# INTRODUCTION EXCERPTS FROM READING, WRITING AND SPEECH PROBLEMS IN CHILDREN

# A DOCTORAL THESIS

**Submitted to the University of Mysore for the Degree of**

**DOCTOR OF PHILOSOPHY (PH.D) IN SPEECH LANGUAGE PATHOLOGY**

### Candidate

**BHANUMATHI**

**All India Institute of Speech and Hearing Mysuru-570006**

**Guide**

**Dr. P. RASHMI**

**Former Professor of Speech Pathology Department of Speech-Language Pathology All India Institute of Speech and Hearing Mysuru-570006**

**APRIL – 2019**

**CERTIFICATE**

This is to certify that the thesis entitled **“INTRODUCTION EXCERPTS FROM READING, WRITING AND SPEECH PROBLEMS IN CHILDREN”** submitted by Ms. Bhanumathi for the award of degree of Doctor of Philosophy (Speech Language Pathology) to the University of Mysore, Mysore, was carried out at the All India Institute of Speech and Hearing, Mysore.

### Place: Mysore Date:

**Director**

All India Institute of Speech and Hearing Mysuru-570006

# CERTIFICATE

This is to certify that the thesis entitled **“INTRODUCTION EXCERPTS FROM READING, WRITING AND SPEECH PROBLEMS IN CHILDREN”** submitted by **Ms. Bhanumathi** for the award of degree of Doctor of Philosophy (Speech Language Pathology) to the University of Mysore, Mysore, is the result of original work carried out by her at All India Institute of Speech and Hearing Mysore, under my guidance. The results of this work have not been previously submitted for any other degree and it is plagiarism free in accordance with Promotion of Academic Integrity and Prevention of Plagiarism in Higher Educational Institutions Regulations, 2018 of UGC.

### Place: Mysore Date:

**Dr. P. Rashmi**

Former Professor in Speech Pathology Dept. of Speech-Language Pathology All India Institute of Speech and Hearing Mysuru-570006

# DECLARATION

I declare that this thesis entitled **“INTRODUCTION EXCERPTS FROM READING, WRITING AND SPEECH PROBLEMS IN CHILDREN”** submitted herewith for the award of degree of Doctor of Philosophy (Speech Language Pathology) to the University of Mysore. Mysore is the result of work carried by me at the All India Institute of Speech and Hearing, Mysore, Mysore, under the guidance of Dr. P. Rashmi, Former Professor in Speech Pathology, Department of Speech-Language Pathology, All India, Institute of Speech and Hearing, Mysuru. I further declare that the results of this work have not been previously submitted for any other degree and it is plagiarism free in accordance with Promotion of Academic Integrity and Prevention of Plagiarism in Higher Educational Institutions Regulations, 2018 of UGC. I would be held responsible if any plagiarized content, violative of the UGC Regulations 2018, is detected in my thesis.

Place: Mysore **Bhanumathi**

Date:

# TABLE OF CONTENTS

|  |  |  |
| --- | --- | --- |
| **Chapter** | **Title** | **Page No.** |
| I | Introduction | 1 |
| II | Review of Literature | 5 |
| III | Methods | 30 |
| IV | Results | 45 |
| V | Discussion | 70 |
| VI | Summary and Conclusions | 79 |
| VII | References | 81 |
| Appendix I Appendix II  Glossary | | |

**LIST OF TABLES**

|  |  |  |
| --- | --- | --- |
| **Table No** | **Title** | **Page No** |
| Table 1 | Brief overview of reports on persons with Hearing Impairment (HI, and the sign languages used across the world. | 11 |
| Table 2 | Frequency of occurrence of handshapes in different sign languages as reviewed by Van der Kooij (2002) | 14 |
| Table 3 | Word order types reported by investigators in various sign languages | 24 |
| Table 4 | Non-manual markers in Topicalization reported in different sign languages | 25 |
| Table 5 | Brief overview on Pronominalization reported by Investigators in various Sign Languages | 35 |
| Table 6 | Wh- Non-manual markers reported in various sign languages. | 40 |
| Table 7 | Non-manual negation markers in various sign languages. | 42 |
| Table 8 | Demographic details of the participants in Groups I and II. | 64 |
| Table 9 | Annotations of signed expression of different parts of speech in ‘PoS tier’ | 79 |
| Table 10 | Various annotations used for transcribing aspects of tenses in the signed expressions | 83 |
| Table 11 | Various annotations used for transcribing the types of pronouns. | 86 |
| Table 12 | Various annotations used for transcribing the strategies used in the signed expression of pronouns. | 87 |
| Table 13 | Various Annotations used for transcribing the various types of questions. | 89 |
| Table 14 | Various Annotations used for transcribing the non-manual markers in questions. | 90 |

### LIST OF FIGURES

|  |  |  |
| --- | --- | --- |
| **Figure No.** | **Title** | **Page No.** |
| 3.1 | The time domain waveform (upper panel) and spectral representation (lower panel) of /da/ stimulus | 19 |
| 3.2 | The time domain waveform (upper panel) and spectral representation (lower panel) of /ba/ stimulus | 19 |

## ABSTRACT

The Indian Sign Language (ISL) has three sign language families/dialects of ISL: Bangalore-Madras sign language, Mumbai-Delhi sign language and Kolkata sign language. The study aimed to investigate and compare the signed expression of the syntactic aspects such as Sign order, Topicalization, Pronouns, Tense aspects, Adjectives, Questions and Negation in Bangalore-Madras dialect and Mumbai-Delhi dialect of ISL, in story narration task and monologue narration task across gender, dialects and tasks. The frequencies of occurrences of these syntactic structures were subjected to statistical analyses. The results of Shapiro-Wilk’s test of normality showed that the data were non-normally distributed (p>0.05) in both the groups and in both the tasks. Non-parametric tests were used which included Mann-Whitney U test and Friedman’s test to compare the scores of the signed expressions of the participants for the syntactic features of ISL within the syntactic features and across gender, groups and tasks. The results revealed no significant difference across gender (p>0.05) in both the dialects and tasks and across dialects (p>0.05) for different syntactic aspects in both the task. However, significant differences were observed for the syntactic features across tasks (p<0.05). Also, significant differences were observed (p<0.05) for comparisons within the syntactic sub features of various syntactic features. Thus, it was inferred that there was no effect of gender, dialects observed on the syntactic features. However, task effect was observed on the syntactic features in both the dialects of ISL.

***Key words:*** Indian Sign Language, Bangalore-Madras dialect, Mumbai-Delhi dialect, Syntactic aspects.

## Chapter 1 INTRODUCTION

Sign languages are visual-manual languages which use hands, arms, head and body to convey the linguistic meaning in a very systematic manner. Sign languages are natural languages that arise as a natural consequence of contact in deaf communities. However, like spoken languages, sign languages also have unique phonology, morphology and syntax.

Various types of Sign Languages are used by hearing impaired individuals across the world; the well reported of these include the American Sign Language (ASL), British Sign Language (BSL), Israel Sign Language (ISL), German Sign Language (DGS), Sign language of Netherlands (NGT), Indian Sign Language (ISL) and others. Approximately 121 sign languages are reported to exist in the world (Gordon Jr., 2005).

The sign language used in India is known as Indian Sign Language (ISL) or Indo-Pakistani Sign Language (IPSL). Zeshan, Vasishta and Sethna (2004) argued that ISL is used in some parts of Nepal, Sri Lanka, Bangladesh and border regions of Pakistan. Like other sign languages, ISL too is a visual-gestural language that uses the hands and arms, facial expressions, eye gaze, and head/body posture to encode linguistic information. Indian Sign language (ISL) is used by approximately 26, 80,000 Hearing Impaired in India (Gordon Jr., 2005). Like other sign languages, Indian Sign Language (ISL) also has its own complex linguistic structure with its own phonology, syntax, morphology and grammar (Vasishta, Woodward & Wilson, 1978; Zeshan et al., 2004). Research in American Sign Language (ASL), British Sign Language (BSL), German Sign Language (DGS), Swedish Sign Language

## Chapter 2 REVIEW OF LITERATURE

Sign languages are visual-manual languages which use hands, arms, head and body to convey linguistic meaning in a very systematic manner like verbal language. Emmorey (1999) and Duncan (2005) define ‘signs’ as linguistic and signs are used as an alternate mode to speaking (McNeil, 1985; 1992; 1999; 2005).

Sign languages and spoken languages are natural languages that arise as a natural consequence of contact in deaf communities. Sign language fulfills all the social and mental functions like that of spoken languages. Sign languages however, are manual-visual languages, as they are expressed in a physical medium while the spoken languages principally use a vocal-auditory based medium. The difference in medium between the spoken and the sign languages has an important effect on the structure of the language.

According to investigators (Fischer, 1978; Morgan & Woll, 2002), the genesis of sign language is special; it is passed down from generation to generation with fewer than 10% of the children with hearing impairment being born to parents of hearing impaired who acquire sign language from their parents. The remaining 90% of children with hearing impairment are born to hearing parents and are exposed to sign language when they enter formal education set up (Moores, 1978). The origin of sign language is also reported to occur as a transmitted genetic trait within a small group of people as a result of consanguineous marriage (Groce, 1985). Children with hearing impairment who live in hearing households where only oral language is used and are not yet exposed to speech training and have no accessible language model,

Table 1.

*Brief overview of reports on persons with Hearing Impairment (HI, and the sign languages used across the world.*

|  |  |  |
| --- | --- | --- |
| *Country* | *Individuals with HI* | *Sign language used & the number of users* |
| Australia | 40,000 individuals (Gallaudet Encyclopedia, 1986, vol.1 p.126) | British Sign Language. 9000 - 9500 (Gallaudet  Encyclopedia, 1985, vol.3 p.56) |
| America | 2, 00,000 to 5, 00,000 individuals (Williams & Abeles, 2004). | American Sign Language.  1, 00,000 to 5, 00,000 (Van Cleve,  1986 in Ethnologue languages of the world., AMESLAN, ASL).  2 million for everyday communication (Lane, Hoffmeister & Bahan, 1996). |
| China | 50.14 per 100,000 with severe impairment (Gallaudet Encyclopedia, 1983, vol.2 p.73.) | Hong-Kong Sign Language. 20,000 (Ethnologue – 2007 and  2010). |
| Israel | 4500 (Gallaudet Encyclopedia,  1986, vol.3, p.84.) | Israeli Sign Language 5,000 (Ethnologue, 2010). |
| India | 1million deaf adults and approximately 0.5 million deaf children (Gallaudet Encyclopedia, 1985, vol.3 p.79) | Indian Sign Language.  26, 80,000 (Ethnologue, 2005) |

## Chapter 3 METHOD

The aim of the study was to investigate and compare the signed expression of the syntactic aspects such as 1) Sign order, 2) Topicalization, 3) Pronouns, 4) Tense aspects, 5) Adjectives, 6) Questions and 7) Negation in adult deaf signers using Bangalore-Madras dialect and Mumbai-Delhi dialect of Indian Sign Language (ISL), in story narration task and monologue narration task across gender, dialects and tasks.

The objectives of the study were to:

1. Investigate and compare *across gender,* the various syntactic features such as Sign order1, topicalization, pronouns, tense, questions, adjectives and negation in signed expressions of adult deaf signers of Bangalore-Madras dialect and Mumbai-Delhi Dialect of Indian Sign Language elicited in story and monologue narration tasks.
2. Investigate and compare *within the syntactic sub features, across the tasks and across the dialects* the various syntactic features of: a) Sign order types(b) topic- comment structure types (c) pronoun types (d) different aspects of tense (e) questions (f) adjectives and (g) negation in signed expressions of adult deaf signers of Bangalore-Madras dialect and Mumbai-Delhi Dialect of Indian Sign Language elicited in story and monologue narration tasks.

1 The earlier reports used the term word order that addressed the sentence structures in sign language (Aarons, 1994; Brennan & Turner, 1994; Dachkovsky, 2005; Liddell, 1980; Neidle, Kegl,

MacLaughlin, Bahan, & Lee, 2000; Padden, 1988; Rathmann, 2001; Sutton-Spence & Woll 1999; Wilbur, 1997). However, a recent study by Napoli and Sutton-Spence, (2014) used the term ‘sign order’ instead of word order to describe the sentence structures in sign languages. Hence the term ‘sign order’ is used in this study.

The Yes-No questions in sign languages appear as part of phonology and not syntax and hence this was not considered.

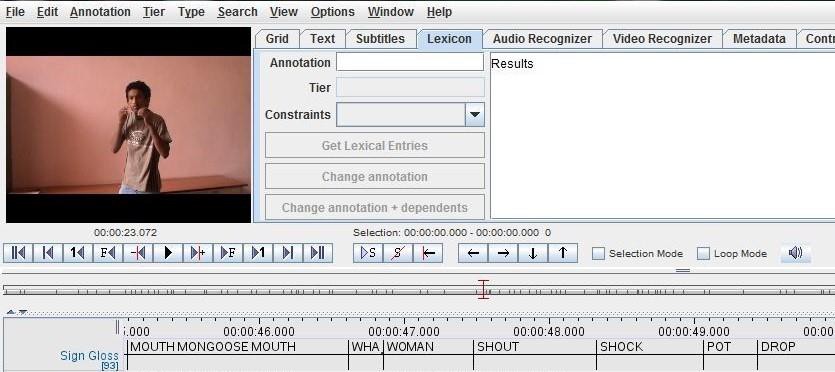
The demographic details of the participants in Groups I and II are presented in Table 1.

Table 1.

*Demographic details of the participants in Groups I and II.*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Group I |  |  | Group II |  |
| Participant Number | Age (in years) Mean age = 22.82 years | Gender | Participant Number | Age (in years) Mean age = 23.75 years | Gender |
| 1. | 22.3 | Male | 1. | 33.2 | Male |
| 2. | 21.6 | Male | 2. | 40.0 | Male |
| 3. | 23.8 | Male | 3. | 21.3 | Male |
| 4. | 22.1 | Male | 4. | 19.5 | Male |
| 5. | 23.2 | Male | 5. | 19.8 | Male |
| 6. | 23.9 | Male | 6. | 18.6 | Male |
| 7. | 24.11 | Male | 7. | 22.5 | Male |
| 8. | 23.9 | Male | 8. | 28.6 | Male |
| 9. | 21.4 | Male | 9. | 23.5 | Male |
| 10. | 23.6 | Male | 10. | 26.3 | Male |
| 11. | 21.2 | Female | 11. | 22.2 | Female |
| 12. | 22.5 | Female | 12. | 25.9 | Female |
| 13. | 23.7 | Female | 13. | 19.8 | Female |
| 14. | 23.5 | Female | 14. | 21.6 | Female |
| 15. | 24.2 | Female | 15. | 19.8 | Female |
| 16. | 24.5 | Female | 16. | 22.1 | Female |
| 17. | 22.1 | Female | 17. | 22.6 | Female |
| 18. | 20.8 | Female | 18. | 21.8 | Female |
| 19. | 21.6 | Female | 19. | 21.7 | Female |
| 20. | 22.5 | Female | 20. | 24.3 | Female |

Note: Group I = Bangalore-Madras dialect, Group II = Mumbai-Delhi dialect



*Figure 1.* An example of a screenshot of an annotated video representing annotations in the tier ‘Sign Gloss’ using ELAN.

## Chapter 4 RESULTS

The aim of the study was to investigate and compare the signed expressions of various syntactic aspects of Indian Sign Language (ISL), such as 1) Sign order, 2) Topicalization, 3) Pronouns, 4) Tense aspects, 5) Adjectives, 6) Questions and 7) Negation in two dialects of ISL (Bangalore-Madras dialect and Mumbai-Delhi dialect) used by adult deaf signers, in story narration and monologue narration tasks within and across gender, dialects and tasks.

*Statistical analyses:* The signed expressions of the participants (adult deaf signers) using Bangalore-Madras dialect (Group I) and Mumbai-Delhi dialect (Group II) of ISL on story narration and monologue narration tasks were analysed for frequency of occurrence of various syntactic structures in the signed expressions of the participants using ELAN software. The raw scores in the form of ‘frequencies of occurrences’ were obtained for various syntactic structures in the signed expressions of the participants [ a) Sign order types, b) Topic-Comment Structures c) Pronoun types and their signed expressions d) Tenses and their signed expression e) Adjectives f) Questions g) Negatives]. The frequencies of occurrences of the different syntactic structures were computed for each participant of both the groups, in both the tasks and this was fed into SPSS software (version 20) for statistical analyses. The raw scores obtained for each syntactic feature in each task and each group was subjected to Shapiro-Wilk’s test of normality to check for normal distribution. The test revealed that the scores of various syntactic features were non- normally distributed (p>0.05) in both the groups and in both the tasks. As the data were non-normally distributed, non-parametric tests were used which included

# References

Aarons, D. (1994). *Aspects of the syntax of American Sign Language* (Unpublished Master’s thesis). Boston University, Boston.

Aarons, D., Bahan, B., Kegl, J., & Neidle, C. (1995). Lexical tense markers in American Sign Language. In K. Emmorey & J. Reilly (Eds.), *Language, gesture and space* (pp. 225–253). Hillsdale: Lawrence Erlbaum.

Aarons, D., & Morgan, R. (1998). *The structure of South African Sign Language after apartheid.* Paper presented at the sixth conference of Theoretical Issues in Sign Language Research, November, Gallaudet University, Washington, D.C.

Aboh, E., Pfau, R., & Zeshan, U. (2005). *When a wh-word is not a wh-word: The case of Indian Sign Language.* In T. Bhattacharya (Ed.), The Yearbook of South Asian languages and (pp.11-43). Berlin: Mouton de Gruyter.

Aronoff, M., Meir, I. & Sandler, W. (2005). The paradox of sign language morphology*.*

*Language, 81,* 301-344.

Bahan, B. (1996). Non-Manual Realization of agreement in American Sign Language, Ph.D. Dissertation, Boston University.

Bahan, B. 1996. Non-Manual Realization of Agreement in American Sign Bahan, B. 1996. Non-Manual Realization of Agreement in American Sign

Bahan, B., J. Kegl, R. Lee, D. MacLaughlin & C. Neidle. 2000. ‘The Licensing of

Baker, C., & Cokely, D. (1980). *American Sign Language: A teacher’s resource text on grammar and culture*. Silver Spring, MD: T. J. Publishers.

## APPENDIX 1

### Checklist used for selection of the participants (adult deaf signers of Bangalore- Madras dialect and Mumbai-Delhi dialect of ISL)

* 1. **Demographic details of the participant**

Name: Age/Gender

Educational Qualification

Are you hearing impaired since birth? Yes

No

If No, Mention the age at which your hearing was impaired: Total family Income:

### Structure of the Family

Joint Family: Yes

No

Nuclear Family: Yes

No