them, Tenyidie is in the University level, but leaving behind 13 other tribal languages like Ao.

g) 18 tribal languages are recognized either as subject language or as medium of instruction in Manipur Schools. Till class 5th., Meitei Mayek is medium of instruction from 6th standard to undergraduate level English and Hindi are second and third languages. However, State govt. is discouraging the tribal mother tongue education in the state by not appointing sufficient Tribal language teachers.

h) In Tripura, Bengali and Kokborok are official languages of the state. Kokborok comprises tribal communities like Tripuri, Reang, Jamatia, Noatia, Murasing, Kolo, Rupini and Ochoi. In Tripura, there are 943 Kokborok medium schools, 28 Meitei medium, 36 Bishnupriya medium and 49 Kuki Halam medium schools. Chakma and Kuki Halam are taught till class 4th, Bishnupriya as a school subject till class 5th followed by Bengali/English mediums till secondary level. It seems that Tripura does not have a consistent education policy for teaching tribal languages in schools-as a medium of instruction or as a school subject.

i) Orissa is home to 62 different tribal communities including 13 Particularly Vulnerable Tribal Groups (PVTG's), making it the state with most diverse indigenous communities in the country. In Ashram schools meant for tribal children, the Tribal Mother Tongues are used as medium of instruction till 5th class, Oriya language from class 2nd onwards and English as school subject from class 3rd / Class 6th onwards. Oriya is medium of instruction and tribal languages as language subjects.

j) In Jharkhand, schools having more than 70% students speaking a particular tribal language are provided lessons in that language. Students in six tribal dominated districts are taught in their mother tongues (Santhali, Kurukh, Mundari, Sadri, Ho, Kharia) till 3rd standard in tribal schools. Among these, Kurukh is Dravidian and others belong to Munda language family.

k) Some tribal languages like Gondi, Halbi, Madiya, Surgujia, Dorli, Singraulia, Bhatri, Dhurva, Sadri and kurukh are taught till 5th Standard in Chhatisgarh and medium is Hindi from 6th standard onwards.

l) West Bengal is home to 21 tribal languages and 74 dialects. Among these, Santhali, Mundari, Soura, Kharia, bhumij, Ho(Munda language family), Kurukh(Dravidian family) are Tribal mother tongues of south Bengal; Tamang, Lepcha and Bhutia are from Darjeeling Hills and Koch Rongbongshi is a major tribal language of North Bengal. Santhali is the largest tribal language taught as medium of instruction in state run schools till 5th standard. Later, it functions as a language subject and Bengali medium continues till secondary level and after.

m) Andaman Islands are home to four “Negrito” tribes - Great Andmanese, Onge, Jarawa, Sentilese, whereas Nicobar Islands have two “Mongoloid” tribes - The Shompen and Nicobarese. Only Nicobarese is the medium of Instruction till 5th standard followed by Hindi medium at secondary level.

4. Conclusion

According to National Education policy (2020) ‘if students upto class 3rd are taught in their mother tongue, they will not only develop a better understanding, but will also increase their attendance in schools’. This is true of Bilingual Tribal education programs too. Education in tribal mother tongues at primary school level has resulted in reduced drop - out rate among tribal students and increased their linguistic competence in mother tongue and later state language or English. The reason is that bilingual education leads to enhanced cognitive maturity in language.

Bilingual education Programs among tribals have been largely successful in Orissa, Nagaland, Meghalaya and Tripura. However, Tripura has highly inconsistent policy in Bilingual Tribal education, as it introduces different Tribal mother tongues up to different educational levels. All should have been at least used as medium of instruction till 5th standard. Nagaland should introduce all the 17 tribal mother tongues as medium of instruction till 5th standard to avoid the extinction of some of the highly vulnerable tribal languages like Ao. In Assam, West Bengal, Jharkhand and Chhattisgarh; Bilingual education programs have just started. It is an irony that despite having several tribal languages (Adi, Mishi, Missing, Nyishi, Tugin, Apatani, Galo etc.- Tibbeto—Burman family), Arunachal Pradesh has very few Tribal languages as educational medium and hardly as school Subjects. English is medium of instruction even in most of the primary schools, where tribal mother tongues should have been introduced. Govt. apathy as seen in the form of inadequate text books and lack of Proper teachers in Tribal languages have also contributed towards the failure of Bilingual tribal Programs in Manipur, West Bengal and Gujrat.

An amazing finding is widespread resentment seen against Bilingual education programs in some tribal regions. In Nilgiri Hills in Tamil Nādu, parents do not want to educate their

children in their language—Gadaba even at primary school level. They insist only on regional Tamil medium. This is due to Tribal aspirations of being seen as a part of mainstream education. Gadaba, according to them does not fetch jobs, but Tamil does.

Finally, Assimilationist model of bilingual Tribal education has been found to be more successful for Bilingual education in Tribal regions of India.

References

- Bagai, Shweta and Nundy, Neera. 2009. Tribal Education: A Fine Balance. Dasara: Bombay.
- Best, Jane and Allison, Dunlop. 2012. Native Language education addressing the interests of special populations with U.S. Federal policy. Mid-continent research for education and Learning. Denver.
- Biligiri, H.S. 1969. Problems of Tribal languages in India. In, N. Ray (Ed.) Language and Society in India. 245—50. Simla: Indian Institute of advanced study.
- Baidehi Sengupta and Samir Karmakar. 2017. Multilinguality in Classrooms: Looking At Primary Education In West Bengal. Language and Language Teaching. Vol.6. No.1. Issue 11.
- Cheryl, Roberts A. 1995. Bilingual Education Program Models: A framework for understanding. The Bilingual Research Journal. Summer/fall. vol.19. Nos 3 &4, pp.369-378.
- Daswani, C.J. 2001. Language Education in Multilingual India. New Delhi: UNESCO.
- Dash, Niladri Shekhar. 2015. Indian Languages in school education: the case of West Bengal. In: Narayana, K.V. (2015) Indian Languages in school education system. Bengaluru, Kuvempu University. Bhasha Bharathi Pradhikara. pp.132-148.
- Devy, G.N. and Debbarma, Sukhendu. (Eds) 2016. People's Survey of India. The languages of Tripura. Vol. 28. Part. 11. p.129. Hyderabad, India: Orient Blackswan private limited.
- Groff, Cynthia. 2017. Language and Language in education planning in Multilingual India: a minoritized language perspective. Language policy. 16(2)135—164.
- Khubchandani, L.M. 1997. Bilingual Education for Indigenous People of India. In: Cummins, J., Corson, D. (eds) Bilingual Education. Encyclopedia of Language and Education, vol 5. Springer, Dordrecht. https://doi.org/10.1007/978-94-011-4531-2_7
- Lesagabaster, D. 2000. The effects of three Bilingual Education Models on Linguistic Creativity. IRAL(38), 213—228.

McCarthy, Teresa & Watahomigie, Lucille J. 1998. Indigenous community based language education in the U.S.A. *Language, Culture And Curriculum*. Sep. vol.10.

Mcivor ,Onowa & Ball, Jessica. 2019. Language in education policies and Indigenous language revitalization efforts in Canada: Consideration for non-dominant language education in the global South. *Forum for International research in Education*, Vol.5, Issue 3, pp.12-28.

Pandhripande, Rajeshwari V. 2002. Minority matters: Issues in minority languages in India. *International journal on Multicultural Societies*, Vol.4, No.2.

Pradhan, Nityanand.(2015) Keynote address: National Seminar on issues and challenges of Education in tribal areas. Koraput:Orissa.pp.1—16.

Reyhner ,Jon. 1993. American Indian Language Policy and School Success. *Journal of Educational Issues of Language Minority Students*. Summer vol. 12. Issue 3. pp.35-59.

Sengupta,Surojit (Eds.)2020. Tribal Cultural Institute. Agartala:Govt. of Tripura.

Taneja,Anjela. The right to mother tongue based education in Tribal India:a comparative perspective. New Delhi:UNESCO.

Wigglesworth, Gilan & Lasagabaster ,David. 2011. Indigenous and English in Australia. In, Catrin Norrby and John Hajek (Eds.) *Uniformity and Diversity in Language Policy : Global Perspectives*.pp.141—156.

Metaphors and Similes in Literature: A Case Study of ‘Antarani Vasantam’

Kalloji Susheel Kumar*

Abstract

The important role of literary text is to describe as much as possible as briefly as possible, in the sense it should say more in few words to achieve a maximum effectiveness. In this case, figures of speech, specifically, metaphor and simile have an important role, as they include figurative meaning of words besides their literary meaning. In this article, metaphors and similes in G. Kalyana Rao's, 'Antarani Vasantam' were studied to find out the effect of using figures of speech on the writer's style and the reader's understanding. For this aim, these two figures of speech were identified in the novel and analyzed, respectively. The paper also focused on the style of the author by providing examples from Telugu language.

Key words: Literature, Metaphor, Simile, Figurative Language, Antarani Vasantam

1. Introduction

Figures of speech are imaginative tools in both literature and ordinary communications used for explaining speech beyond its usual usage. The Collins English Dictionary (2006) defined figure of speech as "an expression such as a simile, in which words do not have their literal meaning, but are categorized as multi-word expressions that act in the text as units". Alhasnawi A. (2007).

Figurative language has some specific features which make it different from nonfigurative language. For instance, metaphor and simile usually include an exaggeration in their comparison. Western Rhetoricians consider two categories of figures of speech; one is scheme, 'meaning form', which changes the ordinary pattern of words, like hyperbole, apostrophe, ellipsis, and antithesis. The phrase 'Rajashekhar, my best friend' is a scheme using 'apposition'. The other is trope, literally meaning 'to turn', that changes the general meaning of words, like simile, metaphor, irony, allegory, satire, symbol, paradox. The trope 'she is as beautiful as angle' is an instance of simile.

There are numerous classifications of figures of speech, as some rhetoricians have classified them into as many as 250 separate figures. Symbol, metaphor and simile are the most important figures of speech in almost all languages. Richards (1965: 105) noted that the two most common figures of speech are metaphor and simile.

* Assistant Professor, Dept. of Linguistics, UCASS, Osmania University, Hyderabad.

2. Metaphor

Metaphor has become so central to our notion of poetic creation, that in the words of Leech (1969, p.180), "it is often treated as a phenomenon in its own right without reference to other kinds of transferred meaning". According to Aristotle (quoted in Colin, 1962, p.11), "Metaphor (metaphora) consists in giving the thing a name that belongs to something else; the transference (Epiphora) being either from genus to species, or from species to genus or from species to species or on the grounds of analogy". That means, in metaphor one object is likened to another by speaking of it as if it were that other. In the comparison of objects it allows abstract concepts to be expressed visually. The figure visualized is based entirely on the resemblance which one object bears to another. Because of this "it is much allied to simile, or comparison; and is indeed no other than a comparison, expressed in abridged form". According to Wales (1989) Metaphor is a Phrase or expression as quoted above that in literary usage denotes something different from its kind. It is a figure of speech that makes a direct or applied comparison between two dissimilar things. The transference of ideas from one context to another in more general terms is meant by building up an image of the story. The vary depictions of Metaphors used in Antarani Vasantham include:

- ఎల్లన్నని... బూదేవిని... ఎన్నెలదిన్నిని అనుకొన్నప్పుడు ఆలాంటి సందర్భాలు గుర్తొచ్చినప్పుడు
- రూతు అగ్నిపర్వతమౌతుంది.
- దారిలో సంపెంగిపూల సమాధి గుర్తొచ్చింది. (117)
- ఆకలి పేగులు అంత శ్రమ తీసుకోడానికి సిద్ధంగాలేవు. (117)
- కోటయ్య కొడుతుంటే నెత్తురు ముద్దే అయ్యాడు. (189)
- ఎట్లాంటివాడు తన బిడ్డ. చాలా మెతక. జాలి గుండె. వర్షించే కళ్ళు. స్పందించే గుండె. మండే నెత్తురు. మొత్తంగా గొప్ప ప్రేమికుడు. ఓ అందమైన, అద్భుతమైన ప్రేమికుడు. (207)

3. Simile

Simile is the root notion of tropes. It is a comparison of two things derived from likeness. The comparison is made explicit by means of such constructional elements as like, as, so, etc. Simile and metaphor differ only in degree of stylistic refinement. In the words of Leech (1969, p.156) Simile is an overt and Metaphor a covert comparison. This means that for each metaphor, we can devise a roughly corresponding simile, by writing out tenor and vehicle side by side, and indicating (by "like" or some other formal indicator) the similarity between them. The ship ploughs the waves', a stock classroom metaphor, may be translated into a simile as follows: "The ship goes through the waves like a plough

ploughing the land". The examples illustrates that a metaphor can be converted into a simile and can again be compressed into a metaphor. The simile, in which a comparison is made directly between two objects thus belongs, in the words of Read (1963, p.23), to an earlier stage of literary expression. It is a correspondence, often persuaded for its own sake. But a metaphor is the swift illuminating of an equivalence. Two images, or an idea and an image stand equal and opposite; clash together and respond significantly, surprising the reader with a sudden light.

The following examples illustrate the same –

- అచ్చ అలాగే దాదాపు ఎన్నెల పిట్టలాగే అరచాడు. (10)
- జ్ఞాపకమంతా కరిగి లావాలా పారినట్టు వుంటుంది. (21)
- మంట చుట్టూ వలయంలా కూర్చున్న జనం. (23)
- అదృశ్యమైన వెలుతురు పరుచుకొంటూ ముందుకు వస్తోంది. యిప్పుడది తాటిచెట్ల మధ్యలేదు. ఊరి బయట మంటలా వుంది. (23)
- శబ్దాల మధ్య వెలుతుర్లు పగులుతున్న మేఘాల మధ్య పరుగులెత్తే మెరుపుల్లా వున్నాయి. (23)
- దేవాలయాల్లో పేరిణి నృత్యంలా అగ్రవర్ణాలు దాచుకొన్న ఉరుముల లయ విన్యాసం. (25)
- నీళ్ళలోకి చేపలా జారిపోతానని పట్టుకోమని అయ్యని అడిగేవాడు. (45)
- నిజానికి రాత్రి ప్రకృతి మౌనంగా లేదు. చీకటిగా లేదు చుక్కల్లా, మిణుగురుల్లా, ఎగిసిపడే
- జాలుకు ఎదురిదీ చేపల్లా, ప్రకృతి తనకోసం తాను సృష్టించుకొన్న నీటిజాలు సంగీతంలా
- ఎప్పటిలాగే వుంది. (54)
- ఎండలో మెరిసే పచ్చని బంగారం తీగలా వుంది. కళ్ళు మండుతున్న కోలిమిలా వున్నాయి. (105)
- చాలామంది మాలామాదిగల్లా శివయ్య క్రైస్తవుడయ్యాడు. (131)
- జాన్ పాల్ రెడ్డి గున్నేనుగులా వున్నాడు. (148)
- కోత కోయటానికి సిద్ధమైన పంట కత్తుల్లా వుంటాయి. (152)
- గంగలా ఉబికిన కన్నీళ్లు వున్నాయి. వెన్నెల్లా కురిసిన ఆనందాలు వున్నాయి. (160)
- చంద్రుణ్ణి వెన్నెల్ని చూసే చిత్రకారుడి హృదయం లాంటి జ్ఞాపకం. (163)
- యిస్కారియేతు యూదాకు వీళ్ళకు తేడా లేదన్నాడు. (209)
- రాళ్ళ మాటలు గురిపెట్టిన బాణాల్లా వుండేవి. (217)
- మడవమీద కాలుపెట్టి పారపైకెత్తిన సుబద్ధ మొదలు నీళ్ళలో చేపలా జనంలో కలిసిపోయిన రూబీదాకా. (228)

4. Conclusion

As it is said in the abstract, the aim of this article was to find out the effect of using figures of speech on the writer's style and the reader's understanding. Figures of speech are imaginative tools in both literature and ordinary communications used for explaining speech beyond its usual usage. The above examples shows that the writer wants to convey his message of this novel, by transference of ideas from one context to another in more general terms, is meant by building up an image of the story, and figurative meaning beyond their literally meaning. Further the author has clarified this from vary depictions of metaphors used in *Antarani Vasantham*. Also, the use of simile as a figure of speech, refers two images, or an idea and an image stand equal and opposite; clash together and respond significantly, surprising the reader with a sudden light and focusing on the allegorical dimension of the novel and discovered its covering concept.

References

- Alhasnawi, A 2007. "A Cognitive Approach to Translating Metaphors". *Translation J.*, 11: 3.3.
- Colin, M. Turbayne 1962. *The Myth of Metaphor*, New Haven and London: Yale University.p.11.
- Kalyana Rao G. 2000. 'Antarani Vasantam', Vijayawada. Published by Viplava Rachayitala Sangam, Andhra Pradesh.
- Leech, G. N. 1969. *A Linguistic Guide to English Poetry*. London & Harlow: Green & Co., Ltd.p.180, 156.
- Read, H. 1963. *English Prose Style*. London: G. Bell & Sons, Ltd.p.23.
- Richards, I.A. 1965. *The Philosophy of Rhetoric*. New York: OUP. p.105.
- Wales K. 1989. *A Dictionary of Stylistics*. London: Longman.

