

ADDIS ABABA UNIVERSITY



SCHOOL OF GRADUATE STUDIES

**THE ACQUISITION OF PHONOLOGY AND LEXICON AMONG
TYPICALLY DEVELOPING AMHARIC-SPEAKING CHILDREN**

By

FIKRE DIRESS ALAMIREW

DECEMBER 2022

ADDIS ABABA, ETHIOPIA

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FIKRE DIRESS ALAMIREW

A DISSERTATION SUBMITTED TO THE DEPARTMENT OF FOREIGN
LANGUAGES AND LITERATURES IN THE FULFILLMENT OF THE
REQUIREMENT FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN
APPLIED LINGUISTICS AND COMMUNICATION

APPLIED LINGUISTICS AND COMMUNICATION
ADDIS ABABA UNIVERSITY
ADDIS ABABA, ETHIOPIA

DECEMBER 2022

ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

This is to certify that this thesis is prepared by Fikre Diress Alamirew entitled, 'The Acquisition of Phonology, and Lexicon among Typically Developing Amharic speaking Children'. The paper is submitted to the fulfillment of the requirements for the Degree of Doctor of Philosophy (in Applied Linguistics and Communication) complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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Declaration

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Abstract

First language acquisition is a time taking process, which requires children's ability to master various features of their native language. The development of these components is influenced by various factors such as age of acquisition, linguistic environment, etc. Although children follow general patterns of language acquisition across languages, there are also various language-specific differences reported in the literature. This study, therefore aimed at describing patterns of phonological and lexical acquisitions in typically developing Amharic-speaking children. The Speech samples were taken from 32 children aged, between 3 to 5. Picture narration, picture descriptions, storytelling, and elicitation tasks were used to gather the data for the current study. The data were then audio- recorded, transcribed, and segmented in ELAN, a software package often used for linguistic description and documentation projects. A combination of qualitative and quantitative data analysis used. The quantitative analysis methods were used to measure the frequency of various consonant phonemes and the size of the lexicon; qualitative analysis was used to describe the developmental features of children's phonology. The result showed that 3 to 5 years old children acquired most of the Amharic pulmonic consonants; however, the absence of /r/ and the ejectives like /p'/, /t'/, /k'/ and /ɸ/ in some children's speech implies that the acquisition of these phonemes goes beyond five years or maybe even at a later age. The result also indicated the developmental features of children's word production. This includes substitution, deletion of weak vowels and consonants as well as cluster reduction. Assimilation and addition were also apparent in a few children's words production. This study also attested that children's lexicons were also composed of nouns, verbs, and adjectives. The presence of demonstratives, pronouns, prepositions, and conjunctions signaled how children's lexicon is organized in their language developmental process. Generally, the development of phonology and lexicons interact each other, in a normal pattern of development and gender and age had a direct correlation to the development these language components.

Acknowledgements

First and for most, I would like to give my greatest gratitude to Almighty God who gives me the strength and courage to accomplish this work after many inconveniences. My in-depth gratitude also goes to my advisor, Dr. Abebayehu Messele; he was so patient, encouraging, and supportive. In addition, his all-round advising expertise, guidance, and insights, helped me to see things from different direction. I am also indebted to my former advisor Dr. Roney Meyer, for his continuous support and guidance.

I would like to thank linguistics department members of Ambo University who helped me in transcribing the speeches' samples and they were encouraging and supporting me to accomplish this study. I am so grateful to children, their families, and teachers who had great contribution during the pilot and main study. I owe a large debt of gratitude to Miss Genet Ketema from Mentor Academy for her unreserved support and cooperation during the recording session. In addition, I would like to give my heartfelt thanks to my husband, Ato Solomon Endale to his unreserved support and encouragement when I lost hope due to different challenges I had gone through.

I am also greatly indebted to my two lovely daughters, Bruktawite Solomon and Mulualem Adugnaw, to their inquisitiveness and great hope to see their mother accomplishment. Finally, I want to thank my youngest sisters W/ro Lakech Diress for her consistent support and all round assistance.

Table of Contents

Abstract	I
Acknowledgements	II
Table of contents	III
List of tables	VII
List of figures	X
Acronyms	XI
CHAPTER ONE.....	1
INTRODUCTION.....	1
1.1 Background of the Study.....	1
1.2 Statement of the Problem	2
1.3 Objective of the study.....	3
1.4 Specific objectives.....	3
1.5. Research Questions	3
1.6 Significance of the Study	4
1.7 Scope of the Study.....	4
1.8 Limitation of the study	5
1.9 Organization of the study	5
1.10 Definition of terms	6
CHAPTER TWO.....	7
REVIEW OF RELATED LITERATURE	7
2.1 Introduction	7
2.2 Theories of Language Acquisition	7
2.2.1 General theories of language acquisition	7
2.2.2 Theories of phonological and lexical acquisition.....	10
2.2.3 The nature of language acquisition	15
2.2.4 Morphological development of children language.....	30
2.3 Stage of language Acquisition.....	34
2.4 Impact of background factors on children language acquisition.....	35

2.4.1	Gender	36
2.4.2	Social Interaction.....	36
2. 4.3	The impact of ids in language acquisition process.....	37
2.5	Previous research on children language acquisition in African context.....	37
2.6	Theoretical Frame work of the study	39
CHAPTER THREE.....		44
AN OVERVIEW OF THE AMHARIC LANGUAGE.....		44
3.1	Introduction	44
3.2	Social and cultural profile of Amharic	44
3.3	The sound system of Amharic.....	45
3.3.1	Phonemes	45
3.3.2	Non-Segmental Features	47
3.3.3	Syllable structure.....	48
3.4	Features of Amharic lexicon	49
3.4.1.	Lexicon formed by root –Pattern morphology.....	49
3.4.2	Words formed by Derivation.....	51
3.4.2.1	Verb.....	51
3.4.2.1.1	Derivation of Verbs.....	52
3.4.2.1.2	Simple and derived verbs	54
3.4.2.1.3	Other Derivational Verbs	54
3.4.2.2	Amharic Nouns	57
3.4.2.2.1	Derivational Nouns	57
3.4.2.3	Adjectives.....	59
3.4.2.3.1	Derivation of Adjectives from Nouns	59
3.4.2.3.2	Derivation of Adjectives from Stem/verbal Roots.....	61
3.4.3	Compounding	62
3.4.3.1.	Compound Nouns.....	62
3.4.3.2.	Compound verbs	62
3.4.3.3.	Compound adjectives	63

CHAPTER FOUR	64
RESEARCH METHODS AND DESIGN	64
4.1 Longitudinal research design.....	64
4.2 Cross-Sectional Design	64
4.3 Study Area and Sampling Size	65
4.2.1 Sampling Area.....	66
4.2.2 Sampling size	66
4.2.2.1 Selection Criteria.....	66
4.2.3 Data Collection.....	68
4.2.3.1 Picture Description.....	69
4.2.3.2 Narrative Pictures	69
4.2.3.3 Question /Answer (elicitation)	69
4.2.3.4 Storytelling (Teret).....	69
4.3 Data presentation and analyses techniques	70
4.3.1 Variables.....	70
4.3.2 Coceptual framework	71
4.3.3 Data Transcribing and Coding	71
4.3.4 Data Analysis Techniques	73
4.3.5 Reliability of transcription	73
CHAPTER FIVE.....	76
DATA ANALYSIS AND INTERPRETATION	76
5.3 Participants Demographic details	77
5.4 Language used in Amharic speaking children’s speeches	78
5.5 The frequency of consonant phonemes in Amharic speaking children’s speech.....	79
5.5.2. Frequency of consonants phonemes in thier manner of production.....	79
5.5.3 Frequency of individual consonant phonemes	80
5.5.3 Frequency ocurrence of consonants in relation to age and gender	81
5.6 Children’s Consonants realization and devlopmental processes.....	95
5.6.1 Aged 3 to 3; 5 years old children’s consonant realizations.....	96
5.6.2 Aged 3; 5 to 4 years old children’s consonant realization	108

5.6.3	Aged 4 to 4; 5 years old children’s consonant realizations.....	116
5.6.4	Aged 4:5 to 5 year old children’s consonant realization	125
5.7.	The development of lexicon in Amharic speaking children’s speech.....	132
5.7.1	Lexical size.....	133
5.7.2	Domain and composition of children’s lexicon	138
5.7.2.1	Frequency of nouns and their types in children’s speech.....	138
5.7.2.2.	The frequency and types of verbs in children’s speech	144
5.7.2.3	The frequency and types of adjectives in children’s speech	156
5.7.2.4	The frequency and type of adverbs	160
5.7.2 .5	Pronouns.....	163
5.7.2.6	The frequency of functional lexicons.....	165
5.7.3	Word -meaning error.....	166
5 .8	Discussion	169
5.8.1	Phonological representation in Amharic speaking children’s speech	169
5.8.2	Amharic speaking children’s developmental processes (errors).....	171
5.8.3	Lexical representati in Amharic speaking children’s speech	180
CHAPTER SIX	185
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	185
6.1	Introduction	185
6.2	Summaries	185
6.3	Conclusions	190
6.4	Recommendations	193
REFERENCES	196
APPENDICES	213

List of Tables

Table 1	Amharic Consonant phonemes.....	46
Table 2	Syllable structure of Amharic words.....	48
Table 3	Derived words and their Lexical categories.....	50
Table 4	Formation of words.....	51
Table 5	Reduction of consonants.....	53
Table 6	Simple verb conjugation.....	54
Table 7	Derivation of causative Verbs.....	55
Table 8	Derivational passive.....	55
Table 9	Features of reduplicative verbs.....	56
Table 10	Derivation of nouns from other nouns.....	57
Table 11	Derivation of nouns from adjectives.....	58
Table 12	Nouns derived from root verbs.....	59
Table 13	Derived adjectives from nouns by adding the suffix /-am/.....	59
Table 14	Adjectives derived from nouns by adding the suffix/-anna/.....	60
Table 15	Derivation of adjectives by adding /amma/.....	60
Table 16	Derivation of Adjectives by adding the suffix / awi/.....	60
Table 17	Derivation of adjectives from Verbal root / bound stem.....	61
Table 18	Reduplicated adjectives.....	61
Table 19	Compound noun/ ə-/.....	62
Table 20	Compound verbs/ allə/ adərrəgə/.....	62
Table 21	Children’s demographic data details.....	68
Table 21	Agreement and disagreement scale of transcription.....	74
Table 22	Thirty-two children’s total number of utterances and word count.....	78
Table 23	The frequency of stops /plosive across age groups.....	81
Table 24	The frequency of stops in relation to gender.....	83
Table 25	The frequency of fricatives in different age groups.....	84
Table 26	The frequency of Fricatives in relation gender.....	86
Table 27	The frequency of affricatives and ejectives.....	87

Table 28	Affricatives and Ejectives in relation to gender.....	90
Table 29	The frequency of nasals across age groups.....	91
Table 30	Nasals in relation gender.....	92
Table 31	The frequency of lateral, liquid and glides.....	93
Table 32	Lateral, liquid and glides in relation to gender.....	94
Table 33	Aged 3 to 3;5 years children's consonant realization summary table.....	96
Table 34	Words illustrating fronting and stopping in aged 3 to 3;5 children's speeches..	97
Table 35	Words that illustrate backing in 3 to 3; 5 years old children's speeches.....	99
Table 36	Words illustrating devoicing in aged 3 to 3;5 children's speeches.....	100
Table 37	Gliding process in age 3 to-3;5 children's speeches.....	102
Table 38	Words illustrating de- ejection in aged 3 to 3;5 children's speech.....	103
Table 39	Words illustrating substitution/r/ in aged 3 to3;5 children's speech.....	104
Table 40	Words that illustrate cluster reduction in aged 3;0-3;5 children's words.....	105
Table 41	Deletion of consonant in age 3; 0- 3; 5 children's speeches.....	106
Table 42	Aged 3; 5 to 4 children's consonant realization.....	108
Table 43	Aged between 3; 5 to 4; years children's words illustrating fronting.....	109
Table 44	Aged 3;5 to 4years children's Words illustrating devoicing,backing, and gliding.....	110
Table 45	Aged 3;5 to 4 years children's Words illustrating de-ejection.....	112
Table 46	Aged 3; 5 to 4 years children's words illustrating substitution of /r/.....	112
Table 47	Aged 3;5 to 4 years children's Words illustrating cluster reduction.....	113
Table 48	Deletion of consonants and vowels in aged 3;5 to 4 children's words.....	115
Table 49	Aged 4 to 4;5 years children's consonant realizations.....	117
Table 50	Aged 4 to 4;5years children words illustrating fronting, stopping.....	118
Table 51	Aged 4 to 4; 5 years children's words illustrating backing.....	119
Table 52	Aged 4 to 4;5 children's words illustrating nasalization,de-ejection.....	120
Table 53	Aged 4; 5 to 4; 5 years children's words illustrating substitution of /r/.....	121
Table 54	Aged 4 to 4; 5 years children's words illustrating cluster reduction.....	122
Table 55	Aged 4 to 4;5 years children's words illustrating deletion.....	123
Table 56	Aged 4;5-5 years children's Consonants realization table.....	125

Table 57	Aged 4; 5 to 5 years children's words illustrating fronting, stopping.....	125
Table 58	Aged 4; 5 to 5 years children's words illustrating backing.....	127
Table 59	Aged 4;5 to 5 years children's words illustrating cluster reduction.....	128
Table 60	Words which illustrate deletion in aged4; 11-5;0 children's speeches.....	130
Table 61	The frequency of total lexicon and its domains.....	133
Table 62	Type and frequency of lexicon across age groups.....	134
Table 63	The relationship between age, FWD and ONW in correlation.....	136
Table 64	The size of FWD and ONW in relation to gender.....	136
Table 65	Measure of correlation of FWD and ONW in relation to gender.....	137
Table 66	The Size of nouns across age groups.....	138
Table 67	The relationship between age and nouns.....	139
Table 68	The frequency of nouns in relation to gender.....	140
Table 69	Measure of correlation between gender and nouns.....	140
Table 70	The frequency of different nouns in children's speeches.....	140
Table 71	The frequency of verbs across age groups.....	144
Table 72	Measure of correlation between token frequency of verbs and age.....	145
Table 73	The frequency of verbs in relation to gender.....	145
Table 74	The frequency of different types of verbs in children's speeches.....	146
Table 75	The frequency size of a adjectives across age groups.....	156
Table 76	Measure correlation between age and frequency of adjectives.....	157
Table 77	The frequency of adjectives in relation to gender.....	157
Table 78	The Frequency of different adjectives.....	158
Table 79	The frequency occurrence of adverbs across age groups.....	160
Table 80	Measure correlation between age and frequency adverbs.....	161
Table 81	Frequency of adverbs in relation to gender.....	161
Table 82	Type and frequency of adverbs in children's speeches.....	162
Table 83	Types and frequency of pronouns.....	163
Table 84	Frequency of preposition, conjunction, and interjection.....	165

List of Figures

Figure 1 The Amharic vowel phonemes.	47
Figure 2 Conceptual frame work of the study.....	71
Figure 3 Sample Annotation taken From ELAN.....	72
Figure 4 The occurrence of consonant in Amharic speaking children’s speeches.....	79
Figure 5 Token frequency of individual consonant phonemes.....	80
Figure 6 The mean value of different lexicons.....	133
Figure 7 The frequency mean of lexical size and the occurrence of ONW....	135
Figure 8 Graphic representation of the total lexical size FWD and ONW	137
Figure 9 The mean value of nouns across age groups.....	139
Figure10 The mean graph of verbs across age groups.....	144
Figure11 The mean value of different verbs.....	146
Figure12 The mean value of different adjectives.....	158
Figure 13 The mean Value of different pronouns.....	164

ACRONYMS

CMPDS:	Compound sentences
ETLA	Echological Theory of language aquisition
DPRO	Demonstrative pronouns
FLA	First language acquisition
FADV	Frequency Adverbs
FWD.	Frequency occurrence of different words
IDS	Individual differences in children's ability of uttering different words
INDPRO	Indefinite pronouns
INCMS	Incomplete sentences
MADV	Manner Adverbs
ONW:	The occurrence of new words in children 's speeches
OT	Opitimal theory
PPRO	Prepositional pronoun
RPRO	Relative Pronouns
TADV	Time Adverbs

CHAPTER ONE

INTRODUCTION

This chapter introduces the overall nature of the research. It attempts to describe the background of the study, a statement of the problem, the main research questions, and objectives. It explains the reason the research was carried out. It shows the significance, scope, limitation, and organization of the study; it also provides definition of terms. Generally, the chapter provides introductory information to the whole thesis.

1.1 Background of the Study

Early childhood is a time in which a child shows dramatic physical, psychological, and emotional development, which is determined by nature and nurture. A newborn child's brain does not have any knowledge or experience when he/she comes to this world even if it is biologically ready to learn from the environment. It is just like a white paper on which nothing is printed. By nature, it has the ability to accumulate ideas, thoughts, and expertise through experience and exposure that a child gets. Nature and nurture take part in children's development. Studies have shown the significant impact of nature and nurture on children's language acquisition process (Pinker, 2004; Sabahat, 2012).

First language acquisition is also a process by which children attain the capacity to perceive and understand the sound systems, as well as to develop different lexicons and sentences to communicate. It is one of the typical human characteristics, because other animals do not acquire and communicate using sophisticated means of language that is comparable to human language. According to scholars, the term language acquisition usually refers to first-language acquisition through which every normal child is able to communicate in a native language (Ingram, 1989; Lust, 2006; Tomasello, 2003). In the process of first language acquisition, children pass through various stages which of the duration depend on nature and nurture. The innate capacity and the exposure children get from caregivers, families and the community enables them to communicate. They start to communicate in a language by uttering single words and systematically their language develops into grammatically correct and complex sentences. That is the reason why early utterances of a child may not be regarded as 'normal' adult language; they are means of communication (Ferguson, 1964:105).

Children's language may not have proper features of the adult language at first, but it is appropriate for them to communicate with their surroundings. Most little children adapt their own words by substituting or deleting the difficult phonemes to communicate comfortably. In line with this, Ferguson (1996) explained that children's language has its own brand like short utterances with low semantic complexity, repetition, and imitation. However, they are able to learn quickly if adults communicate with them and help them to speak freely instead of correcting and enforcing them to speak the adults' target language. Adult-child interaction is not just a way to speak to children; it is a mechanism of helping them to learn or acquire a language. Concerning children's language acquisition process, Bloomfield, (1978) has explained it as a natural way in which they develop their speech ability starting from uttering the first words to complex sentences.

In addition, it is believed that children's language is the foundation of adult-child communication and the acquisition of a first language. Thus, research on this area plays a significant role to understand and describe the way children's language development; the nature of their phonology, lexicon, and the type of utterances they use in different phases of their development; it also helps to see how children develop the full-fledged language of adults. Nevertheless, children's language development is one of the least researched areas in Africa context; it means there is no sufficient descriptive information in many languages including Amharic.

1.2 Statement of the Problem

Language is an essential part of young children's development; it plays a crucial role in literacy acquisition. It is also a way of communicating and building relationships with others as well as it enables children to make sense of the world around them. Children, to achieve these language uses, they need to develop different linguistic elements of the target language, especially, the development of children's sound system and lexicons is considerably significant. Thus, research on the process of language acquisition plays a fundamental role, as it enables researchers to understand, describe, and theorize the development of different linguistic components of children's speeches. A wide variety of researches have been done on children's language development since the 19th century in Europe, American, Asian, Australia (e.g. Ferguson 1964; Ingram 1989; Wyatt, 1994) and they have contributed a lot to our understanding of the way children acquire their first

language. There are also studies in some Africa's languages. For example, Demuth (2010) in the acquisition of Seseato passives; Takeida (2011) on a significant role Caregiver-infant interaction in children's language development; Deen, Kamil Ud (2002) the acquisition of Nairobi Swahili: The morphosyntax of inflectional prefixes and subjects. In Ethiopia, however, works on the acquisition of Ethiopian languages are very scarce. In Amharic, Ababayehu (2007) and (2008) described 'variants of the alveolar trill /r/. In addition ,Abebayehu (2013) has dedicated chapters of his PhD dissertation to a description of developmental speech sound realizations. Ebenezer (2013) examined the nature of child language and baby talk in Amharic. There are also few researches of language acquisition in other Ethiopian languages, such as 'Acquisition of Afaan Oromo Phonology' by Tariku (2019) and 'Aspects of Phonological Acquisition in Children Speaking Sidaamu Afoo' by Abebayehu and Demeke (2017). These local researchers have made significant contributions towards the efforts to fill the gap in the area of language acquisition. Along the same line, the present study was designed to describe the development of phonology and lexicon in typically developing Amharic-speaking children. Accordingly, the study had the following general and specific objectives as well as research's questions.

1.3 Objective of the study

This study primarily aims at describing the acquisition of phonology and lexicon by typically developing Amharic-speaking children, aged between 3 to 5 years.

1.4 Specific objectives

The study specifically attempts to:

- Describe the acquisition of phonology by ages 3-5 Amharic speaking children.
- Describe the acquisition of lexicon by ages 3-5 Amharic speaking children.
- Examine whether the acquisition of phonology and lexicon vary due to sex and age within 3-5 years.

1.5. Research Questions

- What does acquisition ponology looklike by age 3to 5 years Amharic children?
- What lexical domains do aged between 3 to 5 Amharic speaking children acquire?
- How does acquisition of phonology and lexicon look like in relation to age and gender?

1.6 Significance of the Study

Children's language development is not a well-researched area in Amharic and other Ethiopian languages. A study on such an area may help to describe phonological and lexical development of Amharic speaking children's language. It also possibly contributes a lot by providing detailed information about children's language forms in general and the nature of their phonology and lexicon in particular. Research on children language acquisition may offer insights for pedagogical purposes. As Amharic is a medium of instruction in kindergarten and first cycle elementary schools, it plays a paramount role in communication and enhancement of education. Thus, understanding the nature of children's language promotes educational facilities and gives highlights how materials should be designed to teach small children. It provides an opportunity to educational practitioners and preschool teachers to consider children's variability of language learning, the sound sequence, and the type of lexicons children are able to comprehend and produce. The research on children language acquisition may also contribute a lot for clinical purposes; it provides information about children's language development levels for speech's therapist, psychologist to assess and treat language delays and disorders. The finding of this research also offers an in-sight for future researchers in language acquisition area.

1.7 Scope of the Study

This study was conducted in Addis Ababa, specifically in two schools in Lemi Kura sub city. It was confined to Saint Michael and Mentor Academy taking 32 Amharic speaking children. It only focuses on the acquisition of phonology and lexicon. Of course, it would have been better to include more schools and increase the number of children in the study but, in principle, it would be difficult to manage such research by an individual researcher with a limited finance and time constraints. Besides, the nature of the research did not allow the researcher to broaden the scope of the study, as it would be unmanageable. Hence, this research delimited to the description of children's phonology only describing the acquisition of Amharic consonant phonemes, vowels and other phonological aspects were not treated in the current study.

1.8 Limitation of the study

The research was conducted on the development of phonology and lexicon in Amharic speaking children's speech. The data gathered from two selected kindergartens in two academies, in Addis Ababa and thirty-two 3 to 5 years Amharic speaking children were the participants of this study. In this regard, the researcher has believed that it would have been more dependable if the research had included different schools and large representative samples but some schools and children's parents did not show their consent about the involvement of children, as a result, the research area was limited to two schools: St Michael and Mentor Academies. In addition, recording, organizing, and transcribing children's speech data exerted great pressure and took a long period. Besides, children's contemporary mood and lack of tolerance to stay in touch during the recording sessions was the other great challenge, which prolonged the recording session.

1.9 Organization of the study

This paper is organized in six chapters. Chapter one consists of the introductory part which contains the background of the study, the statement of the problem, objectives, significance, delimitation, limitation, organization of the study and definition of terms. The second chapter deals with the literature review, which shows the related works and previous studies. Chapter three focuses on the description of Amharic language: phonological and lexical presentation. Chapter four shows the research methods that contain the research approach, information of sampling and method of data collecting, analyzing, and presenting, whereas, chapter five comprises the data analysis and interpretation and discussion. The last chapter summarizes the findings of the study, draws conclusions and recommendations.

1.10 Definition of terms

Acquisition:	Learning or developing skills or achieving the ability of doing something.
Clitics:	Are morphemes, which Learning or developing skills or achieving the ability of doing something have syntactic characteristics of a word or a form of affix, their meaning depend on neighboring words?
Category/class of words:	Class and category are defined as group of or domain of words, which can be included in the same cells.
IDs(Individual difference)	Individual difference in this study refers to the contemporary ability expressing ideas, uttering and pronouncing different phonemes and words while they were reacting in different activities.
Lexicon	From various definitions, lexicon is used, in this study, in reference to the vocabulary employed by particular group speakers (children).
Phonological processes:	Are defined as patterns of sound errors that typically developing children use to simplify speech as they are learning to talk or while pronouncing different words or children's realization phonemes in their phonological acquisition process, like deleting, substituting, consonants harmony and reduction process.
Utterance :	A sound or a word or a phrase or long sentence that can be produced at once in a speech.
Word items and types:	These words are alternatively used in this research referring to the number of new words occurring in children's speeches

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter provides a review of the literature related to first language acquisition. It deals with the general language acquisition, phonological and lexical acquisition theories. The chapter also attempts to review the different research works on the nature of language acquisition, in general, phonological, and lexical acquisition in particular. It reviews the nature of morphological development, word-meaning relation and the impact of background factors. In addition, it presents the stage of language acquisition and it surveys the previous research on the area, provides the general theoretical framework of the study, and finally, summarizes the chapter.

2.2 Theories of Language Acquisition

Language is a defining human characteristic; children of all cultures acquire native language, and they do so without a need of formal instruction. As a result, the regularity and speed in which children acquire language has prompted researchers to question whether language is learned in any meaningful sense or not. They have carried out several researches over a century to describe how children acquire their first language (L1). They also made great effort to theorize the mechanisms that take place during the acquisition process. In this regard, rationalists and impressionists deeply grounded their theories on the acquisition of children's language and forwarded different viewpoints.

2.2.1 General theories of language acquisition

Scholars have developed a number of theories and approaches over a century to describe children's language acquisition process. One of the general theories of language acquisition is innateness, proposed by Noam Chomsky in the 1960s. Noam Chomsky made his first contribution to the language acquisition process. He began his attempt to explain language acquisition in reaction to the behaviorist view. In his generative account of language acquisition, he claimed that language development follows a module or device, which is particular to language and innate (Chomsky, 1965). The innateness of language acquisition focuses on the fact that children learn language rapidly after birth without great effort within a short period. He further noted that the innate capacity of the child enables him/her to do that. The 'Chomskian' approach of language acquisition description addresses the universal

principles as a foundation of underlying structure. The theory claims that any child adjusts these principles through restricted conditions to irregular and/or target language forms; and a child does this fundamentally with minimum exposure to the surrounding language. In other words, Chomskian tried to explain that a child acquires language by 'fine-tuning' an already existing, innate knowledge of language (Chomsky, 1959).

The claims and observations of two well-known advocates, Chomsky (1959) and Lenneberg (1967), serve as a framework for Mentalist Theory. Chomsky claims that children's language acquisition is resulting from a 'Universal Grammar (UG)' that identifies the necessary form of any natural language that can take place. Universal grammar thus exists as a set of innate linguistic principles that include the initial state and control the form of sentences of any given language. In addition, Chomsky (1986) named this biological ability as the language acquisition device (LAD) which contains a set of universal grammar principles common to all possible human languages. He called this set of general rules as UG. Children generally acquire an innate grammatical pattern or UG that allows them to choose and construct the grammar of their own first tongue.

On the other hand, it is believed that children's language development starts when children get exposure to the environment and experience of language. This helps them gradually to build up the linguistic systems with increasing linguistic capability. In relation to this, 'Usage based' approaches propose universal cognitive abilities of children, which they use to classify and identify similarities and differences observed in the environment, especially, in the speech exposure of the child (Bybee, 2006). Bybee (2010) has also described what the cognitive processes include: categorization, memorization, and the cognitive capacity to connect form and meaning. According to Tomasello's (2003) description, the cognitive processes also include the functional aspect of 'intention-reading', on the grammatical aspect, 'pattern finding' and the experiences that happen in continuous interaction with the environment placed as stored memory. Generally, 'Usage-based' approaches have broad views that make language acquisition as a mechanism, which is possible to go beyond linguistic experience (Behrens, 2009).

Whereas, the 'Ecological Theory of Language Acquisition (ETLA)' proposes that the development of language and its acquisition follows similar processes. The theory focuses

on the connection between cultural and genetic developmental processes. The theory grounded its proposal on how culture/environment and genetic developmental process guide the human language and children's language acquisition. In this regard, Lacerda and Sundberg (2006) have claimed that language acquisition is a result of children's contact with the environment and 'the multi-sensory information on the basis of physiological requirements. Some basic assumptions are decisive for language development: firstly, the obtainability of multi-sensor information; secondly, the general ability to accumulate the surrounding information and the child's capacity for social interaction (Lacerda and Sundberg, 2006).

Children direct interaction helps them recognize languages as effective and real tools. Renner (2017) tried to show the occurrence of language embodiment in the condition, which includes olfactory, visual, tactile, kinesthetic, and auditory information. In line with this. Lindblom (2011) explained how the data sources work as multi-sensory input and facilitate extraction of information by self-organizing non-language specific processes for emergent language representations. Moreover, the Bio-cultural perspective of language acquisition takes into consideration the development of speech units like syllables and phonemes. Lindblom claims that the acquisition of phonological elements connected to the communicative aspect of the language. The theory mainly focuses on how culture/environment a child is exposed to and the natural endowed capacity interact each other on the development and acquisition of language.

Even though, the above theories approach FLA from different perspectives and they are modeled from different standpoints, they describe the possible language learning mechanisms and provide fresh insights about children's ability of language acquisition. As recent research findings have regarded human language is a mixture of genetically determined capabilities and knowledge gained from experiences. It is possible to say that children require a biological trigger, which can be activated by the exposure children get from the environment. In general, the theories are complementary for broader understanding of a child's language acquisition and guide to see theories of phonology and lexicon.

2.2.2 Theories of phonological and lexical acquisition

In addition to general theories that deal with how children acquire language, a number of researchers show 'domain-specific models to explain various features of phonological and lexical development, like how a speech stream is segmented and word learning happens. Along with this proposal, different ideas were suggested on how children identify the speech sounds and produce a word, what shape and representations of lexical entries have, and how they are acquired. As Renner, (2017) and Stole-Gammon (2010) have summarized the different approaches and models, which have, direct connection with phonological and lexical acquisition in children's language development process.

2.2.2.1 Phonological acquisition theories

Different theories, approaches, or models have been designed for the last centuries to describe the acquisition of first language phonology and they grounded in their theories from different standpoints and make them debatable issues. In this regard, the general model of phonological development is one of the earliest endeavors formulated by Roman Jakobson. Jakobson (1968) grounded his model on diary studies and taking it as the pre-linguistic period of babbling and period of phonological acquisition. He also considered the role of babbling a completely unconnected to phonological acquisition because of its free and unstructured shape. As his proposal, universal structures guide phonological acquisition; it means, most common sounds cross-linguistically are acquired first. Jakobson's effort was very central to the relatively short history of child phonology. It is considered as a good promoter to advanced research on child language acquisition and development (Renner, 2017; Stoel-Gammon, 2010). This child-based theory stemmed from Jakobson's (1968) connected to structuralist approach, which suggests children's phonological development is guided by universal general acquisition order of phonemic contrasts, irrespective of their languages.

Rule-based theory proposed by Chomsky & Halle (1968) took into account to generative phonology. The attention of their phonological theory relays on the connection between abstract and surface forms: in other words, it was the only in its time for its' rule-based account of phonology, which tried to show the rules how phonemes or classes of phonemes were produced under specified time. The theory is taken as one of the basic views, which examine the child's speech productions by applying a set of phonological rules. As applied

to the child's phonology, generative rules were used to describe children's simplifications of adult phonemes such as, [+continuant] segments (fricatives) becoming [-continuant] (stops) in certain word positions (Smith, 1973). However, as different studies show, the theory was criticized as it suggested the child's primary phonemic representations match with the adults. It also states that these phonemic representations are only changed to accommodate immature physiology or inappropriately organized phonology (Smith, 1973; Stoel-Gammon, 2010; Vihman et al, 2000).

Similarly, Stamp's (1969) theory of natural phonology recommended a set of universal and native phonological processes that are used to apply to adult and child speech. According to the theory, to acquire an adult-like phonology, a child should pass different processes of learning the sound systems that do not even occur in their language (Stampe, 1972). A case in point, a child who is learning Hawaiian does not have a problem with the final consonant deletion as there are no word-final consonants in that language. However, a child who is acquiring English needs to learn how to pronounce the final consonants.

On the structural difference of phonology, Stamp's theory has been highly influential on the studies of phonological acquisition and phonological disorders (Vellum et al, 2002). In the 1970s, scholars' views had shifted from linear, segment-based phonological theories to non-linear, hierarchical approaches in which phonological representations were described. It is not as strings of segments but as a hierarchy of phonological 'levels', each consisting of various kinds of information (Stoel-Gammon, 2010). In short, these approaches comprise children's level of utterance at the phrase, prosodic word, and going down to the grass root to syllable structure. It goes through to an order of phonological features to describe the structural differences of phonology (Bernhardt & Stumberger, 1998).

On the other hand, the current phonological acquisition theory, which gives a great attention to phonological development and disorder, is Optimality Theory (OT). According to Prince & Smolensk (2004) proposal, OT emphasizes the organization of input to enhance a certain output form rather than being process-oriented. OT as outcome oriented theory; it leads child phonologists to focus on the system of language acquisition and what is obtained in non-adult like changes in the output instead of focusing on errors. In this theory, the child's phonology is described as an actively growing system but it is not seen as a complete

realization of the adult phonology. The proposal of OT deals with a universal set of contradictory ‘constraints’ of two basic types: markedness constraints which do not allow the existence of marked structures in the output (eg. constraint on final consonants) and faithfulness constraints which needs the requirement of matching between the input and output. As Dinnsen & Gierut (2008) explanation, phonological acquisition is taken as a process of ‘ranking and re-ranking ‘of constraints to ensure the constraint patterns of the target language. Indeed, OT depends on a distinct type of constraints, which control the input-output process. These input-output faithfulness constraints focus on how children’s outputs appear different from the input of adult’s phonology. In general, OT emphasizes the requirement of output to describe the properties of the input; whereas, faithfulness constraints are also important to the OT view and have contributed an essential role since the theory origination.

In sum, despite variation among these theories, they have their own contribution and implication to phonological acquisition. They help researchers to understand and describe the phonological development of children's languages from different perspectives. The general views of these theories whether innateness of the role of paralinguistic development: generative (Rule-based), the natural or OT influence of input and language use have taken their own part on the development of children’s phonological theory. In addition, the frequency occurrence of input, the nature and number of underlying phonological representations can show the development of the lexicon in children’s language (Stoel-Gammon, 2010) and this principal phonological representation leads to see lexical acquisition theories.

2.2.2.2 Lexical acquisition theories

Lexicons are the ‘building blocks of language. Children naturally acquire a large number of words in an orderly manner in sentences while interacting with their surroundings. However, researchers consistently raise different questions to understand and describe how children acquire words and what challenges they encounter during the acquisition process. According to Davis (2002:2) explanation, children encounter two major obstacles while they are learning words. The first one is how to discover the sound sequences of speech, which cohere to form words (lexical segmentation), and second, how they learn and associate

sound sequences with meanings (vocabulary acquisition). In relation to lexical acquisition, theories, approaches, and models have brought various insights into how children acquire a lexicon.

In this regard, the connectionist theory tries to show the ability of neural networks to extract different structure from noisy and probabilistic input. It suggests different models, which provide a plausible account of learning processes that are at the heart of cognitive development (Davis, 2002). The connectionist model shows how all knowledge is embodied in a network of simple processing units joined by a connection. This connection has strengthened or weakened in response to regularities of the input patterns. As Davis (2002) explanation, the central issue of connectionist models is lexical segmentation, which is related to children's language acquisition and the amount of input in the neural network of language. Concerning learning lexicon with segmentation, Saffran & *et al* (1996) validate the connectionist theory of lexical acquisition with experiment and findings. This indicates that children are able to have the capacity to segment words-forms from connected speech. They also suggest that there is also evidence that seems to be used by children to segment the speech stream into words. In relation to this, Stager and Werker (1997) explain children that are familiarized with word forms in connected speech have the ability to differentiate between minimal pairs like "bih" and "dih." The theory generally predicts lexical segmentation and vocabulary acquisition developed through the input, which appeared in a connected speech. However, the theory may assist to see that somehow, children's learning words from lexical segmentation of connected speech but it does not show the overall acquisition of lexicon as it ignores the separate word -form of teaching (Davis, 2000).

The other theoretical link on the perception and production of a more explicit lexicon is the whole-word approach; it is 'holistic' representations of early words (Vihman, 2017). Holistic representation means recognition of word form as a whole, with maintenance of the salient syllables or segments. This is specifically observed from children's output collection (Vihman, 2017). The implementation of a word as a whole, describes certain parts of the lexical structure that could have a better depiction than others could, and it indicates that how words are acquired as whole units (Vihman & Keren-Portnoy, 2013). According to a whole-word approach proposal, lexical acquisition passes through three different stages: -item-based word learning), distributional lexical learning which indicates how acquisition

of sound patterns is affected by the distribution and neighboring sound patterns (Vihman, 2002; Vihman & Croft, 2007) and the third one is generalizations; generalization over the phonological patterns of the lexicon are called ‘templates’.

These patterns are not permanent; they are changing over time when they are used increasingly. When a child starts to attain adult-like language, whole-word form representation becomes complex and includes different word structures. These structures have nearly like an adult's speech structures; and speech planning as well as the necessary recognition abilities of using templates decreases. Moreover, as Vihman et al (1994), some of the templates have an association to the patterns that are experienced during babbling. Children's choice of words is taken as “an implicit response to what is familiar to them based on input frequencies” (Vihman, 2017:40). In addition, Hanna & Pulvermüller (2014) explain the adaptation of a target word forms from the templates helps the child to scale up his or her productive lexicon size. In sum, the whole-word approach views words as items, which can be acquired as a whole unit and the approach tries to indicate how generalizations by means of templates mirror the influence of production on perception of selecting items and adapting the target words. The approach generally forecasts how the production abilities of children exert an impact on word recognition (Vihman, 2017).

On the other hand, from a structural approach point of view, it is possible to examine a noun bias acquisition of early lexicons. According to Gentner (1982) proposal, nouns are acquired earlier as they are less complex than verbs, both functionally and theoretically. They tend to be more concrete and thus easier to comprehend. As Gentner suggestion, nouns are generally more accessible to children in acquiring different languages (like English) than verbs. Nouns are considered as consistent and perceptual entities, which permit classification of objects into natural sets more than verbs. According to Noun Bias Approach, verbs are considered more complex to label in more language-specific categories, and they need language input and more time to be acquired. However, researchers on ‘verb-friendly’ languages, such as Mandarin and Korean, argue and invalidate the noun bias approach because the acquisition of verbs is commonly observed in the first place in these languages (McDonough, & Tardif, 2009). On the other hand, Bassano (2000) claims that verbs and nouns are acquired simultaneously in French. Therefore, Gentner's notions of

noun and verb acquisition are not cross-linguistically accurate as there are different languages, which allow verbs to be acquired first. These contradictory notions about the nouns and verbs provide an insight how the acquisition period of different lexicon varies cross-linguistically.

In sum, the different approaches and models show how a child's phonological and lexical acquisition takes place from perception to production. Although scholars have different paths in describing the acquisition process, they build a fundamental theoretical background and provide significant information about the nature of children's language development.

2.2.3 The nature of language acquisition

Children's language is not fully developed; consequently, it seems for adults a requisite to use additional techniques to communicate with children. Most of the time, they speak to young children in different ways to grasp their attention and to develop children's speech ability. In addition, adults have also great intention to see the children's involvement as part of the family interaction. As a result, they use different mechanisms to speak with little children. In this regard, Goodwin (2000) noted that gestures, facial expression, gaze, back channel response, pointing, are helpful mechanisms, which can be used in adult-child interaction long before children start speaking. Supporting the importance of using different mechanisms to speak with children, Clark (2009) described that the use of vocative words like here, there, looks! See! Such kind words take children's attention from other normal speech's pitch and enhance their comprehension and productions. As Clark tries to point out, the choice of suitable words and presenting them in short and simplified forms are used to enable children to identify what is said in the communication process.

The type of input children get from their surroundings can ensure the development of children's language. This communication input provided to children should appear in simplified, comprehensible, and repetitive manner; this helps children to communicate easily with people around them and enhances their language development through time. In relation to this, Ferguson (1977) forwards the value of mother or caregiver's interaction. Parents or caregivers play an important role in the positive well-being of the children. As his report, while caregivers or mothers start to talk with children, the speech is adjusted in a way that children can understand it like increasing pitch, amplifying its positive effect, slowing down its tempo, speaking in short chunks and syntactically simplified sentences are

the common ways of communicating with young children. In addition, Ferguson (1977:74) explains, “Through modification and an extensive use of repetition specialized lexicon, diminutive, and kinship terms of adult’s speech are phonologically, lexically, and grammatically transformed into baby talk.” Similarly, research by Haynes, and Cooper (1986) on the nature of children’s language development indicated that those in 27 out of 34 languages, most of the children’s speeches have common features. Their studies show eight features, which are found to be the most common ones, namely, high pitch, exaggerated intonation, shorter sentences, repetition, and special terms for family and body parts, reduplication, and pronoun shift. Generally, simplification, clarification, self-repetition, paraphrasing, special phonological and morphological modifications (compared to the adult speech of the language) are common features of children’s language.

2.2.3.1 The development of children’s phonology

The development of meaningful language is a multifaceted process. In relation to phonological development, children need to acquire the sound system to produce words to match the adult targets; they must also understand the phonological forms of words in their native language. This complex process has two essential components: first, a biologically based component associated with the development of the speech motor skills that are required for the production of adult-like words; and second, a cognitive linguistic component associated with learning the phonological system of the ambient language. The interaction of these two has the power to shape a child’s phonological development (Alqattan , 2015). The cognitive aspect of phonological learning entails ‘mental’ representation of sounds, which are stored and accessed in the encoding and decoding of words. Some type of mental representation is necessary for the perception and production of words. To pronounce the word *cat*, for example, an individual child must have a stored version of the sound sequence associated with the word; the individual child must be able to differentiate the word *cat* from related sounding words, such as *hat*, *cap*, *cut*, and *kite*, among others (Alqattan, 2015; Gleason & Nan, 2009). In the same way, the production of the word *cat* requires knowledge of the target sound sequence and the articulatory movements are necessary to distinguish it from other words with similar sound pattern. Therefore, children’s sound development can be seen from phonetic as well as phonological acquisition (Winitz, 1969) perspectives.

The development of a phonological system is progressive and needs gradual changes. However, the sequence of contrast affects smaller sound units due to the principle of maximum divergence from the adult phonological systems. The acquisition of sound systems in terms of distribution of the sound among the world's languages and the most widely distributed sound is the earlier to be acquired: nasals, front, and stops consonants would be acquired earlier than orals, back consonants, and fricatives respectively. However, young children may pronounce words differently from adults. According to phonological inventory, Gleason & Nan (2009) noted that children's language differs in certain features from adults. A good example of this is phonological inventory of children's language in English indicating that children use *tore* or *sore* for *store* or *gig* for *pig*.

Children are obviously unable to produce certain sounds or sound combinations of the adult language; they simplify the sound system of language to make up for the limitations. Studies on the child's phonology provide a certain process that can be seen in child language (Ingram, 1978, 1989; Stampe, 1973; Smith, 1973; Menn, 1971 & 1977; Iverson & Wheeler, 1987). These processes are often expressed, as common changes that children make as suitable for them so that they produce an output of their own form until they are able to produce adult-like words. In other words, these processes describe the relations between the adult and the children form. As far as children's phonological process is concerned, different scholars (Ingram, 1989; Bhatt, 1967; Stoel-Gammon, 2006) categorize them as phonological processes, which include cluster reduction, omission, substitution and assimilation (consonant harmony).

Cluster reductions are simplifications of consonants, for example, the cluster can be reduced to one member of the consonant or another sound, which can substitute the entire cluster, or one member of the cluster is retained. Children encounter difficulties while they are trying to pronounce clustered consonants as a result, they mispronounce words like [fren] or [fen] instead of *friend*; such type mispronunciation (process) is cluster reduction. Ferguson (1964) states that cluster reduction (simplification) are sequences of two or more consonants that emerge in adult language maybe dropped out in children's utterance. When a cluster of three consonants appears children simplify the cluster by keeping only the middle consonant, or omitting either the initial or the final consonants, or they change one of the consonants and drop the other two. Concerning this, Clark (2009) also described that children simplify

consonant clusters, as they find them difficult to pronounce. They usually retain only the stops (for example, *strong* is pronounced as [tɒŋ], *blanket* as [bæŋket] or *spoon* as [pun] and *spider* as [pider] if there is one. In addition, while uttering English words that start with the consonant cluster *skw*, children tend to drop the glide /w/ and the initial /s/ keeping only the velar stop /k/ (Clark, 2009).

In this point, Gleason and Nan (2009) report supports the idea of cluster reduction. Children reduce consonant clusters by dropping out one of the sounds like the word ‘*store*’ as [toʊr] or [sour] and the noun ‘*school*’. As [ku:l] or [su:l]. They also omit the stops /t/ and /k/ in the clusters /st/ and /sk/, but they may retain the plosive /t/ in words with the cluster /st/ dropping the fricative /s/ instead. Most commonly, children often retain the second consonants in word-initial clusters starting with the fricative /s/ by omitting the fricative, English children pronounce ‘*stop*’ as [top], ‘*small*’ as [mol] and ‘*slide*’ as [laid].

Studies of prosodic development of children phonology (Spencer, 1986; Fikkert, 1994; Demuth, 1995; Gnanadesikan, 2004; Ota, 1999; Rose, 2000; Goad & Rose, 2004 and Vihman & Croft, 2007) show the combination of cluster consonants. When stop and liquid appear in cluster, the liquid is most likely dropped out, as ‘*clock*’ is pronounced [gok], ‘*milk*’ as [mk], or ‘*bring*’ as [brɪŋ]. Moreover, when a stop appear with nasal, children usually keep the stop but the nasal is deleted, as /bump/ as in [bʌp] or ‘*tent*’ as [tɛt], whereas, a fricative and a glide (j, w, r) occur in a combination, glides are reduced and the fricatives are kept pronounced like the word /from/ as [fom] and /few/ as [fu:]. When nasal combines with obstruent, the obstruent is deleted (Clark, 2009; Ingram, 1976; McLeod et al, 2001; Rose, 2011).

Phoneme deletion also affects the overall shape of a syllable or word. The influence of the primary CV syllable shape in the early production of sounds is evident for omission of one or more sounds from the target (Stoel-Gammon, 2006). Children tend to neglect the final consonant or even the final syllable in early words if it is unstressed, as in [ba] for ‘*ball*’, [ti] for ‘*kick*’ or [bu] for ‘*boot*’ (Clark, 2009). Related to this, Gleason and Nan suggest that the length of a word and its stress pattern could be the possible cause of phonological modification. Young children may delete the initial syllable of multisyllabic words when it is unstressed as in English [mato] for ‘*tomato*’, [zɛrt] for ‘*dessert*’, or [pɒsəd] for ‘*supposed*’

and [nana] for 'banana'. Unstressed syllables in medial position may also be omitted as it can be seen in English words like [tɛfɒn] for 'telephone' [ɛfənt] for 'elephant' or [æt] for 'ant' (Gleason and Nan, 2009; Stoel-Gammon, 2006; Rose, 2011).

Children frequently drop fricatives when the fricatives appear in the onset position. Menn (1971) shows that (from 22.5 to 24 months children) fricatives are deleted in the onset but permitted in the coda, for example, a child pronounce the word 'cheese' as [iz: is], 'seat' as [it], 'fish' as [iʃ], and 'shoes' as [uz]. However, fricatives are permitted as coda like in /toast/ [dos], /watch/ as [ætʃ] and /change/ as [eɪndʒ]. In spite of the fact that there is strong tendency, CV syllable structure seen in children pronunciation, in Portuguese (Freitas, 1996), target onsets are often omitted or a vowel without an onset is inserted. In addition, deletion is common in children's phonological process in Arabic language. In Arabic speaking children's speech production, Coda omission is commonly manifested error pattern (Alqattan, 2015). The most frequently deleted consonants by Arabic speaking children are /n/ and /g/, /r/ /l/ and /ħ/. For example /lɒ: n/ is pronounced as [lɒ:] means 'color', /ʔa'tʃiɡ/ as [ʔa.'tʃi] means 'I hit' or /fɒ:g/ as [fɒ:] which means 'up'.

The other phonological process observed cross linguistically is substitution. Ingram (1976) and Stoel-Gammon (2006) describe the substitution processes 'as the occurrence of one sound class in place of another. This includes substitution of stops for target fricatives and affricates as /see/ is produced [ti], 'zoo' as [du], 'chin' as [tɪn] and /vinegar/ as [bidu]. Just like other languages in Amharic, it is observed that /v/ is substituted by [b] (Abebayehu, 2008). According to Clark, observation, children often substitute fricatives by stops and may pronounce the word /sandwich/ as [tewɪʃ]. Here the initial /s/ is substituted by /t/. Similarly, the word 'knife' is pronounced [najb]; the final /f/ is replaced /b/ and the word 'bus' is may be uttered as [bʌd] as the fricative /s/ is substituted by /d/ (Clark, 2009).

Fronting is one of the common substitution patterns in children's speech; alveolar stops are replaced by the target velar stops like 'key' is pronounced as [ti] and 'go' as [do]. Similarly, Francescato (1968) shows that velar and palatal consonants have a tendency to be substituted by alveolar consonants. Velar fronting is observed when the phonemes /k/ and /g/ are substituted by sounds produced at the alveolar position, /t/ and /d/ like /cookie/ is pronounced [tookie] and /goat/ as [doat] in English. Substitution of alveolar consonants for

target alveolo-palatal consonants is also visible, for example, /shoe/ is produced [su] and /juice/ is [dzus]. Drachmann (1975) also describes in different linguistic communities that children tend to replace velar stops by alveolar ones accordingly as if an English-speaking child can pronounce [tat] for /cat/. Children tend to replace fricatives in adult words by a stop, as in English [ti] for 'sea' or [tei] for 'say'. Drachmann (1975) summarizes these two phonological processes under the term 'stopping'.

In addition, fronting is common cross-linguistically, for example in Arabic language, children substitute /tʃ/ by [t], /q/ by [ɣ]; /qa.l əm / is pronounced as [ɣa.l əm] 'pen', /s/ by [t], /'ʔa.səd/ as ['ʔa.tʌd] 'lion' (Alqattan, 2015) and in Amharic, (Abebayehu, 2008) some fronting patterns in the speech of a 2;8-year-old boy is observed /k/ as [t̪]. As indicated above, this child realized /koka/ 'soft drink' as [t̪o̪t̪a], and /kis/ 'pocket' [t̪iʃ] in which /k/ was produced as [t̪] and as /g/ is substituted by [d], as /gəbəja/ 'market as [dəbəja], /alga/ 'bed' as [alda] and /harəg/ 'ivy is pronounced as [harəd] (Abebayehu, 2008).

Francescato (1968) also identified three more phonological features of substitution in children's speeches: gliding, voicing and devoicing. The English words /lap/, /leg/ and /ready/, for instance, are frequently pronounced by children as [jap], [jek], or [wedi] respectively. This substitution of the liquid /l/ or /r/ in adult speech by [w] or [j] is called gliding. Furthermore, consonants tend to be voiced in children's speech when they precede a vowel, but they are devoiced at the end of a syllable, as in English, [be:b], for 'paper' or [bik] for /pig/. Voiced obstruent in word-final position are produced as their voiceless cognate like, /cheese/ is produced [tʃis] and /bag/ is produced [bæk]. Substitution of glides for prevocalic liquids is commonly observed like the word /red/ as [uəd] and /light/ as [jart] or [uat].

In addition, substitution of vowels for post-vocalic liquids and syllabic liquids, is apparent like in the word /door/ is produced [dœ] and /bottle/ is produced [badu] (Francescato, 1968; Stoel-Gammon, 2006). Furthermore, Ferguson (1964) observes the substitution of /r/ by [l], [j], [w] or the apical stops /t/, /d/ in children speech. Besides, the fricative /s/, in adult speech, is substituted by the affricate /tʃ/ in children's utterance, for example, in Spanish /beso/ is pronounced as [becho] meaning 'shoe' in English. Substitution of /r/ and /s/ in

adult's speech are not restricted to individual languages but seem to be a cross-linguistic phenomenon.

Substitution also occurs on consonant clusters. Concerning substitution, Gleason & Nan (2009) describe substitution of consonant combinations; children substitute consonant combinations by a singleton that is not part of the actual cluster. A good example of this is the English word */spill/* may often be pronounced as [fill]. The cluster */sp/* is substituted by the fricative [f], not [s]. This [f] appears to be an attempt to match the sound of the whole cluster with a single consonant [f] that combines the fricative character of */s/* and the labial character of */p/*. Substitution is not only limited to consonant clusters but also appears with non-segmental features of single consonants. Clark (2009) noticed that English-speaking children have a choice to voice stops in word-initial position but to devoice them in word finally. A case in point */pie/* appear as [baj] substituting the voiceless */p/* by initial voiced [b]. Children also use modification of consonants to solve their difficulty of pronouncing stops in word-final positions by adding a nasal consonant preceding or following the stop at the same place of articulation. English speaking children pronounce the word */dad/* as [dadn], */pig/* as [piŋk] and */bed/* as [bent]. Languages with ejective consonants are observed to be de-ejectivised in children's speeches; Amharic-speaking children who are younger than four years have the same patterns of change. Abebayehu (2008) stated that it the substitution of ejective by pulmonic counterparts, like the word [pappas] for adult speech */p'appas/* 'bishop in children's.

Assimilation, as one of the common pattern of children phonology, is defined by Clark (2009:106) as the "effect of sounds on those preceding or following them within a word or across word boundaries." Assimilation processes (also refers to 'harmony' processes) affect the segments, mainly the consonants of a target word by making one consonant more like another. These forms are just like reduplicated syllables of canonical babble and early word forms such as 'mommy' 'daddy' and 'baby' (Stole-Gammon, 2006). In the process of phonological acquisition, Clark (2009) mentions three types of assimilation. First, assimilation of vowels and consonants occurs through reduplication of entire syllables, as in English [baba] for 'bottle', [ki.ki] for 'kitchen', or [da.da] for 'daddy'. When a child pronounces a word by repeating the same syllable twice instead of pronouncing both

syllables, this is called pattern of reduplication. Pattern of reduplication is taken as error when children repeat the stressed syllable twice at the expense of weak syllable. A good example of this is a 3 years old English Speaking child created total reduplication pattern of assimilation like [tai tai] for 'tiger', [wawa] for 'water' [bæbæ] for 'Patrick's'.

The second type of assimilation occurs when children use the same vowel across the syllables of a word like in English [lidi] for 'little'. Consonant harmony may also occur when the children use the same consonant in the onset of all syllables in a word whereby the vowel differs across the syllables, as in [babi] for 'blanket'. Third, assimilation is also represented in children language when nasality is added to non-nasal consonants, as in English [nam] for 'lamb', 'bean' as [min] where the initial /l/ is produced as /n/ in accordance with the word-final /m/ (Clark, 2009; Stoel-Gammon, 2006).

Drachmann (1975) detected consonants that have a tendency to be assimilated one by another in specific foreseeable ways in C1VC2 syllables. In this case, there are three patterns of consonant harmonies. Velar assimilation i.e., apical consonants tend to assimilate to the nearby velar consonant such as, [gɔg] for, [kæ:g] for 'cat', [kɔk] for 'cup', [gɪgʊ] for 'tickle'. In addition, [gʌg] for 'bug' labial assimilation (i.e., apical consonants) tend to assimilate to labial consonant, for example, [bɛ:p] for 'bed', [bʌbə] for 'butter', [pɔp] for 'top' and [bejp] for 'tape'. These two types (velar and labial) assimilation as shown in the above examples occur regressively and progressively. Velar [gɔg] for 'dog', [gɪgʊ] for 'tickle, [gʌg] for 'bug') and labial ([pɔp] for 'top' and [bejp] for 'tape') apply regressive assimilation whereas [kɔk] for 'coat' as, [kɔk] for 'cup', and, [bɛ:p] for 'bed', [bʌbə] for 'butter' are progressively assimilated (Compton & Streeter, 1977; Pater, 1997; Rose & Walker, 2001; Vihman, 1978). 1997; Rose & Walker, 2001; Vihman, 1978). In children's phonological acquisition, process, regressive assimilation is considerably more common than progressive. In other words, progressive velar assimilation, and labial assimilation, is eliminated long before regressive velar assimilation. Likewise, regressive velar assimilation lasts to target labials when progressive velar assimilation is limited to coronals. This limitation also plays a role in local place assimilation in Korean (de Lacy, 2002).

In conclusion, children pass through certain phonological processes; cluster reduction, deletion, substitution, and assimilation. These processes which children cross linguistically pass through are likely to have a direct impact on the production and acquisition lexicons.

2.2.3.2 Lexical development of children language

Children's lexical development has a great tie to phonology and language growth, (Justice, Meier, & Walpole, 2005). In the course of acquiring different lexicon, children go through the process of learning the word form and relating the form to concept over a period of time (Bloom, 2000). Once the word groups have been identified from the speech stream, it is possible to compare to existing words in the lexicon. There is some evidence that children's ability to access stored word representations. This is highly dependent on the sound match between the stored word and currently heard one (Houston & Jusczyk, 2003). One topic of the current debate on child's lexical development is whether child slowly becomes more and more capable in accessing stored word forms (Swingley & Aslin, 2002), or whether there is a gap in lexical representation that occurs when children begin to associate word forms with referents (Werker & *et al*, 2002; Stoel-Gammon, 2006).

On the other hand, Benedict (1979) determined the ages at which each child acquires predetermined numbers of words for comprehension and production. The advanced development of comprehension is quite striking. The beginning of comprehension is nearly four months in advance of production. Second, the rate of acquiring the first 50 words in comprehension is twice as fast as that of production. Children need nearly two weeks to acquire 10 words in comprehension, but four weeks in production. During the normal course of vocabulary acquisition, a child's lexicon is composed of a bulk of nominal, action words, however, fewer modifiers, personal-social words are observed. In the course of lexical development, children acquire all classes of words despite there frequency differences (Stolt, 2009).

Lexical acquisition is one of the central endeavors starting from the first years of life. Children began exploring the world with the innate capacity of understanding and producing speech. The social interaction between children and their families also gives an opportunity to create a world in which language becomes the primary means of communication by the end of the first year. Children with normal development can produce a few words; the

primary lexicon in children's speech always relates to paralinguistic," non-meaningful vocalizations such as [baba] or [mama], which can gain word status by associating sound with meaning. American children at aged of two have a productive vocabulary of 250–350 words (mean:307) and, by age two years and six months their productive vocabulary has increased to 570 words around the age of six (Stoel-Gammon, 2010). Around the age of six, children who are learning English have a receptive vocabulary of several thousand words, their estimated number varies from 6,000 to 14,000 words. The wide range of estimations of vocabulary size can be related to methodological differences in determining a child's vocabulary; in addition, it has also been documented from environmental and educational differences associated with social class impact of vocabulary size (Hart & Risley, 1995).

2.1.3.3 Composition of children lexicon

As Gentner & Boroditsky (2001) tried to mention, the type of words children comprehend and produce in lexical acquisition process. In what order this acquisition occurs, how human beings organize the world into semantic concepts and how children acquire this parsing are central issues. One of the central arguments associated with these questions is the hypothesis put forth by Gentner (1982) that children universally acquire more nouns than verbs in the process of lexical acquisition. This noun bias-hypothesis was proposed based on the comparisons between the relative frequency of nouns and verbs. The studies show lexical composition in children speech who are acquiring English, Japanese, German, Kaluli, Chinese and Turkish (Genter & Boroditsky, 2001; Kim & *et al* , 2000).The findings of the researches indicate that nouns established the largest word sphere and that verb acquisition takes the second position in children's lexicon.

Similarly, it is presented as a cross-linguistic data of the early lexical acquisition of children acquiring Spanish, Dutch, French, Hebrew, Italian, English, and Korean children; the data were collected using the structured parental rating method; and the report shows that all children under the study used large portion nouns than other words in their vocabularies. This happens in majority of the world language because nouns often represent to concrete objects; and the representation between language and the conceptual world more reflected in nouns than other word classes Gentner (1982). Similarly, concerning lexical composition of children's language, O'Grady (2006) indicates that children appear to be differing in the types of words they focus on, especially, in the early stages of language acquisition. One of

these differences is observed in the number of nouns in early vocabulary. Children have a relatively high proportion of nouns by age two; whereas, other children show a much lower percentage. Making up the large number of nouns is a larger vocabulary of socially useful expressions such as bye, go-away, stop-it, thank-you, I-want-it, and so on. In early and middle childhood, children learn more than ten new words in a day (Miller, 1986; Miller & Gildean, 1987).

However, Korean and Mandarin languages researchers (Choi & Gopnik, 1995; Tardif, 1996) have challenged Genter's original noun-bias-hypothesis. Choi and Gopnik (1995) analyzed early mother-child interactions data, and described that Korean children had both verbs and nouns were dominant categories at the single-word stage. They further explained the difference; the nature of input makes difference in early lexical acquisition. A case in point a Korean mother uses more action verbs, but fewer nouns during mother-children interaction than American mothers do. In addition, the Tardif (1999) report indicates that children acquiring Mandarin used more verbs than nouns in their spontaneous speech. Yet, there was a tendency for the children acquiring Mandarin to produce more verbs than the children acquiring English. Another significant reason for the difference in the number of nouns and verbs in children's speech is the context in which they speak in both groups. Both groups produced more nouns in book-reading situations, but they used more verbs than nouns while playing with toys (Tardif, Gelman & Xu, 1995).

Gentner and Borodistky (2001) further developed the noun bias- hypothesis and categorized words into two groups (the open and closed classes). These two groups of words have different cognitive and linguistic dominance due to acquisition of different kinds of words. The division of open and closed class words is a classic one (Gentner & Boroditsky, 2001). An open class is a large lexical group (e.g., Nouns, adjectives and verbs), whereas the closed-class category is fewer in number (e.g. prepositions, determiners and conjunctions). The open class words have more denotational functions, but those in the latter serve grammatical and relational functions. The role of the closed-class words are used for linguistic connections among those in the open-class. Closed-class words are often high frequency, they are rarely borrowed in language contact, are not easily translated, and their interpretation is context-sensitive (Gentner & Boroditsky, 2001). Based on these two distinct word class categories, Gentner& Boroditsky (2001) tried to observe the

compositional nature of children's lexical acquisition; they discovered how different words behave differently in children's language acquisition process: nouns are acquired easily as their referents are grasped easily.

Bates et al. have extended Gentner's original noun-bias-hypothesis, and observed sequence of lexical categories in relation to the acquisition process. According to Bates *et al.* (1994) report, there are three developmental waves, which indicate the composition of English-speaking children's early vocabularies. As their result indicates (Bates *et al.*, 1994), children have a strong tendency of acquiring common nouns (i.e. the names of the common objects, the names of people) when their lexicon sizes range from 0 to 100 words, however, the number of common nouns decreases when vocabulary sizes grow larger. The percentage of verbs and adjectives increased slowly and linearly when the percentage of lexicon sizes increased between 100 and 400 words. Finally, no proportional development observed for closed-class words (i.e. prepositions, pronouns, quantifiers, question words and connectives) in the lexicon sizes between 0 and 400 words, but a dramatic increment is seen in the percentage of these words when the lexicon size rises to 400 to 600 words. Bates et al. (1994) considered these developmental waves as an indication of change from reference to predication and to grammar in early lexical acquisition.

In line with this, studies on English and Italian children indicate that the compositional development of lexicon size. Caselli & *et al.* (1995) and (1999) labeled a comparable progressive shift in relation to the lexicon size in Italian children. They also describe words that children acquire at the very beginning of their lexical acquisition, are names of people (i.e., *mamma*, *papa*), onomatopoeic expressions and words connected to daily activities (i.e. Social terms). The percentage of these words is very high in small lexicon size, but decreases rapidly as children's lexicon size grows bigger. Children's very first words are used in various ways, and they are difficult to classify under any semantic category of adult language. However, comparable developmental change in early lexicon has been reported in relation to the lexicon size in English and Italian children (Bates & *et al.*, 1994; Caselli, Casadio & Bates, 1999). In addition, children who are acquiring Spanish (Jackson-Maldonado, 1993) and Hebrew (Maital, 2000; Bornstein et al., 2004; Kern, 2007) show the same developmental process.

Children usually either imitate the utterances of adults or use suitable forms in which they mostly change one element, or add another. They hardly utter sentences that would require three or more operations at one time (Dąbrowska and Kubiński, 2003). Creativity increases gradually; but the difference in grammatical aspects may not be developed at once. In addition, the composition of the growing lexicon adds to the vocabulary size; however, the acquisition of different domains of the lexicon follows its own path of development. In the Fenson et al. (1993) CDI norming study, it was found that common nouns predominantly take the first stages of lexical acquisition process until they reach a peak of around 100 words, and then drop down. On the other hand, verbs and adjectives increase slowly but steadily throughout the whole period of development. Functional words (i.e., Pronouns, prepositions, articles, quantifiers, conjunctions, modal and auxiliary verbs) do not show a comparable development at all. Some researchers tried to deal with children's early lexicon grouping as receptive (comprehension) and expressive (productive) (Kern, 2007; Kit, 2003). They observed that children acquire words earlier in their comprehended lexicon than expressive lexicon. Comparing comprehension and production of children lexicon, Kit (2003:4-5) explains:

Children can comprehend many words long before they produce the first word usually, a child produces one-word utterances roughly by the age of 10 to 11 months. The gap between comprehension and production is lexically great at this stage: a child may be able to understand about one hundred words when it starts to produce the first word. The majority of the children's early lexical items are names of individuals and objects in their environment, such as 'mamma, papa' (2003:4-5).

In addition, the Kern (2007) report indicates that children rapidly acquire verbs and adjectives more receptive than in the expressive lexicons of French. Benedict (1979) also explored the distribution of the semantic categories of the first 50 words in receptive and expressive lexicons of the ten children acquiring English and the finding in both vocabularies, nominal takes the first largest share and the group of action words is placed second. Another finding was on the group of modifiers (i.e., attributes, states, locatives and possessives); they were smaller than the groups of nominal and action words. However,

action words were acquired more readily in the receptive lexicons than in expressive vocabularies (Menyu *etal.* 1999). The concern is whether children acquire various target languages' lexical domains in similar or different ways. Generally, based on the discussion, acquisition seems more comparable although the target language specific morphosyntactic components influence the early development of lexical categories.

2.2.3.4 Word -meaning relation in acquisition of lexicon

According to Clark's (1987) principle of contrast, each word in children's lexicon has a distinct meaning accordingly. After the age of one, children figure out sounds, which have related meanings and start to produce their first words. Habitually, children pass through a holophrastic stage, where their one-word utterances may convey more meaning. For example, the word '*up*' is used to indicate something in the sky or to mean, "*pick me up.*" This suggests that children know more words than they can express. When children learn the meanings of words, they are able to learn the significant features of the class of things which are referred to that word (Kit , 2000 ; Stolt, 2009).

Children learn tha '*dog*' refers to *pugs* and *Great Danes*, but not *cats*. When learning words, children often overextend a word meaning. For example, using the word '*dog*' to refer to any furry four-legged animal and overextensions tend to be based on shape, size, or texture, but never color. They may also underextend a word's meaning, like the word '*dog*' refers only to the family pet, as if the name '*dog*' is a proper noun (O'Grady, 2006). According to O'Grady (2006) descriptions, children use different strategies when they try to establish the meaning of a new word.

The three strategies that illustrate noun-type meaning are the whole object assumption (a new word refers to a whole object), the type of assumption (a new word refers to a type of thing, not just to a particular thing), and the basic level assumption. The whole object assumption allows children to infer the word *sheep* from the animal itself, not to its parts, not to its whiteness, and not to its wooliness. The Whole Object Assumption allows children to infer that '*sheep*' to a type of animal, not to be just one particular sheep. The basic level of assumption leads a child to guess that '*sheep*' is used to refer a white, four-legged, woolly animals, and not animals in general (Clark, 2003; O 'Grady 2006; Ingram, 1988).

Contextual Clues: - another major factor in lexical development is children's ability to make use of contextual clues to draw inferences about the category and meaning of new words. For instance, from the early language acquisition process, children can use the presence or absence of determiners to distinguish between names and ordinary nouns (O'Grady, 2006). In another experiment, three- and four-year-old children were asked to act out the meaning of sentences such as '*Make it so there is /tin/ to drink in this glass (of water)*'. The only clues about the interpretation of /tin/, came from the meaning of the rest of the sentence. It is also determined by the child's ability to comprehend the types of changes made to a glass of water. In this way, many children responded by either adding or removing water, but some even remembered what /tin/ 'meant' two weeks later (O'Grady, 2006).

Meaning errors: - the meanings that children associate with their early words sometimes correspond closely to the meanings employed by adults. In many cases, however, the match corresponds less than perfect. The two most typical semantic errors involve overextension and underextension. In cases of overextension, the meaning of the child's word is more general or inclusive than that of the corresponding adult form. Children frequently overextend the word '*dog*' to include *horses*, *cows*, and other four-legged animals. Similarly, '*ball*' is sometimes used for all circled objects. The other possible type of word-meaning error in early language involves underextension, the use of lexical items in an extremely restrictive fashion. For instance, children might use the word '*kitty*' to refer to the family pet, but not to other *cats*. Or the word '*dog*' might be used for *collies*, *spaniels*, and *beagles*, but not for others (O'Grady, 2006).

Underextension errors often reflect children's tendency to focus on prototypical or core members of a category. The potential referents of many words differ in terms of how well they exemplify the properties associated with a particular concept. For example, among the potential referents of the word '*dog*', *collies* and *spaniel* have more of the properties associated with the concept '*dog*' (long hair, relative size, type of bark, and so on) than do *Chihuahuas* (O'Grady, 2006). In general, children use different mechanisms to establish word-meaning relations in their daily interaction.

2.2.4 Morphological development of children language

Language is composed of sounds, words, phrases, and sentences. At each level, language is governed; at the sound level, phonology refers to the rules of the sound system and the rules of sound coordination. At the word level, morphology refers to the structure and construction of words. Thus, morphological skill is required to understand the proper structure of a word, such as word roots, prefixes, and affixes. Children who are native speakers of any target languages with normal development do have the ability to extend morphological rules to novel nouns, verbs, and adjectives as they grow up. This is evident in children's everyday interactions with friends and young adults (Barry, 2013; Clark, 2003). However, children acquire some morphological rules prior to others. Since children are able to apply rules to a certain noun and verb forms before they are able to extend the rules to other noun and verb forms (Barry, 2013; Kit, 2003; Stolt, 2009).

In line with this, Bittner & *et al.*, (2003) categorize morphological acquisition into three periods: pre-, proto-morphology and morphology proper. During the pre-morphological period, children have not yet acquired a grammatical system. At this stage, children use only forms which are single, unmarked or which are morphologically very simple and one form is used for each word (Bittner & *et al.*, 2003; Clark, 2003). These early morphological patterns of words are first acquired by mere repetition and vary in different languages. In certain languages, children early acquire verb morphology: the infinitive or the 3rd person singular present form, either inflected with a person marker (e.g. Dutch, German), or with the stem vowel (e.g. Lithuanian) or very uninflected form (e.g. Turkish) (Bittner & *et al.*, 2005).

According to King (2010), starting from early age, children produce words such as /mama/ or /dada/ to call their parents. The multisyllabic utterances at this age are categorized as reduplicated (i.e a string of identical syllables, like [ba.ba.ba] or multicolored babbles (i.e., syllable strings with varying consonants and vowels, like [ba.gi.da.bu]). Small children also acquire forms for a small number of general purpose verbs, like 'come', 'go' and 'give', and a few property concepts, like 'nice', 'big', and 'good' (Gleason & Nan, 2009; Radford, 2009). During the time, children's morphology grows vigorously in their productive language, their ability to use inflectional morphology increases within a relatively short

period. Children also begin to increase the use of those inflectional types as they have already acquired (Bittner & *et al*, 2000; Clark, 2003). Considerably, later in their morphological development, children use overgeneralization errors (Marchman & Bates, 1994; Clark, 2003).

The occurrence of these errors is not considered as a sign of productivity. At this time, children are not only using rote repetition patterns, but they are processing the rules behind the morphology, for example, the past tense (Marchman & Bates, 1994; Marcus, 1996) they are applying these rules widely, for example, every time they want to refer to the past. Early language learning is dominantly rote repetition, that is, through hearing. As a result, based on the word patterns they hear, young children tend to treat different patterns in the same way (Radford, 2009). For example, they may form rules for themselves that past tense verbs in English end in /-ed/ and overgeneralize the rule to irregular English verbs, such as 'go' and 'bring'. Therefore, they often go through a long stage of saying 'goed' and 'bringed' before eventually learning the actual irregular forms *went* and *brought*.

This stage is also considered as the end of the one-word era and it is an essential phase for the beginning of morphological development (Bittner & *et al*, 2003). Not all share this view but it has been proposed to indicate children's mastery of several inflectional affixes. Children before they produce a word combination, they mastered different inflectional affixes (Clark, 2003). The occurrence of active morphological elements is roughly observed and children also show a dramatic development in lexical diversity with respect to word classes such as, noun, verb and function word types (Bittner & *et al*, 2003).

The main characteristic of this transition from the pre to the proto morphological period is observed with measurable enrichment of morphological diversity. It is also the time for the existence of the first generalization of morphological structures. Children commonly start to utter their first words between twelve and twenty months and they produce regular morphological patterns of words. However, when they develop their ability to use a more complex expression of their meanings, they produce grammatical morphemes: prefixes, suffixes, prepositions, postpositions, and clitics. For example, on nouns, they start to add morphemes, which indicate a difference in gender, number, and case; on their verbs, they use markers for aspect, tense, gender, number, and persons (Clark, 2003). In certain

languages, the acquisition of different morphological patterns may take a long period. There are three basic reasons to occur this: some morphological patterns appear to be more complex conceptually than others. Others are less frequent; and the nature the target language typology may influence the process of morphological acquisition: suffixes, for instance, are acquired more readily, and earlier, than prefixes (Clark , 2003; Ingram & *et al* ,2006; Lieven , 2010; Slolt, 2009).

In addition, Rubino (2003) states that once children hear the plural form of the regular English noun *dog* is *dogs*; they overgeneralize this form to irregular nouns as well. Overgeneralization of the plural formation rule in English also occurs when children start treating singular nouns that end with the fricative /s/ as plural nouns, i.e. toddlers may deduce that nouns like *house* or *purse* are in plural (Clark , 2009). According to Fashold (2010) observation, English learning children pass through three predictable stages in acquiring morphological elements in a target language: among these features, overgeneralization commonly occurs in the second stage. First, children use the correct past and present tenses of verbs (e.g. *go* and *went*). However, they do not relate the two forms as belonging to the same verb. They rather treat the two tenses as separate entities in their lexicon. Then, in the second phase, they construct a rule for forming the past tense and begin to overgeneralize by applying it to irregular verbs, like ‘*go*’ becoming *goed* in the past tense instead of *went*. Finally, they move to the last stage where they learn the exceptions to the past tense rule and acquire, thus, the ability to apply this rule selectively.

An interesting feature of morphology is its developmental sequence. It is that it seems to be at least partly independent of the frequency in which the various morphemes occur in adult speech. For example, the determiners /the/ and/ a/ are the most frequent morphemes in the children’s environment even though they are acquired relatively late. Frequency by itself cannot explain developmental order, although it may have some role to play in conjunction with other factors. It is also clear that pronunciation, by itself, is not decisive either, since the three /-s/ morphemes are acquired at different times. What, then, determines the order of acquisition of non-lexical categories and bound morphemes (O’Grady, 2006).

As Bittner et al (2000) the morphological period arises when the first inflectional differences come to be regular and children use the relevant morphological patterns to new

lexemes. At this point, the grammatical structure is classified into noun and verb domains. There are three basic factors, which affect the acquisition order of inflectional types and grammatical morphemes (Clark, 2003; Ingram, 1999). Primarily, some inflections are semantically more complex than others (Clark, 2003) are. In English, there are some inflectional elements, which convey meanings perceived by other inflections. The more semantically complex grammatical morpheme, the later it is acquired; for instance, the English past /-ed/ is acquired earlier than auxiliary is, '*was/were*'. Likewise, the proper complexity to express particular differences fluctuates between languages. The concept of number, for example, one versus more than one is normally acquired between the ages of 1; 6 and 2; 3. However, as Clark (2003) describes it, numbers can be described differently in different languages.

Some languages use only one inflection to mark plurals on nouns and have some exceptions to learn by repetition. On the other hand, other languages may have more complex systems to indicate the plural forms: in Russian (Gor, 2000), for example, plural forms of nouns depend on the gender and phonological form of the noun. However, the morphemes of number are acquired relatively early, it also takes a longer period before children can produce this concept properly with appropriate forms for each noun type for each gender and case (Clark, 2003). Frequency of input may also affect the acquisition; children are more familiar to some morphological patterns, which appear to the greatest number of stem-types and have a tendency to master the more often used procedures earlier than those used less in the target language (Bittner & et al, 2003; Clark, 2003; Ingram, 1999; Slolt, 2009).

In this regard, Clark (2003) explained that the process of evaluating morphological patterns and inferring meaning is a requirement for the acquisition of inflectional morphology. It is also essential in the acquisition of word formation. Children start to apply a certain word formation process at nearly the same time as their first inflections. In particular, they produce novel compound forms from simple stem combinations. Then, during their second year speech production, some inflectional patterns become apparent; children also start to produce a few derivational affixes in novel word forms. The occurrence of such derivational and compound morphemes is becoming numerous between ages three and four (Clark, 2003:374). The major word formation processes in English are derivation and compounding both emerge early in the acquisition

2.3 Stage of language Acquisition

It is argued that all human beings acquire language; there are numerous languages in the world and human beings seem capable of acquiring any of these as a native language (Stork and Widdowson (1974). According to Kess (1993), there is no normally developing child who is unable to learn a native language. They acquire largely at the age of five and six. It is also a predictable phenomenon that children acquire their first language almost in the similar way through process and systematic. Kess adds his point that children acquire their native language at different stages and each stage maximizes children's language development. Stages of language acquisition have the same pattern across the languages. The principles in all these successive stages may be universal to all languages. These stages of language acquisition are governed by two major contributing factors: innate potential for language acquisition and linguistic environment.

According to Baht (1967), children at an early age may produce sound or sound combination appropriately at one time but later appear to be unable to produce it again. As Bhat& Clark (2009) also indicates that English-learning children start pronouncing the adult word ' *dog* 'or its diminutive ' *doggy* ' as [do], but then reduplicate the consonant /d/, as in [dodi]. Once they are able to produce the sound /g/, they start pronouncing ' *doggy* ' as [gogi]. Only after this stage, they master the adult sequence *doggy*. The shift from [dodi] to [gogi] occurs because children can appropriately produce a single CV syllable and reduplicate it, but it is hard for them to produce a CVCV sequence with two different consonants in succession. In a general view, Clark (2009) and Akmajian et al (2001) classify children language acquisition into three developmental stages.

The first stage is the babbling stage that begins at the infant's age of around five to six months. At this stage, children utter sounds and sound sequences (syllables such as ba, ma, and ga) that are meaningless but recognizable as being more language-like than earlier infantile cries. All children go through a babbling stage, regardless of language and culture. The similarity of sounds children produce at this stage is suggested that humans are biologically predisposed to go through this phase (Clark 2009; Akmajian et al. 2001).The second stage is the one-word stage, which starts in the late part of the first year of life or the early part of the second year. At this stage, children start to use recognizable words of their native languages. The words cited in Akmajian et al. (2001) for English include the

names of familiar people, animals, and objects in the infant's environment (like *mama*, *dada*, *kitty*, *doggie*, *ball*, *bottle*, and *cup*) and words indicating certain actions and demands. Viewed from the perspective of adult grammar, the words that occur at this stage include simple nouns and verbs. Very few or no functional words, like prepositions, articles, auxiliary verbs, interrogative words, are acquired at this stage (Brown , 1973).The last stage is the multiword stage, which starts when the children reach the age of 2:0 to 2:7 months. As Akmajian & et al (2001) state children begin to express a variety of grammatical and conceptual relations at this stage. They begin to use word order to indicate certain relations, for example, possessor followed by possessed or subject followed by predicate. Generally, children start to show the distinction between sentence types, such as negative sentences, imperatives, and questions at this stage. As children, enter the later multiword stages, additional Wh-words, such as why, who, begin to enter in their language. They also begin using yes/no questions. On the other hand (Stern , 1929; Ingram , 1989; Brown , 1973) summarize stages of acquisition as follow;

Single word stage: The child uses single-word utterances.

Early sentence stage: (1- 2.5 at onset). The first multiword utterances appear, although single-word utterances are still most frequent utterances at onset. Most sentences are incomplete, and consist of mostly nouns, verbs, adjectives, and adverbs.

Short sentence stage :-(commonly around age 3;0). The acquisition of inflections and grammatical words begins. The ALS ranges from 3.5 to 4.5. Incomplete sentences become less frequent, yet compound and complex sentences are rare.

*Transition stage:*it is a period of change where the child moves from incomplete to complete sentences. The ALS is around 5.0. Little is known about this stage.

*Complete sentence stage (around age 4; 0-5;0):*most sentences are well-formed, and complex and compound sentences become more common.

2.4 Impact of background factors on children language acquisition

There are a number of factors, which affect the growth of children's language. Linguistic inputs, gender, and parents' socioeconomic and educational level are some that are considered as the influential factors on children's language acquisition process.

2.4.1 Gender

One of the most commonly reported factors related to difference in language acquisition is gender. As several studies of language acquisition have confirmed, gender is one of the influential factors on the development of children's language. From, the two gender, girls have better performance ,especially, in speaking (Fenson et al.1994; Bornstein, Hahn & Haynes , 2004; Bornstein & Haynes ,1998; Bornstein , Haynes & Painter, 1998; Bornstein , Leach & Haynes , 2004). Girls have better comprehension and production ability than boys (Fenson& et al, 1994), and in the linguistic skills, in general, gender has a clear effect on language development (Bornstein, Hahn & Haynes , 2004). According to Hahn and Haynes (2004) report at the age five years, girls regularly out performed boys in language measures. In addition, Hahan and Haynes (2004) report indicates that girls are faster than boys in their lexical development of their speeches are. Jennische and Sedin (2003) and Scanavino et al (2006) similarly confirm that boys have smaller lexicon size than those of girls. Generally, different language acquisition researchers try to show gender is likely an influential factor in language acquisition process with the integration of others.

2.4.2 Social interaction

Social interaction is a significant factor in children's language development. When children interact with others, they show all round development. Interacting with their surroundings provides children a great input. In line with this, Gleason's (2005) acknowledged that language could be acquired in early interactions; when children take turns and express their ideas. As a result, this life long process of development depends on social interaction. Parents are the first social groups to make conversation with children. As children's language development starts at home with their parents. Their parents are the first teachers for their children (Huang , 2004). Parents, especially mothers, can shape children's language and foster language development.

Parents' input may affect children's output; in children's language development, parents' language input is not a sole variable; there are differences in socioeconomic status and education level of parents. It is assumed that differences in socio- economic status and education have influenced children's language acquisition process. According to Hoff-Ginsberg (1991) observation of low-income mothers and children, his research indicates that low income and working class children may not have high interaction opportunities with

their parents. Moreover, Kagan and Tulkin (1972) declared that children in middle class families get continuous interaction and treatment and their phonological and lexical development is better. Generally, socio- economic status and educational level of parents have close relationship with children's language acquisition (Brown , 2000).

2. 4.3 the impact of IDs in language acquisition process

The developmental speed of children may be different in almost every dimension presumably. Language development in particular variation is greatly viable. Different researchers have forwarded their observational viewpoints on the impact of individual differences (IDs) in first language acquisition. They also examine from different perspectives. ID is one of the potential factors, which reveals the developmental dynamics, and architectural constraints of the linguistic system. Research on IDs from children's linguistic input, early speech perception, and vocabulary and grammar development shows variability of producing different phonemes and lexicons. Children's speech production ability may vary due to the linguistic environment; the amount of input children receive from their surroundings fosters children's IDs in the language acquisition process. As different researchers suggested, a large amount of inputs predicts a rapid rate of lexical development (Henrich, et al. 2010; Seamus Donnelly, 2020; Liu et al, 2003; Golinkoff et al, 2015).

2.5 Previous research on children language acquisition in African context

Children's language acquisition is not a well-researched area in most African languages. In my search of literature, I found some research papers, which specifically describe children's language acquisition .Kamil Ud Deen (2002) on his PhD dissertation, on "The Acquisition of Nairobi Swahili: The Morphosyntax of Inflectional Prefixes and Subjects". His investigation describes the developmental path of object agreement, children who speak Nairobi Swahili do not have knowledge object agreement, and their speech met restriction. Research by Takeida (2011) also shows the theoretical perspectives of child language development in relation to caregiver-child interactions. Takeida emphasizes the significant role of caregiver-infant interaction. He reports the role of caregiver- infant interaction as an important input that fosters the development of child's language. In addition, Demuth et al (1993) also made an observation in one of the Bantus languages, Sesotho's inflectional morphology, and their finding direct those children who are acquiring Sesotho passive

through three non-discrete stages. At first, children use bare verbs, which are inflectional suffixes, second children typically utter shadow vowel [a] and [e], and children acquire full-inflected forms in Sesotho. Demuth (1989) & Demuth et al. (2010) also show the Sesotho verbal passive tends to be acquired earlier than other verbs.

From local researchers, Ababayehu (2008) shows the variants of the alveolar trill /r/ and other developmental realizations of Amharic-speaking children. In addition, in his PhD dissertation on 'Speech production of Amharic Speaking Children with Repaired Cleft Palate', he indicates different phonological features observed in children's with cleft palates, speech production. He also reports the commonness of the situations across linguistically and the presence of language specific speech production characteristics related to the phonetic and phonological system of Amharic language. In addition, he indicates how various strategies are employed by children with cleft palate in order to manage the particular speech production challenges.

In addition, Abenezer (2013), in his M.A thesis, offers significant information about the nature of Baby Talk and his finding reveals that some features of baby talk and word formation of small children. As his research report indicates, Amharic word does not have a word which starts with the consonant /p/ or the vowels /i/ and /u/, but in Baby Talk such a word formation was observed like [ɲappa] means 'food'. Likewise, there are a few research works in other Ethiopian languages, for example, Tariku (2019) has attempted to describe the acquisition of Oromo phonology. His reports indicate that at what age of Afana Oromo speaking children acquire most of the consonants and vowels. According to his finding most of Afan Oromo consonants and vowels are acquired at the age of three but the bilabial stops, alveolar fricatives and ejectives are developing till the age four. His report also points out the unusual incidence of clusters retention at medial position in Afan Oromo speaking children's speeches. Ababayehu and Demeke (2017) also described those aspects of phonological development in Sidamu Afoo speaking children. They tried to relate the different phonological features observed in Sidaamu Afoo with other languages. Their report also includes language specific features like ejection of the implosive /d/. As described, in Sidaamu Afoo, the ejectives are easier to be acquired than implosives. Generally, these researches provide significant information about the local languages description and build up local children's languages profiles. However, there are always gaps

to be filled by different researchers in different local languages acquisition in general and different components of the languages in particular.

2.6 Theoretical Frame work of the study

This study aims to describe the acquisition of phonology and lexicon among typically developing Amharic-speaking children. The study specifically focuses on the development of Amharic phonemes and class of lexicons and their frequency occurrence. The result from the current study is believed to contribute to the knowledge of language acquisition in general and the acquisition of Amharic phonology and lexicon in particular. Therefore, this, the theoretical framework in this section is written as follows. It was also discussed based on the most common types of theoretical frameworks/approaches/ used in language acquisition research. In language acquisition research, the major theoretical argument sets between two frameworks, rationalists, and impressionists. In this regard, it has tended to focus on distinguishing between the two theoretical frameworks that have proposed different accounts for the acquisition of phonology and lexicon (Bybee, 2006).

According to nativist (rationalist) approaches, the properties of UG constrain the course of language acquisition from the very beginning of life; in other words, the ability of children to acquire their target language is genetically predisposed and endowed by (Sibanda, 2014). This approach theorizes and views the development of phonology and lexicon in relation to the model of the target language, which deals with the innate grammatical rules, categories, principles, and parameters. The rules are presented in UG to assist children to develop the sound system and the lexical units in natural patterns. According to nativist approaches, children start to perceive, comprehend, and produce the target sound system creatively when they begin acquiring the language (Beckman & Edwards 2000, Pierrehumbert, 2003).

On the other hand, 'Usage-based' (impressionists) theory believes that children's language development starts when children get exposure to the environment and experience of the target language. This helps them to build up the linguistic systems gradually with increasing linguistic capability. 'Usage based' approaches propose universal cognitive abilities of children, which they use to classify and identify similarities and differences observed in the environment, especially, in the speech exposure to the child (Bybee, 2006). These cognitive processes include categorization, memorization, and the cognitive capacity to connect form

and meaning (Bybee, 2010). They also include the functional aspect, ‘intention-reading’, and, on the grammatical aspect, ‘pattern finding’ (Tomasello, 2003). The experiences that happened in a continuous interaction with the environment placed as stored memory. Generally, ‘Usage-based’ approaches have broad views that make language acquisition as a mechanism, which is possible to go beyond linguistic experience (Behrens, 2009). According to Penke (2012) within a constructivist paradigm of language acquisition, the input characteristics, such as the frequency of specific forms and the constructions in the input and the typological characteristics of language’s development systems determine the acquisition process. The focus of Usage- Based approaches is on the construction instead of rule based grammatical items combined in the process of speech.

In addition, the constructivist theory predicts that the acquisition of phonology and lexicon gradually develops, with the earliest uses restricted to rote-learnt high frequent forms. Pertaining to input frequency, some literature acknowledge the input frequency of the linguistic elements that plays a very important role in the acquisition. Sibanda (2014) suggested that the words that occur more frequently in the environment of the child are acquired early. According to constructivist idea, phonemes that occur more frequently within the environment of the child are acquired early (Sibanda, 2014). This tells us, the development of phonology and lexicon depends on the frequency of input that children get from their surroundings.

Whereas, the ‘Ecological Theory of Language Acquisition (ETLA)’ proposes that the development of language and its acquisition follows similar processes. The theory focuses on the connection between cultural and genetic developmental processes. The theory grounded its proposal on how culture/environment and genetic developmental process guide the human language and children’s language acquisition (Lacerda and Sundberg, 2006). Language acquisition is a result of children’s contact with the environment and ‘the multi-sensory information on the basis of physiological requirements. Some basic assumptions are decisive for language development: firstly, the obtainability of multi-sensor information; secondly, the general ability to accumulate the surrounding information and the child’s capacity for social interaction (Lacerda and Sundberg, 2006). and the development of children’s phonology and lexicon integrally determined by the surround exposure and

their genetic capability of acquiring the language. In relation to this theory, Soel-Gammon (2009) describes phonological development as it is determined by two major contributing factors. He noted:

Phonological development involves both biological and cognitive factors that interact with one another during the period of acquisition. Babies must learn to produce movement patterns that yield sound sequences similar to those of the adult speakers in their environment. They must learn to do this in spite of differences in vocal tract configuration and speed and precision of motor movements, especially movements involving the tongue. Thus, anatomical and neurophysiological constraints in the human infant place natural limits on the range of variation that can occur in early vocalizations (2009:3).

In relation to lexical acquisition, different theories proposed different viewpoints. Children naturally acquire a large number of words in orderly manner in sentences while interacting with their surroundings. However, researchers consistently raise different questions to understand and describe how children acquire words and what challenges they encounter during the acquisition process. According to connectionist theory, lexical acquisition can occur through lexical segmentation, which can be related to children's language acquisition, and the amount of input stored in the neural network of language (Davis, 2000). As the theory indicates, children through time, they are able to have the capacity to segment word-forms from connected speech, which is already stored in a neural network.

Whereas lexical development as perception and production, it is holistic. Lexicons are acquired from the whole units of the implementation of a word as a whole, describes a certain parts of the lexical structure that could have a better depiction than others could, and it indicates that words are acquired as whole units (Vihman & Keren-Portnoy,2013). According to a whole-word approach proposal, lexical acquisition passes through three different stages .The first is item-based word learning, which holds the acquisition of lexicon as items (examples) which focuses on learning words from the whole Vihman & Keren-Portnoy, 2013). The second stage is distributional learning which indicate how acquisition of sound patterns is affected by the distributional and neighboring sound patterns The part of a word is the basis for phonological demonstrations (Vihman & Croft,

2007; Bybee, 2001; The third stage is generalizations; generalization over the phonological patterns of lexicon are called ‘templates’ (Zamuner et al, 2004).

Despite how lexicon are acquired in children’s language development process, there are also debatable issue, which class of lexicon is acquired first which comes next and this situation is cross linguistically the same or not. As the knowledge gained from the theoretical part, there are two major debates in relation to composition of children lexicons. in this regard Gentner (1982) proposed that noun – bias approaches of lexical acquisition process which describes that nouns are the first to be detected and covered a large portion of children’s speeches (Kim *et al*,2000) His approaches had acceptance by different researcher (Bornstein *&et a l*, 2004; Kim& *et al* , 2000). However, Gentner(1982) proposal was argued by Korean researchers that nouns-bias approach is not cross-linguistically the same rather it is specific to a certain languages environment. As their argument indicates children lexicon is build up with the type of input, they get from their surroundings.

The theories of lexical acquisition have different standpoints, they gives valuable insights, information and descriptions about the interaction of different elements in the process of children’s language acquisition process. Particularly lexical acquisition is one of the major accomplishments in children’s language development. This development also triggered by children’s innate capacity and the exposure they get from their surroundings. In relation to this Soel-Gammon (2009) have also shown how children lexical acquisition is guided by the interaction between nature and nurture.

Infants enter the world with the biological capacity for understanding and producing speech, and social interactions between infants and their caregivers create a world in which language becomes the primary means of communication. By the end of the first year, babies with typical development are able to produce a few words; these early words often resemble paralinguistic, non-meaningful vocalizations such as [baba] or [mama], which can gain word status by associating sound with meaning. American children aged 2; 0 have a productive vocabulary of 250 –350 words (mean of (Soel-Gammon , 2009:5).

The other factor that should be taken into consideration in the process of language acquisition is the development of children’s brain system. Pertaining to this, Behrens & Parker (2010) stated that the development of language is highly interwoven to the

development of neural systems because well developing brain easily accumulates the linguistic input it gets from the surrounding, arranges, and organizes that input into the lexicon and grammar of their native language. In addition, the brain and its neural development and capacity of accumulating inputs and organizing them into meaningful units are also influenced by children's variability and age (Behrens & Parker, 2010).

Generally, a number of studies have been done in language acquisition areas in different parts of the world and most of them are domain specific or take sub-section of the domain. As a result, the relationship between language domains in the field has been given little attention. Researchers have attempted to study exclusively phonology, the other on morphology, syntax, or lexicon and they have contributed indispensable and rich knowledge about the ways children acquire phonological patterns, morphological aspects of the verbs and nouns system and the composition of the lexicon. However, research is also needed, which describes the overlap between different domains of language. In line with this, this research is designed to describe the acquisition of phonology and lexicon and their interactions in typically developing Amharic speaking children's speeches. The research also used pragmatically mix of different approaches as they were considered helpful for a better theoretical framework adaptation and data analysis for the current study.

Summary

In this chapter, it was attempted to review the general theories of language acquisition, the nature of models and approaches which address phonological and lexical acquisition of children's language. It also describes the nature of children's phonology, lexicon, and morphology cross-linguistically. The composition of lexicon, word-meaning relation, and the impact of background factors on children language development were briefly reviewed. Some researches in African context were also treated. Generally, this chapter has provided significant information about children's language development cross-linguistically and the next chapter has overviewed the nature of Amharic language.

CHAPTER THREE

AN OVERVIEW OF THE AMHARIC LANGUAGE

3.1 Introduction

A meaningful analysis of children language is impossible without a clear understanding of the nature of adult/standard version. Therefore, in this chapter; an attempt was made to describe the various feature of Amharic language. This chapter is divided into two major sections. In the first section, it discusses some of the social and cultural aspects of the language and the second major section focuses on the description of sound system, lexical, morphological and syntactic features: it deals with the formation of words, derivational, inflectional, and compounding.

3.2 Social and cultural profile of Amharic

Amharic is one of the largest languages, which belong to the Semitic branch of the Afroasiatic family (Sieber, 2005; Gasser, 2011). Genetically, it has a connection to Hebrew, Arabic, and Syrian. It has the highest number of speakers next to Arabic. According world Fact book (2020), 29.3%, of the people speak Amharic in the country. Currently, Amharic is the official working language of the Federal Democratic Republic of Ethiopia and some of the regions within the federal system. Amharic has the highest number of speakers, using the language as a mother tongue. According to the ethnological information resource webpage, 48% of the urban and 25.7% of the rural populations of Ethiopia speak Amharic as L1. In addition, in urban area, Amharic is particularly a dominant language, which is spoken by a considerable number of people as L2 (the CSAE Report, 2007).

It is believed that Amharic has major five dialects: Gondar, Gojjam, Wollo, Menz and the Addis Ababa (standard') dialects ((HabiteMariam, 1973; Abraham, 1955; Meyer, 2011). The first two vernaculars are spoken in the northwestern part, the Wollo variety is spoken in the northeastern part of Ethiopia, and the Menz Variety is spoken in northern parts Semen Showa Zone of Amhara Region. The Addis Ababa dialect is spoken in Addis Ababa and the regional cities and towns have their own dialect. Addis Ababa dialect is also used in medias and instruction purpose (Ababayehu 2013). In addition, Meyer (2011) described that Amharic spoken by people in multilingual areas and occupational group; it is as different as

to be treated as distinct varieties. Most documents in the country are written in Amharic. There are also a large number of electronic and online accessible Amharic documents (Wondwossen and Gasser, 2012). Literature in Amharic has a long-standing history; it went back to seventeenth century (Ludolf, 1698; Podolsky Isenberg, 1991). It is also well-described language. It is linguistically described by ,Armbruster (1908), Dawkins (1960) ,Bender (1968), Cohen (1936,1970) ,Taddese (1972) ,Habtemariam (1973), Podolsky (1991), Hayward (1992), Leslau(1995),Getahun (1997).Mengistu (2000), Baye (1995, 2008), and Girma (2009). The presence of these studies and its official uses for many years have contributed a lot to the language to be well-documented language in Ethiopia.

3.3 The sound system of Amharic

Amharic exhibits a complex sound system like many Ethio-Semitic languages. Mainly, the sub-segmental features of labialization, palatalization, and glottalization (Bezza, 2013) are the prominent features of the phonology and morphology of the language. The sound system of the language below provides and focuses on the segmental, none, -segmental features and the syllable structure of Amharic.

3.3.1 Phonemes

Amharic phonemes have been an arguable issue as different scholars propose different suggestions. According to Hayward and Hayward (1999), Amharic has 35 consonants; other scholars tried to show (Appleyard, 1995; Baye, 2008) Amharic has 30 consonants and condensed to 27 consonants. In addition, Mulugeta, (2001) has brought down the number of consonants to 21. Regarding consonant phonemes, there is no disparity about the phonemic status of the labials: /b, f, m/, the coronals: / t, t', d, s, z, n, l, r/; the velars: /k, k', g / and the glides: /w, j, h/. The debate mainly focuses on the labialized consonants /k^w, k'^w, g^w, h^w/ and the palatalized consonants: / tʃ tʃ', dʒ, ʒ, ɲ/ and the uncommon sounds, i.e., the voiceless bilabial stop /p/, bilabial ejective /p'/ and voiced labio-dental /v/, which are confined to words of foreign origin. (Abebayehu, 2013).

Table 1 Amharic Consonant phonemes

	Bilabial	Labio-dental	Dental	Alveolar	Postalveolar	Palatal	velar	Glottal
Stops	p b		t	d		k	k g	ʔ
Affricative					tʃ dʒ			
Nasal	m			n		ɲ		
Fricative		f v		s z	ʃ ʒ			h
Trill				r				
Approximates	w					j		
Lateral				l				
Ejectives stops	pʼ		tʼ				kʼ	
Ejectives affricative					tʃʼ			
Ejective fricative				sʼ				

Adopted from Abebayehu (2011)

As it is explained briefly above, scholars do not have agreement concerning the status of /p/, /pʼ/ and /v/ since the occurrence of these sounds is limited to loan words. Excluding these sounds from the phonemic inventory of Amharic just because of their origin would lead to broader questions as to what is original to Amharic and what is the origin of Amharic itself. Regarding this, Baye (2008) explains that although various philological, historical and comparative researches were carried out to find out the origin of Amharic, no precise answer has been given until today because Amharic like the other Semitic languages of Ethiopia has great language contact; different languages of Ethiopia have influenced it typologically. Concerning the question of originality of Amharic, Abebayehu (2013:78) claims, “Originality is the only variable to consider including or excluding aspects of the language, then not only the sounds in question but the status of the entire language will also be in question.” Thus, as /p/, /pʼ/ and /v/ have already been there in the system of the language for a long time and hence have been and are still being learned by children with no problem special to them; they can be considered as phonemes of the language. These sounds are included in the consonant chart. However, the consonant chart excludes the labialized consonants, which is why they are transcribed in phonetic bracket [b^{ow}] [k^w], etc) since they are used alternatively with consecutively appearing vowels as diphthongs. Likewise, there is a dispute among scholars about the number of vowels. Scholars (Appleyard, 1995; Mulugeta, 2001; Baye,

1995, 2008) agree that Amharic has seven vowel phonemes but some others (like Cohen 1970; Podolsky, 1991) the number goes from three to nine.

No matter how controversial the numbers of consonant and vowel phonemes of Amharic, in this study the vowel phonemes indicated below have been adopted, as they are functional in the language sound system. This vowel chart coincides with Appleyard (1995), Mulugeta (2001) and Baye (1995 &2008). In addition Ethiopian script the *fidal*, the fundamental forms of consonants are presented with the seven vowels as Abestayehu (2011) mentioned below.

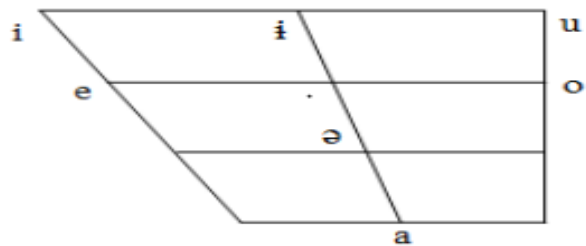


Figure 1 The Amharic vowel phonemes

3.3.2 Non-Segmental Features

Amharic sound system characterized by segmental and non-segmental features. Like the segmental phonetic features which consist of particular consonants, the sound system of Amharic has non-segmental feature of length, which shows segments of the same articulatory features which can be realized based on the duration of time they take to be articulated. A consonant may be articulated relatively in a long duration (germination) to compare with its normal length. Germination of consonant in words may bring change of meaning as in *bəla* “say” and *bəlla* “ate”, *wana* “swimming” and *wanna* “major”. Most importantly, germination plays a role in contrasting the patterns of derivation and inflection in the verb system of Amharic (Bezza, 2013).

Despite Abraham (1942) unaccepted claim that Amharic is tone language, researchers (Mulugeta, 2001; Tilahun, 2002) have agreed that in Amharic, it is not common to see particular pitch patterns related with words or morphemes which help to realize tone or stress as essential phonological features. However homophonous forms of various grammatical (lexical) categories such as: /*jiro*/ is a verb which means “(he) renouncing”

and /jiro/ is noun “powder’ from roasted pea”, may be distinguished by relative pitch in the intonation of their clause Bezza (2013). Moreover, variation in pitch is important to identify functions of phrases and clauses. Regarding this, Bezza (2013) tries to show the importance pitch in Amharic to distinguish the function of words in a sentence “statements and yes/no questions are composed in Amharic with the same words in the same order. The difference is marked by the pitch trend along the articulation of the words”. Thus, the role of non-segmental feature of pitch in Amharic is determined by intonation.

3.3.3 Syllable structure

The philosophy of simplification and difference of articulation is maintained by means of the rules and order of segments; namely, phonotactic rules imposed by the syllable structure of a language. The following examples demonstrate the syllabification of Amharic consonants and vowels. Bezza (2013) summaries the syllable structure of Amharic.

Table 2 Syllable structure of Amharic words

a	gəbəja	market
b	dɪŋaj	Stone
c	ʾaf	mouth
d	ɪbab	snake
e	lɪbb	heart
f	kʾɪrb	Near

As it is shown above, and Baye (2000) listed, the following possible basic syllabic types: CV, CVC and CVCC were observed in Amharic. However, the initial vowels in those syllables as in (c) and (d) are obviously pre-glottalized suggesting a remnant glottal feature. It is also important to note that the only vowels that can occur in the initial positions are the central vowels /i/ and /a/. According to Podolsky (1991), those vowels bear gutturalization. If there is other vowel initial in words, they are borrowed. There are no diphthong vowels and no contrastive vowel length in the language. The heavy syllable type CVCC is limited to word final positions. The branching coda of those syllables may represent a geminate consonant as in (d) or a cluster of different consonants as in (f). Impermissible clusters of consonants are separated by the epenthetic vowel /i/.

3.4 Features of Amharic lexicon

Amharic is one of morphologically rich languages and it manifests a root-pattern morphological phenomenon (A root is a set of consonants also called radicals) which has a basic lexical meaning. A pattern consists of a set of vowels, which are inserted among the consonants of a root to form a stem. In addition to this non-concatenative morphological feature, Amharic uses different affixes to create inflectional and derivational word forms. Some adverbs can be derived from adjectives. Nouns are derived from other basic nouns, adjectives, stems, roots, and the infinitive form of a verb by affixation and intercalation (Martha, 2011; Gasser, 2012; Nega, 2002)

3.4.1. Lexicon formed by root –Pattern morphology

Like other Semitic languages, words, in Amharic, have a unique underlying root-pattern morphology (Mengistu, 2002). Amharic words are derived from combining patterns and core root consonants. The former usually consists of vowels and supporting consonants and the latter carries the core semantic meaning (Bezza, 2013). The complete meaning of a given word obtained only from joining both, since the pattern also carries the meaning related to the affixation form. The main point here is that a given word can have a large number of related words sharing the same semantic core meaning. Roots are the structural frames of words formed with sequences of frequent three consonants; some words have two to five consonants known as radicals (Meyer, 2011). The patterns are the determinant of the difference in length and repetition /reduplication of the radicals. In addition, to root-pattern variation, Amharic makes use of multiple morphological processes such as affixation, reduplicating, and compounding to form new words.

To see root-pattern morphology, it is better to examine the Amharic root /sbr / means 'break', when we add the pattern/ə-ə/ among the radical we get the stem /səbbər-/. Attaching the suffix /-ə/ at final position also gives the word /səbbərə / 'he broke' which is the first form of the verb (third person masculine singular past tense) as in other semitic languages (Bender et al, 1976). In a similar way, but without geminating the second consonant and placing the suffix/-a/, we get the process nominal word /səbərə/ which means 'breaking'. The pattern /ə-a/ together with the suffix /-i/makes agent nouns, as in /səbari/ 'one who breaks. The same base with the suffix /a/ gives us the participle /səbara/'broken'. Inserting the vowel /i /between the first and the second and the vowel /-ə/between the second and

third consonant results in a jussive stem /sibər-/. Attaching the prefix /mə-/ to it forms an infinitive verb /məsbər /‘to break’ (Wondwoson, 2017). The imperfective stem is derived from the root by putting in the vowel/-ə /between the first and the second consonants.

Usually, the form taken by the stems of a particular class is indicated by a sequence of Cs and Vs, called pattern. For example, CVCCVC, CVC, and CVCC are patterns that represent the perfective, jussive, and imperfective stems of tri-radical verbs, respectively (Atalech & Lars, 2007; Wagner, 2011). Similarly, the following table shows root-pattern morphological feature of words of Amharic.

Table 3 Derived words and their Lexical categories

Root f-l-g	Derived Form	Lexical Category	Gloss
	fəlləgə	V	He needed (he searched for)
	fīləga	N	searching
	fəllagi	N	someone who searches
	məfələg	V(inf)	to search
	təfəlagi	N	a person who is wanted
	asfəlagi	A	Necessary

The derivation is carried out by various types of affixation, including prefixes, suffixes, and infixes. In Amharic, like other Semitic languages, majority of the words (nouns and verbs) have three root consonants as the above table shows. Many words can be formed from the root like /f-l-g/ and the base /fəlləgə/ he searched (or he needed), a number of words are derived from this root have semantically related meaning but different lexical categories. In addition, some (nouns and verbs) have four; and some (nouns) five consonant phonemes which form their base from other words, for example, from the root /t-m-r/, by adding the pattern / ə-a-ə /we can get the base /təmarə/ (he learnt) (third person singular masculine past act) verb.

Table 4 Formation of words

No R. CC	Root	Base	Derived As-/a-
2	m-t'	mət't'ə	asmət't'a/ amət't'a
2	b-l	bəllə	asbəlla/ abəlla
3	t-m-r	təmarə	astəmarə
3	n-d-t	nəddədə	asnəddədə/ anəddədə
3	t-l-k'	təllək'ə	astəllək'ə/ atəllək'ə
3	k'-l-l	k'əllələ	ask'əllələ/ ak'əllələ
3	?-m-r	amarə	asammərə

As indicated, the imperfective and gerundive functions are described by distinctive pronominal affixes. However, the other pronominal affixes for the imperfective and the imperative are almost the same. The two forms are identified by their distinct conjugational patterns.

3.4.2 Words formed by Derivation

According to Baye (1998), there are five common parts of speech in Amharic: nouns, verbs, adjectives, adverbs, prepositions and conjunctions. Of the five parts of speeches, Prepositions and conjunctions are not productive and there are fewer in number. Adverbs, in Amharic, are also less productive. They are not inflected however, some adverbs can be derived from adjectives, for example, /kifujna/ 'severely or seriously' is derived from the adjective / kifu/ 'wicked' by suffixing /-jna/. Thus, the discussion mainly focuses on derivational and inflectional morphology of the remaining the four parts of speech, namely nouns, verbs, adjectives and adverbs (Bezza, 2013).

3.4.2.1 Verb

The verb is one of the main parts of speech, which is found at the end of a sentence in Amharic language. It describes the action and the existence of state or condition. Verbs in Amharic language have very complex morphological features. It may consist of a stem and various prefixes and suffixes. They are also inflected for tense, person, gender, number. Generally, a verb may convey different information due to its derivational and inflectional morphemes, which are attached as prefixes and suffixes; verbs have a complex morphology (Baye, 2008).

3.4.2.1.1 Derivation of Verbs

One of the unique features of verbs in Amharic is derivation. Derivation of verb from other parts of speech is not common. According to Anbessa and Hudson (2007), verbs are called denominals, which are derived from nouns by taking just the consonants of a noun and considering them as a root. A case in point, the verb /mærrəzə/ 'he poisoned' and /tərrətə/ 'He told a story' are denominal verbs derived from the nouns /mərz/ 'poison' and /tərət/ 'story', respectively (Bezza, 2013). However, regarding the history of denominals, Anbessa and Hudson (2007) tried to show its uncertainty. They explained that even if the denominals are considered to be derived from the noun, it is observed that verb root is from the consonants of the nouns. Therefore, it is likely to assert that Amharic verbs are commonly derived from root consonants, which bear the central lexical meaning, by intercalating vowels and/or using different derivational morphemes.

However, there is unsolved disagreement amongst scholars about the number of root consonants in Amharic verb. Bender and Hailu (1978), Leslau (2000) argue that root consonants in Amharic verbs vary from one to six. In this regard, Leslau (2000) grouped verbs as bi-radicals (abbreviated tri-radicals), tri-radicals, quadri-radicals, abbreviated quadri-radicals and plural-radicals (those consisting of more than four consonants) based on the number of consonants that show up in the surface forms of the verbs. Dawkin (1960) grouped verbs into five categories based on the number and features of the consonants in the verbs.

- Category I: Uncontracted three-radical verbs(CCC)
- Category II:Contracted three-radical verbs with a vowel instead of the last radical (C)
- Category III :-Contracted three-radical verbs with a vowel instead of the last radical
- Category IV :- Uncontracted four-radical verbs
- Category V:-Contracted four-radical verbs with a vowel instead of the last radical

Although Dawkin (1960) and Leslau (2000) classified the number of root consonants in Amharic verb into five, Baye's (2006) argument shows different direction. Concerning Amharic verbal stem, he claims that stems (roots) consistently have three radicals; however, the difference in number of consonants occurs on the surface because of the reduction and

extension of one or more radicals. According to Baye’s claim, verbs, which have, less than three consonants in their base form have gone through the root-reduction process. Others, which consist of more than three consonants in their base words, have been obtained through root- extension process. Here, it is possible to say that Amharic verbs range from one to six consonants due to root reduction and extension processes

Concerning reduction, Baye(1999 &2006) says that the reduction process involves reduction of the laryngeals and glides (h, y, w,?) and two other weak radicals (b and r). The extension process is divided into internal extension (germination and reduplication) and external extension (epenthesis). Discussion on the nature of Amharic verbs and the number of (three, less or more than three) consonants is crucial in this study as it helps to know the nature of verbs, which are exhibited in children’s language. Verbs classified into three types depending on the germination pattern of radical. The first category of verbs like/ mkʀ/ for /mækkərə/ the penultimate radical geminates in perfect tense only. The second category verbs, for example /flg/ for/fəlləgə/ the penultimate radical geminates irrespective of the verb forms.

Whereas, the third type of verbs like/ft’n/, for /fət’t’ənə /, the penultimate radical geminates in both perfect and imperfect verb forms (Bezza 2013).According to Derb (2011) the vowel /ə/ is also labeled as the thematic or aspectual vowel. It is the only vowel, which intercalates among the consonants of all Amharic verbs. However, there are verbs, which are also described by using the vowel /a/ after the first radical. Thus, any other vowel in the surface form of Amharic verbs indicate reduction of laryngeals, sometimes called gutturals or weak radicals, and glides (h, y, w, ?). The presence of the vowel /ə / in surface implies the reduction of the consonant /h/, and the vowel /a/ represents that the reduction /? /. The vowel /o/ implies the reduction of /w/ and /e/ show the reduction of the consonant /j/ (Baye 2006) as indicated in the following table.

Table 5 Reduction of consonants

Roots	Verbs	Gloss
f- h-r	fərra	'he feared'
n-w- r	norrə	he lived, it existed''
h-j d	hedə	'he went'
l-?-k	lakə	he sent

3.4.2.1.2 Simple and derived verbs

Sisay (2004) tries to show the distinction between simple and derived verbs. Simple verbs derived from roots by intercalating vowel patterns and derived verbs are taken as derivatives of simple verbs. The derivation process can be an internal one in which consonant-vowel patterns change, whereas, an external derivation can occur where affixes attached to the simple derived verbs or a combination of the internal and external derivational processes. According to Gasser (2011) through internal and external derivation, Amharic verb can appear in four different tense-aspect mood (TAM) categories. These are commonly referred to perfective, imperfective, jussive/imperative, and gerundive.

Table 6 Simple verb conjugation

Forms	Type A: sbr		Type B: flg		Type C: mrk	
	Stem	Template	Stem	Template	Stem	template
Perfective	səbbər	CVCCVC	fəlləg-	CVCCVC	marrək-	CVCCVC
perfective	sibbər-	CVCCVC	fəlləg-	CVCCC	mark-	CVCC
Jussive	sibbər -	CVCCVC	fəllig -	CVCCC	mark-	CVCC
Gerund	səbbəra	CVCCVCA	fəlləga	CVCCVC	marək	CVCVC
Infinitive	məsibbər	CVCVCCVC	məfəlləg-	CVCVCCVC	məmarək	CVCVCCVC

Simple stems are formed by intercalating the vowel / ə / (except for type C verbs) among the root consonants. The number of vowels needed vary on the nature of the conjugation and the number of consonants in the root. Table 5 indicates how the pattern differs depending on conjugation and verb type for tri-radical.

3.4.2.1.3 Other Derivational Verbs

Like perfective, imperfective, jussive/imperative, and gerundive verbs, there are other verbs, which can be formed by derivational. These verbs are causative, passive, reduplicative /repetitive, reciprocal: adjective etc.

Causative verbs: are derived by inserting the derivational morphemes/ a- /and/or/ as-/ to the verb stem. Verbs which begin with /a-/, always take the morpheme /as-/. The following table indicates this occurrence.

Table 7 Derivation of causative Verbs

Stem	Perfective	Gloss	ccusative /as-or a-	Gloss
d-r-s	dərrəsə	he arrived	adərrəsə	cause to arrive
w-s-d	wəssədə	he took	aswəssədə	cause to be taken
b-l-?	bəlla	he ate	abəlla	he fed someone
tʃ-f-r	tʃəffərə	he danced	astʃəffərə	cause to dance
m-t'-?	mət't'a	he came	asmət't'a	cause to be brought
g-b-?	gəbba	he entered	asgəbba	caused to be entered
?-w-k	awək'ə	he knew	asawək'ə	cause to know
?-d-g	addəgə	he grew	asaddəgə	cause to grow

Passives:-as Mengistu,(2002) explanation, the passive verbs are derived by adding the derivational morpheme /t(ə)-/. This derivational morphemes are realized as /tə-/before consonants and as /t-/ before vowels. Moreover, on the imperfect, jussive and in derived nominal like verbal noun, the derivational morpheme, /t-/ is used. In this case, it assimilates to the first consonant of the verb stem, and as a result, the first radical of the verb geminates. For example, in /j-wwərwər/ 'let it be thrown' which is the surface form of /j-t-wərwər/, the germination of the first consonant, namely /w/, is the result of assimilation of the passive prefix /t-/. Thus, derivational passive verbs are treated in the following table.

Table 8 Derivational passive

Verb type	original	Gloss	Passive /reflective	Gloss
Perfective	bəlla	he ate	təbəlla	he was eaten
Perfective	gəddələ	he killed	təgəddələ	he was killed
Perfective	t'ərra	he called	tət'ərra	he was called
Imperfective	jibəlla	he eats	jibbəlla	Let it be eaten
jussive	s'af	write	jis's'af	let it be written
Jussive	as'da	clean	jis's'ədda'	let it be cleaned
Perfective	k'ət't'a	Punished	tək'ət't'a	he was punished
Perfective	godda	hurt	təgodda	he was hearted

As the above table depicts /tə/and /ji-/are the common derivational morphemes to derive passive form of a verb in Amharic. Passives are possibly derived from perfective by adding the morpheme /tə-/ and from imperfective, jussive and denominals using the /ji-/ morpheme. For instance, from the jussive /as'ida / 'clean it' assimilating /a/ and adding /ji/ we can

derive a passive /jis's'ədda/. Although in Amharic, the passive does not normally apply to intransitive verbs. Like many language (e.g. English) in Amharic, the passive does not normally apply to intransitive verbs. However, there are exceptional verbs like /fəlla/ 'it boiled' form their passive forms by using the prefix t(ə)- as in /təfəlla/ 'it was made 'and /dʒəmərə/ meaning 'it began'; it forms the passive as in /tə-dʒəmərə/. Regarding Amharic exceptional intransitive verbs, Demoz, (1964) argues that majority of intransitive verbs, which permit the passive, require a special type of object “a cognate object” and, therefore, the attachment of the passive prefix is not problematic since such constructions are considered transitive.

Reduplicative/ repetitive :reduplicative stems show an action which is performed repeatedly; for three consonants stem verbs, reduplicating the second consonant is common feature; reduplicating the second consonant of the root /səbbərə/ and using the vowel /a-/ next the duplicated consonant as in /səbabərə/ 'he broke repeatedly (Baye, 2008; Martha, 2011 and Bezza,2013). All verbs have the same reduplicative forms. Supporting the proposition, the following table shows reduplication feature of Amharic tri -radical verb.

Table 9 Features of reduplicative verbs

Triradical verb	Reduplicative(C ₁ ə C ₂ a C ₂ C ₃)	
kərəmə	kərarəmə	he stayed long somewhere
t'ərəgə	t'ərarəgə	he swept repeatedly
məddəbə	mə-da-dəbə	he grouped repeatedly
lək'k'əmə	lək'ak'əmə	he sorted out repeatedly
wəddək'ə	wədadək'ə	he fell repeatedly

From the above table, we can understand that in Amharic language, reduplicative verbs have C₁VC₂aC₂ V C₃V pattern and they can be derived from imperfective, jussive, and causative verbs. For example, from the jussive verb /k'urət'/ 'cut' it is possible to derive the reduplicative verb /korart'ə / using the vowel /a-/ next the duplicated consonant; and the same pattern goes on in imperfective verb as in / ijək'orət'ə'/ it can be duplicated into / jik'orarət'/. In addition, reduplication can also work in causative verbs like /asik'orət'ə/ can form /asik'orarət'ə/ by reduplicating. Thus, in Amharic language reduplication can occur across different types of verbs (perfective, imperfective, jussive, infinitives gerundive and causative).

3.4.2. 2 Amharic Nouns

Nouns differ in their type and composition: they can be notional words, which stand for subjects, objects phenomena; and they denote objects of thought, any actions and states, features and relations. Amharic has a rich system of nominal affixation that derives various forms of nouns and adjectives (Ayalew, 2011). Different sub classes of nouns include gerunds, instrumentals, and agentive. These are formed by attaching affixes to actual or potential stems. However, whether a word is a noun or not can be determined according to morphological distinction and sometimes by syntactic representation (Titov, 1976).

3.4.2.2.1 Derivational Nouns

Amharic nouns are mainly categorized as primary or derived. Derived nouns have relation in their root consonants or they have meaning relation to verbs, adjectives, or other nouns they are derived from. If this meaning relation does not occur, the noun is primary. For example, a noun /fərəs/ 'horse' is primary but /fərəsəŋna/ 'horse rider' is derived from the nominal base /f-r-s/ by adding the morpheme /-ŋna/.

Derivation of nouns from nouns: derivation of nouns from other nouns can occur by affixation and intercalation. The morphemes /-nat/, /-ŋna / /-at/, /-awi/, /-təŋna /, /-na/ and the prefix / bəla-/ are attached to derive nouns from other nouns (Leslau, 2000). The following table depicts how nouns are derived from other basic nouns by adding the aforementioned morphemes.

Table 10 Derivation of nouns from other nouns

Primary	Gloss	Morpheme(bond)	Derived nouns	Gloss
fərəs	horse	-əŋna	fərəs-əŋna	Horse driver
bərr	door	-əŋna	bərr-əŋna	goal keeper
mərkəb	Ship	-əŋna	mərkəb-əŋna	Capitan
nəgər	A thing	-əŋna	nəgər-əŋna	Wicked
bet	House	-əŋna	Bet-əŋna	intimate one's family
dinbər	boarder	-təŋna	dinbərt -əŋna	share boarder
liḍḍ	child	-nnət	liḍḍinnət	childhood
gəbərə	farmer	-nna	gibrinna	agriculture
inat	mother	-nnət	inat-nnət	motherhood
ʃum	officer	-ət	ʃumət	Position

Derivation of nouns from adjectives: nouns are possibly are derived from adjectives by adding the suffixes /-nnət/ and /-nna/ as in the examples /dəgnnət/ 'generosity' which is

derived from the adjective /dæg/.By adding these suffixes, there are a number of nouns derived from adjectives.The following table shows this derivation phenomenon (Bezza, 2013).

Table 11 Derivation of nouns from adjectives

Adjectives	Gloss	Bound morphemes	Derived noun	Gloss	<i>Derivation of nouns</i>
sənəf	lazy	-nna	snfɪnna	laziness	
ɪwkʰ	known	-nna	ɪwkʰɪnna	recognition	
dɪha	poor	-nnət	dɪhɪnnət	Poverty	
dʒəɡna	hero	-nnət	dʒəɡnɪnət	Heroism	
nəs'a	free	-nnət	nəs'annət	freedom	
tɪlkʰ	Big (elder)	-nnət	tɪlkʰɪnnət	greatness	

ns from verbs: nouns can also be derived from verbs and roots by affixation and intercalation of vowels. Most of the nouns are derived from verbs are abstract nouns, which occur by intercalating the vowels. These abstract nouns are process: resultative, instrumental, gerundive, infinitives, and manner and agentive. The following points summarize how nouns can be formed (Baye, 1999).

- a) One possibility derives a noun from a root by intercalating the vowel /i/ among the root consonants or just after the first root consonant.
- b) Intercalation of the vowel /a/ after the first radical or among radical's results in either a noun or a bound stem used to derive a noun.
- c) The pattern /ə-ə/ and the suffix /i/ are used in the derivation of agent nouns.
- d) Nouns of manner can be derived by prefixing /a/ to the stem which is formed by reduplicating the penultimate radical and intercalating the pattern/ ə -a- ə/.
- f) The infinitive/verbal noun is derived by prefixing the morpheme /mə-/ to the jussive verb.
- g) Instrumental noun is derived by suffixing /-ija/ to the infinitive.The following table shows the description of the summary points

Table 12 Nouns derived from root verbs.

Root	stem	Affix	Derived	Category	Gloss
t-k'-m	t'ik'm		t'ik'm	abstract	Advantage
g-r-d	gi rd	-oʃ	gi rdoʃ	abstract	awning, eclipse
d-g-m	diggim	-oʃ	diggimoʃ	process	repetition
s-b-r	Sibr	-at	sibrat	Abstract(result)	breakage
s-r-k'	sirk'-	-ot	sirk'ot	process	theft
ʃ-h-l	ʃil	-ota	ʃilota	resultative	ability
t-k-z	tikkaz-	-e	tikkaze	resultive	melancholy, sadness
f-t-n	fətən-	-a	fətəna	resultative	test ,exam
s-b-k	səbak-	-i	səbaki	agent	preacher
w-d-k'	widdak'-	-i	widdak'i	resultative	reprobate, rubbish
m-s-b-r	məsər-	-ija	məsərija	instrumental	tool for breakings-

3.4.2. 3 Adjectives

Adjectives in Amharic embrace all the words that modify nouns and can be modified by the word /bət'am/ 'very, greatly'. Like nouns, adjectives can be primary or derived but primary adjectives are limited in numbers like/dəg/ means 'kind'. In contrast, in Amharic, derived adjectives are many in number as they have different patterns of derivation. They are derived from nouns, verbal roots and other adjectives by suffixing and intercalating of vowels (Matha, 2011; Bezza, 2013).

3.4.2.3.1 Derivation of Adjectives from Nouns

Adjectives can be derived from nouns by using different suffixes. The bound morphemes like /-am/, /-appa/ /-awi/, and /-ama/ are commonly used for the derivation of adjectives from nouns. The following tables indicate this derivation phenomenon. Derivation of adjectives by adding the suffix /-am (Bezza, 2013).

Table 13 Derived adjectives from nouns by adding the suffix /-am/

Base	Gloss	Derived	Gloss
habt	wealth	habt-am	rich
bird	chill	birid-ama	chilly
l ib	heart	l ibb-am	wise
wiʃət	lie	wuʃət -am	Liar
hod	stomach	hod-am	glutton
ʃuhət	shout	ʃ'uhət-am	shouter

As the above table indicates, a number of adjectives can be derived from nouns by adding the suffix /-am/ and most of the adjectives which are created in this pattern are derogatory

words. They are likely used to insult or comment. Adjectives like /wufət -am/ means ‘liar’, /hodam/ means ‘glutton’ are some examples of derogatory words. However, words like /habtam/ meaning ‘rich /wealthy’, /biridama/ means ‘chilly’ and /libb-am/ mean wise/ thoughtful’ are not derogatory instead they show state or condition of someone /something (Bezza, 2013). Moreover, adjectives are potentially derived from nouns by adding the suffix /-anna/. By adding this suffix, it is possible to form many adjectives as possible. The derived adjectives meaning is acquired by the general meaning associated with base words. The following table shows formation of adjectives by adding the suffix /-anna/.

Table 14 Adjectives derived from nouns by adding the suffix /-anna/

Base	Gloss	Derived	Gloss
adəga	danger	adəgəŋna	Dangerous
idd il	luck	idd iləŋna	Lucky
hajil	power	hajiləŋna	powerful
wəndzəl	crime	wəndzələŋna	Criminal
aməs’	Insurgency /riot	aməs’əŋna	Insurgent

Adjectives can also be derived from nouns by adding the suffix /-ama/ and their meanings tend to the bases. The following table shows this derivation.

Table 15 Derivation of adjectives by adding /amma/

base	Gloss	Derivation	gloss
z inab	Rain	z inab-amma	Rainy
d ingaj	Stone/rock	d ingaj-amma	Rocky
tərara	Mountain	tərara-amma	Mountainous
aʃəwa	Sand	aʃəwamma	Sandy
daməna	cloud	damənamma	Cloudy
s’əhaj	Sun	s’əhajamma	sunny

/-awi/- there are also adjectives which can be derived from nouns by adding the suffix /-awi/. Adjectives which are formed in this pattern, their meaning associated to the base and indicate belongings/possession or citizenship.

Table 16 Derivation of Adjectives by adding the suffix /awi/

Base	Gloss	Adjectives	Gloss
itjop’ja	Ethiopia	itjop’jawi	Ethiopian
misrak’	east	m israk’awi	Eastern
səmaj	Sky	səmajawi	Blue
tarik	History	tarikawi	Historical
timmihrt	Education	timmihrt awi	Educational

3.4.2.3.2 Derivation of Adjectives from Stem/verbal Roots

Like a verbs and nouns, adjectives are derived from verbal roots or by intercalation of vowels or attaching a suffix. As the following table indicates the suffix /-a/ is used to create adjectives from the stem by placing the vowels /ə-a/ between the root consonants. In addition, adjectives can also be derived using the vowels/ - ə- i/and /u/.

Table 17 Derivation of adjectives from Verbal root / bound stem

Root	Stem	Affix	Derived adjective	Gloss
t'-m-m	t'əmam	-a	t'əmama	bend
t'-n-k-r	t'-n kar	-a	t'ənkara	Strong
d-k-m	d-kam	-a	dəkamma	weak
k-b-d	kəbbad		kəbbad	Heavy
s-n-f	sənəf		sənəf	Lazy
r- dʒ -m	rəɖʒim		rəɖʒ'i m	Tall/long
k-b-r	k-bur		k'ibur	respectful
z-n-g-h	z-n-g	-u	z'ingu	forgetful
b-r-t	b'i rt	-u	b'i rtu	endured

Table 18 Reduplicated adjectives

Base	Gloss	Reduplicated	Gloss
tiniʃ	small	tinaniʃ	A little
tillik	Big	tɪlɪlɪk'/ tillik' tɪlk	The big ones
k'əj	red	k'əjaji	The red ones
tikur	Black	t'ikuakur	The block ones
and	one	and and	some
addis	new	adaddis	The new ones
k'onɖʒo	beautiful	k'onəɖʒəɖʒt	The beautiful one

As indicated, in Amharic, reduplication process in adjectives mainly occurs to mark plurality in size, color ,number and quality adjectives. For example /,tinaniʃ/ /tɪlɪlɪk'/tillik'-tillik'/ are adjectives of size, whereas adjectives like /t'ikuakur/ and /k'əjaji/ indicate colors. In addition adjectives of quality/ k'onəɖʒəɖʒt /and /andand/ are created by reduplication process. Commonly, adjectives inflected on numbers through reduplication.

Inflection on gender and definiteness:-adjectives can also be inflected for gender and definiteness. The bound morphemes /-u/ or/-w/ for masculine and /-it/,/-wa/or/-itu/ feminine and /jə-/ can mark gender and definiteness, for example, / tillik' /' big' becomes / tillik'u / for masculine / tillik'wa / tillik'ijtu /for feminine gender. Moreover, the prefix /jə-/, shows

possession in feminine and masculine genders like /jə-tilliku/ and /jə- tillikitu / and /(Bezza 2013).

3.4.3 Compounding

Formation of words in Amharic is not only confined to root–pattern and affixation phenomenon. It can occur through compounding process. Through compounding, formation of nouns, verbs, and adjectives are common. Most of the verbs can be formed by compounding a lexical base with functional verbs (Bezza, 2013).

3.4.3.1. Compound Nouns

Compound nouns are basically genitive; they are formed in two ways ; they can be derived by inserting the vowel /-ə-/ between the two nouns. The intercalation of vowel occurs when compounding words are taken from Geez. For example, from the word /bet/ and / kirstijan / it is possible to form /bet- ə- kirsitjan/ ‘church’.The following table shows such compound nouns with and without intercalation of vowels.

Table 19 Compound noun/ ə-/

Modifiers	Gloss	Word	Gloss	Compound	Gloss
injəra	Injera(flatpancake)	innat	mother	indzəra-innat	Stepmother
timmihrt	Education	bet	house	timmihrt-bet	School
sirrat	Formality	timmihrt	education	sirratə-timmihrt	Curriculum
hajil	Power	k'al	Word	hajilək'al	asperity

3.4.3.2. Compound verbs

There are certain verbs , which are not formed from a particular class of words, and they are not likely potential until they are combined with verb /allə/ literally ‘say’ and /adərrəgə/’do/make’. The potential stems have the following patterns of C₁C₂C₂C₃C₃ or C₁ əC₂ ə C₃C₃ in tri-radical roots and they can be formed from productive roots or from roots of limited productivity (Baye, 2006; Bezza, 2013). They also tried to present the nature of compound verbs as it is seen the following table.

Table 20 Compound verbs/ allə/ adərrəgə/

Bound stem	Gloss	Compound	Gloss
kəss	Slow	kəss-allə	Becomes slow
zimm	quite	zimm - allə	Become quite
kiffit	open	kiffit allə / adərrəgə	opened/he opened (at once)
dikkim	tired	dikkimallə/ adərrəg	Became tired
tʃimmkʔ	squeeze	tʃimmikʔallə/adərrəgə	Made it squeezed

As the above table indicates, the bound stems take grammatical support from /allə/ and /adərrəgə/ to become meaningful verbs (Bezza, 2013).

3.4.3.3. Compound adjectives

Like nouns and verbs, there are certain adjectives their formation occurs through compounding, for instance /hod/ literally mean 'stomach' and /səfi/ means 'wide', there is a compound adjective /hodəsəfi/ means 'tolerant' and from /libb/ literally 'heart' and /mulu/ 'full', by compounding the two, the word /libəmulu/ meaning 'courageous/brave' is found. Here, it is noticed that compound adjectives can be formed by intercalation of the vowel /-ə/ between the two stem words.

Generally, formation of nouns, verbs, and adjectives has rich morphological patterns. Many words are derived by intercalation of vowels, affixation, and compounding. As the language has a rich morphological patterns, the formation of words is determined by the nature of the stem or root words. Thus, it is possible to see different patterns of derivation of words in Amharic language.

Summary

This chapter offers a brief description of the sociocultural and structural aspects of the language. It describes the sound system as well as the nature of word formation in Amharic language. A large number of words are formed through two major morphological processes: derivational and intercalation of vowels. Moreover, reduplication and compounding are the other ways of creating new words. Except preposition and conjunction, nouns, verbs, adjectives and in a certain instance adverbs are formed through derivation. Generally, the different features of the language are discussed briefly to back up this research focus area for better description and comprehension of the nature of the language and the following chapter deals with the methods and design used to collect, analysis and describe three to five years old children's phonological and lexical development.

CHAPTER FOUR

RESEARCH METHODS AND DESIGN

The main aim of this study was to describe the development of phonology and lexicon in typically developing Amharic speaking children's speeches. Such a research in the area of language acquisition often follows longitudinal and/or cross-sectional research designs (Clark, 2003; O'Grady, 2006; Ingram, 1989).

4.1 Longitudinal research design

Longitudinal research design is defined as a type of observational research one which focuses on particular individuals changes through time and follow up continues until the expected change occurs. In other words, longitudinal design is type of correlational research in which researchers observe and collect data from the same individuals a number of times for a long period (Menard, 2002). Longitudinal research method is helpful to describe patterns of change through time. In other words, it makes it possible to see the development of children's language through time. According to Menard (2002), in longitudinal research, data are collected from a long period with several intervals with the same children; and the analysis is made with comparison of data between periods. In spite of its advantage showing the growth and development of children's language through time, it requires a long period, a large amount of money and human resources. This method especially for student researchers creates great pressure to produce short-term results.

4.2 Cross-Sectional Design

A cross-sectional study design is defined as a type of observational research that analyzes data of variables collected at once in a given point of time across a sample population or a pre-defined subset (Zoltan, 2007). Cross-sectional research design is helpful to include a large representative sample and less demanding to recruit respondents. It also allows researchers to gather a large size of data within a short period. The method helps the researcher to see individual ability of producing various phonological and lexical entities. It enables researcher to establish relationship between variables. According to Zoltan (2007) explanation, cross-sectional data collection method is less exposed to detrimental factors like unexpected external events that are beyond the researcher control (e.g. children illness, drop out and others).

However, cross-sectional design has its own limitation; as the speech data is taken at once within a speech period; it may be exposed to common method of variance bias which result from children tendencies, including both temporal feeling (moods) and personalities. For example, some children show emotional temperament to produce the required speech data in a consistent manner (Steen kampe and Baumgartner 1998). But to reduce the mentioned weaknesses, the researcher studied individual child's behavior, feeling and ability of speaking during the introduction period; and speech's recording trials were made to choose children who were involved as a participants and if unexpected feeling (tiredness and lack interest to speak) occurred during the recording session, the recordings were stopped and repeated. Moreover, the four data collection activities were administered independently and repeatedly to pick the best recording samples.

4.3 Study Area and Sampling Size

Addis Ababa lies at the altitude of 2,355 meters elevation (7,726 ft.) and constitutes 11 sub cities: Addis Ketema, Akaki kality Arada, Bole, Gullele, Kirkos, Kolife Keranio, Lideta, Yeka, and Lemi Kura. Each sub city has a high population density due to people come from different parts of the country to engage in different economic activities, and they build permanent life in Addis Ababa.

This continuous flow of people makes Addis Ababa the home of different nation and nationalities with various mother tongues like Amharic, Afaan Oromo, Tigrigna, Gurage, Harari, Afar and other languages. Despite having different mother tongues, people in Addis Ababa commonly communicate in Amharic. Children whose parents speak different mother tongues also acquire Amharic as a first or second language at their early age and speak fluently.

In addition, Amharic is a medium of instruction in kindergarten and first cycle elementary schools, and understanding the nature of children's language promotes educational facilities and gives highlights how materials should be designed to teach small children. In addition it plays a paramount role in communication and enhancement of elementary education. Research on children's language acquisition may also contribute a lot to assess and treat language delays and disorders, particularly in children.

4.2.1 Sampling Area

This research was conducted in Addis Ababa, at Lumi Kura, sub city. The sub city was selected purposely because of relative distance and in some schools; there were people the researcher knew very well. In addition, without having better acquaintance with school environment, it was difficult to perform different activities (talking with children and recording). After the researcher had considered the unwillingness of other schools' principals to accept the request about children's involvement, she decided to select only two schools (mentor and St. Michael schools), which made it possible to obtain unreserved assistances and cooperation from the staff and management to gather reliable and timely data.

4.2.2 Sampling size

32 children aged 3 to 5 were selected to serve as participants of the study. These age group children were preferred for reason. As many literatures have indicated, it is believed that children at this age group, starting from age 3 years have the ability to produce and more complex grammatically structured different class of words (O'Grady, (2006). This stage is also characterized by the emergence of quite elaborate types of phrase and sentences (Ingram, 1988). Bearing this in mind, three to five years old children were taken to describe the nature and development of children's phonology and lexicon. In addition, various procedures were followed to select the target participants.

4.2.2 .1 Selection Criteria

As part of the arrangement, it was made brief discussions with school chief principals on the objectives of the study and why the children get involved in the research and other related details such as how and when the data collection would be carried out, etc. The researcher explained that speech recording was only held during class-breaks and lunch time in a manner, that is fun to the children, with the assistance of their teachers. Once the schools managements were in agreement with the project and data collection procedures, the chief KG coordinators were informed and requested by the schools to assist and provide the necessary information.

Identification

After the schools gave their consents, 60 children, aged between 3 and 5 years were selected from the two schools. 30 children were from St Michael and 30 from Mentor Academy. The

kindergarten's chief teachers and investigator using the children's profile did the first selection. Children, whose birth certificates attached in their school profiles, were included.

Approach

The consent letter and information sheet filled by parents determined children's involvement in this study. After the consent letter and the information sheet were prepared, and checked by the school principals, they were sent to parents. Parents were informed in the consent letter about the aim of the study and their children involvement was only to take their speech for describing children's language development. It also stated that the recording did not have any influence or effect on their children class time as well as their well-being as it was held in the manner that is fun. The consent letter confirmed that their children involvement was only determined by their willingness and agreement. Finally, the consent letter requested parents to fill the information sheet attached if they only agree and sign on it.

In addition, parents were requested to fill the necessary information properly like children full name, age, speech's development condition (normal/delayed) which was checked during trial audio recording) in relation to his /her age, parents 'education level, job and current address, home language/ languages. Finally, after five days, from 60 consent and information sheets, 50 papers were turned back to schools: 22 papers from Mentor and 28 from St.Micheal Schools.

Recruitment

The final selection was made by checking the information filled on 50 sheets. The involvement ten children were automatically rejected for three of them, their parents did not fill the information letters properly, whereas, the other seven children their home language is not Amharic. Finally, from 50 children 16 male and 16 females 'totally 32 children were chosen: 12 children were from Mentor and 20 from St Micheal schools. The number of children was not equally aggregated from both schools because 8 unreturned and three not properly filled papers were registered from Mentor academy. In addition, from the seven none Amharic mother tongue children, five of them were in Mentor so that the number of children taken from this school was smaller than St. Michael. Moreover, the other remaining children were not involved because of audio recording trials, those who were timid and unable to be approached were also dropped and the number reduced to 32 children.

Inclusion and exclusion criteria

School children inclusion criteria	
Inclusion criteria	<i>Age: 3:0 to 5:0 Language: Amharic-speaking children who were not exposed to other local language at home.</i>
Exclusion criteria	<i>Age: below 3:0 and above 5:0 Language difficulty: Children with speech/hearing difficulty or delayed from normal pace and who speak other additional language at home / diffidence in cognitive ability</i>

Table 21 Children’s demographic data details

Code	Name	Sex	Age	Code	Name	Sex	Age
Group 1				GROUP 3			
C1	TSN	F	3;1:16	C17	BTHY	F	4;5:0
C2	HLN	F	3;2:5	C18	HNA	F	4;5:12
C3	AMN	F	3; 2:23	C19	IDY	F	4;4:19
C4	MKLT	F	3;2:14	C20	FKR	F	4;3:2
C5	NTN	M	3;3:15	C21	AMN2	M	4;4:7
C6	ELS	M	3;3:6	C22	KAL	M	4;4:25
C7	HRY	M	3;5:0	C23	EBNR	M	4;4:9
C8	EYB 1	M	3;4:8	C24	EPRM	M	4; 5: 0
Group 2				Group 4			
C9	BLN	F	3;9:23	C25	SOL.M	F	4;6:10
C10	SOL.G	F	3;10:2	C26	SMR	F	4;9:15
C11	DGM	F	3;11:28	C27	RDT 2	F	4;10:20
C12	RDT.B	F	3;10:0	C28	LDY	F	4;11:26
C13	EYB2	M	3;10:0	C29	ELNT	M	4;11:23
C14	AMN 1	M	3;9:24	C30	AMR	M	4;11:12
C15	MKYS	M	3;9:5	C31	NOD	M	4;11:21
C16	BRK	M	3;10:7	C32	EYB.G	M	4;11:20

4.2.3 Data Collection

In this study, four integrated data collection tasks were employed. These are picture description, picture narration, storytelling, and elicitation (question and answer). Concerning these activities, Canals (2017) explains that the research questions and objectives set for a particular study guide us to determine the type of data collection methods we employ to

obtain the intended language data from children's speeches. Thus, in this research, these four tasks were designed to elicit phonological and lexical composition of children's speech.

4.2.3.1 Picture Description.

Picture descriptions task was done by presenting pictures of different animals and people performing different activities and, a series of actions involving objects. Children were shown selected pictures and they were asked natural questions like 'what is happening?' 'How many are there?', 'What do you see in the picture?', 'What is X doing?' etc. This activity is designed to elicit different phonological and lexical entities in children's speech.

4.2.3.2 Narrative Pictures

In addition to descriptive activity, series of pictures, which narrate about a little female monkey, were taken and presented. First, children were told the story while they were looking at series of pictures. Then, they were asked to retell what they heard and saw. Every participant was encouraged to retell the story. Children tried their best to narrate the story looking at a series of female monkey's picture which narrates its routine activities jumping from one tree to others. This activity helped the researcher to see children's ability of narrating events with different string of ideas using different words and the activity enabled the researcher to see how the realization of different phonemes in different words are appeared by individual child.

4.2.3.3 Question /Answer (elicitation)

Children were asked to speak about what kind of activities they perform at home, at school, what type of materials they have/use at school and at home. They were also encouraged to tell what they did yesterday and what they do today (at school and after school), how they study at home etc. This was helpful to see the occurrences of different lexicons with their sound combination in a string of sentences; such words might not be observed during picture narration and description activities had a possibility to manifest. Question/answer activity also helped to see children's speech production and recognition ability of different lexicons which were used to explain their home and school activities.

4.2.3.4 Storytelling (Teret)

In addition to the above data collecting activities, children were engaged in telling a story they heard at home or school; they were encouraged to speak freely what they know. This was done by the help of the teachers in the class during their story time. This activity was

used to see the type of words, phrases, or sentences children used to develop their idea. Storytelling 'teret' was also an important activity, which mirrored the ability of children in recognizing and producing various words while telling the story and as they talked freely, their correct and mispronounced phonemes were clearly manifested.

Generally, the four data collection activities were employed to gather reliable data about children's language development. Administering these tasks in language acquisition research are significant to see the different language elements from different perspectives. In sum, the information that was not observed in one data gathering instrument had a possibility to be detected in the others; as a result, these activities were helpfully employed in this study.

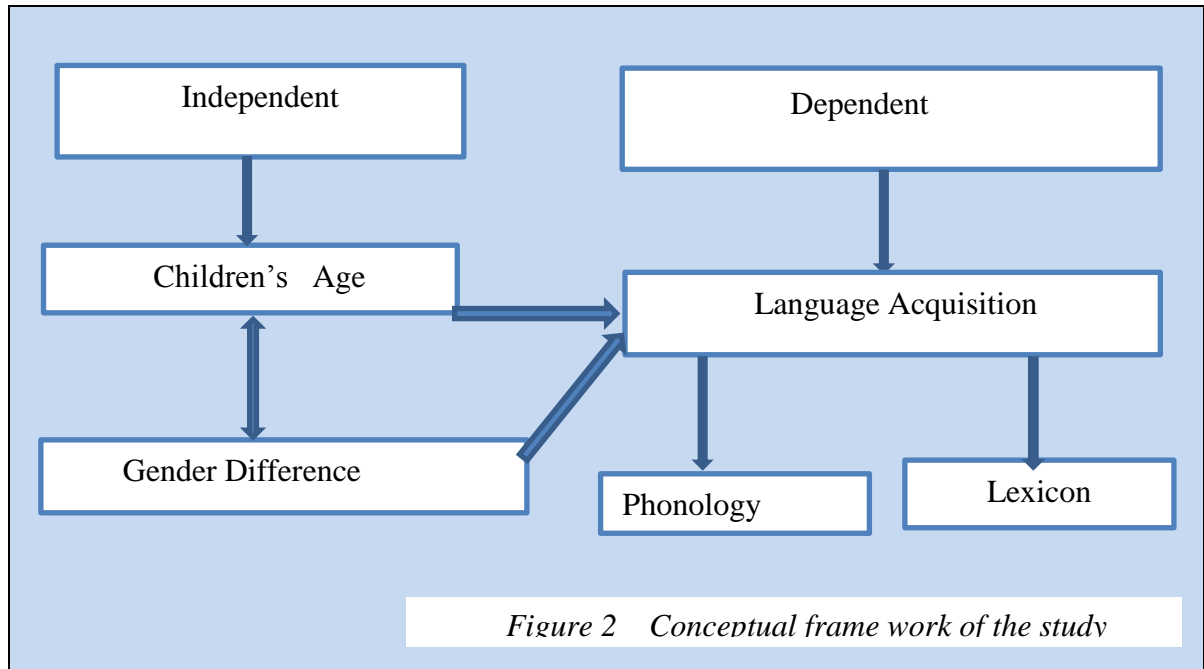
4.3 Data presentation and analyses techniques

All the speeches data collected from the four activities (picture description, narration and elicitation and storytelling) were audio-recorded and transcribed Using IPA.

4.3.1 Variables

In this study, there are two types of variables; independent and dependent variables which were taken to carry the research. Independent variables: age and gender were used as target variables to compare the other dependent variables: phonological realization and processes, size and class of lexicon. Thus, the analysis of phonological and lexical development was treated using the independent variables.

4.3.2 Coceptual framework



The conceptual framework shows the interaction between independent and dependent variables. It also indicates how the independent variables: children's age and gender possibly influence language acquisition in general, phonological, and lexical development in particular.

4.3.3 Data Transcribing and Coding

The speech data gathered from different tools were audio-recorded, transcribed using IPA, and coded soon after fieldwork to put the raw data in to meaningful way. The transcription was done using ELAN linguistic annotator tools. ELAN is a multimedia annotation tool developed by "The Language Archive" a unit of the Max Planck Institute for Psycholinguistics. It is applied in a variety of research areas in which audio and/or video recording are the basis for qualitative and/or quantitative analysis of different modalities of communication (Sloetjes & Seibert, 2016). ELAN is a tool, which is used manually adding textual annotation from audio and/or video recordings. The data model is tier based, allowing multi-level, multi-participant annotation. A tier, in this context, is a kind of linguistic layer, or container for grouping annotations that share the same topic or target and the same coding, for example, children's utterances hierarchically linked to key words and part of speeches (POS) and the link continues to morphological and phonological segmentation.

In ELAN, user defines the type of tiers and determines what to use for each. Users define the codes or categories to apply to tiers. For instance, one of the tier contained children utterances, the other tier was its types (simple word, phrase, or sentence) and the tiers had hierarchal linked one to the other. If one tier was set for keywords (KWD), the next showed what part of speeches (POS) the key word represents. Generally, one annotation can also be linked to other annotations and be part of a hierarchically structured group of annotations using tiers formation. By marking segments of interest and storing them as annotations and the user produces data sets that represent a measurement of the stored variables (like phonology and lexicon). ELAN also helps the user to see the frequency occurrence of different elements annotated.(frequency of phonemes ,size and domain of lexicon , types and frequency of errors etc.).

ELAN Linguistic annotation software was used in this study due to it has easily to use. It helped the researcher to link the media files with annotation data, to create unlimited tires, link annotation to other annotations(for example, key words(KWD) with part of speeches (POS) and it also linked all the tires together hirarichally. It also enhanced different tiers and annotations further facilitate the creation of new annotations and manipulation of existing annotations (e.g. easily copying selected annotation to another tier (Johnston & Crasborn 2006). ELAN enabled the complex searches across multiple annotation files. The user to add and visualize ‘annotator’ property for each tier also uses it. As ELAN is interlinear text transcriptions and annotations tool, the data are easily exportable to statistical programs for searching, retrieving, sorting, and calculating. The following sample annotation was taken to show how the tiers are hirarichally linked each other.

*AMR [245]	Inezih barewotf nɛf'at'ɔf'ɪntn ɪzih safaw laj tʃet'et'u iha new															
UTT [246]	S															
UTT.T [246]	SIMPL.S															
K-WORD [676]	Inezih	barewotf	nɛf'at'ɔf'	ɪntn	ɪzih	safaw	laj	tʃet'et'u	iha	new						
POS [688]	DEM	N	ADJ	PRO	DEM	N	PP	V	N	AUX.V						
WORD.GLOSS [688]	these	cows	whites	something	here	barrie	on	drinking	water	is						
MOR.T [1052]	ine-	zih	bare	-wot	nɛf'at'	-ɔf'	ɪntn	ɪzih	safa	-w	laj	tʃe-	t'et'	-u	iha	new
MOR.T [1048]	DER,	free	free	INFL	RED	INFL	free	free	free	INFL	free	DE	INF	free	free	free
MOR.M [1038]	PP.M,	DEM	N	3P.PL	ADJ	3P.PL	PRO	DEM	N	DEF	PP	PR	V	3P	N	AUX.V
GRAM.REL [642]	MOD	SUBJ	MOD	PRO	MOD	MOD	SPCF	PRG.V	OBJ	AUX.V						
COD.S [9]																
GLOSS [9]	these white oxen are dringing water from the barrel.															

Figure 3 Sample Annotation taken From ELAN

4. 3.4 Data Analysis Techniques

First, the audio- recorded files transcribed in ELAN annotator tools were saved in eaf files for searching frequency of different phonemes and lexicon (nouns, verbs, adjectives ,adverbs etc.), and errors and their types. The annotation results were displayed in ELAN by using ‘find and replace’ searching engines. After the search was completed ELAN displayed in the following search results; the number of utterances, key words and part of speech (POS) frequency of nouns, verbs ,adjectives and other words) and the frequency of different consonants in each child’s speech. The results found in this way were registered in excel format. After each child’s annotation, the results put in to order in excel format then, the dependent, independent variable names were created, and each child’s speech data information was registered in SPSS.

Using SPSS`

After the quantitative (like the total frequency of different consonants, the size and domain of lexicon in each child’s speech) data found from ELAN tool had registered in SPSS, the analysis was made using descriptive (sum, percentage, mean and standard deviation) statistics. Then, Pearson correlation coefficient was employed to describe the relationship between age and gender with the growth of phonology and lexicons. Qualitative data analysis method was also used to describe the representation and developmental realization of different consonant in aged 3-5 children speeches.

4.3.5 Reliability of transcription

According Shriberg, *et al* (1984) and Cucchiarini (1996) report the fact that phonetic transcriptions are error-prone and it is important checking the quality of transcriptions. The most common way of checking the quality of transcription is a portion of the data transcribed by two-three independent transcribers and by measuring the inter-transcriber agreement. Hence, the reliability of phonetic transcription measures the extent to which the similarity of judgments made. The reliability of phonetic transcription is mainly determined by the status and experience of the transcribers and their skills. In order to assure this fact, three Amharic mother tongue transcribers were selected from linguistics department, Ambo University. These transcribers were professionals who had good experience in transcriptions.

The three transcribers were given the same data and audio to listen repeatedly and transcribe. The total data transcribed were taken from child C3's speech. The transcribed data includes word, phrases, and sentences and the total 241 words were transcribed. The reliability of measurement was checked to determine the agreement and disagreement of transcription. To calculate reliability agreement of the three transcribers, percentage of agreement formula were used. This percentage of agreement was calculated by cross checking how the consonants and vowels appeared in transcribed words. This was done manually checking symbol by symbol. If the consonants and vowels used in a word by three transcribers had one to one match, the word categorized into complete agreement group or if the consonant and vowels appeared in word share most of articulatory feature but differed in few cases, it was categorized as little disagreement.

Table 21 Agreement and disagreement scale of transcription

1. Complete agreement	If the consonant and vowels appeared in three transcription had one to one match
2. Little disagreement	Most of the consonant and vowels appeared in the word were the same but one may be two are different
3. Partial agreement	If the consonants and the vowels used by three transcribers are partially the same but the other not.
4. Little agreement	If the consonants and vowels used in three transcribers did not share most of the common features

Using the above scales the transcribed words were checked accordingly and grouped in to one of the above category. Finally, percentage of agreement and disagreement of transcribers were calculated as follows.

The finding of the calculation was presented as follow:

1. Complete agreement $PcA = \frac{184}{241} \times 100 = 76.35$
2. little Disagreement $plD = \frac{40}{241} \times 100 = 16.59$
3. partial agreement $ppA = \frac{11}{241} \times 100 = 4.56$.
4. Little agreement $plA = \frac{6}{241} \times 100 = 2.48$

As the result indicates 76.35% complete agreement and 16.59% little disagreement and 4.56. % partial agreement, 2.48% little agreement was found. According to Shriberg et al. (2010) the least reliability of agreement is 70% and the agreement obtained was greater than the standard level(76.35%) and it was significant to continue.

Summary

This chapter describes the study design, sampling area, sampling size, participant selection criteria, data collection activities employed, methods of data transcription, segmentation and analysis used. Whereas, the collected speech data were analyzed, interpreted and described in the following chapter.

CHAPTER FIVE

DATA ANALYSIS AND INTERPRETATION

5.1. Introduction

This chapter presents summary of the pilot study's results and describes children's language development in relation to participants' demographic data. An attempt was also made to analyze, interpret, and discuss phonological and lexical compositions of Amharic speaking children's speech.

5.2. Summary of the pilot study's results

This pilot study was done to assess whether phonological and lexical development of children could be investigated effectively through the intended research tasks (picture description, narrative picture, and storytelling and elicitation). The pilot provided tips to investigate the main study on the acquisition of phonology and lexicon by employing picture narration, picture description, and storytelling and elicitation activities. It was piloted by taking twelve Amharic speaking children (six males and six females aged between 3 to 5 years) and the speech's data were audio-recorded, transcribed, and analyzed. The findings of the pilot study brought encouraging results.

As the pilot findings indicated the meaningful occurrence of pulmonic consonants and vowel phonemes. It also provided significant information about various phonological processes, which were attested in the children's speech. Substitution of one consonant by others was the common phenomenon, which was attested in most children's words. Substitution of other consonants by stops was one of the patterns detected in the pilot study. For example, substitution of /f/ by [p], and /v/ by [b] was observed children's words. Similarly, substitution of the back consonants by relatively the front one like dʒ/ by [d], /ɲ/ by [n] and tʃ/ by [t] was seen. Backing /z/and/s/by [ʃ] was frequently detected patterns of substitution. Gliding /l/and/r/ by [j], de-ejectivization and substitution of /r/ by [l] were also detected across age groups. As the result of the pilot study indicated deletion of the consonant /h/ /j/ and /w/ was commonly seen in children's certain words, cluster reduction, assimilation and in some case inversion and addition were also visible.

Similarly, the pilot study exhibited the nature of children's lexicon, which are composed of a large number of nouns (mean 166.7), verbs (mean 135.33) and adjectives (mean 45).

Adverbs (mean 24.41), pronouns (42.41), prepositions (mean 26.75), and conjunction (mean 9.33) had a significant representation across age groups. The pilot study has highlighted the impact of gender and age on the development of children’s phonology and lexicon.

Generally, the overall results of the pilot study showed the possibility of conducting the main study on the area by employing the given data collection tasks (narrative pictures, picture description, storytelling, and elicitation). However, there was a requirement to make considerable modifications on elicitation questions, for example, from elicitation questions some of them were simplified to children’s level of understanding. It was also necessary to make an adjustment in children’s age intervals between the groups. The pilot study also gave insight for the researcher to consider the significance of a frequent visit and keep in touch with children before the main study’s audio-recording session to create a conducive environment and intimacy with children.

5.3 .Participants Demographic details

After the pilot study had been done by twelve Amharic speaking children, thirty two participants were chosen for the main research. These participants were three to five years old Amharic speaking children and all of them were taken from the two schools (Mentor Academy and St.Micheal schools). Children were grouped into four places. In order to examine whether there was patterns of changes on phonological and lexical elements in relation to their functional age, they were grouped into four with five-month intervals. In addition, children’s age and gender were treated as background variables and presented in the following table.

Table 21 Frequency and Percentage of Background Variables

Background variables	Group		Frequency	Percent
Gender	Male		16	50
	Female		16	50
Age	3;0-3;5 years	Male	4	12.5
		Females	4	12.5
	3;5-4;0 years	Male	4	12.5
		Females	4	12.5
	4;0-4;5 years	Male	4	12.5
		Female	4	12.5
	4;5-5;0 years	Male	4	12.5
		Female	4	12.5

As presented, thirty-two Amharic speaking children: sixteen males and sixteen females were the participants of this study. They were also grouped into four with five-month intervals and each group consists of eight participants: four males and four females.

5.4 Language used in Amharic speaking children’s speeches

In the following table, it was attempted to present the total number of utterances that children produced at a word, phrase, and sentence levels. The frequency of words found in thirty-two children’s speeches was also treated.

Table 22 Thirty-two children’s total number of utterances and word count

No	Age	Total utterances					Total Lexicon			
		N	Utter	%	Mean	SD	Word	%	mean	SD
1	3;0-3;5	8	1179	19.5	147.38	19.906	2558	16.5	319.75	42.016
2	3; 5-4; 0	8	1488	24.6	186	20.633	3498	22.6	437.25	57.173
3	4;0-4;5	8	1590	26.3	198.75	20.79	4151	26.8	518.88	43.390
4	4; 5-5; 0	8	1783	29.5	222.87	33.25	5272	33.3	659	95.382
5	Total	32	6040	100	188.75	36.096	15479	100	483.72	139.138

As the table shows, the total number of utterances that were taken from all children as a word, phrase, or sentence levels were counted and their total frequency was 6040 and the frequency mean was 188.75. However, the number of utterances collected from children’s speech differed from age group to age group. As the mean value of each age group portrayed, the number utterances increased hirarichally. It had 147.38 frequency mean in the first age group, 186 in the second, and 198.75 in the third and 222.87 in the fourth age group.

Similarly, the total number of word count from thirty-two children’s speech was 15479 with 483.72 frequency mean. 319.75 mean frequency was registered from the first age group, 437.25 from the second, 518.88 from the third and 659 from fourth age group (see Apdex.III for each child’s word frequency). Generally, as the mean of each group indicated, the minimum word count was 250(from the first age group) and the maximum was 807 (from the fourth age group. Apart from the frequency of utterances and words, the occurrence of consonant phonemes in children’s words was also counted and presented as follows.

5.5 The frequency of consonant phonemes in Amharic speaking children's speeches

In this section, an attempt was made to present the frequency of different phonemes, which were detected in children's words. These consonant phonemes were grouped in their manner of production in a pie chart and the frequency of individual consonant phoneme presented in bar graph consecutively. In addition, the frequency of each phoneme was also treated in relation to age and gender in the following sub- sections.

5.5.2. Frequency of consonants phonemes in thier manner of production

Different consonants counted from thirty-two Amharic speaking children's speeches was presented in a group in relation to their manner of production in the following pie chart.

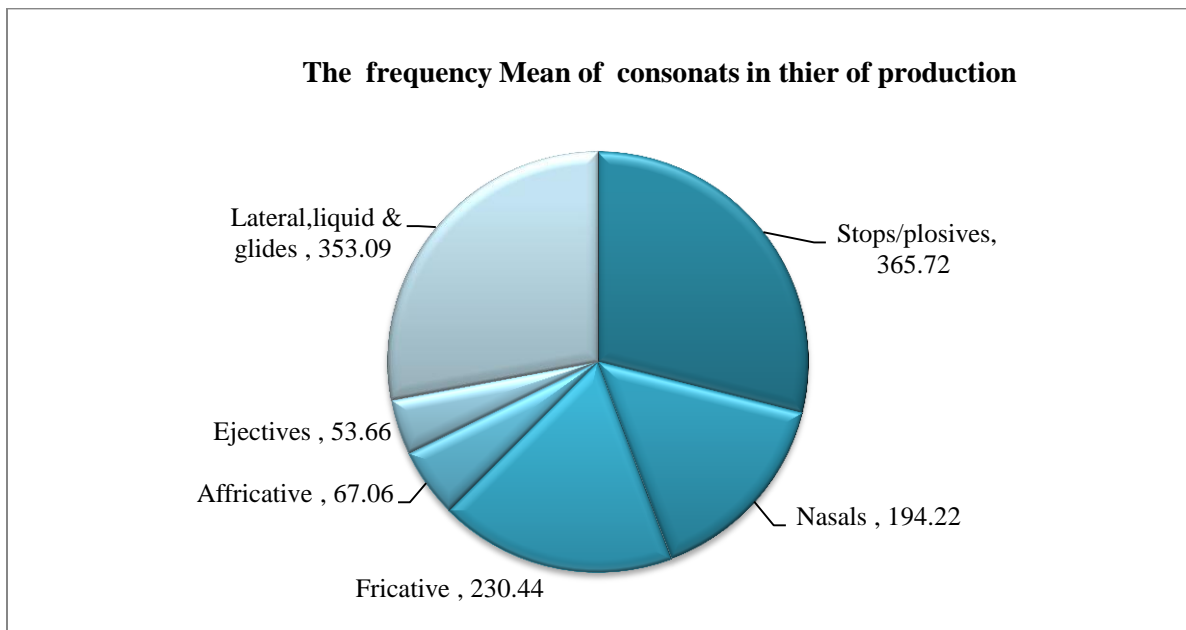


Figure4 the frequency mean of consonant phonemes

As shown in the pie chart, stops, in general, had the highest frequency mean (365.72) followed by lateral, liquid, glides (r, l, j &w)(353.09). Similarly, fricatives (230.44) and nasals((194.22) were significantly depicted consonants, and they appeared third and fourth respectively, whereas, affricatives (67.06) and ejectives (53.66) were relatively the least in their occurrence. Generally, the above pie chart presented the consonant phonemes in their manner of production. However, the total frequency of each consonant phoneme was also presented in a bar graph as follows.

5.5.3 Frequency of individual consonant phonemes

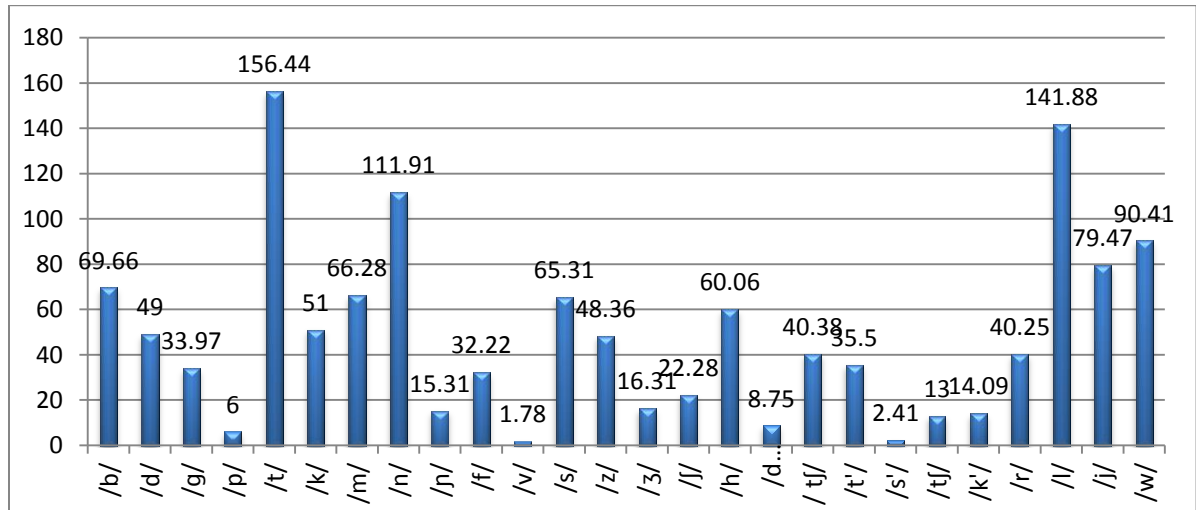


Figure 5 Frequency of individual consonant phonemes

As figure 5 depicts, the mean of individual consonant had differed one from the other in children's speech. The stop /t/, the liquid /l/, and nasal /n/ were the first dominantly recurring consonants followed by /w/, /j/, and /b/ respectively. The nasal /m/, the fricative /s/, and /h/ appeared in third place. In addition, the stop /k/ and /d/, the fricative /z/, the affricative /tʃ/ and /r/ were the fourth group of consonants in their representation. The ejective /tʰ/, the stop /g/ and the fricative /f/ had nearly close frequency and they were observed in different children's speech. In addition, the fricative /ʃ/ and /ʒ/, the nasal /ŋ/, the affricative /tʃʰ/, the ejective /kʰ/ were the other group of consonants detected in children's speech. However, the affricative /dʒ/, the stop /p/, the ejective /sʰ/ and /pʰ/ and the fricative /v/ had the least frequency mean due to few words were detected with such consonants.

In sum, in spite of frequency difference, a number of pulmonic consonants had a significant depiction in children's speech. Some consonant like /t/ and /l/, /w/ and /j/ were more salient than others as the type of tasks children engaged in and substitution phenomena likely brought such dominant frequency. For example, the frequent occurrence of the word /laj/ means 'up' and the agreement word /awo/ means 'yes' in children's speech augmented the frequency of /l/, /j/, and /w/. Moreover, the substitution of /r/ by [l] and the ejective /tʰ/ by [t] in different words also lifted up the frequency of /l/ and /t/ to the highest position. In

addition, children's choice of words in their storytelling and elicitation tasks could bring a possible difference in the frequency occurrence of consonants.

5.5.3 Frequency occurrence of consonants in relation to age and gender

In this section, consonants were presented together in their manner of production like stops, fricatives, affricatives, nasals, ejectives and lateral, liquid and glides(r,l,w,j), but their frequency occurrence was treated independently across age groups and in relation to gender to describe different consonants variation in boys and girls as well as in different age groups.

5.5.3.1 Frequency occurrence of stops in children's speech

Table 23 Frequency of stops /plosive across age groups

Age group		/b/	/d/	/g/	/p/	/t/	/k/
3;0-3;5	N	8	8	8	8	8	8
	Sum	374	106	164	22	1052	291
	%	16.8	6.8	15.1	11.5	21.0	17.8
	Mean	46.75	13.25	20.50	2.75	131.50	36.38
	SD	8.860	11.081	9.885	2.866	12.672	15.519
3;5-4; 0	N	8	8	8	8	8	8
	Sum	486	299	213	61	1298	383
	%	21.8	19.1	19.6	40.9	25.9	23.5
	Mean	60.75	37.38	26.63	7.63	162.25	47.88
	SD	21.137	13.917	11.868	7.652	41.403	10.643
4;0-4;5	N	8	8	8	8	8	8
	Sum	573	512	331	43	1150	454
	%	25.7	32.7	30.5	28.9	23.0	27.8
	Mean	71.63	64.00	41.38	5.38	143.75	56.75
	SD	18.981	19.250	10.378	5.370	27.202	17.879
4; 5-5; 0	N	8	8	8	8	8	8
	Sum	796	651	379	23	1506	504
	%	35.7	41.5	34.9	15.4	30.1	30.9
	Mean	99.50	81.38	47.38	2.88	188.25	63.00
	SD	18.860	23.874	14.282	2.357	34.878	10.770
Total	N	32	32	32	32	32	32
	Sum	2229	1568	1087	149	5006	1632
	%	100.	100	100.	100	100	100
	Mean	69.66	49.00	33.97	4.66	156.44	51.00
	SD	25.826	31.259	15.669	5.197	36.565	16.785

As the data in above table indicated, the total frequency mean of /b/ was 46.75 in the first age group, 60.75 in the second, 71.63 in the third and 99.50, in the fourth age group and the maximum frequency count was 138 (in the fourth age group) and the minimum was 15 (in the first age group). This indicated that the stop /b/ had a significant representation across

age groups. The other stop consonant was /d/ and it had 13.25 frequency mean in the first age group, and the frequency mean increased to 37.38 in the second, to 64.0 in the third and 81.38 in the fourth age group. However, the manifestation of /d/ was more frequent in older age groups than others. However, the consonant /d/, in some children's speech, especially in the first age group, it was affected by frequent devoicing phenomena and this brought a great difference between the maximum and the minimum frequency of /d/ to fall far apart (max 129 and the Min 3). Whereas, the other voiced stop, /g/ had 20.50 frequency mean in the first age group, 26.63 in the second, 41.38, in third and 47.38 in the fourth age group.

As far as the voiceless stops /p/, /t/, and /k/ were concerned, the above table has portrayed their frequency. From voiceless stops, /p/ was the least in its manifestation across age groups as well as in Amharic language. Its total frequency was 136 in thirty-two children's speech. It had 3.25 frequency mean in the first age group, 5.5, in the second, 5.3, in the third and 2.88 in the fourth age group. On the contrary, the voiceless stop /t/ was the most salient of all the stops. It had 131.50 frequency mean in the first age group, 162.25 in the second, and 143.75 in the third and 188.25 in the fourth age group. The above data also confirmed that the consonant /t/ had a great coverage in different children's speech. The other voiceless stops /k/ had also 36.38 frequency mean in the first age group, 47.88 in the second, and 56.75 in the third and 63 in the fourth age group.

Generally, the stops /t/, /b/, /k/and /g / had a noticeable representation across age group and the consonant /d/ was also manifested in different age groups despite hosting continuous omission and substitution in some children's words. In sum, except /p/, the other stop consonants had a hierarchal augmentation across age groups. A case in point, the highest frequency of /t/ was 111 in the first age group and it grew to 222 in the fourth age group.

Table 24 Frequency of stops in relation to gender

Gender		/b/	/d/	/g/	/p/	/t/	/k/
Males	N	16	16	16	16	16	16
	Sum	1112	808	501	79	2371	898
	%	49.9	51.5	46.1	53.0	47.4	55.0
	Mean	69.50	50.50	31.31	4.94	148.19	56.13
	SD	21.762	29.239	15.547	4.024	25.087	17.161
Females	N	16	16	16	16	16	16
	Sum	1117	760	586	70	2635	734
	%	50.1	48.5	53.9	47.0	52.6	45.0
	Mean	69.81	47.50	36.63	4.38	164.69	45.88
	SD	30.080	34.053	15.832	6.281	44.594	15.222
Total	N	32	32	32	32	32	32
	Sum	2229	1568	1087	149	5006	1632
	%	100	100	100	100	100.	100
	Mean	69.66	49.00	33.97	4.66	156.44	51.00
	SD	25.826	31.259	15.669	5.197	36.565	16.785
	Min	15	3	10	0	98	18
	Max	138	129	74	25	255	93

An attempt was also made to describe the frequency occurrence of stops from gender perspectives. As shown in table 24, the stop /b/ had 69.50 mean frequency coverage in boys' speech and 69.81 in girls. Besides, /d/ was 50.50 in boys' and 47.50 in girl's speech. The other voiced stop /g/ covered 31.31 frequency mean in boys' and 36.63 in girls' and the voiceless stop /p/ had 4.94 mean in boys' speeches and 4.38 was in girls'

Whereas, the consonant /t/ had 148.19 mean frequency coverage in boys' speech and 164.69 in girls' and /k/ was 56.13 in boys and 45.88 in girls' speech. Generally, as the mean value indicated, stops had significant representation in boys and girls' speech. However, the frequency of stops registered in boys and girls' speech differed one from the other. For example, the stops /b/, /g/ and /t/ had a better frequency in girls' speech than boys, whereas, /d/, /p/ and /k/ showed a slight exceedance in boys' side.

To summarize, all stops, except /p/, had a significant representation and their frequency increased in older age (4- 5 years) groups. As the findings have indicated, it is possible to deduce that this age bound children acquire most of the stop consonants. However, some children were consistently observed substituting /d/ by [t] in different word positions, and

this is a good sign to speculate that the acquisition of /d/ requires time in some children's phonological development process.

5.5.3.2 Frequency of fricatives

Table 25 Frequency of fricatives in different age groups

Age group		/f/	/z/	/v/	/h/	/ʒ/	/ʃ/	/s/
3;0-3;5	N	8	8	8	8	8	8	8
	Sum	174	109	25	251	111	218	330
	%	16.9	7.0	43.9	13.1	21.3	30.6	15.8
	Mean	21.75	13.63	3.13	31.38	13.88	27.25	41.25
	SD	3.694	9.070	5.793	13.814	9.031	12.99	19.315
3; 5-4; 0	N	8	8	8	8	8	8	8
	Sum	224	304	15	281	114	126	432
	%	21.7	19.5	26.3	14.6	21.8	17.7	20.7
	Mean	28.00	38.00	1.88	35.13	14.25	15.75	54.00
	SD	6.437	17.542	1.642	14.633	3.845	4.464	16.928
4;0-4;5	N	8	8	8	8	8	8	8
	Sum	259	484	14	618	254	265	632
	%	25.1	31.1	24.6	32.2	48.7	37.2	30.2
	Mean	32.38	60.50	1.75	77.25	31.75	33.13	79.00
	SD	7.818	50.819	3.495	29.060	21.002	9.877	24.501
4;5-5; 0	N	8	8	8	8	8	8	8
	Sum	374	660	3	772	43	104	696
	%	36.3	42.4	5.3	40.2	8.2	14.6	33.3
	Mean	46.75	82.50	0.38	96.50	5.38	13.00	87.00
	SD	6.182	14.172	.744	12.224	2.722	4.375	16.656
Total	N	32	32	32	32	32	32	32
	Sum	1031	1557	57	1922	522	713	2090
	%	100	100.0	100.0	100	100	100	100
	Mean	32.22	48.66	1.78	60.06	16.31	22.28	65.31
	SD	11.05	37.341	3.471	33.281	14.766	11.78	26.445
	Max	57	174	17	111	56	50	124
	Min	17	3	0	7	0	6	20

Similarly, the fricatives /f/, /v/, /z/, /s/, /ʒ/, /ʃ/, and /h/ had different representation. For example, the fricative /f/ was found with 20.63 mean frequency in the first age group, 28.00, in the second, 32.38, in the third and 46.75 in fourth age group. On the other hand, the fricative /v/ was the least from the group. It had 45 total frequency occurrences, it had 3.13 mean frequency coverage in the first group, 1.88 in the second, 1.75 in the third, and this consonant was hardly detected in the fourth age group. Generally, the distribution of /v/ was not constant in each age group as the language itself hosts few words with /v/, but because of substitution, the frequency seemed better in the first age group than others.

Unlike /v/, the fricative /s/ was one of the most salient consonants from the group, it had 2090 total frequency occurrence, and 41.25 mean frequency was registered from the first age group, 54 from the second, 79, from the third and 87 from the fourth age group. The other fricative, /z/ had also 1557 total occurrence. Its mean frequency coverage was 13.63, in the first age group, 38 in the second, 60.50 in the third and 82.50 in the fourth age group children's speeches. As the figures indicated, the frequency of /z/ showed a big increment in the last two age groups children's speech.

Likewise, the frequency of /ʒ/ was 522, and 13.88 mean frequency was registered from the first age, 14.25 from the second, 31.75 from the third and 5.38 from the fourth age group children's speeches. The fricative /ʒ/, in general, had a significant representation, but it was more frequent in the first, second, and third age groups due to substitution of /s/ and /z/ by [ʒ] but its frequency decreased in the fourth age group.

The other voiceless fricative /ʃ/ was registered with 713 total frequency and it was detected in all children's speech. Its mean frequency was 27.25 in the first age group, 15.75 in the second 33.13 in the third and, 13 in the fourth age group. Indeed, like the consonant /ʒ/, the highest frequency of /ʃ/ was registered from the first and the third age groups and this happened due to the backing phenomenon of /s/ and /z/ to [ʃ] in some children's speech.

The fricative /h/ was also the other frequent consonant. Its total occurrence was 1922 and had different mean frequency coverage across age groups. For instance, 31.38 mean frequency was registered from the first age group, 35.13, from the second, 77.25 from the third and 96.50 from fourth age group. Although the fricative /h/ was affected by the initial and medial deletion in some words, it had a frequent occurrence across age groups.

To sum up, all fricatives, except /v/, were found across age groups with significant frequency; but the deviation in each group also indicated that the visible difference observed amongst children in using different consonants. For example, the total mean frequency of /h/ was 31.38 and SD was 13.814 in the first age group; this evidently showed individual differences.

Table 26 The frequency of fricatives in relation gender

Gender		/f/	/z/	/v/	/h/	/ʒ/	/ʃ/	/s/
Males	N	16	16	16	16	16	16	16
	Sum	501	871	17	919	173	350	1091
	%	48.6	55.9	29.8	47.8	33.1	49.1	52.2
	Mean	31.31	54.44	1.06	57.44	10.81	21.88	68.19
	SD	11.441	45.243	1.482	32.125	8.968	10.813	27.29
Females	N	16	16	16	16	16	16	16
	Sum	530	686	40	1003	349	363	999
	%	51.4	44.1	70.2	52.2	66.9	50.9	47.8
	Mean	33.13	42.88	2.50	62.69	21.81	22.69	62.44
	SD	10.954	27.631	4.648	35.247	17.48	13.032	26.12
Total	N	32	32	32	32	32	32	32
	Sum	1031	1557	57	1922	522	713	2090
	%	100	100	100	100	100	100	100
	Mean	32.22	48.66	1.78	60.06	16.31	22.28	65.31
	SD	11.056	37.34	3.471	33.281	14.76	11.786	26.44
	Min	17	3	0	7	0	6	20
	Max	57	174	17	111	56	50	124

Along with gender, the frequency of fricatives had different distribution. The mean frequency of /f/ was 31.31 in boys' speech, and 33.13 in girls, whereas, /v/ had a limited occurrence on both sides. It was 1.06 (SD 1.482) boys and 2.50 (SD 4.648) in girls. As the fricative /v/ was not detected in some children's speech on both sides, the deviation is bigger than the mean. Unlike the frequency of /v/, the fricative /s/ was the most salient consonant from the group. It occurred with 68.19 mean frequency coverage in boys' and 62.44 in girls' speech. The frequency of /s/ had an increment in boys' speech than girls' but as groups' means and deviation depicted, the difference is not bigger to say one of the groups is better than the other. In addition, the devoicing phenomena of /z/ to [s] also brought differences in some boys' speech. Generally, despite slight difference, the result can be convincing evidence to deduce the significant depiction of /s/ in both boys' and girls' sides.

The other fricative /z/ appeared with 55.38 mean frequency coverage in boys' speech and 45.12 in girls'. Like /s/, the frequency of /z/ was slightly greater in boy's speech than girls. However, the occurrence of /ʒ/ was greater in girls' speech than boys; it had 10.81 mean frequency coverage in boys' and 21.81 in girls'. Similarly, the fricative /ʃ/ represented by 21.88 mean frequency in boys' speech and 22.69 in girls', and the glottal fricative /h/ had 57.44 mean frequency coverage in boys' speech and, with little increment, it was 62.69 in

girls. In sum, the frequency occurrence of /f/, /z/, /ʃ/ and /h/ had better representation in girls' speech than boys', whereas, /s/, /z/ and, /v/ show increment in boy's side.

To summarize, fricatives as whole, except /v/, had significant manifestation in all children's speech. Especially, the fricative /s/ and /h/ were more salient consonants than others were and the frequent occurrence of the fricatives /f/, /s/, /z/ and /h/ had hierarchal increment. However, the other fricatives /z/ and /ʃ/ did not show such growth rather they were more frequent in younger children's speech due to substituting. In relation to gender, the fricative /f/, /v/, /z/, /ʃ/, and /h/ had a better representation in girls' speech than boys, whereas, the consonant /s/ and /z/ in boys' speech.

5.5.3. Frequency Affricatives and Ejectives

In this section, the token frequency of affricatives /dʒ /, /tʃ/, /tʃʰ/ and the ejectives, /tʰ/, /pʰ/, /kʰ/and /sʰ/were treated in relation to age and gender. The total occurrence of each consonant also treated individually.

Table 27 Frequency of affricatives and ejectives

Age group		/dʒ /	/ tʃ/	/ tʃʰ/	/tʰ/	/pʰ/	/kʰ/	/sʰ/
3;0-3;5	N	8	8	8	8	8	8	8
	Sum	33	272	23	49	0	15	5
	%	11.8	21.5	5.5	4.3	0.0	3.3	6.5
	Mean	4.13	34	2.88	6.13	0.00	1.88	0.63
	SD	4.704	21.46	5.330	12.426	0.00	3.482	1.061
3;5-4; 0	N	8	8	8	8	8	8	8
	Sum	71	279	116	225	17	78	15
	%	25.4	22	27.9	19.8	20.0	17.3	19.5
	Mean	8.88	34.88	14.50	28.13	2.13	9.75	1.88
	SD	4.086	18.871	11.199	14.604	2.997	6.159	1.727
4;0-4;5	N	8	8	8	8	8	8	8
	Sum	82	394	105	384	51	124	23
	%	29.3	31.1	25.2	33.8	60.0	27.5	29.9
	Mean	10.25	49.25	13.13	48.00	6.38	15.50	2.88
	SD	7.517	27.02	7.080	23.658	11.32	10.014	1.553
4; 5-5; 0	N	8	8	8	8	8	8	8
	Sum	94	322	172	478	17	234	34
	%	33.6	25.4	41.3	42.1%	20	51.9	44.2
	Mean	11.75	40.25	21.50	59.75	2.13	29.25	4.25
	SD	2.712	17.38	10.79	16.98	1.458	12.837	2.493
Total	N	32	32	32	32	32	32	32
	Sum	280	1267	416	1136	85	451	77
	%	100	100	100	100	100	100	100
	Mean	8.75	39.59	13.00	35.50	2.66	14.09	2.41
	SD	5.623	21.34	10.86	26.52	6.083	13.204	2.168

As the table depicted, the frequency of affricatives (dʒ , tʃ , and ejectives (p' , t' , k' , to' and s') was presented. The affricative /dʒ/ had 280 (Mean 8.75) total frequency occurrence, and its mean frequency was 4.13 in the first age group, 8.88 in the second, 10.25 in the third and 11.75 in the fourth age group. The affricative /tʃ/ had also 1267 (Mean 39.59) total frequency and it had a different distribution across age groups; it covered 34.0 mean frequency coverage in the first age group, 34.88 in the second, 49.25 in the third and 40.25 in the fourth age group. Generally, the affricatives /dʒ/ and /tʃ/ were seen across age groups. They had also age related increment.

Whereas, ejective $\text{/tʃ'}/$ was a less frequent consonant in different children's speech. It had 416 total frequencies. Of the total, 2.88 (SD 5.330) mean frequency was registered from the first age group, but this consonant had zero realizations in six children's speech from the group. Whereas in the second age group, it had 14.50 (SD 11.199) mean frequency, 13.13 (SD 7.080) in the third and 21.50 (SD 10.797) in the fourth age groups. The manifestation of $\text{/tʃ'}/$ differed from individual to individual and across age groups. Some children such as like ,C1, C2, C3, C5, C7 and C8 from the first age group, C12 and C13 from the second ,C21 from third and C29 from the fourth age groups, did not realize and produce the consonant $\text{/tʃ'}/$. These children consistently substituted $\text{/tʃ'}/$ by its counterpart as [tʃ] or [t] or [t'] . This substitution incidence decreased in older children's (4;5-5 years) speech.

Along with this, the ejective $\text{/t'}/$ had 1136 total frequency coverage and its mean frequency was 4.3 (SD 6.13) in the first age group. It increased to 28.13 (SD 14.604) in the second, 48 (SD 23.658) in the third and 59.75 (SD 16.985) in the fourth age group. As the total frequency and its distribution depicted, the ejective $\text{/t'}/$ was embodied fairly across age groups. However, there were also some children who substituted $\text{/t'}/$ by its counterpart [t] consistently. A case in point ,from the first age group, except children C7 and C8, the consonant $\text{/t'}/$ was not properly realized by others; in this age group children's speech, the consonant hosted either deletion or substitution phenomenon. Similarly, in child C12's speech from the second and C21 from the third, the consonant $\text{/t'}/$ had also zero realization. Generally, from 32 children, eight of them did not have a proper realization and production of the ejective $\text{/t'}/$.

As far as the ejective /pʼ/ is concerned, the table depicts a different frequency occurrence across age groups. It had 85 (mean 2.66) total frequency occurrence. However, the ejective /pʼ/ was not detected in the first age group children's speech. However, it had 2.13 (SD 2.997) mean frequency in the second age group, 6.38(SD 11.32) in the third and 2.13 (SD 1.458) in the fourth age group. The low frequency of /pʼ/ resulted from a limited number of words which consist of this consonant and from 32 children, in 13 of them, the ejective /pʼ/ was not detected.

The other ejective /kʼ/ had also 451(mean 14.09) total frequency in thirty-two children's speeches. Of this, 3.3 (SD 1.88) mean frequency was detected in the first age group, 9.75(SD 6.159) in the second, 15.50 (SD 10.014) in the third and 29.25(SD 12.837) in the fourth. As it is observed, the ejective /kʼ/ was fairly embodied across age groups although there were children who were not able to utter this consonant. For example, from the total thirty-two, children, C1, C2, C3, C5, and C8 from the first age group, and child C21 from the third did not realize the ejective /kʼ/. In sum, aged between 4 to 5 years old children had better performance in pronouncing the ejective /kʼ/ than the younger, except child C21.

The last consonant from the group was /sʼ/ and it had 77 total frequency occurrence. Words with this consonant /sʼ/ ranges from zero to eight in children's speech. Of this, 0.63 (1.061) mean frequency was registered from the first age group, 1.88(SD 1.727) from the second, 2.88(SD 1.553) from the third and 4.25(SD 2.493) from the fourth age group. Like other ejectives, the consonant /sʼ/ had a limited frequency across age groups and it was hardly detected consonant across age group.

Generally, from the affricatives, /tʃ/ had the highest frequency occurrence in different age groups even though a few children substituted it by aspirated [t^h], whereas /dʒ / had a limited frequency. Apart from affricatives, ejectives were the least but their frequency size showed an increment in older age group children's speech. Most of the first age group children and some from other groups did not pronounce the ejectives properly, and this mirrors how the acquisition of these consonants takes time in some children's language development process.

Table 28 Frequency of affricatives and ejectives in relation to gender

Gender		/dʒ/	/tʃ/	/tʃʰ/	/tʰ/	/pʰ/	/kʰ/	/sʰ/
Males	N	16	16	16	16	16	16	16
	Sum	129	495	209	582	54	173	32
	%	46.1	39.1	50.2	51.2	63.5	38.4	41.6
	Mean	8.06	30.94	13.06	36.38	3.37	10.81	2.00
	SD	5.543	19.51	12.61	24.56	8.302	10.27	1.673
Female	N	16	16	16	16	16	16	16
	Sum	151	772	207	554	31	278	45
	%	53.9	60.9	49.8	48.8	36.5	61.6	58.4
	Mean	9.44	48.25	12.94	34.63	1.94	17.38	2.81
	SD	5.796	20.02	9.212	29.12	2.542	15.22	2.482
Total	N	32	32	32	32	32	32	32
	Sum	280	1267	416	1136	85	451	77
	%	100.0	100.0	100	100	100	100	100
	Mean	8.75	39.59	13.00	35.50	2.66	14.09	2.41
	SD	5.623	21.345	10.86	26.521	6.083	13.20	2.123

Like stops and fricatives, affricatives and ejectives were described in relation to gender. The mean frequency of the affricative /dʒ/ was 8.06 (SD 5.543) in the boys' speech and 9.44 (SD 5.796) in girls'. Similarly, the boy's speech covered 30.94 (SD 19.512) mean frequency of /tʃ/ and it was 48.25(SD 20.025) in girls. As the means indicated, the frequency of affricative /tʃ/ had a better exceedance in the girls' speech than boys.

Likewise, the ejective /tʃʰ/ had 13.06 (SD 12.615) mean frequency coverage in boys' and 12.94 (SD 9.212) in girls' speech, whereas, the ejective /tʰ/ had by far a better occurrence than other ejectives; it covered 36.38 mean frequency in boys' speeches and 34.63 (SD 29.127) in girls'. The ejective /pʰ/ also covered 3.37 mean frequency in boys' speech and 1.94 in girls' and the mean frequency of /kʰ/ was 10.81 in boys' side and 17.38 in girls' speech. The total frequency mean of /sʰ/ was 2(SD 1.673) in boys speeches and it was 2.81(SD 2.482) in girls. The data in the above table depicted that the affricatives /dʒ/, /tʃ/ and /sʰ/ had a better frequency occurrence in girls' speech than in boys' whereas, the ejectives //tʃʰ/,/tʰ/ and /pʰ/ slightly greater in boys' speech than girls'. However, the difference in both side was a not sound evidence to say one group is better than the others.

In sum, affricatives and ejectives were generally the least frequent consonants across age groups and most of older age children (age 4; 5-5; 0 years) pronounced most of the affricatives and ejectives properly. Thus, it is possible to put forward the contribution of age

and gender on the development of phonology in general and the acquisition of affricatives and ejectives in particular.

5.5.3.4 The frequency of nasals in children's speeches

Table 29 Frequency of nasals across age groups

Age group		/m/	/n/	/ɲ/
3;0-3;5	N	8	8	8
	Sum	236	511	60
	%	11.1	14.3	12.2
	Mean	29.50	63.88	7.50
	SD	13.908	17.772	3.665
3;5-4; 0	N	8	8	8
	Sum	341	740	120
	%	16.1	20.7	24.5
	Mean	42.63	92.50	15.00
	SD	11.987	30.313	2.449
4;0-4;5	N	8	8	8
	Sum	649	939	150
	%	30.6	26.2	30.6
	Mean	81.13	117.38	18.75
	SD	29.763	16.414	4.062
4; 5-5; 0	N	8	8	8
	Sum	895	1391	160
	%	42.2	38.8	32.7
	Mean	111.88	173.88	20.00
	SD	25.363	45.555	7.111
Total	N	32	32	32
	Sum	2121	3581	490
	%	100	100.	100
	Mean	66.28	111.91	15.31
	SD	38.836	49.995	6.635
	Max	169	233	30
	Min	10	41	3

As far as the nasal /m/ is concerned, it had 2121 (Mean 66.28) total frequency. It also appeared with 29.50 mean frequency coverage in the first age group, 42.63 in the second, 81.13 in the third and 111.88 in the fourth age group. The other most frequent nasal in children's speech was /n/; it had 3581 total frequency and 63.88 mean frequency was registered from the first age group, 92.50 from the second, 117.38 from the third and 173.88 from the fourth. In addition, the nasal /ɲ/ had also 490 total number of distribution. It had also 7.50 mean frequency coverage in the first age group, 15 in the second, 18.75 in third, and 20 in the fourth age group. Nasals, in general, had significant representation in all

children's speech, especially, /n/ was the most frequent consonant from the group and /m/ stood second and /ŋ / was fairly depicted. In addition, the frequency of nasals had a significant distribution and hierarchal increment.

Table 30 The frequency of nasals in relation gender

Gender		/m/	/n/	/ŋ/
Males	N	16	16	16
	Sum	1068	1760	259
	%	50.4	49.1	52.9
	Mean	66.75	110.00	16.19
	S D	38.765	49.212	7.774
Females	N	16	16	16
	Sum	1053	1821	231
	%	49.6	50.9	47.1
	Mean	65.81	113.81	14.44
	SD	40.173	52.307	5.379
Total	N	32	32	32
	Sum	2121	3581	490
	% o	100	100	100.0
	Mean	66.28	111.91	15.31
	SD	38.836	49.995	6.635
	Min	10	41	3
	Max	169	233	30

The data in above the table 30 indicated that the frequency of /m/ did not have such a big difference between girls (66.28) and boys (66.75) but it had little increment in boys' speech. However, the nasal /n/ occurred with 110 mean frequency in boys and 113.81 in girls' speech. The nasal /ŋ/ had also 16.19 mean frequency in boys' speech and 14.44 in girls'. In general, nasals had a fair representation in both boys' and girls' speech. However, the frequency of / m/ and /ŋ/ had little increment in boys speech, whereas, /n/ in girls side.

5.5.3.5 Frequency of lateral /liquid /glides in children’s speeches

Table 31 Token frequency of lateral, liquid and glides

Age group		/r/	/l/	/j/	/w/
3;0-3;5	N	8	8	8	8
	Sum	61	779	576	493
	% of	4.7	17.2	22.7	17
	Mean	7.62	97.38	72.00	61.62
	SD	15.565	45.585	25.077	28.284
3; 5-4; 0	N	8	8	8	8
	Sum	190	1122	554	591
	%	14.8	24.7	21.8	20.4
	Mean	23.75	140.25	69.25	73.88
	SD	23.347	13.382	22.933	21.304
4;0-4;5	N	8	8	8	8
	Sum	481	1195	583	872
	%	37.3	26.3	22.9	30.1
	Mean	60.13	149.38	72.88	109.00
	SD	27.961	6.802	25.997	26.393
4; 5-5; 0	N	8	8	8	8
	Sum	556	1444	830	937
	%	43.2	31.8	32.6	32.4
	Mean	69.50	180.50	103.75	117.13
	SD	32.824	48.929	21.592	41.828
Total	N	32	32	32	32
	Sum	1288	4540	2543	2893
	%	100.0	100.0	100.0	100.0
	Mean	40.25	141.88	79.47	90.41
	SD	35.571	44.406	26.895	37.326
	Min	0	36	23	40
	Max	107	283	133	183

As shown, the frequency of /r/, /l/, /j/, and /w/ was presented in the above table. The total frequency of /r/ was 1288(Mean 40.25). Of the total, it had 7.62 (SD 15.565) mean frequency coverage in the first age groups, 23.75 in the second, 60.13 in the third and 69.50 in the fourth. Despite its distribution across age group, /r/ was not detected in nine children’s speech. For example, children C1, C2, C3, C5, and C8 from the first age group , children C12 and C13 from the second , C21 from the third and C29 from the fourth age group did not pronounce the consonant /r/. Generally, from this finding, it is possible to say that the consonant /r/ had a limited frequency due to substitution and deletion process.

On the other hand, the liquid /l/ was one of the most abundantly manifested consonants in all children’s speeches. It had 4540 (Mean 141.88) total token frequency. Its mean frequency was 97.38 in the first age group, 140.25 in the second, 149.38 in the third and

180.50 in the fourth age group. Similarly, the glide /j/ and /w/ were considerably frequent. For example, /j/ had 2543 (Mean 79.47) total occurrence. Its mean frequency was 72 in the first age group, 69.25 in the second, and 72.88 in the third and 103.75 fourth. Likewise, the glide /j/ had a better representation in all children's speech although it was affected by deletion in some words. In addition, the total frequency of /w/ was 2893 (Mean 90.41). It had 61.62 mean frequency in the first age group, 73.88 in the second, 109.0 in the third and 117.13 in the fourth. As the big SDs in each group indicated, the frequency of /w/ greatly varied from one child to child other within the group.

Generally, /l/, /j/, and /w/ were dominantly visible consonants in all children's speech and they had hierarchal increment across age groups, whereas, /r/ had a limited frequency comparing to the group due to zero realization in nine children.

Table 32 Lateral, liquid and glides in relation to gender

Gender		/r/	/l/	/j/	/w/
Males	N	16	16	16	16
	Sum	609	2403	1342	1373
	%	47.3	52.9	52.8	47.5
	Mean	38.06	150.19	83.88	85.81
	SD	34.169	38.665	20.630	31.433
Females	N	16	16	16	16
	Sum	679	2137	1201	1520
	%	52.7	47.1	47.2	52.5
	Mean	42.44	133.56	75.06	95.00
	SD	37.910	49.325	32.061	42.968

The total frequency of lateral /r/, liquid /l/ and the glides /j/ & /w/ was presented in the above table in relation to gender. As the mean value of /r/ in both sides indicated, the frequency of this phoneme is slightly greater in girls' (42.44; SD 37.910) speech than in boys' (38.06; SD 34.169). Whereas, the frequency of /l/ exceeded in boys' speech (150.19) comparing to girls (141.88); the increment was observed due to two older age boys consistently substituted /r/ by [l] and this brought up the frequency of /l/ greater in boys' speech than girls. In addition, the mean frequency of /j/ was 83.88 in boys and 79.47 in girls and /w/ had 85.81 mean frequency coverage in boys' speech and 90.41 in girls. In general, the frequency of /r/, and /w/ had a better frequency in girls' speech than boys but the frequency of /l/ and /j/ showed increment in boys' side.

Summary

The findings in the above consecutive tables indicated that most of Amharic consonant phonemes had a reasonable distribution across age groups and the consonants /t/, /l/ and /n/ were the most prominent consonants respectively. These consonants had also leading place in all children's speech as they appeared by replacing other consonants. The second frequent consonants were the glide /w/ and /j/. Consonants like /b/, /s/ and /h/ had the third place in their frequency. Therefore, it is likely to say that these consonant phonemes had a repeated manifestation in different words or they were likely acquired at this age bound and the tasks children engaged in during recording session was also a possible factor for their highest frequency. Besides, except, /p/, /v/ and /p'/, the remaining consonant phonemes had also a visible representation in different children's speech. On the other hand, the big number of SD (standard deviation) in each group also signaled the existing difference between children in using different consonants in their speech. The overall manifestation of different consonants in children's speech is potent to say that majority of aged between 3 to 5 years children acquired most of the pulmonic consonant phonemes, however, some children did not articulate the ejectives (/tʃ/, /t'/, /p'/, /k'/, /s'/ and the lateral /ɾ/. This indicated that the acquisition of these phonemes requires time to be completed in some children's phonological development process.

Although the frequency occurrence of different consonants portrayed their reasonable representation in children's speech, they had also a probability of hosting substitution, deletion, assimilation and cluster reduction processes due to different contributing factors (the nature of sound sequence in a word, the structure of words and the number of syllables). In order to describe these situations, children's consonants distribution and the nature of consonant realizations were summarized and presented in the following sections.

5.6 Children's Consonants realization and developmental processes

In this subsection, children's consonant realization and developmental processes were treated and presented. The section was intended to describe the general speech development of Amharic speaking children. First, the consonant repertoire was presented for each group to see the occurrence of different consonants in their appropriate position at SIWI (syllable-initial-word-initial); and SFWF (syllable-final-word-final) in a word (See appdx.V). Then,

children's sample words were presented and analyzed to summarize the developmental process of each child.

5.6.1 Aged 3-3; 5 children's consonant realizations

In the following consecutive tables, the first age group (3-3; 5) children's consonants realizations.

Table 33 Aged between 3 to 5 years old children's consonant realization

Devoicing	Fronting	Backing	Stopping
/b/→[p] (C1, C2)	/d/ →[b] (C2)	/z/ →[ʒ](C1, C2, C3)	/m/→[t] (C2,)
/d/→ [t] (C1, C2, C3, C4, C5, C6)	/d/ →[f] (C6)	/s/ →[ʃ] (C1, C2, C3, C8)	/tʃ/→ [tʰ](C8)
/z/ →[s] (C3 ,C4, C5 ,C7)	/tʃ/→[tʰ] (C1)	/z/ →[ʒ](C1, C2, C3, C8)	
/ʒ/→[ʃ] (C3, C4)	/ɲ/ →[n] (C1,C8)	/ʒ/ →[dʒ] (C1, C2 ,C3)	
/g/→ [k] (C3)	/ʃ/→[s] (C4 ,C6,C8)	/m/→ [v] (C5)	
/z/→ [ʃ] (C3)	/ʒ/ → [z] (C8)		
	/tʃ/→ [tʰ] (C8)		
Gliding	Substitution /r/	De- ejection	
/r/→ [j] (C3)	/r/→ [l](C1, C2, C3 ,C5, C6, C8)	/kʰ/→ [k](C1C2,C3,C5)	
/l/→ [j] (C3)		/tʃʰ/→ [tʰ] C1, C2)	
		/tʰ/ →[t] (C1, C2 ,C3, C4 , C5)	
		/sʰ/ →[tʃ] (C3)	
		/tʃʰ/→[tʃ] (C4)	

As shown in the above table, different patterns of substitution were detected. For example, substitution of /b/ to [p] was one of the patterns found in two girls' (C1 & C2) speech but the majority of this age group children substituted /d/ by [t] at the initial and final word's positions. Substitution of /z/ by [s] was the other pattern detected in C3 ,C4, C5 & C7 's speech, whereas, children C3 & C4 substituted /ʒ/ to [ʃ] and child C3 also replaced /g/ by [k] and /z/ by [ʃ].

Fronting was also observed in the group. For example, child C2 commonly substituted /d/ by [b] whereas child C6 fronted /d/ by [f]. Similarly, children C1 & C8' fronted /tʃ/ by [tʰ], and /ɲ/ by [n] and children C4; C6 & C8 commonly fronted /ʃ/ by [s]. In addition, child C8 substituted /ʒ/ by [z] and /tʃʰ/ by /tʰ/. On the other hand, unlike fronting, stopping was only detected in two children's (C5 & C8) speech. Child C2 substituted the nasal /m/ by the stop [t] and Child C8 frequently substituted the affricative /tʃʰ/ by aspirated stop [tʰ] especially at the final word's position.

Substitution of one consonant by relatively back one was a frequent phenomenon in the group. For example, children C1, C2, and C3 commonly substituted the fricative /z/ by the back [ʒ]. These four children, from the group also substituted the fricative /s/ by the back consonant [ʃ]. While children C1, C2 and C3 backed /z/ to [dʒ] in some words but backing /m/ by [v] was only detected in child C5's speech.

Gliding and substitution of /r/ by [l] were the other patterns in the group. Substitution of /r/ & /l/ by [j] was commonly observed in Child C3's speech. This girl realized /r/ & /l/ as [j] in her entire speech but the other children, except child C7, substituted /r/ by [l] in their entire speech. Children were consistently observed substituting the ejectives by pulmonic counterparts. Such substitution was regular in different children's speech. Substitution of the ejective /k'/ by [k] was detected in children C1, C2, C3 and C5, /t'/ by [t] in C1, C2, C3 and C4 and /tʃ'/ by [tʰ] in C1 and C2's speech. In addition, substitution of /s'/ by [tʃ] in child C3's and /tʃ'/to [tʃ] in child C4's speech was the other incident in the group.

Generally, substitution of different consonants by others like, stopping, fronting, devoicing, backing, gliding, de-ejectivisation and substitution /r/ were the frequent developmental features commonly detected in the first age group children's speech. To examine the presence of such patterns, they were presented with illustrating words as follows.

5.6.1.1 Words illustrating aged 3 -3; 5 years children's substitution processes

Table 34 Words illustrating fronting and stopping in aged 3-3; 5 years children's speech

Process	Pattern	Realization	Target	Gloss	Source
Stopping	/m/ → [t]	təkinaw (C2)	məkinaw	car	Pic.naming
	/tʃ' → [tʰ]	lamotʰ (C8)	lamotʃ	cows	Pic.dscrpt
		fijəlotʰ (C8)	fijəlotʃ	goats	Pic.dscrpt
		kokobotʰ (C2)	kokobotʃ	stars	Pic.naming
		ijəbəlathat (C2)	ijəbəlathatʃ	(she)eating	Pic dscrpt
Fronting	/d/ → [b]	babo (C2)	dabo	bread	Storytelling
	/tʃ' → [t]	ijətət'awotu (C6)	ijətətʃ'awotu	playing	Pic. dcrpt
		k'ət'inewotʰ (C8)	k'ətʃ'inewotʃ	giraffes	Pic.dscrpt
		nət' (C8)	nətʃ	white	Pic.dscrpt
		k'ut'billəw (C8)	k'u tʃ'billəw	sitdown	Pic.dscrpt
	/ɲ/ → [n]	tənttua (C2)	tə ɲntua	has slept	Pic.dscrpt
	/ɲ/ → [n]	ətəna (C8)	ijətəna	sleeping	Pic.dscrpt
		ɡuadənawa (C2)	ɡuadənawa	her friend	Pic.dscrpt
	/ʃ/ → [s]	səmis (C4)	ʃəmiz	shirts	Pic descript
	/ʃ/ → [s] /z/ → [z]	tins (C6)	tɪnʃ	small	Pic dscrpt
		Wusa (C8)	wuʃa	dog	Pic.dscrpt
		ziwaziwe (C8)	ziwaziwe	swing	Pic.dscrpt

Children's words were commonly affected by different substitution process. As part of children's speech development, different realization processes were frequently detected in the group. Children's words illustrated in the above table indicated that the substitution /m/ by [t] like in the word /məkinaw/ 'car' as [təkinaw] in C2's speech but no other words detected in this pattern. In addition, children C2 and C8 substituted /tʃ/ by [tʰ] in their entire speech at the word final position like in the word /ajəʃ/ as [ajətʰ] and /kokoboʃ/ as [kokobotʰ]. These two children, from the group, consistently substituted /tʃ/ to [tʰ] at the final position without variation.

Similarly, fronting /d/ to [b] was only found in the word /dabo/ 'bread' as [babo] in child C2's speech and substitution /tʃ/ by [tʰ] was found C8's entire speech. In the word /k'əʃinəwotʃ/ means 'giraffes' as [k'ət'inəwotʰ] and in this word, the boy did only fronted the consonant /tʃ/ by [tʰ] but also substituted /tʃ/ by [tʰ]. Similarly, fronting, /tʃ/ by [tʰ] was also visible in child C8's speech in other words. Such a fronting incident was also observed in child C6's one word /jətəʃ'əwotu/ means '(they) playing' was realized as [ijətət'əwotu] but this child pronounced the consonant /tʃ/ correctly in other words. Children C2 and C8, from the group, substituted /ɲ/ by [n]. Child C2 pronounced the word /təɲtʃua/ means 'has slept' as [tənntua] in child C2 and child C8 also substituted the same root word /ijətəɲa/ 'sleeping' as [ətəna].

The other fronting was substitution of /ʃ/ by [s]; this fronting phenomenon was detected in child C4's word /ʃəmiz/ 'shirt' as [səmis]; child C6 uttered the word /tɪnʃ/ 'small' as [tɪns] and child C8 pronounced the word /wʊʃa/ 'dog' as [wusa]. Moreover, child C8 engaged in other substitution pattern; he substituted /ʒ/ by [z] in the word /zɪwəzɪwe/ 'swing' as [zɪwəzɪwe]. In sum, from eight children, in the group, stopping and fronting were commonly detected only in C2, C4, C6, and C8's speech. More specifically, substitution of relatively back consonants by front one was more frequent in child C2 and C8's speech than others were. In these two children's speech, fronting and stopping apparently frequent in different word positions.

Table 35 Words illustrating backing process in 3-3; 5 years old children's speech

Process	Pattern	Realization	Target	Gloss	Source
Backing	/f/ → [s]	silm(C8)	film	film (movie)	Storytelling
	/z/ → [ʒ]	zaf (C2,C3,C8)	zaf	tree	Pic.dscrpt
		muʒ (C2)	muz	banana	Pic.dscrpt
		ʒiwon (C3)	zihon	elephant	Pic.dscrpt
		aʒot ^h (C8)	azowotʃ	people	Pic.naming
		bizʉ (C8)	bizu	many	Pic.naming
		aʒot ^h (C8)	azowotʃ	crocodiles	Pic.dscrpt
		muʃ (C3)	muz	banana	Pic,dscrpt
	/s/ → [ʃ]	abəʃa (C3)	abəsa	lion	Pic,dscrpt
		atiʃət ^m (C3)	atisət'm	does not give	Pic,dscrpt
		ʃəwotʃ (C2,C8)	səwotʃ	people	Pic.naming
		ʃiʉ (C2)	isu	he	Pic.dscrpt
		ʃuli (C1)	suri	trouser	Pic. dscrpt
		kuəʃ (C2,C3, C8)	kuas	ball	Pic.dscrpt
		paʃta (C8)	paʃta	espageti	Elicitation
	/ʒ/ → [dʒ]	dʒiwadʒiwe(C1,C2)	ʒiwəʒiwe	swing	Pic.dscrpt
	/z/ → [dʒ]	dʒafu(C1)	zafu	tree	Pic.dscrpt
/m/ → [v]	səvavawi(C5)	səmajawi	blue	Pic.dscrpt	

Substituting relatively front consonant by back one was the other common developmental process which commonly affect most of aged between 3; to 3;5 years old children's speech. From eight children, in the group, backing was regularly detected in children C1, C2, C3, C5 and C8's speech. For instance, backing the consonant /f/ by [s] in the word /film/ as [silm] was a peculiar incidence in child C8's storytelling task but this boy had target realization of /f/ in other words.

However, substitution of /z/ by [ʒ] was the frequent backing phenomenon in different children's speech. This backing pattern was regularly observed in children C2, C3, and C8's speech. A good example of this is the frequent occurrence of the word /zaf/ 'tree' as [ʒaf]. This word was detected more than three times in each child's speech (in their storytelling, picture narration, and picture description) but these children did not show variation in their pronunciation. Similarly, these three children consistently realized /z/ as [ʒ] in most of their words like in the word [muʒ], [ʒiwon], [aʒot^h] for the target word /muz/ 'banana' /zihon/

elephant' and /azowotʃ/ 'crocodiles'. Such a pattern of substitution was regularly noticeable in these children's speech (see Appdx.V) but different realizations /z/ were also observed in different tasks.

On the other hand, backing the voiceless /s/ by [ʃ] was the other pattern of substitution in C1, C2, C3 and C8's speech. All the three children (C2, C3 and C8) substituted /s/ by [ʃ] in the words like /kuas/ 'ball' as [kuaʃ] , /anbəsə/ 'lion' as [abəʃa], /səwotʃ/ 'people' as [ʃəwotʃ], /pasta/ 'spaghetti' as [paʃta] and others. However, except words listed in the above table, the consonant /s/ had a proper depiction in these children's speech. Similarly, backing of /ʒ/ to [dʒ] was seen in children C1 and C2's few words, like in the word /ʒiwaʒiwe/ as [dʒiwadʒiwe] and /zafu/'tree' as [dʒafu]. Besides, the unique backing incidence was the substitution of /m/ by [v], which was detected in child C5's one word /səmajawi/ 'blue' as [səvavawi].

Generally, substitution of the front consonants by relatively the back one was a frequent developmental process, which occurred in different patterns. Despite variation observed, most of this age group children substituted one of the front consonant by the other back one in certain word but the regular backing phenomenon was registered in children C2, C3, and C8's speech.

Table 36 Words illustrating devoicing in aged three to 3; 5 children's speeches

Process	Pattern	Realization	Target	Gloss	Source
Devoicing	/b/ → [p]	ipəpələtʃ (C1)	ijəbələtʃ	she(eating	Pic.dscrpt
		dəppəl (C2)	dəbtər	ex.book	Elicitation
	/d/ → [t]	tɪmətua (C2)	dɪmətua	the cat	Pic.naming
		təmo(C2)	dəɡmo	also	Pic.dscrpt
		təna(C2);	dəna	drama'	Elicitation
		ant (C1, C3, C4)	and	one	Pic.dscrpt
		wotəbet (C3)	wodəbet	to home	Pic.dscrpt
		sɪtɪst (C4)	sɪdɪst	six	Pic.dscrpt
		wənt (C5)	wənd	male	Pic.dscrpt
		wətə(C6)	wədə	to	Pic.dscrpt
	/z/ → [s]	mus(C1,C4)	muz	banana	Pic.dscrpt
		sihon(C4,C5)	zihon	elephant	Pic.dscrpt
		Saf (C5,C7)	zaf	tree	Pic.dscrpt
/ʒ/ → [ʃ]	ʃəiwaʃiwe (C3)	ʒəiwaʒiwe	swing	Pic.dscrpt	
/g/ → [k]	təkəbita (C3)	təɡəlbit'a	upsiddown	Pic.dscrpt	
Backing & devoicing	/z/ → [ʃ]	muʃ (C3)	muz	banana	Pic.dscrpt

Like stopping, fronting and backing, devoicing was the other developmental feature detected in aged between 3 to 3; 5 years old children's speech. Although the occurrence of devoicing had different frequency, it was seen in all children speech, except in Child C8's speech. One of the common and frequent devoicing incidences was the substitution of /d/ by [t] at the initial and final word positions. From the group, children C1, C2, C3, and C4 consistently devoiced /d/ by [t] in different words. For example, the word /dimətua/ 'cat' as [timətua] and /wədə/ to [wətə] and /sidist/ 'six' as [sitist] but children C5 and C6 substituted /d/ by [t] only in final position like in the word /and/ 'one' as [ant]. However, devoicing /b/ by [p] was only seen in child C1 and C2's speech at the medial position like /ijəbələtʃ/ '(she) eating' as [ipələtʃ] (C1). This word hosts not only devoicing but also deletion of the glide /j/. Similarly, Child C2 realized /b/ as [p] in the word /dəbtər/ 'ex.book' as [dəppəl]. Except in few words, however, devoicing /b/ by [p] was not common in other children's speech.

With similar pattern, devoicing of /z/ to [s] was also seen in children C1, C4, C5 and C7's some words. For example, children C1 and C4 consistently pronounced the word /muz/ as [mus]. They did not show any change after they heard the target word. However, child C1 had a different realization of /z/ as indicated in table 37, she consistently uttered the word /zafu/ as [dʒafu]; backing the consonant /z/ to [dʒ] but she had a correct production of /z/ in other words. Devoicing of /z/ to [s] was also detected in children C4, C5, and C7's speech like in the word /zihon/ as [sihon] 'elephant' and /zaf/ 'tree' as [saf]. Nonetheless, this devoicing incidence was context specific, like in child C1's speech. Children were observed phonating /z/ correctly in different tasks, and so the realizations of /z/ differed from word to word. The same child had a possibility to pronounce /z/ differently in different words. Therefore, this evidence leads to deduce that the realization of /z/ consistently varied in each child's speech because of the child's perception of the actual words he/she uttered in different tasks. On the other hand, devoicing of /ʒ/ to [ʃ] in the word /ʒəiwaʒiwe/ 'swing' as [ʃəiwaʃiwe], /g/ to [k] like in the word /təgəlbɪt'a/ 'upside down' as [təkəbɪtə] and substituting /z/ to [ʃ] in the word /muz/ 'banana' as [muʃ] was only seen in Child C3's speech. In sum, substituting the voiced consonant by voiceless one was the consistent developmental process, which was attested in the first age group children's speech.

Table 37 Gliding process in age 3-3; 5 children’s speech

Process	Pattern	Realization	Target	Gloss	Source
Gliding	/l/ → [j]	jamotʃ(C3)	lamotʃ	cows	Pic.dscript
		fijəjotʃ(C3)	fijəlotʃ	goats	Pic.dscript
		jəja (C3)	lella	other	Pic.dscript
	/r/ → [j]	bəjəwotʃ (C3)	bərəwotʃ	oxen	Pic. dscript
		dojowotʃ (C3)	dorowotʃ	chickens	Pic.dscript
		məbjat (C3)	məbrat	light	Elicitation
		fijef ije (C3)	fifaf ire	fruits	Pic.dscript
		gaja (C3)	gar	with	Pic.dscript
	/l/ → [w]	Wubs (C2	libs	cloth	Elicitation

As far as gliding is concerned, it was only detected in two children’s speech. From the group, child C3 commonly substituted /l/ and /r/ as [j] in most of her words. For example, she realized /l/ as /j/ in the word /lamotʃ/ ‘cows’ as [jamotʃ], /fijəlotʃ/ ‘goats’ as [fijəjotʃ] and /lella/ ‘other’ as [jeja]. Similarly, she substituted /r/ by /j/ in the word /bərəwotʃ/ ‘oxen’ as [bəjəwotʃ], /dorowotʃ/ ‘chickens’ as [dojowotʃ] and in other words, too. Child C3 did not show any variation in the realization of /r/ as /j/ but she pronounced /l/ correctly in some words when it appeared at the initial position. However, gliding /l/ to /w/ was detected in child C2’s only one word as she pronounced the word /libs/ as [wubs]. With this word, child C2 not only substituted the consonant /l/ as [w] but also the weak central upper vowel /i/ to the back upper vowel [u]. To summarize, gliding was not as frequent as other patterns; it was only detected in child C2 and C3’s speech. Child C3 consistently substituted /r/ to [j] in her entire speech but in child C2’s speech it is only detected in one word.

Table 38 Words illustrating de- ejection process in aged 3-3;5 children’s speech

Process	Pattern	Realization	Target	Gloss	Source
De- ejection	/tʰ/→[t]	tota (C2,C3 C4, C5)	tʰotʰa	ape	picʰdscrpt
		tille (C4)	tʰire	cereals	picʰdscrp
		ajituan(C2)	ajitʰʰuan	rat	picʰdscrpt
	/tʃʰ/→[tʰ]	tatutotʰ (C2)	tʰatʰʰutotʰ	chickens	picʰdscrpt
	/tʃʰ/→[tʃ]	tʃilawan(C1,C2,C3, C5)	tʃʰirawan	her tail	Pic.dscrpt
		tʃamma (C5)	tʃʰamma	shoes	Pic.naming
		kətʃine (C5)	kətʃʰine	giraffe	Pic,dscrpt
		afitʃa (C5)	afitʃʰa	nose	Pic.naming
		kutʃ (C4)	kutʃʰ	sit	elicitation
		itʃawətələhu(C4)	itʃʰawətələhu	playing	elicitation
		tʃaj (C3)	səhaj	the sun	Pic.naming
		nizuh(C8)	nisʰuh	clean	Pic.dscrpt
		isak (C1)	misa-ikʰa	lunchbox	Elicitation
		/sʰ/→[ʃ]	tilik](C1,C2,C3,C4,C5)	tilikʰ	big
	sʰ/→[ʒ]	ijələkəmu (C2)	ijələkʰəmu	sorting	Pic.dscrpt
	/kʰ/→[k]	Kana (C3)	kʰana	Tvchannel	Elicitation
		bəjəkənu (C3)	bəjəkʰənu	daily	Pic.naming
		bəkolo (C4,)	bəkʰolo	corn	Pic.dscrpt
		kətʃine (C4)	kətʃine	giraffe	Pic.dscrpt
		kitələtʃ(C4,C5)	kʰitələtʃ	leaf	Pic.narrat.
		kəj(C5,)	kʰəj	red	Pic.dscrpt
		tikul(C2 C2 ,C3 C5)	tikʰur	black	Pic.dscrpt

As the above table depicts, de-ejection of ejectives was common in different children’s speech. This age group children did not realize most of the ejective consonants, except children C6 and C7 pronounced /kʰ/ and /tʰ/ properly. The other children substituted all the ejective consonants by their pulmonic counterparts. Children C1, C2, C3, C4, C5 and C8 substituted /tʰ/ by [t] in different words. They consistently pronounced the word /tʰotʰa/ as [total]. In addition, child C2 realized the word /tʰire/ ‘cereal’ as [tille] in this word, the girl also substituted /r/ by [l], and she pronounced the word /ajitʰuan/ ‘the rat’ as [ajituan]. Apart from words presented in the above table, aged between 3 to 3;5 years old children substituted /tʰ/ by [t] in their entire speech.

Similarly, substitution of /tʃʰ/ by its pulmonic counterpart [tʃ] was also apparently visible in this age group. Except children C4 and C7, the others did not pronounce the ejective /tʃʰ/; they either substituted or deleted. For example, the word /tʃʰirawan/ ‘her tail’ appeared as

/tʃilawan/ in children C1, C2, C3, C5's speech. Especially, child C5, consistently substituted /tʃ/ by [tʃ] in his entire speech as words illustrated in the above tables.

The majority of the words presented in the above table indicated that de-ejectivisation of, /k'/ by /k/ was the other observable pattern. From eight children in the group, five of them realized /k'/ as [k]. For example, child C1 pronounced the word /misa-ik'a/ 'lunch box' as [isak] deleting /m/ and the weak central upper vowel /i/ and substituting /k'/ by [k]. In addition, different children substituted /k'/ by [k] like in the word /tilik'/ 'big' as [tilik] and /tik'ur/ 'black' as [tikul]. Generally, children C1, C2, C3, C4 and C5 consistently substituted /k'/ by /k/ in their entire speech. On the other hand, substitution of /s'/ by [tʃ] and [ʒ] was seen only in two children's speech. Child C3 replaced /s'/ by [tʃ] in the word /s'əhaj/ 'the sun' as [tʃaj] and child C8 substituted /s'/ by [ʒ] in the word /nis'uh/ 'clean' as [niʒuh]. Words with the consonant /s'/ in children's speech were either few in number or did not occur at all, so it was difficult to examine how many of the children from the group acquired it. Generally, de-ejectivisation was common in aged between 3 to 3; 5 years old children's speech. Thus, it is possible to say that most of this age group child need time to acquire the ejective consonants.

Table 39 Words illustrating substitution /r/ by [l] in aged 3-3; 5 children's speech

Process	Pattern	Realization	Target	Gloss	Source
Substitution /r/by[l]	/r/ → [l]	faləls (C1,C8)	fərəs	horse	Pic.naming
		sal (C1 C2,C3,C8)	sar	grass	Pic.naming
		dʒolo (C1)	dʒoro	ear	Pic.naming
		dolo (C1,C2,C4)	doro	chicken	Pic.dscrpt
		tik'ul C1,C2,C3)	t'ik'ul	black	Pic.dscrpt
		filafille (C2,C5,C8)	fɪrafire	fruits	Pic.dscrpt
		bellewot ^h (C2,C3)	berewoʃ	oxen	Pic.dscrpt
		allat (C4,C5)	arat	four	Pic.naming
		mellet (C4)	meret	ground	Pic.dscrpt
		ijəlot (C4)	ijərot'ə	running	elicitation
		gumalle (C5)	gumare	hippo	Pic,dscrpt
		wullo/ije(C5,C8)	wuro	cat	Pic,dscrpt
		t'ik'ul (C6)	t'ik'ur	black	Pic.dscrpt

In aged between 3 to 3; 5 years old children's speech, substitution of /r/ by /l/ was the common developmental pattern of substitution. From the group, only child C7 pronounced /r/ correctly and C3 glided /r/ to [j], whereas, child C4 sometimes pronounced it correctly but on the other case she substituted it; her realization depends on the type of word she

uttered. The others substituted /r/ by /l/ consistently. As a result, most of this age group children's words were entirely affected by substitution of /r/ by /l/. For example, children C1 and C8 pronounced the word /færəs/ 'horse' as [fələs] and children C1, C2, C3 and C8 constantly uttered the word /sar/ 'grass' as [sal], /fɪrafɪrə/ 'fruits' as [file] and /tɪk'ur/ 'black' as [tɪk'ul]. Generally, in this age group, except child C7, consistent substitution of /r/ by [l] was apparently visible in all children's speech.

5.6.1.2 The nature of cluster reduction in aged between 3-3; 5 children's speech

Table 40 Words illustrate cluster reduction in aged between 3-3; 5 years old children's speech

process	pattern	Realization	Target	Gloss	Source
Cluster reduction	/nb/ → [b]	abəfa (C3)	anbəsa	lion	Pic.dscrpt
		wøbəl/ji (C1,C3)	wonbər	chair	Elicitation
	/ng/ → [g]	aʃagulit (C2)	aʃangulit	toy	Elicitation
	/rɪn/ → [m]	t'əmus (C6)	t'ərmus	bottle	Pic. naming
	/sk/ → [k]	ikibito (C2, C5, C6)	iskirbito	pen	Elicitation
	/rb/ → [b]				
	/rs/ → [s]	isas (C1)	irsas	pencil	Elicitation
		bofa (C1,C3)	borsa	bag	Elicitation
		bosa (C2)	borsa	bag	Elicitation
		tʃəsən (C6)	tʃərsən	finishing	Elicitation
tis (C5)		tirs	tooth	Elicitation	
k'ut (C8)		k'urs	breakfast	Storytelling	
/rtʃ/ → [tʃ]	sətʃe (C6)	sərtʃe	doing	Elicitation	
/rtʃ/ → [tʃʰ]	bitʃiko (C5)	birtʃiko	glass	Pic naming	
/ntʰ/ → [tʰ]	tət'əlt'ilo (C7)	tət'əlt'ilo	hanging	Pic.dscrpt	
/tʰb/ → [b]	tabual (C5)	tat'bual	washed	Pic.dscrpt	
/ntʃʰ/ → [tʃʰ]	aʃitʃ'a (C7)	aʃintʃ'a	nose	Pic.naming	

Despite not frequent, words with cluster consonants were detected in each child's speech and all cluster consonants were reduced to singleton. For instance, child C1 realized the word /wənbər/ as [wəbəl] and C3 as [wəbəji] dropping the consonant /n/ and gliding /r/ to [j]. Similarly, children C1 and C2 dropped /n/ from /nb/ in different words. The cluster /ng/ was also reduced to [g] in the word /aʃangulit/ 'toy' to [aʃagulit] in child C2's and others' speech. Child C6 also dropped the consonant /r/ from the cluster /rɪn/ from the word /t'ərmus/ 'bottle' as [t'əmus]. Cluster reduction also took place in the following cluster consonants. For example, the cluster /sk/ as [k] and /rb/ as [b] in the word /iskirbito/ 'pen' as [ikibito]. Likewise, the geminating consonant /tʰ/ was dropped from the word /tat'tʰibual/ as [tabual] meaning 'has been washed' and /rtʃ/ as [tʃ] in the word /birtʃiko/ 'glass' as

[bɪtʃiko]. Apart from cluster reduction, the word [bɪrtʃiko] hosted substitution of ejectives /tʃ/ and /kʰ/ by [tʃ] and [k] respectively. As children's words in the above table portrayed, cluster reduction was regularly recurring phenomenon with different patterns. The cluster /st/, /sk/, /rs/, /rb/ and /ng/ /rtʃ/, /rtʃʰ/, /ntʃ/, /tʰb/ and /ntʃʰ/ were condensed to [t] , [k], [s] , [b] and [g] , [tʃ], [t], and [b] in different word positions. Generally, any consonant that appeared in cluster had a great possibility to be condensed as singleton.

5.6.1.3 Deletion of consonants in aged between 3 to 3; 5 children's speech

Table 41 Deletion of consonant in age between 3 to 3; 5 children's speech

Process	Pattern	Realization	Target	Gloss	Source	
Deletion	/b/ → ∅	goz(C4)	gobəz	clever	Elicitation	
		təsəbua(C3,C5)	betəsəbua	her family	Pic. dscript	
		əsafa(C1)	bəsafa	with barrel	Pic. dscript	
	/d/ → ∅	əppəl(C1)	dəbtər	ex.book	Elicitation	
		/m/ → ∅	əkina(C1&C5)	məkina	car	Pic. dscript
			inm(C2)	minim	nothing	Storytelling
	tɪtbet(C6)		tɪmhɪrtbet	school	Elicitation	
	/z/ → ∅	uhonotʃ(C6)	zihonotʃ	elephants	Pic. dscript	
	/l/ → ∅	tɪk'u (C7)	tɪliku	the big	Pic.dscript	
		idzotʃ(C5)	lidzotʃ	children	Pic.dscript	
		ibəllat(C8)	libəllat	to eat	Storytelling	
	/r/ → ∅	t'iku(C7)	tɪk'ur	black	Pic.dscript	
		tət tət(C5& C6)	tərət tərət	story story	Storytelling	
	/w/ → ∅	hua(C1&C2)	wuha	water	Pic.dscript	
		ət'ətʃ(C1)	wət'ətʃ	she	Pic.dscript	
		ofotʃ(C1)	wofotʃ	birds	Pic.dscript	
		kətʃ'inotʃ(C8)	kətʃ'inewotʃ	giraffes	Pic. dscript	
	/j/ → ∅	ət'ət'u(C1)	jət'ət'u	drinking	Pic. dscript	
		itʃi (C4,	jitʃi	this	Pic.dsept	
	/h/ → ∅	ujət (C3)	hulət	two	Pic.dscript	
eɪtʃ(C3)		hedətʃ	she went	Pic.dscript		
edu(C5)		hedu	they went	Pic.dscript		
aja(C8)		ahja	donkey	Pic.naming		
ieɲawn (C8)		jiheɲawn	this one	Pic.dscript		
iwa(C1,C2)		wuha	water	Pic.dscript		

Deletion of consonants and vowels was the other noticeable phonological feature in aged between 3 to 3; 5 years old children's speech. It was detected in different words levels in every child's speech in the group. For example, in the word /tərət/ as [tət], the reduplicated phrase /tərət tərət/ as [tət tət] it means 'story' and /t'ikur/ 'black' as [t'iku] dropping /tʰ/ and the final /r/ from the word was detected in children C5, C6 and C7's speech. These three boys were frequently deleting /r/ from the final position in different words. However, most

of aged between 3 to 3;5 years old children substituted /r/ by [l] or [j] but deletion /r/ was not detectable pattern if it was not clustered with other consonants.

Deletion of /b/, /d/, and /m/ was also identified in some children's speech. For example, deletion of /b/ from the initial and medial positions was identified in child C1, C3, and C5's speech. These children dropped the consonant /b/ and the vowel /ə/ or /e/ from the initial position like in the word /betəsəbua/ 'her family' as [təsəbua] and /bəsafa/ as [əsafa]. Similarly, deletion of /b/ from the medial position was also seen in the word /gobəz/ 'clever' as [goz]. Child C1 also deleted /d/ from the word /dəbtər/ as [əppəl]. This word also hosted substitution of the cluster /bt/ as [pp], whereas, child C1 and C5 pronounced the word /məkina/ as [əkina] dropping the initial /m/ from the word and these two children repeatedly uttered the word more than three times but they did not show any change.

Deletion of /z/ in the word /zihonotʃ/ 'elephant' as /uhonotʃ/ was also seen in child, C6's speech and he consistently pronounced the word in a similar pattern without change. Children C5, C7 and C8 also deleted /l/ from some words like /tɪlɪk'u/ as [tɪk'u] (C7), /lɪdʒotʃ/ 'children' as [ɪdʒotʃ] (C5) and /sɪbələt/ 'eating' as [ɪbəlla] (C8) but deletion of /l/ was not seen in other words. In addition, consonants such as, /w/, /j/, and /h/ and the weak vowel /ə/ hosted a frequent deletion in some words. Deletion of /h/ from the initial and medial position was also found in different words. For example, the word /hedətʃ/ 'she went' was pronounced as [etətʃ], /ahɪja/ 'donkey' as [aja] and other words, too.

The consonant /h/ was affected by the initial and medial deletion. Similarly, the glide /w/ and /j/ also hosted deletion at the initial position. The glide /w/ was consistently deleted from the word /wuha/ 'water' in different children's speech; children pronounced the word as [uha] or [hua] or [ihua] and it also faced deletion from the plural marker /-wotʃ/ in different words. Children were observed dropping /w/ from plural marker morpheme /-wotʃ/ like in the word /kətʃɪnewotʃ/ 'giraffes' as [kətʃɪnotʃ] and deletion of the glide /j/ was detected from the initial position. For example, child C1 and child C4' pronounced the word /jət'ət'u/ 'drinking' as [ət'ət'u] and /jɪtʃɪ/ 'this' as [ɪtʃɪ].

In aged between 3 to 3;5 years old children's speech, deletion of the stop /b/, /d/, the nasal /m/, the fricative /z/ /, /h/, the liquid /l/, /r/, the glide /j/ and /w/ was commonly detected. However, deletion of /h/, /w/, and /j/ was more frequent in certain word patterns than others.

In sum, as the data in the above table presented, deletion of different consonants from various words was common in every child's speech despite frequency difference.

Summary

In sum, aged between 3 to 3; 5 years old children's consonant realization patterns indicated that children's words passed through different phonological processes. Substitution of one consonant by other was one of the prominent features in the group. From the substitution patterns, fronting, stopping, backing; devoicing, gliding, de-ejectivisation, and substitution of /r/ were apparent, and especially, backing and devoicing were commonly detected in all children's speech. Children's words were also affected by cluster reduction and deletion, so it is possible to presume that most of aged between three; 0 to 3; 5 years children's words were not free from different phonological processes.

5.6.2 Aged 3; 5 to 4 years old children's consonant realization

In this section, it was attempted to present the second age groups (3; 5 to 4 years) children's consonant realizations as well as their developmental patterns.

Table 42 Aged 3; 5-4; 0 children's consonant realization

Substitution				
Fronting	Stopping	Devoicing	Backing	De-ejectivisation
/f/→[p] (C11)	/dʒ/→[d] (C16)	/b/→[p] (C12)	/b/→[f] (C13, C16)	/k'/→[k](C10, C12, C16)
/j/→[s] (C9)	/dʒ/→[t] (C12, C13)	/d/→[t] (C11, C12, C15, C16)	/z/→[ʒ](C13, C14, C16)	/t'/→[t](C12)
/tʃ/→[tʃ'] (C16)	/tʃ/→[tʰ] (C12, C13)	/z/→[ʒ] (C12, C16)		/tʃ'/→[t] (C12)
	/m/→[b] (C14)	/ʒ/→[ʒ] (C12, C16)		/tʃ'/→[tʰ] (C13)
Substitution of /r/				
/r/→[l] (C11, C12, C13, C16)				

As shown, aged between 3; 5 to 4 years old children's consonant realization consists of different substitution patterns. Patterns like fronting, stopping devoicing, backing, de-ejectivisation, and substitution of /r/ were commonly detected in this age group. However, fronting was only registered in three children's (C9, C11, and C16) speech and stopping was detected in children C12, C14, and C16's speech. Children C11, C12, C15, and C16 commonly devoiced different consonants whereas children C10, C12, C13, and C16 engaged in de-ejectivization of the ejective consonants. Similarly, children C11, C12 and C16 substituted the consonant /r/ by [l]. Generally, aged between 3; 5 to 4 years old children's consonant realization table portrays different substitution patterns. Like in the

first age group, fronting, stopping, backing, devoicing, de-ejectivisation and substitution of /r/ were apparent. In order to describe the nature of these substitution features, they were also presented with illustrative words in following consecutive tables.

5.6.2.1 Words illustrating substitution in aged 3; 5-4 years old children's speech

Table 43 Aged between 3; 5-4 years children's words illustrating fronting and stopping

Process	Pattern	Realization	Target	Gloss	Source
Fronting	/f/ → [p]	pələs(C11)	fərəs	horse	Pic.dscrpt
	/ʒ/ → [z]	ziwaziwe (C6)	ziwazi we	swing	Pic.dscrpt
	/ʃ/ → [s]	səmiz (C9)	ʃəmiz	shirt	Pic.dscrpt
	/tʃ/ → [tʰ]	t'amma (C16)	tʃ'amma	shoe	Pic.naming
Stopping	/dʒ/ → [d]	lid(C16)	lidʒ	child	Pic.naming
		dīmət(C16)	dimitotʃ	cats	Pic.dscrpt
	/dʒ/ → [t]	tib (C12)	dʒib	hyena	Pic. naming
		litot ^h (C12)	lidʒotʃ	children	Pic.dscrpt
	/tʃ/ → [t ^h]	fijəlot ^h (C12)	fijəlotʃ	goats	Pic.dscrpt
		wotalət ^h (C12)	wotalətʃ	she climbed	Pic.dscrpt
		babot ^h (C13)	ibabotʃ	snakes	Pic.dscrpt
		dīmətot ^h (C16)	dīmətotʃ	cats	Pic.dscrpt
		wəfot ^h (C16)	wəfotʃ	birds	Pic dscrpt
	/m/ → [b]	bəkinaw (C14)	məkinaw	the car	Elicitation

As the above table depicts, different words illustrated the developmental realization of aged between 3; 5 to 4 years old children's speech. From the group, fronting of /f/ as [p] and /r/ as [l] was seen in child C11's one word / fərəs/ as [pələs] 'horse', however, the girl pronounced these consonants properly in her other words. In addition, child C16 replaced the relatively back fricative /ʒ/ by [z] in the word /ziwaziwe/ 'swing' as [ziwaziwe] and child C9 substituted the fricative /ʃ/ by other relatively front fricative[s] like in the word /ʃəmiz/as [səmiz]. Similarly, child C16's word /tʃ'amma/ 'shoes' as [tʰ'amma] was the other example of fronting of /tʃ/ by [tʰ], and the boy substituted /tʃ/ as [tʰ] in his entire speech. Generally, from eight children in the group, fronting was apparent in children C9, C11, and C16's words but it was dominantly manifested in child C16's speech.

By the same token, in aged between 3; 5 to 4 years old children's speech, stopping was also the other developmental pattern illustrated by different words. For instance, child C12 substituted the affricative /dʒ/ by [t] like in the words /dʒib/ 'hyena' as [tib] and / lidʒotʃ/ 'children' as [litot^h]; in addition, this word hosted not only stopping of /dʒ/ to [t] but also

substitution of /f/ to [t^h]. Child C12 realized the affricative /tʃ/ as aspirated stop [t^h] in the word /fijələʃ/ ‘goats’ as [fijələt^h] and /wotalətʃ/ ‘she climbed/ ‘went out’ as [wotalət^h]. Similarly, child C13 pronounced the word /ibabotʃ/ ‘snakes’ as [babot^h] substituting the affricative /f/ by voiceless aspirated stop [t^h]; and child C14 has repeatedly uttered the word /məkinaw/ ‘car’ as [bəkinaw] replacing the nasal /m/ by [b] but the boy properly used the nasal /m/ in his other words. Utterly, stopping was common in C12, C13, C14, and C16’s speech; especially, substitution of /f/ to [t^h] at the final position was consistently detected in C12, C13 and C16’s words. In sum, in spite of frequency difference, fronting and stopping were visibly apparent in some children’s speech in the second group.

Table 44 Aged 3; 5 to 4;0 children’s words illustrating devoicing, backing, and gliding

Process	Pattern	realization	Target	Gloss	Source
Devoicing	/b/→[p]	pəg(C12)	bəg	Sheep	Pic.dscrpt
		pəlla(C12)	bəlla	ate	Pic.dscrpt
		nəpələʃ(C12)	nəbərəʃ	she was	storytelling
		polsa(C12)	borsa	bag	Elicitation
	/d/→[t]	təptəl(C12)	dəbtər	Ex.book	Elicitation
		tɪmət(C12)	dɪmmət	Cat	storytelling
		ant ant (C11,C12)	andand	some	Pic. naming
		tolo (C12)	doro	hen	pic naming
		gətəpə (C11)	gəddəpə	friend	Elicitation
		Tabo(C11, C12, C15)	dabo	bread	Elicitation
	/z/→[s]	mus(C12)	muz	banana	Pic.dscrpt
		saf(C12)	zaf	tree	pic dscrpt
		aso (C12)	azo	crocodile	pic.dscrpt
		ʃəmisot(C16)	ʃəmizotʃ	shirts	Pic. dscrpt
		/ʒ/→[ʃ]	ʃɪwəʃɪwe(C12)	ʒɪwəʒɪwe	swing
Backing	/b/→[f]	dəftəl(C13,C16)	dəbtər	ex.book	Elicitation
		dəftər(C15)	dəbtər	ex.book	Elicitation
	/z/→[ʒ]	zɪhɔn(C13)	zɪhɔn	elephant	Pic.dscrpt
		kəʒə (C14)	kəʒɪə	then	Pic.dscrpt
Gliding	/b/→[w]	awusu(C15)	absu	Gives something	storytelling

As the words in the above table show, devoicing was commonly seen C12’s speech. The girl continuously substituted /b/ by [p] in her entire speech. She did not show any change even after she had heard the target pronunciation of the consonant [b] like in the word / bəg/ ‘sheep’ as [pəg], /bəlla/ ‘he ate’ as [pəlla], /borsa/ ‘bag’ as [polsa], and the same too in other words. The girl also devoiced /d/ by [t] in different word positions, for example, she repeatedly uttered the word /dɪmmət/ ‘cat’ as [tɪmət] and /and and/ ‘some’ as [ant ant] and

/doro/ ‘chicken’ as [tolo] and the word /gaddəɲa/ ‘friend’ as [gatəɲa]. Children C11 and C15 also devoiced the voiced stop /d/ by voiceless stop [t] in the words like /dabo/ ‘bread’ as [tabo], however, except in a few words, children’s C11 and C15 had a better realization of the stop /d/. The other devoicing pattern was the substitution of /z/ by [s]; such devoicing was manifested only in C12 and C16’s speech. Child C12 frequently substituted /z/ by [s] like in the word /muz/ ‘banana’ as [mus], /zaf/ ‘tree’ as [saf], /azo/ ‘crocodile’ as [aso] and in other words. Likewise, the girl (C12) substituted the affricative /ʒ/ by fricative [ʃ] in the word /ʒiwaziwe/ ‘swing’ as [ʃiwaʃiwe], whereas, child C16 replaced /z/ by [s] only in the word /ʃəmizotʃ/ ‘shirts’ as [ʃəmisotʃ]. Generally, as it was depicted in the above table, devoicing was visible in children C11, C15 and C16’s in one or two words but it was dominantly frequent in child C12’s words.

On the other hand, backing the relatively front consonants by back one was detected only in boys’ speech from the group. For example, C13 and C16’s was frequently substituted /b/ by [f] in the word /dəbtər/ as [dəftəl] or child C15 as [dəftər]. Whereas, child C13 substituted the voiced fricative /z/ by [ʒ] like in the word /zihon/ ‘elephants’ as [zihon] and child C14 in the word /kəzia/ ‘then’ as [kəʒa]. Gliding /b/ as [w] was detected during storytelling activity in child C15’s one word; the boy uttered the word /absu/ ‘give me a piece of bread’ as [afen bədabo awusu]. This boy did not change his pronunciation even after he had been told the target one.

Generally, devoicing of /b/ to [p], /d/ to [t], /z/ to [s] and /ʒ/ to [ʃ] were dominantly visible in most of child C12’s words; any word which appeared with one of the above voiced consonants had a great possibility to be affected by devoicing process in her speech. Devoicing was also manifested in children C11, C13 C15 and C16’s speech even though its occurrence did not exceed from one or two words. As far as backing and gliding are concerned, they were seemingly taken as boys’ developmental realization patterns in the second age group.

Table 45 Aged 3;5 to 4;0 children's Words illustrating de-ejectivisation

process	Pattern	Realization	Target	Gloss	Source
De-ejectivisation	/k' /→ [k]	tikul((C12)	t'ik'ur	black	Pic .dscrpt
		tilik(C12)	tilik'	big	Pic.dscrpt
		kəj (C12,C16)	k'əj	red	Pic .dscrpt
		tilkje(C10,C16)	tilk'je	the big	Pic.dscrpt
	/t' /→ [t]	atənaləhu(C12)	at'ənaləhu	i study	Pic. dscrpt
		tələmpəza(C12)	t'ərəp'eza	table	Pic. naming
	/tʃ' /→ [tʰ]	tɪlawan(C12)	tʃ'ilawan	her tail	Pic.dscrpt
		itawotaləhu(C12)	itʃ'awotaləhu	I play	Elicitation
		itəlsaləhu (C12)	itʃ'ərsaləhu	I finish	Elicitation
		pita(C12)	bitʃ'a	yellow	Pic.dscrpt
		tʰatutotʰ (C12)	tʃ'atʃ'utotʃ	chicken	Pic,dscrpt
	/s' /→ [s]	səj (C12)	s'əhaj	the sun	Elicitation
		səgul(C12)	s'əgur	hair	Elicitation

Like fronting, stopping and devoicing, deejectivisation was a continuously recurring pattern in child C12's speech. The girl de-ejectivised all ejective consonants in her entire speech. In addition, children C10 and C16 substituted /k' / by [k] in the word /tilk'je/ 'the big' as [tilkje], /k'əj/ 'red' as [kəj] and /t'ik'ur/ 'black' as [tikul]. Most of aged between 3;5 to 4 years old children properly realized the ejectives, but three children's (C10, C12 and C16), from the group, engaged in substitution of ejective consonants by their pulmonic counterparts especially, child C12 did not realize any of the ejective consonant; she was far from the adult's target.

Table 46 Aged between 3; 5-4 years old children's words illustrating substitution of /r/

process	Pattern	Realization	Target	Gloss	Source
Substitution of /r/	/r/ → [l]	mələt (C16)	məret	the earth	Elicitation
		amola (C16)	amora	big bird	pic.naming
		kəbəlɔ(C16)	kəbərə	drum	pic.naming
		təmali (C13)	təmari	student	Elicitation
		t'ilat'ile (C13)	t'irat'ire	cereals	Elicitation
		bəlle (C13)	bəre	oxen	pic.dscrpt
		dolo (C13)	doro	chicken	pic. scrpt
		jədul (C13)	jədur	wild	pic.dscrpt
		kangalo(C12)	kangaro	kangaroo	Pic.dscrpt
		nislamola(C12)	nisramora	eagle	Pic.naming
		gummale(C12)	gummare	hippo	Pic.naming
fələs(C12)	fərəs	horse	pic.naming		

As far as substitution of /r/ by [l] is concerned, it was frequently noted in C12, C13 and C16's speech. Mainly, children C12 and C13 had zero realization of /r/. For example, child

C12 substituted /r/by [l] in the word /børe/ as[bølle], /kangaro/ ‘kangaroo’ as[kangalo] and child C13 uttered the word /doro/ ‘chicken’ as [dolo], /jædur/ ‘wild’ as [jædul]. Similarly, child C16 realized /ɾ/ as[l] in the word /møret/ ‘earth’ as [mølet], /amora/ as [amola]. Majority of this age group children (C9, C10, C11, C14 and C15) had the proper realization of the consonant /r/ but children C12, and C13 completely substituted /r/ by[l] and in child C16’s few words.

To sum up, as far as substitution of one consonant within other is concerned, some children’s words, within the group, passed through different developmental patterns: fronting, stopping, devoicing, backing, gliding, and substitution of /r/. These substitution patterns greatly affected children C12, C13, and C16’s words. Unlike other children in the age group, child C12 had an immature phonological realization, which was still far from the adult’s target and she substituted different target consonants by others in her entire speech.

5.6.2.2 The nature of cluster reduction in aged 3; 5 to 4 children’s speech

Table 47 Aged between 3;5 to 4; years children’s words illustrating cluster reduction

Process	Pattern	Realization	Target	Gloss	Source
Cluster reduction	/nb/→[b]	abəsa(C11)	anbəsa	lion	Pic.naming
		worbər (C10,C14)	wonbər	chair	Elicitation
		gibal(C11)	ginbər	forehead	Elicitation
	/rb/ →[b]	iskibito(C13)	iskirbito	pen	Elicitation
	/rs/ →[s]	bosa (C9,C13’C15)	borsa	bag	Elicitation
		isas (C16)	irsas	pen	Elicitation
	/nk/→ [k]	ikifun(C10)	inkilfun	asleep	Pic.dscrpt.
	/lf/ →[f]				
	/ntʃ/→[tʃ]	afitʃ’a (C9,C14)	afintʃ’a	nose	Pic.naming
	/rtʃ/ →[tʃ]	bəbitʃ’k’o (C11,C13)	bəbirtʃ’k’o	with glass	Elicitation
	/nt’/ →[t’]	gət’ila (C14)	gənt’ila	break off	Pic.dscrpt
	/wk’/→[k’]	ak’aləhu (C14)	awk’aləhu	i know	Elicitation
	/ng/→[g]	kagalo (C16)	kangaro	kangaroo	Pic.naming
/tm/ →[m]	simot (C9)	sitmot	whiledying	Storytelling	

In aged between 3;5 to 4 years old children’s speech, except in child C12, a number of target words with consonant cluster were detected. Most of the words with such cluster consonants were taken from children’s elicitation, storytelling, and picture description tasks. However, all clusters had a possibility to be reduced to singleton. The reduction process affected any of cluster consonants, which appeared in children’s words.

For instance, in children C10, C11, C13 and C14's words, the cluster /nb/ was reduced to [b] / from the words /anbəsa/ as [abəsa], /wɒnbər/ 'chair' as [wɒbər] and /gɪnbər/ 'forehead' as [gɪbəl]. Simply, from child C11's utterance, the word, /gɪnbər/ was not only affected by reduction but also substitution of /r/ by [l]. This confirms that in children's speech, a single word can host different developmental features at the same time.

Likewise, child C13 pronounced the cluster /rb/ as [b] in the word /ɪskɪrbɪto/ 'pen' as [ɪskɪbɪto] and the cluster /rs/ was commonly reduced to /s/ in different words. From the group, children C9, C10, C13 and C1 dropped /r/ from the cluster /rs/ like in the word /bɒrsa/ as [bɒsa] and /ɪrsas/ as [ɪsas] and child C10 left /n/ and /l/ from the clusters /nk/ and /lf/ in the word /ɪnkɪlfun/ 'asleep' as [ɪkɪfun]. Child C9 and C14 uttered the word /afɪntʃa/ 'nose' as [afɪtʃa] dropping /n/ from the cluster /ntʃ/ and C11 and C13 dropped /r/ from /rtʃ/ in the word /bəbɪrtʃko/ 'with glass' as [bəbɪtʃko]. Dropping /n/ from the cluster /ntʃ/ was also the other example in child C14's words; he realized the word /gəntʃɪla/ 'she breaks off' as [gətʃɪla]. This boy also uttered the verb /ɔkw'ələhu/ 'I know' as [ak'ələhu] dropping /w/ from the cluster /wkʃ/. Of course, there are adults who pronounce the same word in the same way, so it may not be considered only children's pattern of reduction.

On the other hand, child C16 realized the word /kangaro/ 'kangaroo' as [kagalo] retaining the consonant [g] from the cluster /ng/ and child C9 uttered the verb /sɪtmot/ as [sɪmot] 'dying' by dropping /t/ from the cluster /tm/. In sum, different words appeared with clustered consonants in aged between 3; 5 to 4 years old children's speech and all of them were reduced to singletons. Words with cluster /nb/, /rb/ and /rs/ were the common clusters, which were affected by the reduction process. In addition, clusters like /nk/, /lf/, /ntʃ//tm/, /ng/, /ntʃ/, /rtʃ/ and /wkʃ/ were also condensed to singleton like [k], [f], [tʃ], [m], [g], [tʃ] and [kʃ] respectively.

5.6.2.3 Aged between 3; 5 to 4 years old children's words illustrating deletion

Table 48 Deletion in aged between 3; 5 to 4 years old children's words

Process	Pattern	Realization	Target	Gloss ⁵	Source
Deletion	/m/ → ∅	isak'a (C11)	misaik'a	lunchbox	Sp.speech
	/t/ → ∅	atʃawutənaltʃ(C10)	tatʃawutənələtʃ	play with us	elicitation
	/l/ → ∅	məsu(C11)	məlsu	answer	Storytelling
		ella(C11)	lella	other	elicitation
		it'əjkik'h(C15)	lit'əjkih	Let me ask you	storytelling
		izəlɪk(C15)	lizəlɪk	piggyback	storytelling
	/k/ → ∅	jik'əmətal(C15)	jik'k'əmətal	he sits	Storytelling
	/r/ → ∅	ɑdgo (C11)	ɑdrigo	doing	Sp.speech
	/j/ → ∅	ibt'əsəʃ(C11)	ijəbət'əsəʃ	cutting	Pic.dscrpt
		informen(C14)	juniformen	my uniform	elicitation
	h/ → ∅,	iwua(C9)	wuha	water	Pic.dscrpt
		ullət (C11)	hullət	two	Pic. dscrpt
		ije (C9)	jihe	this	Pic.dscrpt
		jəpaw(C10)	jihepaw	this one	Pic.dscrpt
		məs'af (C15)	məs'əhaf	book	Pic.dscrpt
edətʃ (C11)		hedətʃ	she went	Pic.dscrpt	
w/ → ∅	ihua (C9,C10,C15)	wuha	water	Pic.dscrpt	
Assimilation	/z/ → dʒ	dʒɪdʒoro(C11)	zɪndʒəro	monkey	Pic. dscrpt
	/k' → [z]	təzəzika (C13)	təzəkɪzk'a	upside-down	Pic.naming
	/ɲ/ → [m]	guadmamatʃotʃ(C15)	guadənamatʃotʃ	friends	Storytelling

Deletion of consonants and vowels or syllable was identified in different children's words in the group. For example, child C11 deleted the nasal /m/ from the compound word /misaik'a/ as [isak'a] and child C10 left out the voiceless stop /t/ from the initial position in the word /tatʃawutənələtʃ/ 'she play with us' as [atʃawutənələtʃ]. Similarly, /k /, /r/, /j/, /h/ and /w/ were the other consonants which were commonly affected by deletion. Particularly, deletion of /h/ from the initial and medial positions was commonly observed. For example, child C11 repeatedly uttered the word /hedətʃ/ 'she went' as [edətʃ] and /hullət/ 'two' as [ullət] dropping the initial /h/ and child C9 pronounced the word /wuha/ 'water' [iwua] and /jihe/ as [ije] by deleting /h/ from the final position. Similarly, children C10 and C15 dropped /h/ from the medial position in the word /jihepaw/ 'this one' as [jəpaw] and /məs'əhaf/ 'book' as [məs'af]. Some children also dropped /w/ from the common word /wuha/ 'water' and pronounced it differently; no child from the group called the word /wuha/ properly. Some children deleted /h/ and the other /w/ or added the vowel /i/ as [iwua] or [ihua], so it was common to hear that children uttered the word /wuha/ differently.

Generally, except child C12, all the children in the group were committed deletion of consonants from certain words they uttered. Generally, aged between 3;5 to 4 years old children engaged in deletion when they tried to pronounce two or more syllabic words or the sound sequence of a word may create difficulty of uttering all the phonemes at the same time. If children were unable to pronounce such words, they would substitute one by other, or they had a tendency of dropping consonants and vowels.

On the other hand, assimilation of one consonant by others was noticed in three children's (C11, C13, and C15) speech. For example, child C11 assimilated the consonant /z/ by [dʒ] in the word /zɪndʒəro/ 'monkey' as [dʒɪdʒoro] and child C13 realized the word /təzək'ɪzk'a/ as [təzəzɪkə] by assimilating the consonant /k'/as [z]. Child C15 also regressively assimilated the consonant /n/ by [m] in the word /ɡwadəɪnəmətʃotʃ/ 'friends' as [ɡwadəməmətʃotʃ]. However, assimilation was not a frequent developmental pattern in this age group. If the number of syllables increased in a word, some children were unable to pronounce the sound sequences. Then, they had a possibility of assimilating one consonant by others, which were easier for them to utter it.

Summary

As it was attempted to present in the above consecutive tables, aged between 3; 5 to 4 years old (the second age group) children's words passed through different developmental processes. However, children C12, C13 and C16's consonant realization was far from the adult target as well as from the group. More specifically, most of child C12's words were consistently affected by different substitution processes. Fronting, stopping, devoicing, backing, de-ejectivisation and substitution of /r/ by /l/ were commonly visible in her speech. In addition, any word that appeared with cluster consonants were affected by cluster reduction and deletion. If words appeared with more than two or three syllables, deletion was apparent. However, majority of these age group children had a relatively better production of expressive words with the correct realization of different consonants than the first age group (aged 3-3; 5).

5.6.3 Aged between four to 4; 5 years old children's consonant realizations.

Like the above two age groups, in aged between 4 to 4; 5 years old children's speech, different consonant realizations and developmental processes were detected. Substitutions like fronting, backing, and devoicing, nasalization, de-ejectivisation, and substitution of /r/

by [l] were seen in some children's speech even though their occurrence was limited to some words. Cluster reduction and inversion were the other developmental processes, which were also observed in the group. The description of these developmental processes was presented in the following consecutive sections in different tables.

Table 49 Aged between four to 4; 5 years old children's consonant realizations

Backing	Devoicing	Nasalization	De-ejectivisation	Gliding
/s/ → [ʃ] (C17, C18, C20)	/b/ → [p] (C21)	/r/ → [ŋ] (C18, C19)	/tʰ/ → [t] (C19)	/r/ → [j] (C17)
/z/ → [ʒ] (C20)	/d/ → [t] (C21)	/f/ → [m] (C18)	/kʰ/ → [k] (C21)	/h/ → [w] (C22)
/tʃ/ → [ʃ] (C17)	/ʒ/ → [ʒ] (C19)	/l/ → [n] (C19)	/tʃʰ/ → [tʃ] (C21)	
/ʃ/ → [ʃ] (C18)		/r/ → [n] (C19)		
/z/ → [ʒ] (C21)	Fronting	Stopping	Substitution /r/	Inversion
	/tʃʰ/ → [tʃ] (C23)	/m/ → [b] (C23)	/r/ → [l] (C21)	/r/ → [s] (C18, C22)
	/p/ → [n] (C19)			

As shown, some aged between 4-4;5 years old some children substituted the front consonants by relatively back one. From the group, backing was observed in children C17, C18, C20 and C21, and devoicing in children C19 and C21's speech. Nasalization was the other substitution incidence, which was detected in children C18 and C19's words. De-ejectivisation was the other developmental pattern, detected in two children's (C19 and C21) and gliding in Children C17 and C22's speech. On the other hand, child C21 consistently substituted /r/ by /l/. In sum, except children C19, C21 and C23, substitution of one consonant by other was not frequent or even not detected in other children's speech in the age group; they produced most of the consonants properly. However, some of children's words affected by different consonant realization processes were presented in the following consecutive tables.

5.6.3.1 The nature of substitution in aged 4 to 4; 5 children's speech

Table 50 Aged between 4; 0 to 4; 5 years children words illustrating fronting, stopping and devoicing

processes	Patterns	Realization	Target	Gloss	Source
Fronting	/tʃ/ → [tʰ]	k'ət'inəwotʃ(C23)	k'ətʃinəwotʃ	giraffes	Pic.dscrpt
	/ɲ/ → [n]	amonal (C23)	amonal	I'm sick	storytelling
Stopping	/m/ → [b]	bəkina (C23)	məkina	car	Pic. dscrpt
Devoicing	/b/ → [p]	əjəpəlu(C21)	ijəbəlu	eating	Pic. dscrpt
	/d/ → [t]	antu(C21)	andu	the one	pic. dscrpt
	/z/ → [ʃ]	inəʃih(C21)	inəzih	these	Pic.dscrpt
	/ʒ/ → [ʃ]	ʃəwafəwe(C19)	ʒəwazəwe	swing	Pic.dscrpt

As shown, aged between 4 to 4;5 years old children's some words which described fronting, stopping and devoicing were presented in the above table. From different developmental patterns, fronting was only detected in Child C23's two words. The boy realized /tʃ/ as [tʰ] in the word /k'ətʃinəwotʃ/ 'giraffes' as /k'ət'inəwotʃ/ and /ɲ/ as [n] in the word /amonal/ 'I am sick' as [amonal] and this boy consistently fronted these two consonants without variation. However, substitution of back consonant by relatively front one was not seen in other children's speech in the group. This boy (C23) also substituted the nasal /m/ by the stop [b] and repeatedly uttered the word /məkina/ 'car' as [bəkina] but he pronounced the nasal /m/ properly in other words. Children C19 and C21 also engaged in devoicing the voiced consonant by voiceless one. Child C19 substituted the consonant /ʒ/ by [ʃ] only in the word /ʒəwazəwe/ 'swing' as [ʃəwafəwe] whereas, Child C21 substituted the consonant /b/ by [p] in the word /ijəbəlu / as [əjəpəlu] and consistently devoiced /d/ to [t] like in the word /andu/ 'one of' as [antu]. The boy (C21) also repeatedly uttered the word /inəzih/ 'these' as [inəʃih] backing and devoicing the consonant /z/ by [ʃ].

Generally, most aged between 4;0 to 4;5 years old children's words, fronting, stopping and devoicing were not registered and their words are free from these developmental patterns but children C19 and C21's few words hosted devoicing and Child C23 engaged in fronting and stopping.

Table 51 Aged between 4 to 4; 5 years children’s words illustrating backing

process	pattern	Realization	Target	Gloss	source
backing	/s/→[ʃ]	mɪʃa (C 20)	mɪsa	lunch	pic.dscrpt
		aʃarat (C20)	asrə-arat	fourteen	pic.dscrpt
		k’əʃbilla (C20)	k’əs-billa	slowly	Pic.dscrpt
		amɪʃt (C20)	ammist	five	pic.dscrpt
	/z/→[ʒ]	zaf (C20)	zaf	tree	pic.dscrpt
		muʒ (C20)	muz	banana	pic.dscrpt
		aʒowtʃ (C20)	azowotʃ	crocodiles	pic.dscrpt
		ɪjəʒələlətʃ (C20)	ɪjəzələlətʃ	jumping	pic.dscrpt
		inəʒih (C20)	inəzih	here	pic.dscrpt
	/z/→[ʃ]	algəʃahum (C21)	algəzahum	I didn’t buy	Elicitation
		inəʃih (C21/)	inəzih	these	pic dscrpt
	/t’/→[tʃ]	tʃ’itʃəl (C17)	t’intʃəl	rabbit	pic.dscrpt
	/s/→[ʃ]	bətəʃəbətʃua (C18)	bətəsəbətʃua	her family	pic dscrpt
	/ʃ/→[tʃ]	tʃ’ikrikrotʃ (C18)	ʃ’ikrikroʃ	rounding	Elicitation

Substitution of the front consonant by relatively back one was the other developmental incidence in some children’s speech in this age group. One of the backing pattern was substituting /s/ by [ʃ] which was only detected in child C20’s speech. The girl pronounced the word /mɪsa/ ‘lunch as [mɪʃa], /asra-arat/ ‘fourteen’ as [aʃarat] and /k’əs-billa/ ‘slowly’ [k’əʃbilla] replacing the cluster /sr/ by other far back fricative [ʃ] and /z/to[ʒ] in the word /zaf/ as [ʒaf] and /azowotʃ/ ‘crocodiles’ as [aʒowtʃ]. Indeed, substitution of /s/ by [ʃ] and /z/ by [ʒ] was the consistent backing patterns observed in child C20’s speech. Whereas, backing of /t’/ by [tʃ] was a particular pattern only detected in child C17’s one word /t’intʃəl/ as [tʃ’itʃəl] but this girl correctly pronounced the ejective /t’/ in other words. On the other hand, child C18 realized /s/ as [ʃ] in the word /bətəsəbətʃua/ ‘her family’ as [bətəʃəbətʃua] and /ʃ/ as [tʃ] in the word /ʃ’ikrikroʃ/ ‘rounding’ as [tʃ’ikrikrotʃ]. Generally, the frequent backing phenomenon was detected in child C20’s speech but children C17’s and C18’s few words also affected by backing.

Table 52 Aged between 4 to 4; 5 old years children’s words illustrating nasalization, de-ejectivisation and gliding

Process	Pattern	Realization	Target	Gloss	Source
Nasalization	/r/ → [n]	gummane(C18)	gummare	hippo	Pic.dscript
		t'ənəp'eʃa (C19)	t'ərəp'eza	table	Pic.naming
		binabino(C19)	birabiro	butterfly	pic. naming
	/l/ → [n]	fijənotʃ (C19)	fijəlotʃ	goats	Pic.dscript
		namotʃ(C19)	lamotʃ	cows	Pic.dscript
/f/ → [m]	bəsama(C18)	bəsafa	with barrel	Pic.dscript	
De-ejectivisation	/t'/ → [t]	təntʃən(C19)	t'intʃəl	rabbit	Pic.dscript
		totit (C21)	t'ot'it	the ape	Pic.dscript
	/k'/ → [k]	kutit (C21)	k'ut'ir	number	Elicitation
		ijəkələtətʃ (C21)	ijək'orət'ətʃ	cutting	Pic. dscript
/tʃ/ → [tʃ]	bitʃa (C21)	bitʃa	yellow	Pic.dscript	
Gliding	/r/ → [j]	t'əjəp'esa(C17)	t'ərəp'eza	table	Elicitation
	/h/ → [w]	ziwonun(C22)	zihonun	elephant	Pic.dscript

As depicted in the above table, nasalization dominantly affected child C19’s words; for example, substitution of /l/ and /r/ by a nasal [n] was common her entire speech. She consistently realized /l/ as [n] like in the word /fijəlotʃ/ as [fijənətʃ] and /lamotʃ/ as [namotʃ] and /r/ as [n] in the word /gummare/ ‘hippo’ as [gummane] and /t'ərəp'eza/ as [t'ənəp'eʃa]. This girl totally nasalized the two consonants (/l/ and /r/) and she did not show any variation in her entire speech. Nasalization of /f/ by [m] was only observed in child C18’s one word /bəsafa/ as [bəsama]. This girl was asked to call this word repeatedly but she did the same without change but she pronounced the fricative /f/ properly in her other words. In addition, this girl had matured consonant realization and target pronunciation in majority of her words. The above table also portrays the presence of de-ejectivisation in aged between 4 to 4; 5 years old children’s speech. From the group, substitution of the ejectives by their pulmonic counter parts was detected in C19 and C21’s words. Child C19 consistently realized the ejective /t'/ as [t] like in the word /t'intʃəl/ ‘rabbit’ as [təntʃən] and this word was also affected by nasalization of /l/ by [n], but the girl pronounced ejectives properly. On the other hand, child C21 consistently de-ejectivised ejective /t'/, /k'/ and /tʃ'/ in his entire speech. For example, he uttered the word /t'ot'it/ ‘ape’ as [totit] and / k'ut'ir/ ‘number’ as [kutit] replacing /t'/ and /k'/ by their pulmonic counter [t] and [k] respectively. Similarly, he substituted the consonant /tʃ'/ by [tʃ] like in the word [bitʃa] ‘yellow’ as [bitʃa]. In sum, the

consistent substitution of ejectives by their pulmonic counter parts is a good sign to say, from the group, child C21 did not acquire all the ejectives yet.

The other substitution pattern was gliding; it was only seen in two children's (C17 and C22) speech. For example, child C17 substituted /r/ by the glide [j] only in the word /t'ərəp'eza/ 'table' as [t'əjəp'eza]. Nevertheless, the girl pronounced /r/ properly in other words and child C22 substituted the fricative /h/ by a glide [w] in the word [ziwɔnu] 'the elephant' for the target word /zihonun/ but except in the two words, gliding was not seen in the group. In sum, although nasalization, de-ejectivisation and gliding were seen in some children's speech, majority of aged between 4 to 4; 5 years old children's words were free from such substitution processes and they had a target realization of different consonants

Table 53 Aged between 4 to 4; 5 years old children's words illustrating substitution of /r/

process	Pattern	Realization	Target	Gloss	Source
Substitution /r/ by [l]	/r/ → [l]	afəl(C21)	afər	soil	Pic.dscrpt
		kitʃəl(C21)	k'it'əl	leaf	Pic.dscrpt
		kutɪl(C21)	k'ut'ir	number	Elicitation
		ijəkələtətʃ(C21)	ijək'orət'ətʃ	cutting	Pic. naming
Inversion/Metathesis	/k/&t/	bikutan(C21)	birtukan	orange	Elicitation
	/r/&s/	isras(C18,C22)	irsas	pencil	pic.dscrpt

As shown, substitution of /r/ by [l] and inversion of consonants were also seen in few children's words. From the group, substitution of /r/ by [l] was only found in C21's speech. In the boy's speech, any word which appeared with the consonant /r/ was affected by substitution of [l]. Words like /afər/ 'soil' as [afəl] and /kit'əl/ 'leaf' as [kitʃəl] and /kutir/ 'number' as [kutɪl] were some of the samples taken from his speech. Indeed, child C21 did not show changes on the realization of /r/ as [l] in his entire speech. In addition, inversion/metathesis of the consonants /k/&t/ was also detected in his one word. He pronounced the word /birtukan/ 'orange' as [bikutan]; the word also hosted reduction of /r/ from the cluster /rk/. Similarly, children, C18 and C22 also inverted /r/ &s/ in the word /irsas/ 'pencil' as [isras); as if some adults do. To recap, majority of aged between 4 to 4; 5 years old children had a target realization /r/. However, C21's words were regularly affected by substitution /r/ by [l].

5.6.3.2 Cluster reduction in aged 4 to 4; 5 years old children's speech

Table 541 Aged 4; 0-4; 5 years old children's words illustrating cluster reduction

Process	Pattern	Realization	Target	Gloss	Source
Cluster Reduction	/nb/→[b]	abəsa (C18,C22,C24)	anbəsa	lion	Pic.dscrpt
		wəbər(C18,C19)	wənbər	chair	Elicitation
	/rb/→[b]	ʃuba(C17)	ʃurba	plaited	Pic. dscrpt
		iskibito(C24)	iskirbito	pen	Elicitation
	/rs/→[s]	bəsas(C17,C19)	bərsas	with pencil	Elicitation
		k'usen(C17,C19)	k'ursen	breakfast	Elicitation
		bosawan(C21,C24)	borsawan	her bag	Pic.dscrpt
	/bt/ →[t]	dətər(C17)	dəbtər	ex.book	Elicitation
	/lb/→[b]	abəlum (C23)	albəlum	do not eat	Elicitation
	/rt /→[t]	bitukan (C20)	birtukan	orange	Pic.dscrpt
		timitbet(C18)	timhirtbet	school	Elicitation
	/lw/→[w]	awəd̩m(C17,C19,C2)	alwəd̩m	I don't like	Elicitation
	/wk/→[k]	akaləhu(C18)	awkaləhu	I know	Elicitation
	/gn/→[g]	agita (C21 C24))	agnitta	she got	Pic.dscrpt
	/sk/ →[k]	akəmtbət (C21)	lask'əmit'bət	to put	Elicitation
	/rm/→[m]	t'əmusun (C23)	t'ərmusun	the bottle	Elicitation
/ng/→[g]	aʃagulit(C23)	aʃangulit	toy	Elicitation	

The data in the above table indicated that words with cluster consonants had frequent prevalence in aged between 4 to 4; 5 years old children's speech but all of them were affected by reduction. This developmental process was detected in all eight children's speech. For example, children C18, C19, C22 and C24 realized /nb/ as [b] like in the word [abəsa] 'lion' and [wəbər] 'chair' for the target words /anbəsa/ and /wəbər/ respectively. Children C17 and C24 commonly condensed the cluster /rb/as [b] from the word /ʃurba/ 'plaited hair' as [ʃuba] and /iskirbito/ 'pen' as [iskibito]. Similarly, children C17, C19, and C24 dropped /r/ from the cluster /rs/ like in the word [bəsas] 'with a pencil' for the target words /bərsas/ and [k'usen] 'my breakfast' for the target word /k'ursen/. Children C21 and C24 condensed the cluster /rs/ as [s] in the word [bosawan] 'her purse/ bag' for the target /borsawan/. Similarly, child C17 dropped /b/ from the cluster /bt/ like the word /dəbtər/ as [dətər] and C23 left /l/ from the cluster /lb/ in the word [abəlum] 'they did not eat' for the target word /albəlum/. The cluster /rt/ was also condensed to [t] in C18's and C20's words. For instance, the word /timhirtbet/ 'school' appeared as [timitbet] in C18's speech and child C20 uttered the word /birtukan/ 'orange' as [bitukan] dropping the /r/ from the cluster /rt/. The reduction of /lw/ as [w] from the word /alwəd̩m/ as [awəd̩m] was detected in children C17, C19, and C20's speech. Child C18, on the other hand, condensed the cluster

/wk/ as [k] in the word /awkaləhu/ ‘I know’ as [akaləhu]. In addition, C21 and C24 dropped /ɲ/ from the cluster /gɲ/ in the word /agnɪtta/ ‘she found’ as [agita] and child C21 reduced the cluster /sk/ to [k] from the word /lask’əmit’bət/ ‘to put on it’ as [akəmtbət]. Likewise, child C23 retained [m] from the cluster /rm/ in the word /t’ərmusun/ ‘the bottle’ as [t’ərmusun] and he realized the word /afəngulit/ ‘toy’ as [afəngulit] dropping /n/ from the cluster /ng/.

Generally, from the clusters /nb/, /rb/, and /lb/, children retained the stop [b] and dropped /n/, /r/ and /l/ but if the bilabial stop /b/ clustered with the other stops like /bt/ it has the possibility to be released. In addition, aged between 4 to 4; 5 years old children were commonly observed dropping /r/ from the cluster /rs/, /rt/ and /rm/. Children also dropped the consonant /s/ and /w/ from the clusters /sk/ and /wk/, and they kept the stop [k]. Likewise, this age group children released the liquid /l/, n/ and /ɲ/ from the cluster /lw/, /ng/ and /gɲ/ respectively. In sum, any cluster consonant, which appeared in aged between 4; to 4;5 years old children’s words, was obviously condensed to singleton by dropping one of the consonant from the cluster..

5.6.3.3 The nature of deletion in aged 4 to 4; 5 children’s speech

Table 55 Aged between 4 to 4; 5 years old children’s words illustrating deletion

Process	Pattern	Realization	Target	Gloss	Source
Deletion	/n/ → ∅	woz(C17)	wənniz	river	Pic.dscrpt
	/ti/ → ∅	kərs’iɲnaləʃ(C17)	tik’ərs’iɲnalətʃ	She sharpens	Elicitation
	/tə/ → ∅	k’əmət’u (C23)	tək’əmət’u	they sat	Pic.dscrpt
		irət’alətʃ (C23)	tirət’alətʃ	running (she)	Pic.dscrpt
		akilt (C24)	atikilt	vegetables/plants	Pic.dscrpt
		koʃəmat(C24)	korəʃəmat	crushed and eat	Storytelling
		/rən/ → ∅	aguade C21,C24)	arənguade	green
	/h/ → ∅	aja (C17)	ahja	donkey	Pic dscrpt
		ullət (C21)	hullət	two	Pic.dscrpt
		ijed (C22)	ijəhede	going	Pic.dscrpt
		uha (C22)	wuha	water	Pic.dscrpt
		s’aj (C23)	s’əhaj	the sun	Pic. dscrpt
		iwa (C23. C24)	wuha	water	Pic.dscrpt
		/w/ → ∅	uha (C17)	wuha	water
	/w/ → ∅	ullo (C21)	wurro	cat	Pic.Dscrpt
		azotʃ (C21,C23)	azowotʃ	crocodiles	Pic.dscrpt
		/aj/ → ∅	ibəllu (C23)	ibəllu	(they) eating
	/aj/ → ∅	afətal (C23)	jaʃətal	(it/he) smells	Pic.dscrpt
		indələm (C23)	ajidələm	it is not	Pic.dscrpt

Deletion was the other developmental feature detected in aged between 4 to 4; 5 years old children's words. Except in C18, C19 and C20's speech, consonants or syllable deletion was apparent in this age group. Deletion of /n/, /t/, /r/, /h/ and /j/ was registered from children's words. For example, from the word /wənniz/ 'river' and /tɪk'ərs'ɪlɪnələtʃ/ 'she sharpened for me', child C17 deleted the geminating /n/ from the medial position and the morpheme /ti-/ from the initial position and pronounced as [wɒz] and [kərs'ɪlɪnəlɔʃ] respectively. However, deletion of CVC syllable /-rən- / was detected in child C21 and C24's word [aguade] 'green' for the target word /arənguade/. In the group, deletion of /h/, /w/, and /j/ was frequently noticeable in C17, C21, C22, C23, and C24's words at the initial and medial positions as it was illustrated in the above table.

Summary

As observed in the above consecutive tables, aged between 4 to 4;5 years old some children's words accommodated different substitution patterns like fronting, stopping, devoicing and backing, de-ejectivisation, nasalization, gliding, and substitution of /r/. However, from the group, children C17, C18, C22, and C24 had matured phonological realization; substitution patterns were rarely observed in their words, especially, child C17's words did not host any substitution process. The frequent substitution patterns were registered in C19, C20, C21, and C23's words. More specifically, children C19 and, C21's words were highly affected by different substitutions. Uniquely, child C19 continuously nasalized /l/ and /r/ in her entire speech, whereas, C21 totally replaced the ejectives by non-ejective consonants and /r/ by [l]. Consonants and syllables deletion as well as cluster reduction were the other developmental processes attested in certain words. Generally, even though some children's words affected by different phonological processes, majority this age group children uttered different words with target consonant realization. In sum, comparing to the first and the second age groups, aged between 4 to 4; 5 years old children, except children C19 and C21, had a better phonological realization and production of different consonants in words.

5.6.4 Aged 4:5-5 year old children's consonant and developmental realization

Table 56 aged 4; 5-5 children's consonants realization table

Fronting	Backing	Stopping	Devoicing
/ʃ/ → [s] (C27)	/b/ → [f] (C26, C31)	/v/ → [b] (C29)	/d/ → [t] (C29)
/tʃ/ → [t'] (C27, C29)	/n/ → [ɲ] (C26)		
/z/ → [f] (C28)	/s/ → [ʃ] (C28, C29, C31, C32)	Substitution/r/	
/k/ → [t] (C28)	/z/ → [ʒ] (C28)	/r/ → [l] (C29)	
/tʃ/ → [ʃ] (C28)	/s'/ → [tʃ'] (C28)		
/tʃ/ → [tʰ] (C29)	/z/ → [s] (C29)		
	/ʒ/ → [dʒ] (C31)		

This table presents aged between 4; 5 to 5 years old children's consonant realization. Children in this age group had a better production of words as well as consonant realization. However, there were some variations in the realization of some consonants in some words. For example, some fronting patterns were detected in children C27, C28, and C29 words and, backing in Children C26, C28, C29, C31 and C32's speech. Whereas, stopping and devoicing were hardly detected except in child C29's few words. The boy also realized the consonant /r/ as [l] in his entire speech. Generally, as consonant realization summary table depicted, substitution of one consonant by other was not a frequent phenomenon but their occurrence in some words were illustrated in the following section as follows.

5.6.4.1 The nature substitution in aged 4; 5 to 5 years old children's speech

Table 57 Aged between 4; 5 to 5 years old children's words illustrating fronting, stopping and devoicing

process	Pattern	Realization	Target	Gloss	source
Fronting	/ʃ/ → [s]	wusətuan(C27)	wuʃətuan	her false	Storytelling
		səmisotʃ(C29)	ʃəmisotʃ	shirts	Pic.dscript
	/tʃ/ → [t']	bəmət'ərəʃa(C27)	bəmətʃ'ərəʃa	finally	Pic.dscript
		afɪnt'a(C29)	afɪntʃ'a	nose	Pic.naming
		t'akka(C29)	tʃ'akka	forest	Pic.dscript
		mət'awota(C29)	mətʃ'awotʃa	play/game	Elicitation
		t'ammajən(C29)	tʃ'ammajən	my shoes	Pic.naming
		k'ət'ne(C29)	k'ətʃ'en	giraffe	Pic.dscript
	/z/ → [f]	faf (C28)	zaf	tree	Pic.dscript
	/k/ → [t]	təʃa(C28)	kəzia	then	Storytelling
/tʃ/ → [ʃ]	ʃəkoleʃ(C28)	tʃəkoleʃ	chocolate	Elicitation	
/tʃ/ → [tʰ]	təgət'ətʰ(C29)	dənəgət'ətʃ	panicked	Pic.dscript	
	ellijwotʰ(C29)	ellijwotʃ	tortoise	Pic.dscript	
Stopping	/v/ → [b]	tibbi(C29)	Tv	television	Pic. naming
Devoicing	/d/ → [t]	abukato(C29)	abukado	avocado	Pic.naming
		wənitm(C29)	wənidm	brother	Pic.dscript

As depicted, different consonant realization, patterns were observed in some children's speech but they had a chance to occur once or twice. Child C27 fronted /ʃ/ by [s] in the word /wʊʃətuan/ 'her lie' as [wusətuan] and child C29 in the word /ʃəmizoʃ/ 'shirts' as [səmisot^h], whereas, fronting /tʃ/ by [t'] was commonly detected in child C29's many words. The boy substituted /tʃ/ by [t'] in his entire speech like the words [t'akka] for the target word /tʃakka/ 'forest' and [t'ammajən] for /tʃammajən/ 'my shoes' and other words presented in the table and substitution of /tʃ/ by [t'] also seen in child C27 one word /bəmətʃərəʃa/ 'finally' as it appeared as [bəmət'ərəʃa].

Fronting /z/ to [f] was uniquely detected in child C28's one word [faf] for /zaf/ 'tree'. Similarly, the girl fronted the backstop /k/ by other front stop [t] in the word [təʃa] for target word /kəzia/ 'then' and /tʃ/ to [ʃ] in the word [ʃəkolet] for the target word /tʃəkolet/ 'chocolate'. The other fronting in the group was the substitution of the affricative /tʃ/ by aspirated [t^h] which was frequently seen in child C29's words. He was observed consistently fronted /tʃ/ by [t^h] at the final position and devoiced the consonant /d/ by [t]. For example, the boy pronounced the word [təgət'ət^h] for the target word /dənəgət'ətʃ/ 'she was panicked' and [əllijwot^h] for the target /əllijwotʃ/ 'tortoises' and in many other words (see appdx.V) and stopping was also detected in child C29's one word. The boy repeatedly pronounced the word /Tv/ as [tibbi] substituting /v/ by [b]. Devoicing of /d/ by [t] at the final position was registered from child C29's words like [abukato] for the target word /abukado/ 'avocado' and [wənɪtm] for the target word /wənɪdm/ 'brother' but the boy pronounced /d/ properly in other words.

To summarize, the occurrence of fronting, stopping, and devoicing was restricted to children C27, 28 and C29's speech. Most of these developmental patterns visibly recurred in Child C29's words, especially; substitution of relatively back consonant by the front one was a more visible pattern than the others.

Table 58 Aged between 4; 5 to 5 years old children's words illustrating backing

process	pattern	Realization	Target	Gloss	source
Backing	/b/ → [f]	dəftər](C26,C31)	dəbtər	ex.book	Elicitation
	/n/ → [ŋ]	inənətɔtʃua(C26)	inənətɔtʃua	her mothers	Pic.dscrpt
	/s/ → [ʃ]	k'əmiʃ (C28)	k'əmis	dress	Pic.naming
		milaʃ (C28)	milas	tongue	Pic.naming
		fərəʃ (C28)	fərəs	horse	Pic.dscrpt
		ʃabrɪrat(C31)	sijabarɪrat	chasing	Elicitation
	/z/ → [ʒ]	ʃiga (C32)	siɡa	meat	Elicitation
		inzih (C28)	inzih	these	Pic.dscrpt
	/s' → [ʃʰ]	bizu (C28)	bizu	many	Pic.dscrpt
		tʃaj (C28)	s'əhaj	the sun	Pic.dscrpt
/z/ → [s]	səmisɔt (C29)	ʃəmizɔʃ	shirts	Pic.Dscrpt	
	/ʒ/ → [dʒ]	dʒiwadzɪwe(C31)	ʒiwazɪwe	swing	Pic.descript
Substitution /r/ by [l]	/r/ → [l]	nəbil (C29)	nəbir	tiger	Pic.dscrpt
		k'uls (C29)	k'urs	breakfast	Elicitation
		kənfəl (C29)	kənfər	lip	Pic. naming
		kəbəlɔ(C29)	kəbərə	drum	Pic. naming

Like the other developmental patterns, substitution of the front consonants by relatively back one was detected in aged between 4; 5 to 5 years old children's speech. One of the backing incidence was substitution of /b/ by [f] as children C26 and C31 uttered the word /dəbtər/ 'ex.book' as [dəftər]. In addition, backing /n/ by [ŋ] was observed in Child C26's one word /inənətɔtʃua/ 'her mother /family' as [inənətɔtʃua]. Similarly child C31 substituted /s/ by [ʃ] in the word /sijabarɪrat/ 'chasing' as [ʃabrɪrat] and child C32 only substituted /s/ by [ʃ] in the word / siɡa/ 'meat' as [ʃiga]. However, substitution of /s/ by [ʃ] was frequently registered from child C28's speech. As it has been depicted in the above table, the girl was repeatedly uttered the consonant /s/ as [ʃ] like in the word /k'əmis/ 'dress 'as [k'əmiʃ], /milas/ 'tongue' as [milaʃ], /fərəs/ 'horse' as [fərəʃ] and in other words. This girl also substituted /z/ by the back fricative [ʒ] like in the word [bizu] 'many/ much' for the target word /bizu/ and [inzih] 'these' for the target word /inzih]. She also backed /s'/ by [ʃʰ] in the word /s'əhaj/ 'the sun' as [tʃaj]; this word was also affected by omission the syllable / -əh-/ from the medial position. Generally, backing as a developmental pattern, it was visibly recurred in Child C28's speech than others were. Whereas, substitution of /r/ by [l] manifested in child C29's entire speech like in the word /nəbir/ 'tiger 'as [nəbl], /kənfər/ 'lip' as [kənfəl] but the other children in the group uttered /r/ properly when it was not

clustered with other consonants. In sum, unlike their age group children, backing was repeatedly observed in Child C28's and substitution of /r/ by [l] in child C29's words. Child C29 totally replaced /r/ by [l] in his entire speech and this highlighted that the acquisition of /r/ takes time and goes beyond this age range in some children's phonological acquisition process.

5.6.4.2 The nature of cluster reduction in aged 4; 5-5 children's speech

Table 59 Aged between four; 5 to 5 years children's words which illustrating cluster reduction

Process	Pattern	Realization	Target	Gloss	Source
Cluster reduction	/nb/ → [b]	gɪbər (C30)	ɡɪnbər	forehead	Pic.naming
		wəbər (C30)	wənbər	chair	Pic.naming
		abəsa(C29, C32)	anbəsa	lion	Elicitation
	rb/ → [b]	bəsəbis (C31)	bəsərbis	by service	Elicitation
	/bt/ → [t]	dətər (C27)	dəbtər	ex.book	Elicitation
	/mb/ → [b]	t'iruba(C27)	t'irumba	whistle	Pic. naming
	/nd/ → [d]	wədme(C27)	wəndime	my brother	Elicitation
		mɪrɪda(C27)	mɪrɪnɪda	soft drink	Elicitation
		itəgəna(C29)	ɪndəgəna	again	Pic.dscrpt
	/fr/ → [f]	t'ifən(C25)	t'ifrən	my nail	Elicitation
/ng/ → [g]	arəguade(C25)	arənguade	green	Pic dscrpt	
		aʃaɡulɪt(C26)	aʃaŋɡulɪt	toy	Elicitation
		lɪŋərʃ (C30)	lɪŋərʃ	let me tell you	Elicitation
	/rg/ → [g]	ədgo (C30)	ədriɡo	he did	Elicitation
	/td/ → [d]	bɪrədɪst (C26)	bɪrətɪst	casserole	Elicitation
	/sk/ → [k]	bukɪt(C25)	bɪskut	biscuit	Elicitation
	/tw/ → [w]	lɪwot'a(C32)	lɪtwot'a	to climb	Pic. dscrpt
	/rs/ → [s]	k'usen(C25)	k'ursen	my breakfast	Elicitation
		borsajen(C25)	borsajen	my bag	Elicitation
	rɪʃ/ → [ʃ]	bɪʃ'k'o (C 30)	bɪʃ'ɪk'o	glass	Pic naming
	/st'/ → [t']	wut' (C28)	wust'	in	Pic.dscrpt
/sk/ → [k]	bukɪt(C25)	bɪskut	biscuit	Elicitation	

The common cluster reduction patterns observed in aged between four; 5 to 5 old children's speech were the realization of /nb/, /rb/ and /mb/ as [b]. For example, child C30 pronounced the cluster /nb/ as [b] in the words /ɡɪnbər/ 'forehead' as [ɡɪbər] and /wənbər/ 'chair' as [wəbər] and children C29 and C30 uttered the word /anbəsa/ 'lion' as [abəsa]. Similarly, child C31 dropped /r/ from the cluster /rb/ in the word /bəsərbis/ 'by service' uttered it as [bəsəbis]. Whereas, child C27 contracted /b/ from the cluster /bt/ and /mb/ and retained [t] and [b] in the word /dəbtər/ 'exercise book' as [dətər] and /t'irumba/ 'whistle' as [t'iruba]. On the other hand, clusters like /nd/ and /td/ were condensed to [d]; Child C27 articulated

the cluster /nd/ as [d] in the word /wəndime/ as [wədime] and /mirinda/ 'soft drink' as [mirida] dropping /n/ from the cluster /nd/ and Child C29 dropped /n/ from /nd/ substituted /d/ by [t] from the word /ɪndəgəna/ 'again' uttered it as [ɪtəgəna]. Similarly, Child 26 pronounced the word /bɪrətɪst/ 'casserole' as [bɪrədɪst] dropping the consonant /t/ from the cluster /td/ and children C25, C26 and C30 also condensed the cluster /ŋg/ and /rg/ as stop [g] like in the word /arəŋgʊade/ 'green' as [arəgʊade], /afəŋgʊlit/ 'toy' as [afəgʊlit] and /lɪŋgəriʃ/ 'let me tell you' as [lɪgəriʃ]. Child C25 also engaged in the reduction of the clustered /fr/ as [f] and /rs/ as [s] like in the word [t'ɪfren] 'my nail' as [t'ɪfen], /k'ursen/ 'my breakfast' as [k'usen] and /borsajen/ 'my bag' as [bosajen]. This girl also dropped /s/ from the cluster /sk/ and kept [k] in the word [bɪkʊt] 'biscuits' for the target word /bɪskʊt/. Likewise, child C30 contracted the cluster /rɪʃ/ as [ʃ] dropping /r/ from the word [bɪʃ'kʊ] 'glass' for the target word /bɪrɪʃ'kʊ/.

To summarize, most of the words with clustered consonants were taken from children's elicitation and some from picture naming activities as it was attempted to present in the above table. Words with clustered consonants were more frequent in aged between four; 5 to 5; 0 years old children's speech than other age groups, especially in children C25 and C27's speech. However, children until this age did not utter some clustered consonants properly; as a result, children's words possibly accommodated the reduction process. Despite variation in the type of consonants' reduction, like the other three younger age groups, almost all aged between 4; 5 to 5; 0 years old children's words were affected by the reduction process. In relation to this, age at which children acquire cluster consonants is a controversial issue across linguistically. Some studies indicated that children produce correctly cluster consonants at the age of two (Prather, Hedrick, and Kern, 1975), but the consonant clusters are not adult like or the target word clusters rather the cluster possible occur due to deletion of phonological elements from the target words. On the other hand, Shriberg and Kwiatkowski (1980) reported that 4 year-old children correctly produced 90% of a simple consonant clusters in spontaneous speech whereas Smit et al. (1990) reported that very few clusters had been mastered at the age of four. As research reports from many of the world languages have indicated, typically developing children are able to master the production of cluster consonants in age between 6 to 7 years with a complete mastery between 8 – 9-years (Smit et al. (1990; McLeod & Arciuli, 2009). The finding of

this study also concedes with this report because no child in this study were able to produce correctly a word with cluster consonants until the age of 5 years. In sum, this incident highlighted that the target realization and correct production of different cluster consonants require more time.

5.6.4.3 The nature deletion in aged 4; 5-5; 0 children's speech

Table 60 Words which illustrate deletion in aged 4;5-5;0 children's speech

Process	pattern	Realization	Target	Gloss	source
Deletion	/t/ → ∅	jəbesira (C26)	jəbet-sira	homework	Elicitation
		liwodk' (C26)	litwodk'	to fell	Pic. dscript
		at'ibliɲalətʃ (C28)	tat'ibliɲalətʃ	washesfor me	Elicitation
		tʃatʃotʃ (C28)	tʃatʃutotʃ	chickens	Pic.dscript
		atəmralətʃ (C28)	tastəmralətʃ	she teaches	Elicitation
	d/ → ∅	təbika (C29)	tədəbik'a	hiding	Pic.dscript
	/l/ → ∅	idzotʃ (C28')	lidzotʃ	children	Pic dscript
	/h/ → ∅	jedu (C27,C30,)	ijəhedu	going	Pic.dscript
		s'aj (C27,C31,C32)	s'əhaj	the sun	Pic.dscript
	/r/ → ∅	atətəmalətʃ (C28)	tətəmralətʃ	she teaches	Elicitation
	/j/ → ∅	itʃem (C25)	jitʃem	this one	Sp.speech
	/w/ → ∅	ihua (C26,C30,C31,C32)	wuha	water	Pic dscript

As shown in the above table, some of the children from the group, deleted consonants and vowels from certain word. For example, child C26 deleted the voiceless stop /t/ from the compound word /jəbet-sira/ 'homework' as /jəbesira] and [liwodk] for target word /litwodk'/ 'to fail 'and child C28 deleted /t/ from the initial position from the word /tat'ibliɲalətʃ] 'she washes for me 'as [at'ibliɲalətʃ]. Similarly , child C29 dropped /d/ from the word /tədəbik'a/ 'hiding' as he pronounced as [təbika] and Child C28 left /l/ from the initial position in the word /lidzotʃ/ ' children' as [idzotʃ]. Commonly, children deleted the consonants /h/, /j/ and /w/ from some words. For example, from the word, /wuha/ 'water', deletion of /h/ or /w/ was alternatively visible. Similarly, deletion of /j/ was commonly detected in C25's speech. In sum, words that illustrate deletion of /t/, /d/, /l/, /r/, /h/, /j/and /w/ were taken different children's speech but it was not frequent in this age group.

As the above consecutive tables presented, aged between 4; 5 to 5; 0 years old children, except children C28 and 29, the others had relatively matured consonant realization. Most of their words were free from substitution patterns. From the group, children C25, C31, and C32's words did not accommodate any substitution pattern. Children C25, C26 and C27 were the most active girls from the group and their speeches were developed by various

expressive words. They consistently described any event they saw in complete sentences. Majority of their words were also free from such developmental realization patterns. However, children C28 and C29' were far from the group and most of their words were affected substitutions (fronting, stopping devoicing and backing). Deletion of consonant and vowels was the other developmental process detected in these children's words. Like the three younger age groups, aged between 4;5 to 5;0 years old children engaged in consistent reduction process and all clustered consonants appeared as singleton because children possibly dropped one of the consonants from the cluster.

Summary of the section

It was attempted to describe the frequency occurrence, realization, and production of Amharic consonant phonemes in aged between 3 to 5 years old children's speech. The findings highlighted that most of the children had a better realization of Amharic consonants at CV, CVC, and CVCV level; as a result, most of consonants had a significant representation as whole. When the position of some consonants was changed, the sound sequence of word children might have not experienced before and the number syllables in word increased, children had a tendency to engage in substitution, deletion, or cluster reduction processes. Even consonants, which had the leading frequency like /t/, /l/ and /n/, were affected by deletion and cluster reduction process while children were articulating a certain word. Especially, the lateral /r/, affricatives, and ejectives were commonly affected by substitution. Deletion of /h/, /w/ and /j/ was the other common incidence across age groups in the appearance of some words. Assimilation and inversion were seen in a few children's words. Generally, older aged (4; 5-5 years) children by far, had better production of words in different sound sequences. They uttered most of their words properly. Moreover, as a researcher observation, during the recording session, children who had early exposure to school environment had a better realization of different consonants and older age girls, except C19 and C28, the other had a better performance than boys' phonological realization and production.

The other point of concern that the findings signaled was children's consonant realization paths. Children somehow differed one from the other in their consonant realization paths. A case in point, one target consonant can be realized differently in different children's words even in the same age group; children were observed backing one front consonant by other

whereas the other children possibly replaced the same consonant by relatively front one or stops or they devoiced and so on. As a result, different patterns of substitution (fronting, stopping backing and devoicing) were registered across age groups in children's words. However, the frequency occurrence of these developmental features decreased when children grew older. As it was observed, in older aged (4;5-5 years) children's speech, the number of words with proper consonant realization relatively increased and different class of words also manifested at large and the nature of these words was treated in the following lexical development section.

5.7. The development of lexicon in Amharic speaking children's speech

Lexical development is an important stage in children's language acquisition process. Words is the basic 'building blocks' for meaningful utterance, sentence, and texts. Without words, there would be no phrases, utterances, and sentences or no meaningful language. Therefore, child's lexical development is taken, as an acute initial stage; if not the proper development of language, competence is unpredictable. Therefore, children lexical development plays a crucial role to the complete language acquisition process. Children's lexical development involves three major parts, namely, the development of word forms, meanings, and the association of the word forms with appropriate meanings (O'Grady 2005). The word forms are sound sequences of speech input, which was seen in the previous section, whereas, the major lexical development was also treated in the following section. To examine the nature lexicon in aged between three to five years old children's, speech, data were gathered and categorized in different lexical domains such as, nouns, verbs, adjectives pronouns, adverbs, prepositions, demonstratives, and interjections. Unintelligible utterances were not included in the analysis. After item-by-item analysis, the words were classified according to their domain. First, all word types (i.e. all words uttered in each child's speech in a total 13 to 25 minutes) were taken. Second, noun types, except people's name, and verb types (different categories of verbs), adjectives (like quality, size, shape, color, and quantity) were identified and categorized. Adverbs (manner, time, place, and frequency), pronoun, demonstratives, preposition, conjunctions, and interjections were also counted as different classes words. These lexical domains' frequency size were also calculated and described in relation age and gender in the following consecutive section.

5.7.1 Lexical size

In this section, the total size of lexicon gathered from thirty-two children’s speech, frequency of nouns, verbs, adjectives, adverbs, pronouns, demonstratives, conjunctions, prepositions and interjections was treated.

Table 61 The frequency of total lexicon and its domains

Stat	lexicon	N	V	Adj	Adv	Pro	Dem	PP	Conj	Inter
	32	32	32	32	32	32	32	32	32	32
Mean	483.72	161.59	137.41	44.56	21.94	16.06	21.97	24.28	12.22	18.31
SD	139.18	36.844	44.24	8.883	10.56	8.77	9.163	8.243	5.84	9.
Min	250	101	78	22	8	5	10	10	3	6
Max	807	239	242	60	45	55	49	39	25	53
Sum	15479	5171	4397	1426	702	514	703	777	391	586

The total mean frequency of lexical and its domains found in thirty-two Amharic speaking children’s speech was also presented graphically.

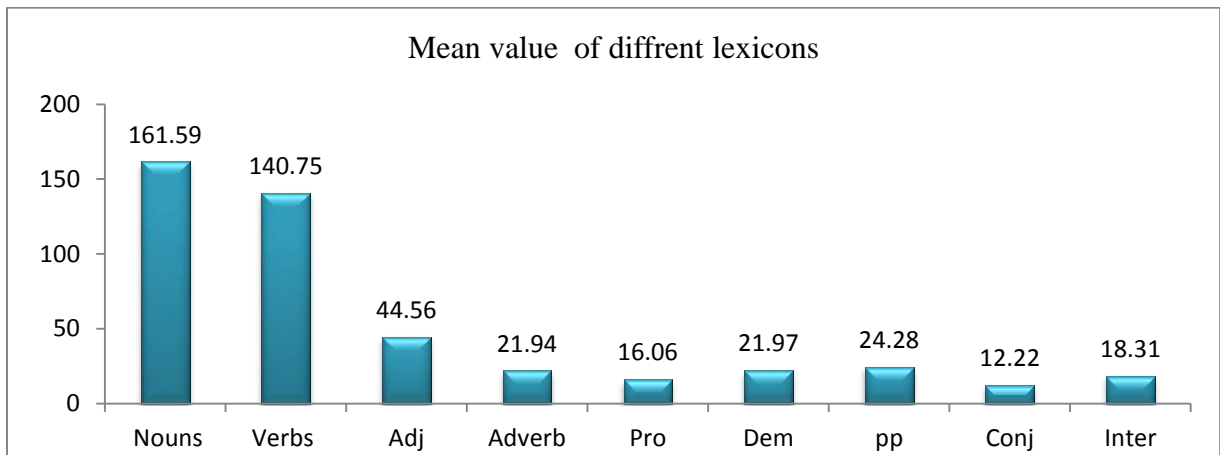


Figure 6 the mean frequency of different lexicons

As it was attempted to present in the above table and graph, the total number of lexicons found in thirty two Amharic speaking children’s speech was 15479 words with 483.72, (SD 139.138) mean frequency coverage and the maximum count was 807 (from the fourth age group) and a minimum 250 words (from the first age group). Along with, children’s lexicon was composed of different domain of words, and these words found in various frequencies. For example, noun, with 161.59 mean frequencies, took the first largest share; the maximum count was 239 and the minimum 101 words and verbs appeared at the second

position with 137.41 mean frequencies and the maximum word count was 242 and the minimum 78. Whereas, adjective had 44.56 mean frequency coverage and appeared at the third place. Demonstrative (21.97), adverb (21.97) and prepositions (24.28) had a significant representation in children's lexicon respectively. Interjection (18.31), pronoun (16.06), and conjunction (12.22) were the other class of words detected in children's speech.

Generally, as the result indicated, nouns and verbs constituted the largest portion of the total lexical size and adjectives had significant embodiment, whereas, the prepositions, demonstratives, and adverbs were the fourth frequent word classes, which had almost nearly similar distribution. The other class of lexicon such as, pronouns, interjections, and conjunctions contributed their share to the development of children's lexical size.

5.4.1.1 FWD and ONW of lexicon across the age groups

In this section, it was attempted to describe type and frequency of lexicon in relation to age and gender.

Table 62 FWD and ONW of lexicon across age groups

Age	N	TYP	Sum	%	Mean	SD	Max	Min
3;0-3;5	8	FWD	2558	16.5	319.75	42.016	392	250
		ONW	923	15.6	115.38	13.606	135	98
3; 5-4; 0	8	FWD	1308	22.6	437.25	57.173	501	350
		ONW	1308	22.1	163.50	27.604	197	97
4;0-4;5	8	FWD	4151	26.8	518.88	43.390	559	444
		ONW	1922	32.5	240.25	30.103	281	201
4; 5-5; 0	8	FWD	5272	34.1	659.00	95.382	807	510
		ONW	1922	32.5	240.25	30.103	281	201
Total	32	FWD	15479	100	483.72	139.138	807	281
	32	ONW	5922	100	185.06	57.451	250	98

The result depicted in the above table was also presented graphically;

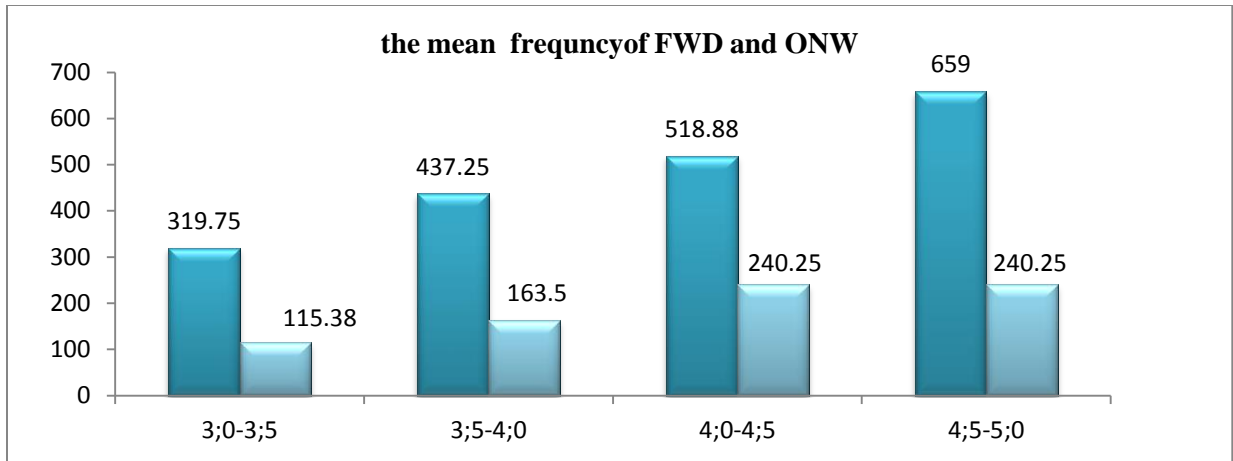


Figure 7 The mean frequency of lexical size and the occurrence of new words (ONW)

As shown in the above table and graph, the total frequency occurrence of words (FWD) had 319.75 mean frequency coverage in aged between 3;0 to 3;5 years old children's speech. It had 437.25 mean frequency in the second (aged 3;5-4;0) and 518.88 in the third (age 4;0-4;5) and 659 the fourth (age 4;5-5;0) group. As far as the occurrence of new words (ONW) is concerned, 115.38 mean frequencies of new words were registered from the first age group and 163.50 from the second, 240.25 from the third, and 240.25 from fourth. As the figures in the above table and graph illustrated, the frequency occurrence (FWD.) and (ONW) had a significant representation across age groups. However, the FWD and ONW had difference across age groups. As the SD, the maximum, and the minimum counts signified, the size of lexicon had a visible difference from child to child and from age group to age group. For example, in the first age group, FWD's deviation (SD) was 42.016 with a maximum count 412 and the minimum 319 words. Similarly, the group deviation on the ONW was 13.606 and the maximum count 140 and the minimum was 101; these figures portrayed that the visible difference between children in a group. Similarly, FWD and ONW also had upward increment across age groups. A case in point, the mean of FWD in the first age group was 319.75 and it was 659 in the fourth age group, so the two means had a big difference to show how age influences the developmental pattern of children lexicon. In addition, this difference can be checked with the nature of correlation between the age and FWD and ONW; it was attempted to run Pearson measure of correlation.

Table 63 the relationship between age, FWD and ONW in correlation table

Correlations				
		Age	FWD	ONW
Age	Pearson Correlation	1	.898**	.855**
	Sig. (2-tailed)		.000	.000
	Sum of Squares and Cross products	40.000	4397.500	1729.000
	Covariance	1.290	141.855	55.774
	N	32	32	32
FWD	Pearson Correlation	.898**	1	.811**
	Sig. (2-tailed)	.000		.000
	Sum of Squares and Cross-products	4397.500	600138.469	200900.563
	Covariance	141.855	19359.305	6480.663
	N	32	32	32
ONW	Pearson Correlation	.855**	.811**	1
	Sig. (2-tailed)	.000	.000	
	Sum of Squares and Cross-products	1729.000	200900.563	102319.875
	Covariance	55.774	6480.663	3300.641
	N	32	32	32

** . Correlation is significant at the 0.01 level (2-tailed).

As the above correlation table depicts, children’s age had a strong positive correlation with FDW ($r=0.898$) and ONW ($r=0.855$) which are almost nearly perfect positive correlation. This indicates that when children grew older the number of new words (ONW) and the total frequency (FWD) increased rapidly. The ONW and FWD had statistically significant difference amongst age groups as $p < 0.01$ (2- tailed) as indicated. In addition to this, FWD. and ONW had strong positive correlation ($r=0.811$). They both linearly increased upward across age groups. In sum, ONW and FWD had a direct strong relationship in children’s lexical development.

Table 64 The size of FWD and ONW in relation to gender

Gender	Lexical size						
	N	Sum	%	Mean	SD	Max	min
Male	16	7292	47.1	455.75	121.523	676	250
Females	16	8187	52.9	511.69	153.534	807	318
Total	32	15479	100	483.72	139.138	807	250
	Occurrence of new word items(ONW)						
	N	Sum	%	Mean	SD	Max	min
Male	16	2763	46.7	172.69	49.471	241	98
Female	16	3159	53.3	197.44	63.618	281	101
Total	32	5922	100	185.06	57.451	281	98

The size of FWD and ONW is also presented graphically as follows

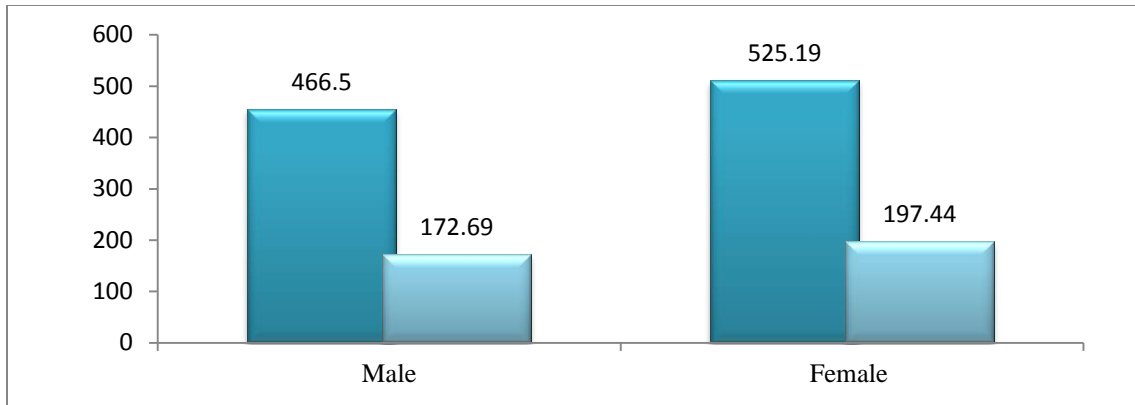


Figure 8 Graphic representation of the total lexical size FWD and ONW

As shown, the size of FWD and ONW were registered in boys' and girls' speeches. The size of FWD had 466.5 mean frequency, with maximum 676 and the minimum 250 word count in boy's speeches, and 511.69 in girls with maximum 807 and minimum was 324 words. In addition, the occurrence of new words (ONW) shows exceedance in girls' speeches than boys. It had 172.69 mean coverage in boys' speech and 197.44 in girls' side. Thus, girls had greater FWD and ONW than boys. The significant of this difference was also checked by measuring the correlation between gender and FWD and ONW.

Table 65 Measure of correlation of FWD and ONW in relation to gender

Correlations				
		Gender	FWD	ONW
Gender	N	32	32	32
	Pearson Correlation	1	.204	.219
	Sig. (2-tailed)		.262	.229
	Sum of Squares and Cross-products	8.000	447.500	198.000
	Covariance	.258	14.435	6.387
**. Correlation is significant at the 0.01 level (2-tailed).				

As Pearson correlation coefficient $r=0.204$ and $p=0.262$ (2-tailed) indicates the size of FWD had a positive correlation, however, this correlation was not strong and it does not show statistically significant difference between boys and girls. Similarly, the size of new words (ONW) had weak positive correlation with gender, which means despite the FWD and ONW had an exceedance in girls' speech but the difference was not statistically significant.

As whole, in this age range, the size (FWD) and the type of new words, used (ONW) had significant size in each child's speech. However, the choice and the presence of new words and its frequency occurrence were apparently different from child to child and across age groups. Obviously, the big SD (standard deviation) registered in each group can be a supportive evidence how lexicon divergently distributed in different children's speech. In addition, the existence of new words and their frequency grew up hirarichally from the first to the last age group. This direct upward increment of lexicon was generally viable to show how age was an influential factor on the development of children lexicon in type and compositions and girls' had greater lexical size than boys but the difference was not statistically significant.

5.7.2 Domain and composition of children's lexicon

As part of language development, children construct string of complex sentences using different words. They express their feeling, ask question and show where something is kept. In order to express these ideas, they used different nouns, verbs, adjectives, adverbs, conjunction, and preposition. However, the ability of producing these lexicons differed in types and composition from individual to individual and from one age group to others. Therefore, the following sub sections were intended to deal with the domain and composition of t lexicons

5.7.2.1 Frequency of nouns and their types in children's speech

Table 66 The Size of nouns across age groups

Age	N	Sum	%	Mean	SD	Max	Min
3;0-3;5	8	908	17.6	113.50	9.547	128	101
3; 5-4;0	8	1220	23.6	152.50	10.337	167	135
4;0-4;5	8	1483	28.7	185.38	15.417	204	161
4; 5-5; 0	8	1560	30.2	195.00	30.270	239	149
Total	32	5171	100.0	161.59	36.844	239	101

Noun, which covered the largest portion of children's lexical size, had a dominant distribution across age groups. It had 113.50 mean frequency with the maximum 128 and minimum 101-word count in the first age group; 152.50 mean frequency coverage with the maximum 167 and minimum 135 words in the second age group. The mean frequency of nouns increased to 185.38 in third age group and the maximum count was 204, and the

minimum was 161 words. Whereas, the largest noun count was registered in the fourth age group; it had 195 mean frequency and the maximum count was 239 and the minimum 149 words. Moreover, the following graph depicts the frequency mean of nouns across age groups.

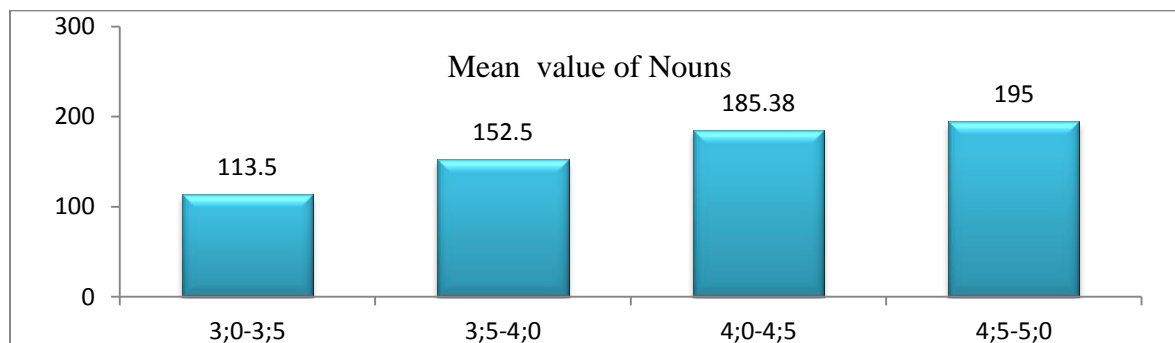


Figure 9 The mean value of nouns across age groups

Generally, the above graph and table show that there was a hierarchal increment of nouns across age groups. Despite individual child's difference in using different nouns, the frequency mean shows upward increment and this was examined using measure of Pearson correlation. Coefficient.

Table 67 The relationship between age and nouns

Correlations		Age	Nouns
Age	Pearson Correlation	1	.855**
	Sig. (2-tailed)		.000
	Sum of Squares and Cross-products	40.000	1109.500
	Covariance	1.290	35.790
	N	32	32
The size of nouns	Pearson Correlation	.855**	1
	Sig. (2-tailed)	.000	
	Sum of Squares and Cross-products	1109.500	42081.719
	Covariance	35.790	1357.475
	N	32	32

** . Correlation is significant at the 0.01 level (2-tailed).

The mean value of each group and Pearson correlation coefficient $r=.855$; $p < 0.01$ indicated that the relationship between age and the size of nouns was very strong and positive. This, a strong positive relationship of age with nouns indicated that the hirarichally increment of nouns. From the above figures, it is possible to deduce that age difference has functional contribution to the development of nouns; older age children had large number of nouns in

their speech than the younger ones. In sum, when children grow older, their lexical size is maximized and the frequency of nouns increased, too.

Table 68 Frequency of nouns in relation to gender

Gender	N	Sum	%	Mean	SD	Max	Min
Male	16	2574	49.8	160.88	35.244	213	101
Female	16	2597	50.2	162.31	39.525	239	103
Total	32	5171	100.0	161.59	36.844	239	101

From the total size of nouns, 160.88 mean frequency was registered from boys' speech with maximum 213, and the minimum 101 word count, whereas, girls' covered 162.31 noun share and the maximum count was 239 and the minimum was 103. This shows that girls somewhat show exceedance on the production of nouns.

Table 69 Measure of correlation between gender and nouns

Correlations			
		Gender	Nouns
Gender	Pearson Correlation	1	.020
	Sig. (2-tailed)		.914
	N	32	32
Nouns	Pearson Correlation	.020	1
	Sig. (2-tailed)	.914	
	N	32	32

Like the total lexical size, gender and nouns have weak positive correlation which indicated the presence of slight difference between girls' and boys', however as the two mean values and Pearson correlation coefficient ($r=0.20$) indicated, the difference observed between boys and girls was not statistically significant to say girls had great nouns size than boys.

Table 70 Frequency of different nouns in children's speech

Types of nouns	N	Sum	Mean	SD	Max	Min
Object's name	32	1410	44.06	15.740	75	16
Animal's name	32	1224	38.25	10.580	63	21
Place names	32	781	24.41	8.598	37	8
Common nouns	32	845	26.41	6.314	38	15
plants and fruits' name	32	911	28.47	7.874	43	14

From total size (5171) of nouns, objects' name had 44.06 mean frequency coverage and the maximum count was 75, and the minimum 23 words. Majority of things and objects' names found in children's speeches were listed below.

Example 1 Words which represent object's names

Object	Gloss	Object	Gloss	Object	Gloss
afangulit	Toy	ʃəmizotʃ	Shirts	mankija	Spoon
borsa	Purse/ bag	t'iruba	flute	ʃukija	Fork
dəwol	bell	libs	Clothes	mətʃ'awotʃ	equipment
dəbtər	Ex.book	lap'is	Rubbers	bərmel	Barrel
kəbərə	Drum	kuas	ball	dʒoroget	Earring
ziwaziwe	Swing	worək'ət	Paper	tʃ'amma	Shoes
iskirbito	pen	kofija	Cape	məkina	car
irsas	Pencil	misaikka	Luch box	safa	barrel
wənbər	Chair	birtʃk'o	glass	məs'əhaf	book
məskot	Window	bərr	door	intʃət	Wood
suri	Trousers	ʃurab	Sweater	ʃəmiz	shirt
firaʃa	matters	ʃikirkiroʃ	Rounding	zant'illa	umberella

As illustrated, most of the words presented in the above list were commonly detected in most children's speech. Apart from these, name of body parts such as /fitt/ 'face', /ajin/ 'eye', /ginbar/ 'forehead', /afintʃ'a/, 'nose' /dʒoro/ 'ear' /and/ 's'əgur/ 'hair' were repeatedly manifested words in each child's speech.

In addition, nouns, which represented animal's names, were the other category detected at large, next to object names, they covered 38.25 frequency mean, and the maximum count was 63 and the minimum 21 words. Most of animals' name seen in children's speeches was names of domestic and wild animals.

Example 2 words which represent Animal's names

Animal's names detected in children's speeches							
domestics	Gloss	Domestic	Gloss	Wild	Gloss	Wild	Gloss
bərre	Ox	wuʃa	Dog	t'ot'a	ape	gumarre	hippo
lam	Cow	tʃ'atʃ'ut	Chicken	ellij	trotiose	dʒib	Hyena
bæg	Sheep	giməl	Camel	anbəsa	lion	azo	Crocodile
fijəlotʃ	Goats			zihon	elephant	awure	Beast
ahija	Donkey			kətʃine	giraffe	zidʒəro	Monkey
fərəs	Horse			nəbr	tiger	amora	Big bird
dimət	Cat			abofə'mane	cheetah	wof	birds
doro	hen			asa	fish	ibab	Snake

Most of animal's names, which appeared in the above word's list, were regularly recurring noun across age groups. However, there were some nouns like /asa/ 'fish', /dʒib/ 'hyena', /abofə'mane/ 'cheetah' and /amora/ 'big bird'. which were only manifested in few children's

speech. On the other hand, the word /t'otit'a/ 'ape' had the highest frequency occurrence in picture description and storytelling activities and this augmented the size animals' name to be larger.

Similarly, for the establishment of a large size of nouns, the name given for places contributed their share. Such type of nouns had 24.41 mean frequency coverage in thirty-two children's speech; the maximum frequency count was 37 and the minimum was 8 words. Children' used different place names but the nouns /bet/ 'house', /timihirtbet/ 'school', /kifl/'class' were the most active words in majority of children's speech ,whereas, the occurrence of other place names were limited in types and frequency.

Example 3 Words which represents different place's names

Noun	Gloss	Noun	Gloss	noun	Gloss
hangar	Country	kənfər	village	mijpitabet	bedroom
etiopia	Ethiopia	gibbi	compound	bora	kid's playing park
kufna	kitchen	idnamol	kids'entertianing	mərət	ground
bora	playing	ǰıntbet	toilet	timihirtbet	school
tərara	mountain	misabet	dining room	kifl	class
gurquad	holle	botta	place	medda	field
bet	house	wonz	river	tǰ'akka	forest

In addition, Plants, fruits, and vegetables' names were the other category of nouns, which took 28.47 mean frequency noun's share. The maximum was 43 and the minimum 14 words. Most of the common plants, fruits and vegetables' names appeared in children's speeches are listed as follows.

Example 4 words which represented plants and fruits' names

plants	Gloss	Fruits	Gloss	Fruits	Gloss	vegetable	Gloss
zaf	tree	firafire	fruits	anasas	pineapple	timatim	tomato
k'it'əl	leaf	muz	banana	wojin	graves	karot	carrot
k'irnitǰ'af	branch	papaja	papaya	birtukan	orange	dinnitǰ	potato
intǰət	wood	mango	mango	indǰorǰ	strawberry	k'arija	Green pepper
				pom	apple		

Plants, fruits, and vegetables' names occurred frequently during picture description and elicitation tasks. From these nouns group, nouns like /zaf/ 'tree',/k'it'əl /'leaf 'and/muz/ 'banana' had the highest manifestation in all children's speech. While uttering these nouns, however, children were commonly observed switching code from Amharic to English because this age bound children had oral practice about the name of fruits and vegetables

in English than Amharic in the school environment, so when children were unable to call the name of plants, fruits and vegetables' name in Amharic, they easily switched to English.

In addition, aged between 3 to 5 years old children used some common nouns in their speech and this category of nouns had 26.41 mean frequency coverage (see table 70) and they had fair contribution to the growth of noun's size. The maximum count was 39 and the minimum 15 words.

Example 5 Words represented common nouns

Nouns	Gloss	Noun	Gloss	Nouns	Gloss
abbat	Father	ihit	Sister	guadəna	Friend
innat	Mother	akist	Aunt	betəsəb	family
lidz	child	aggot	Uncle	set	Female
wəndm	Brother	səw	Person	wond	Brother
doktətər	Doctor	Seratəna	Sevant	astəmarj	Teacher

As depicted, common nouns, which represent people, were categorized as one group. From these nouns, words such as, /abbat/ 'father, /innat/ 'mother', /lidz/ 'child' and /betəsəb/ 'family' were the most frequent category in every child speech. Moreover, the nouns /abbat/ / and /innat / were also used as referent words to old people whom children saw during picture description and narration activities. However, the other common nouns had a chance of occurrence once or twice and some others common nouns were only detected in few children's speech.

To sum up, children used different types of nouns in their speech and these nouns had a significant distribution across age groups. Majority of the nouns listed in the above consecutive examples occurred frequent in all children's speech but some noun types were limited to in few children's speech. As a whole, nouns had a leading share in children's lexical inventory. Especially, object and animal's names took the large portion of the nouns size. Nouns, which represent plants, fruits and vegetables' names, common nouns and places names, had significant depiction respectively. Although these categories of nouns were registered across age groups, there were also verbs used to express action, describe objects, and narrate events.

5.7.2.1. The frequency and types of verbs in children’s speech

Table 71 Frequency of verbs across age groups

Age	N	Sum	%	Mean	SD	Max	Min
3;0-3;5	8	705	16.0	88.13	7.060	99	78
3;5-4; 0	8	948	21.6	118.50	7.407	130	105
4;0-4;5	8	1182	26.9	147.75	21.862	189	119
4;5-5;0	8	1562	35.5	195.25	30.927	242	148
Total	32	4397	100.0	137.41	44.245	242	78

As shown in the above table, the frequency of verb was presented across age groups. The frequency mean was also depicted graphically as follows.

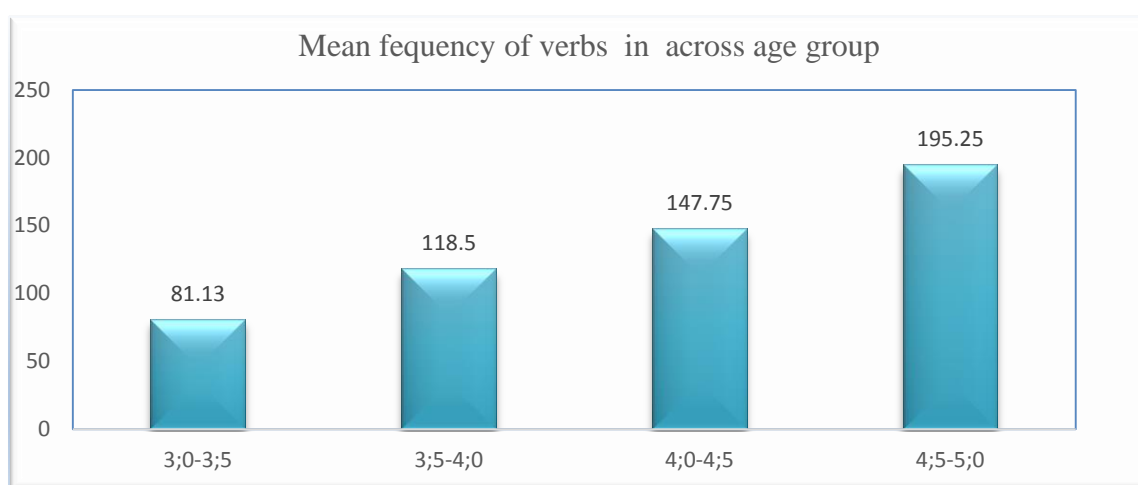


Figure 10 The mean frequency of verbs across age groups

As presented in the above table and graph, verbs had different frequency coverage across age groups. From the total number of verbs, 88.13 mean frequency was registered from the first age group and the maximum count was 99 and the minimum 78 with range of 29 verbs; 118.50 mean frequency was also found in the second age group with maximum 150 and minimum 115 verbs count. Whereas 147.75 mean frequency were registered from the third age group and the maximum count was 189 and the minimum 119 words. The largest portion verbs was found (mean 195.25) in the fourth age group and the maximum count was 242 and the minimum 182 words. In sum, the frequency occurrence of verbs differed from child to child as well it also increased hierarchically across age groups. The two older age groups had a greater number of verbs than the two younger groups children did.

Table 72 Measure of correlation between frequency of verbs and age

Measure of Correlations			
		Age	Verb
Age	Pearson Correlation	1	.900**
	Sig. (2-tailed)		.000
	Sum of Squares and Cross-products	40.000	1402.500
	Covariance	1.290	45.242
Token frequency of verbs	Pearson Correlation	.900**	1
	Sig. (2-tailed)	.000	
	Sum of Squares and Cross-products	1402.500	60685.719
	Covariance	45.242	1957.604
**. Correlation is significant at the 0.01 level (2-tailed).			
b. List wise N=32			

In addition to the mean frequency registered in each group, the Pearson correlation coefficient $r=0.9$ and $p<0.01$ mirrored the relationship between the frequency of verbs and age; it had a very strong positive correlation. As the frequency mean and the Pearson correlation coefficient indicated, the frequency occurrence of verbs had an increment in older age group and its increment was linearly hierarchal from the first to the fourth. Generally, the frequency of verb showed the presence of a statistically significant difference amongst the groups. In addition, as the maximum and the minimum verb count of the groups, and the SD (Standard deviation) disclosed, the frequency occurrence of verbs varied from child to child with in the group.

Table 73 The frequency of verbs in relation to gender

Gender	N	Sum	%	Mean	SD	Max	Min
Males	16	2198	50.0	137.38	43.083	228	78
Females	16	2199	50.0	137.44	46.793	242	80
Total	32	4397	100.0	137.41	44.245	242	78

The frequency of verbs did not show a significant variation between boys' and girls' speech as a whole. The mean frequency occurrence of verbs was 137.38 in boys' speech and it was 137.44 in girl's side. The frequency mean as well as the total size of verbs did not show such a big difference.

Table 74 Frequency of different types of verbs in children’s speech

Types of verbs	N	Sum	%	Mean	SD	Max	Min
Progressive	32	1014	23.06	31.69	9.358	53	15
Past	32	761	17.307	23.78	7.491	39	12
Auxiliary verb	32	675	15.35	21.09	9.485	40	8
Imperfective	32	475	10.80	14.84	6.144	33	4
Perfective	32	457	10.39	14.28	5.765	27	4
Infinitives	32	341	7.75	10.66	5.867	24	3
Imperative	32	267	6.072	8.34	3.973	17	0
Gerund	32	262	5.958	8.19	6.674	26	0
Passive	32	147	3.343	4.59	3.330	13	0
Total	32	4397	100	137.41	44.245	242	78

The frequency of verbs such as progressives, past, auxiliary, imperfective, perfective, infinitive, imperative, gerund, and passive was presented. In addition, the frequency mean of each category was also presented in the following bar graph.

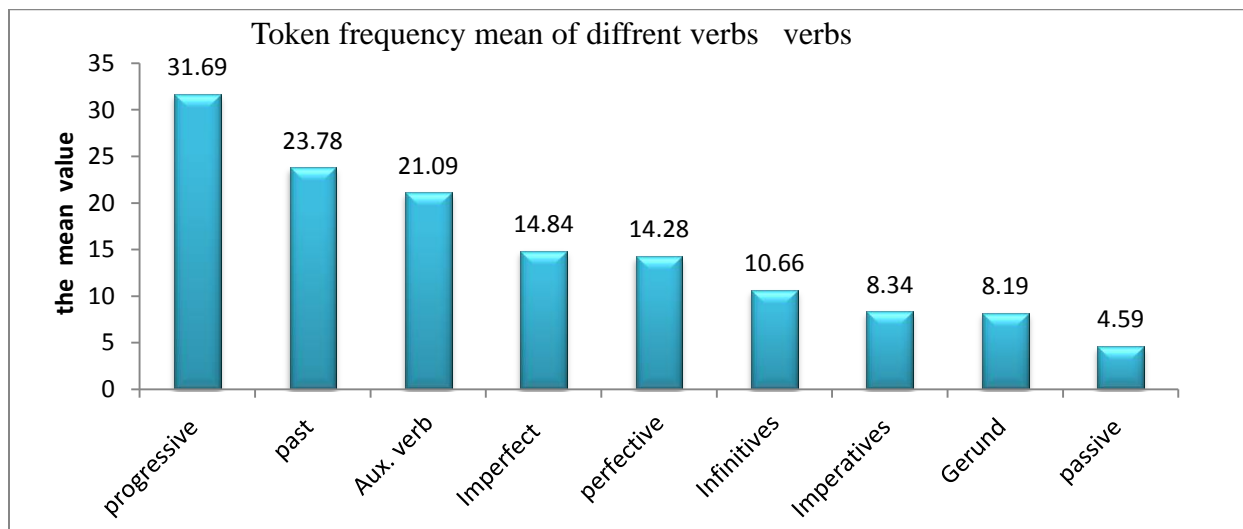


Figure 11 The mean frequency of different verbs

As shown in the above table and graph, progressive, auxiliary; past, imperfect perfect, infinitive, jussive, passive, and gerund were manifested in different frequency in Amharic speaking children’s speech.

Progressive:- progressives took the largest share, these verbs had 39.69 frequency mean and maximum verb count was 53 and minimum 15 words. Some of the progressive verbs appeared in children’s speeches were listed as follows.

Example 6 Words which represent progressive verbs

Progressive	Gloss	Progressive	Gloss
ijəhedu	(They) going	ijəbət'əsətʃ	(she) cutting
ijətətʃ'awətətʃ	(she) Playing	ijəwəɲu	(they) Swimming
ijəbələtʃ	(she) eating	ijbərəru	(they) flying
ijajətʃw	(She) watching (him)	ijəfəran	(we) doing
ijərot'u	(They) running	ijat'əbətʃ	(she) washing
ijələk'ak'əmu	(They) stripping	ijət'tatʃ	(She) Drinking
ijəwərədu	Getting down	ijəməta(drum)	(he) Playing
ijastəmarətʃ	(she) teaching	ijəzələlətʃ	(she) jumping

The above list of progressive verbs appeared with different inflections, which indicate subject, object, person, gender, and number. Despite they would not be complete without the auxiliary verbs, children used progressives as sole word utterances, in verb phrases (VP) and in sentences during children's talks as following extract taken from different children's speeches shows.

Extract 1

1. /ijə-bəll-a/= (as single utterance)
 PRO.3rd SIG.M.PRG.V(ijə-bəll-a) eating
 Gloss: (he) eating
2. /t'otitua kətʃ'newotʃun ija-jə-tʃ nəw/
 DEF.3rdP.SIG.F.SUBJ (t'ot'-it-ua) the ape+ DEF.3rd PL.OBJ (kətʃ'ne-wotʃu) the giraffes
 ACC (-n) + PGR. 3rd SIG.F.V (ija-jə-tʃ) watching + PRST. AUX.V (nəw) is
 Gloss: The ape is watching the giraffes .(SOV)
3. /wofotʃu t'irat'ire ijəlkəmu nəw/
 DEF.3rd PL.SUBJ (wofotʃu) the birds +PL.OBJ.(t'irat'ire) cereals +3rd.PL PRG.V
 (ijə-ləkəm-u) eating/picking + PRST AUX.V (nəw) is.
 Gloss: The birds are eating cereals.(SOV)
4. /kəbərə ijəmət-a /= (he) playing drums.(VP)
 OBJ (kəbərə) drum + PRG.. 3rd.F. SUBJ.V (ijə-mət-a)
 Gloss:(he) playing drum (VP)

Although the occurrence of progressive verbs as single utterance cannot show a complete idea, children had a common tendency of using them like (1), especially, in turn taking conversation during elicitation and picture narration tasks, children frequently used progressives as sole word utterance but when they were encouraged to answer questions

like ‘who is doing this?’ or, ‘What is X doing?’ They were able to use the progressives in sentence, which had overt subject, and object like sentences (2 & 3). Despite not frequent, progressives also appeared in VP phrases like (4). Indeed, progressive were seemly frequent in all children’s speech. For example, the progressive verb /ijəhed-/ which was apparent in all children’s speech, is derived from singular male subject indicator V2 /hedə/ ‘he went’ occurred with different inflectional markers like /ijə-hed-ə/ ‘(he) going’ or, /ijə-hed-u/ meaning ‘(they) going’, /ijəhed-ɪ/, ‘(she) going’ or /ijəhed-n/, ‘(we) going’ and the same patterns of inflection was also observed in other progressive verbs too. This implies that aged between 3 to 5 years old children can produce well-inflected progressive verbs. Moreover, as the speech data taken from thirty-two children revealed, progressives were the first active verb type in children speech.

Past verbs: These categories of verbs had 23.78 mean coverage and the maximum count was 39 and the minimum 12. The common past verbs detected in children's speech were listed as follows.

Example 7 words, which illustrate simple past verbs

Past verbs	Gloss	Past verbs	Gloss	Past verb	Gloss
mət'atʃ	She came	sət'ətʃat	She gave	afənəfu	They won
ajətʃ	She saw	dənəgət'tʃ	She was panicked	korəʃəmat	he crashed
wot'atʃ	She climbed	agəpətʃ	She found	korət'ə	He cut
asərətʃ	She tied	hedu	They went	tədəbək'ə	He hide
wəʃətʃw	She(it)lied to him	bəlluat	They ate her	təɲna	He slept
wodəkətʃ	She fell down	t'ət'u	They drunk	wosədat	He took he
tədəbək'ətʃ	She hid	abarəruat	They chased her	ask'əmət'ə	He put
motətʃ	She died	t'əjək'at	He asked her		

Originally, a third person male indicator past action verbs is the first dictionary word in Amharic language and the other categories are derived from such root verbs. Due to this reason, these verbs frequently manifested in all children’s speech because children start learning with these verbs as they are the first input verbs in children's perceptual lexicon and they had a dominant manifestation next to progressives. Children used these verbs as sole word utterance because the verbs convey a complete message due to inflection for the subject, object, person, number, gender, and tense and this situation helped children to utter the past verbs as a sole utterance. For instance, the past verb /abarər-u-at/, was commonly found in each child’s speech. While children were describing a picture, which showed what three cats did to catch the rat and Some children used this verb as a sole word utterance like

/abarər-u-at/ ‘they chased her (it)’. Others added overt object like /ajt’ituan abarər-u-at/ ‘they chased the rat’, whereas, the remaining children used overt subject and object like /sotsu dīmətotf ajtituan abarər-u-at/ ‘The three cats chased the rat’. Generally, these potentially inflected verbs were detected meaningfully in complete ideas form without overt subject and object or they manifested commonly in SOV structured sentences. In sum, these verbs had the second leading position in children’s speech. The following extracts also illustrate how the other past verbs occurrence looks like in children’s speech.

Extract 2

1. /wot’a-tf/ (a verb serves as complete idea without over subject and object)
 3rd SIG.F PAST5.+V(wot’a-tf) climbed /went out
 Gloss: she (it) climbed up / went out.
2. /zaf laj **wot’atf**/ (a past verb with complement)
 N(zaf) tree +PP (laj) on + 3rd SIG.F.V(wot’a-tf) climbed/went out
 Gloss: she (it) climbed up a tree.
3. /t’ot’awa zaf laj **wot’atf**/ (past verb with overt subject and complement)
 DEF.3rdSIG.F.N.SUBJ (t’ot’a-wa)+N (zaf) tree +PP (laj) on+ 3rd SIG. F. PAST.V (wot’atf)
 climbed
 Gloss: The ape climbed up a tree.
5. /t’ot’awa zaf laj**wot’atf** na muz bəllatf/(overt subject with compound past verbs and complements)
 DEF.3rd SIG.F.N (t’ot’awa) the ape + N (zaf) tree +PP (laj)on + 3rd SIG.F. PAST.V (wot’atf)
 climbed /went out + CONJ (na) and + OBJ (muz) banana +3rd SIG.F.PAST.V (bəlla-tf) ate .
 Gloss: The ape climbed on a tree and ate a banana.

As the above extract indicated, past verbs appeared as sole utterances like (1) and with complete (pp. Phrase like (2) and with overt subject in (3) and with a combination of two verbs (4). However, younger age (3 to3; 5 years) children used most of the past verbs as single utterances, but the others used them alternatively depending on the point children wanted to address.

Auxiliary verbs:-, such verbs had 21.09 mean frequency coverage and the maximum count was 40 and the minimum 8 words. They were the third most prevalent verbs in children’s speech. Auxiliaries such as, /now/, ‘(he)is’, /Nat/ (she) is ‘or /net/ ‘she) is’, /natfəw/ ‘(they) are’ and the past auxiliary form like /nəbərɪ/ ‘(they) were’, /nəbərə/ ‘(he)was’ and /nəbərət/

‘(she) was’ and modal auxiliary like /itʃlaləlləhu/ ‘(I) can’ /titʃlalətʃ/ ‘(she) can’ were more salient types. Like adults, children were able to use these verbs as a linking or a helping verb as the example below illustrates

Extract 3

1. /and t’ot’j it nəbərətʃ/ (Auxiliary ‘be’ as a linking verb)

Number MOD.ADJ (and) one + DEF. third SIG.F.SUBJ (t’ot’jit) the ape+ 3rdSIG.F.AUX
.PAST.V (nəbərə-tʃ) was.

Gloss: There was one ape. (From storytelling task)

2./sidəwol missa ijəbəllan nəbər/

3rd Sig M.GRD.V (sidəwol) while ringing + OBJ (misa) lunch + 1st Pl.PRG.V (ijə-bəllan) eating +3rd SIG. M.AUX.V (nəbər) was .

Gloss: While the bell ringing, we were eating (from elicitation)

3./ məs’əf itʃillaləhu /

INF.V (məs’əf) to write +1st SIG SUBJ.MOD.V.(itʃillalə-hu) I can

Gloss: I can write.(From elicitation)

4./wuha wust’ nəw/

N.(wuha) water +PP(wust’) inside + 3rd SIG. AUX.V (nəw) is.

Gloss: It is in the water.

As illustrated, children used auxiliary verbs as the rule of the language allows them. They used these verbs as a helping verb like sentence (2) and (3) and as a linking verb like (1) and (4). Moreover, when children were unable to remember the right expressive /descriptive words, they frequently preferred to use auxiliaries with demonstratives like/ /jɪtʃi nat/ ‘this is (female)’ /john nəw/ ‘this is (male)’ and /inəzih nəbərə/ ‘here they were’. As a whole, auxiliary verbs had significant representation in each child’s speech and most of the children’s complete sentences were guided by these verbs.

Imperfective: as it was presented in table 74, imperfective verbs had 14.84 mean frequencies and the maximum count was 33 and the minimum 4 verbs. Most of the imperfect verbs were detected from children’s elicitation mode tasks. During this session, the children were talking about what kind of activities they perform every day, at school and home and to express these events, they frequently used imperfective verbs as presented as follow

Example 8 words which represent imperfective veer

Imperfective	Gloss	Imperfective	Gloss	Imperfective	Gloss
ihedalləhu	I go to	at'naləhu	I study	tat'iballətʃ	She washes
isət'alləhu	I give	intəɲnalən	We sleep	tihedalətʃ	She goes
jitʃawətallu	I play	inrot'alən	We run	titʃ'ohalətʃ	She shouts
isəralhu	I do	inat'ənalən	We study	tik'ərs'ilnalətʃ	She sharpens
ins'fallən	We write	intʃawətalən	We play	inbəllalən	We eat
inzəmrələn	We sing	tastəmrələtʃ	She teaches	inmaralən	We learn
awolkaləhu	I put off	inawəralən	We talk	tik'otanallətʃ	She angryat us

In most of the children's speech, imperfect verbs appeared as a sole word utterance like past verbs as the following speech extracts taken from Child C26 shows.

Extract 4

Teacher: /ibet sithedʒ min tisərialəʃ? /

N (bet) home +2nd SIG.F.V (sithedʒ) go +PRO (min) what+ 2nd SIG.IMPRF.V (ti-sərialə-ʃ)

Gloss: What do you do when you go to the home?

SMR: /itʃ'awətaləhu/

1st SIG. IMPRF.V (i-tʃ'awətal-əhu) play

Gloss: I play.

Teacher: /lella min tisərialəʃ? /

ADJ (lella) + PRO (min) what +2nd SIG.IMPRF.V (ti-sərialə-ʃ)

Gloss: What other things do you do?

SMR: /itəɲnaləhu/

1st SIG. F.IMPF.V (i-təɲnal-əhu) sleep

Gloss: I sleep.

Teacher: /lella minm atisərim? /

ADJ (lella) + PRO. NEG (minm) + NEG. 2nd SIG. IMPRF.V (ati-sərim) not do.

Gloss: Don't you do other things?

SMR: /at'ənaləhu/

1st Sig IMPRF.V ((a-t'əna -lləhu) study

Gloss: I study.

Most of the imperfective verbs are derived from the root verbs by adding the derivational prefix /i-/ for 1st sig prson, /ji-/ for 2nd plural and 3rd sig. male /ti-/ 3rd sig. female and /in-/ 1st Plural markers. However, the common imperfective, in most of the children's speech, were the first person singular ones. These verbs were commonly manifested as sole word utterances as the above example indicated. Like other verbs, imperfective are inflected for subject, object, person, number, gender and tense. For example, the imperfect verb /ti-k'ərs'ilnalətʃ/ 'she sharpens it for me' was detected in most of the children's speech. This verb conveys different information about what their teacher does when their pencils are

broken. They all used a one-verb utterance to show 3rd person singular subject 'she', object 'pencil', and the 1st person prepositional object 'for me'. This designates that like adults, this age circle children were able to use morphologically developed imperfect verbs to express their ideas or feelings.

Perfect verbs: despite their limited occurrence, perfect verbs were visible across age groups. The mean frequency of these verbs was 14.24; the maximum count was 27 and the minimum 4 verbs. Perfective verbs, such as /t'əftual/ 'has gone out/ switched off', /təŋɪtual/ 'he has slept and /hedallətʃ/ 'she has gone' were detected from children's verb inventory. Verbs like /k'oməwual/ 'They have stood', /gəzitolatal/ 'He has bought to her', /billual/ 'He has said' /jizual/ 'He has held', /wət't'allətʃ/ 'She has been out' were the other group of perfect verbs which were detected in some children speech. Moreover, the perfect verb like /tat'ibual/ 'It has been washed', /təsət'tual/ 'It has been hung out' and /adrigəwal/ 'They have done' were the other perfect verb types. Children's perfect verbs also occurred with overt object sentences like, /wufaw təŋɪtual/ 'The dog has slept', /ʃəmizotʃu tat'ibəwal/ 'The shirts has been washed' and /səwujəw k'omoual/ 'The man has stood. Despite their limited frequency and phonating difficulty, perfectives were visible in each child's speech.

Infinitives: like /in-didərk'u./ 'to be dried', /in-diləbəsʊ/ 'to be dressed', /lə- məzləl/ to jump /lit-mot/ 'to die', /li-gəddiləw/ 'to kill him', /lə-məmar/ 'to learn', /lə-məs'af / 'to write' /lit-wodk'/ 'to fail down (for female), /li-twot'a/ 'to climb'/li-k'əmmaw/ 'to snatch him', /lit-ak'ərəb/ 'to present/serve', /lit-ak'fat/ 'to hug her' were samples infinitives taken from children's speech. These verbs had a 10.66 mean frequency coverage, the maximum was 24, and the minimum was 3 words .The following sample sentences illustrate the nature of infinitive verbs in children's speech.

Extract 5

1. /tot'awa zaf laj li-twot'afəligga /
 DEF.3rdSIG.N.SUBJ (tot'awa)+N(zaf) tree+PP (laj)+3rd SIG.INF.V (li-twot'a) to climb+
 3rd SIG. MAIN.V (fəlliga) wants
 Gloss: The ape wants to climb a tree.
2. /innatua li-takifat sittil wodəkətf/
 3rd SIG.POSS.N.SUBJ. (innat-ua) her mother + 3rd SIG.SUBJ & 3rdSIG. OBJ.INF.V (li-takif-a) +3rd SIG. GRND (si-ttīl) + 3rd SIG.PAST.V(wodəkə-tf) fell down.
 Gloss: When her mother almost to hug her, she fell down.
3. /jəlidʒətuan lidət li-jakəbru nəbər/
 DEF.3rd SIG. POSS. OBJ (jə-lidʒ-tua-n) the girl's+ N.OBJ (lidət) birthday+ 3rd Pl.INF.V
 (li-jakəbr-u)
 Gloss: They were to celebrate her birthday.

As the extracts above indicated, the infinitives did not appear as a sole utterance in children's speech; they were occurred with the combination of different words in a complete sentence or phrases. Even though they were not frequent, infinitive forms were also seen in all children's speech and children were able to use these verbs in grammatically correct sentences as observed in sentences 1, 2 & 3.

Imperatives:-the other verb type detected in children's speech was jussive (imperative). This verb had 8.34 mean frequencies, and its occurrence ranges from 17 to 0 words as presented in table 74. The existence of this verb did not exceed 10 verbs in majority of the children's speech, however, the highest frequency of imperatives was registered in child C15's speech.

Example 9 words which represent imperative verbs

Imperative	Gloss	Imperatives	Gloss
amit't'a	bring	wusədzilŋ	take it from me
billa	eat	tənəsu	wake up/ stand up
sit't'at	give her	asajŋ	show me
tək'əmət'	sit down	tətʃ'awotu	play
təŋŋa	sleep	hidu	go
li-bbəs	get dressed	zimbəllu	keep quiet
askə'mit	put it down	abisu	clean
rəfi	stop	məllisu	turnback
atrəbif	don't disturb	s'afu	write

Most of the imperative verbs were detected from elicitation and storytelling tasks and they appeared in a children's connected speech. When children were particularly talking about their families and their teachers' order and instruction, they mainly used imperatives.

Example 6

- 1./at'ina' sibbal 'at'ənaləhu'/
 2nd SIG. M. IMPER (at'ina) study + 1st SIG.GRND (si-bbal) being told +1st SIG. IMPR (at'ənaləhu)
 Gloss: When I am ordered or told to study, I study.
- 2./t'ərəten məlisu afen bədabo abbisu/
 1st SIG. POSS. N.OBJ (t'ərəten) my story + 2nd PL .IMPER (məlis-u) turn back+ 1st SIG .N.OBJ (afen] my mouth 3rd SIG PP.N (bə-dabo) with bread + 3rd PL. SUBJ .IMPER .V (abbis-u) clean (give)
 Gloss: Favored my story and bestow me something (all children)
- 3./Sinnrəbʃ Miss 'zi-mmibəllu'tilənallətʃ/
 1st PL.GRND.(sinnirəb-ʃ) disturbing + (Miss] the teacher + 2nd PL.IMPER.V (zi-mmibəllu) keep quiet + SIGN. SUBJ. IMPRF (tilənallətʃ) says
 Gloss: When we disturb Miss says 'keep quiet

Gerund: - had 8.19 mean frequency coverage and maximum count was 26 and the minimum was zero word. The following verbs list illustrates verbs, which stands as gerund verbs.

Example 10

Gerund	Gloss	Gerund	Gloss
si-mok'u	While bathing (they)	tə-dəbbək'ə	Hiding (she)
si-bəllu	while eating (they)	ak'ifo	Hugging (she)
sirot'u	While running (they)	simola	While filling (it)
siwagu	While fighting (they)	si-səbrəw	While cutting (he)
sijagənu	While getting (they)	Siwodku	While falling (they)
si-hed	While going (she)	Simət'u	While coming (they)
sit tʃ'awot	Playing (she)	sirəbʃu	While disturbing (they)

The above lists and other gerund verbs, which were not presented here, were found from elicitation modes. As researcher's observation, during transcription, children used gerund to link or connect one idea to the next one while narrating a story. As illustrated in the following extract.

Extract 7

1. /dʒibu hodu **si-molla** wədə bet hedə/

DEF. 3rd SIG. N. SUBJ (dʒibu) the hyena +3rd. POSS. N. OBJ (hod-u) his stomach+ 3rd SIG. GRND. V (si-molla) while being full + PP (wədə) to +N (bet) house + 3rd SIG. PAST .V (hedə)

Gloss: While being full his stomach, the hyena went to its home

2. /t'ot'it muz **bəllita** si-titf'ərs (zaf laj) wot'atf/

3rd SIG .F. N. SUBJ (t'ot'it) the ape + SIG. N (muz) banana +3rd SIG. F. GRND .V(bəllita) eating + 3rd SIG.F. CON V(**si-titf'ərs**) while finishing + SIG .N (zaf) tree+ PP (laj) on + 3rd SIG F. PAST.V (wot'atf) climbed

Gloss: She climbed (a tree) while finished eating.

3./ajit'jit **sit-hed** wədəkətf/

3rd SIG. N.SUBJ (ajit'jit) the rat+ 3rd SIG. F. SUBJ.GRND. V (sit-hed) while going to + 3rd SIG. F. SUBJ.PAST.V (wədəkə-tf) fell down

Gloss: while going, the rat fell down.

The above three sentences were taken from three children, and similar sentences production was also observed in other children's speech, too and such verbs were manifested in connection with other verbs ,like the verb /si-molla/ 'having filled' / bəllita / 'while eating' and /sit-hed / 'while going as presented in sentences 1,2&3 respectively .

Passives were the least frequent verbs. As table 74 depicts, it had 4.59 mean frequencies and the maximum count was 13, and the minimum count was zero. Passives, such as, /ik'otaləhu/ 'I am scolded', /jiggəzal/ 'it is bought, /tasiralətf/ 'she has been tied' /tat'ibual/ 'it has been washed' (in different children speech) were detected. Moreover, passive like /təsəbbərə/ 'it was broken'/təgəzalat/ 'it was bought for her' (in C29), /təsət'əw/ 'he was given' /tək'orət'ə/ 'it was cut' /alk'k'ual/ 'it was finished /consumed '(C26 from the last age group), and /təsək'ləw/, 'they are hanged',/təməta/ 'He was beaten'(in C25). Although Passives were visible across age group, it did not have a significant representation in each child's speech. A case in point, four children from the first age group did not have a passive representation in their speech. Generally, the manifestation of passive was very limited in frequency and items. This does not lead us to say these children did not acquire passives because the tasks designed and children choice of verbs in their sentences might limit their occurrence.

To sum up, different functional verbs were detected in aged between three to five years old children's speech and progressives were the leading types, which were found in each child's speech at large. Next to progressive, past and auxiliary verbs were more frequent than others were. Imperfective, perfective, and infinitive had significant representation across age groups. Besides, imperative, gerund, and passive were the other verb types observed in each age group, but they had a limited frequency respectively. Generally, the presence of different categories of verbs indicated that children's verbs development was also likely composed of different functional category and they contributed to the development and compositional patterns of children's lexicons.

5.7.2.3 The frequency and types of adjectives in children's speech

As it was observed in the lexical size table, adjective has been the third frequently occurring lexical domain and it was composed of different types. In this section, the frequency of adjectives and its type (number, quantity, quality, size/shape/ length, color and others) were described in relation to age and gender.

Table 75 The Frequency size of adjectives across age groups

Age	N	Sum	%	Mean	SD	Max	Min
3;0-3;5	8	321	22.5	40.13	11.532	56	22
3;5-4;0	8	341	23.9	42.63	9.070	60	32
4;0-4;5	8	371	26.0	46.38	4.534	53	40
4;5-5;0	8	393	27.6	49.13	7.699	59	35
Total	32	1426	100.0	44.56	8.883	60	22

As the above table depicts, the token frequency of adjectives differed from age group to group, but this difference was not significantly greater. For example, 40.13 frequency mean was registered from the first age group, the maximum count was 56, and the minimum was 22 words. Most of these age group children used number adjectives as a modifier. They counted number of things, objects, and animals and this brought the frequency of size of adjective large in number. In addition, 42.63 mean frequencies of adjectives were found in the second aged group children's speech, 46.38 the third and 49.13 in the fourth age group.

Generally, despite the sign of hierarchal increment from the first to the fourth, the frequency mean of adjectives did not indicate such a big difference. In order to prove the correlation between age and frequency of adjectives, it used measure of Pearson correlation.

Table 76 Measure correlation between age and frequency of adjectives

Correlations			
		Age	Adjectives
Age	N	32	32
	Pearson Correlation	1	.393*
	Sig. (2-tailed)		.026
	Sum of Squares and Cross-products	40.000	123.000
	Covariance	1.290	3.968
Number of Adjectives	N	32	32
	Pearson Correlation	.393*	1
	Sig. (2-tailed)	.026	
	Sum of Squares and Cross-products	123.000	2445.875
	Covariance	3.968	78.899
*. Correlation is significant at the 0.05 level (2-tailed).			

The mean of the four age groups and Pearson correlation coefficient $r=0.393$ and $p=0.026$ (as correlations at 0.05 levels of significance (2-tailed) indicated a weak positive correlation between age and total size of adjectives was found. This means, the size of adjectives increased upward across the age groups, but this increment did not show a big difference. Although older age children (4;5-5;0 years) comparatively got used different types of adjectives to describe people, animals, objects and places, the frequency of number as modifiers was not as big as the young ones. This made the frequency mean of each age group nearly close one to the others.

Table 77 The frequency of adjectives in relation to gender

Gender	N	Sum	%	Mean	SD	Max	Min
Males	16	713	50.0	44.56	10.308	60	22
Females	16	713	50.0	44.56	7.536	57	30
Total	32	1426	100.0	44.56	8.883	60	22

As shown, the frequency of adjectives in boys' and girls' speech, in general, no difference was observed. The occurrence of different types of adjectives like quality, color, size and quantity more apparent in girls' speech than boys. However, numbers as modifiers were more frequent in boys' speech.

Generally, adjectives had significant representation next to nouns and verbs, but their distribution did not show a sound difference amongst age groups and in relation gender. In addition, the types of adjectives taken from all children’s speech had nearly the same size except in older age (aged 4; 5 to 5;0 years) children’s speech.

Table 78 The frequency of different adjectives.

Stat	Color	Quality	Quantity	Number	Size/shape	Others
N	32	32	32	32	32	32
Sum	190	126	204	462	282	137
Mean	5.94	3.94	6.38	14.44	8.81	4.28
SD.	2.488	2.711	3.250	6.211	3.287	2.386
Max	12	8	12	41	17	9
Min	0	0	1	5	1	0

As the above tables depicts, different types of adjectives was registered in children’s speech and the mean frequency of each category was presented in the following graph.

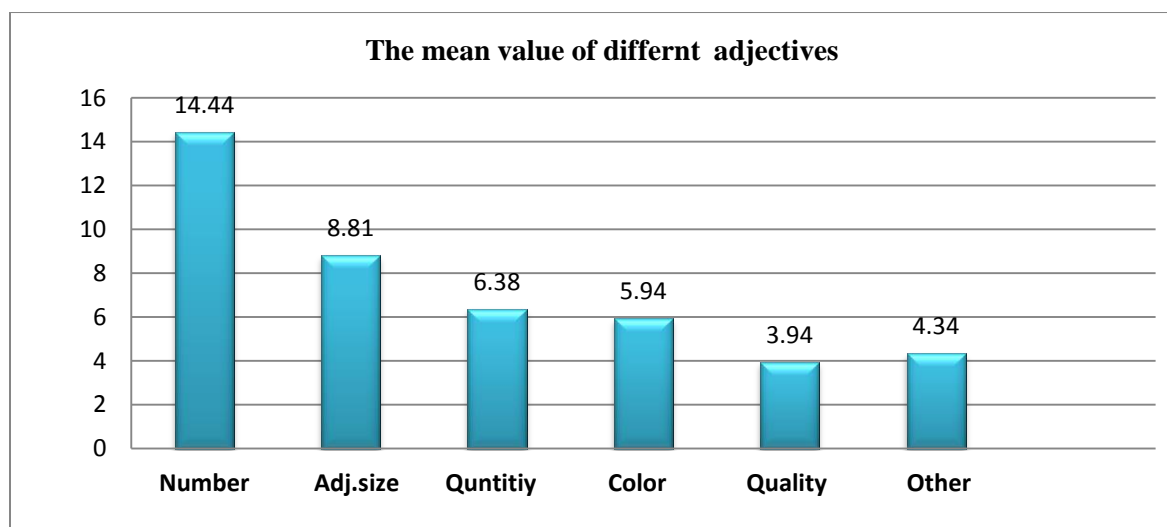


Figure 12 The mean value of different adjectives

Children used numbers as a modifier repeatedly to describe nouns. That brought the frequency relatively high comparing to other adjectives. Numbers as modifiers had 14.44-frequency mean; the maximum count was 41 and the minimum 5 words. They appeared like in a phrase /and t’ot’a/ ‘an/one ape’, /hullət lamot/ ‘two cows’, /arat lidʒot/, ‘four children’ /ammist kokəbot/ ‘five stars’ and others constituted the largest share of adjectives.

Adjectives of size /shape/ length were also fairly represented in children's speech; these adjectives had 8.81 mean frequency shares and the maximum count was 17 and the minimum 1 word. Adjective of size/shape like /and tɪllɪk k'ətʃme/, 'one big giraffe'/andua tɪnnɪf ɛllɪj/ 'the one/the little tortoise', /wofɪram tɪlk'je zɪhon/ 'a fat big elephant', /k'ətʃɪn nat/ 'it/ she is thin', /rədʒɪm zaf/ 'long /tall tree', /atʃrje lɪdz/ 'a short child' and /səfi safə / 'wide barrel' are sample taken from children's speech. In addition, quantity adjectives had 6.35 mean coverage and the maximum count was 12 and the minimum 1 word. Quantity adjectives like /hullum/ 'all', /bət'əkɪlala / 'all in all', /bɪzu/ 'many', /tɪnɪf/ 'small', and /tɪnɪf tɪnɪf/ 'in small amount' /mulluwn/ 'all in all' were the common ones in children's speech.

Next to quantity, color adjectives covered 5.94 mean frequency size of adjectives and its frequency ranges from zero to twelve words. Color adjective like /tɪk'ur wuʃa/ 'black dog', /arənguade ɪbab/ 'green snake', /kəj wof/ 'red bird', /bɪtʃa ababa/ 'yellow flower', were frequently seen in different children's speech, whereas, /səmajawi suri/ (in C22) 'blue trouser', /bunnama/ 'brown' and /birtukanama/ 'orange' were color adjectives which were detected in some children's speech. Whereas, quality adjectives had 3.94 mean frequency from the total and the maximum was eight and the minimum was zero. Adjectives such as, /k'ondʒo/ 'beautiful', /jəmiɑmrəw/ 'the beautiful', /nɪs'uh/ 'clean', /s'iddɪt jallə/ 'neat', /gobəz/ 'clever' /bɪlɪh/ 'wise/bɪlt/ 'cunning' /addɪs/ 'new' /k'ɔʃaʃa/ 'dirty' and /bukɪt jallə/ 'soaked and mess' are taken from children's speech. Apart from the above-mentioned types, there were other adjectives, which represented things made of; these adjectives had 4.34 mean frequency coverage and the maximum count was 9 and the minimum zero. Adjectives like /jəʃərə/, 'canvas' /jək'oda/ 'leather' /jəwɑɲnə/ 'for swimming', /jəmæk'ina/ 'cars' were found and however, such kinds of adjectives were not frequent as well and were not detected in some children's speech.

To summarize, different adjectives had different representation in children's speech and numbers as modifier took the largest share of the total because most of the children frequently used numbers as a modifier to describe things, objects, animals and people they saw during picture description and picture narration activities. Next to number, size/shape/length adjectives had better distribution in each child's speech. In addition, the manifestation of quality and quantity adjectives portrayed the composition of adjectives, as

a whole, despite not detected in some children’s speech. In sum, like nouns and verbs, the presence of adjectives in children’s speech is seemingly evident to deduce that adjectives contributed their share in the development of children’s lexicon.

5.7.2.4 The frequency and type of adverbs

Adverbs exist in Amharic but they are few in number and they are used to modify verbs and adjectives. These adverbs can be found in both their primitive or compound forms; they are formed by combining preposition and other words. They appeared to indicate manner, time, place, cause, and degree and answers questions ‘when’, ‘where’, ‘how’ and ‘to what extent. In spite of their limited frequency, these adverbs were detected in children’s speech across age groups.

Table 79 The frequency of adverbs across age groups

Age	N	Sum	%	Mean	SD	Max	Min
3;0-3;5	8	108	15.4	13.50	4.106	23	10
3;5-4;0	8	159	22.6	19.88	11.281	45	8
4;0-4;5	8	151	21.5	18.88	5.167	29	12
4;5-5; 0	8	284	40.5	35.50	4.071	41	30
Total	32	702	100.0	21.94	10.568	45	8

As shown, adverbs covered 13.50 mean frequency share in the first age group children’s speech and the maximum count was 23 and the minimum 10 words. Adverbs had also 19.88 mean coverage in the second age group children’s speech with 45 maximum count and the minimum 8 words. In addition, 18.88 mean frequency of adverbs were registered from the third age group children’s speeches and the maximum was 29 and the minimum 12 words, whereas, the frequency mean of adverbs augmented to 35.50 in the fourth age group children’s speech and the maximum was 45 and the minimum was 31 words. Generally, adverbs had significant representation across age groups and had upward increment despite not linear, as the mean frequency was greater in the second age group than the third. In addition, in order to see the contribution of age on the occurrence of adverbs in children’s speech, measure of correlation result was presented.

Table 80 Measure correlation between age and frequency adverbs

Correlations			
		Age	Adverb
Age	Pearson Correlation	1	.699**
	Sig. (2-tailed)		.000
	Sum of Squares and Cross-products	40.000	260.000
	Covariance	1.290	8.387
	N	32	32
Adverbs	Pearson Correlation	.699**	1
	Sig. (2-tailed)	.000	
	Sum of Squares and Cross-products	260.000	3461.875
	Covariance	8.387	111.673
	N	32	32

** . Correlation is significant at the 0.01 level (2-tailed).

The result indicated a strong positive correlation as Pearson correlation coefficient $r=0.699$ and $p<0.01$ (correlation is significant at 0.01 level (2-tailed). This result indicated that adverbs had a better frequency occurrence in older age groups than the other did as the mean value of each groups confirmed. A case in point, the frequency mean of the first age group was 13.50 but it increased to 35.50 in the fourth age groups. However, children’s IDs were the other contributing factor on the variation observed in each group. Like other class of words, the frequent occurrence of adverbs was also described in relation to gender as follows.

Table 81 Frequency of adverbs in relation to gender

Gender	N	Sum	%	Mean	SD	Max	Min
Males	16	330	47.0	20.63	8.966	39	10
Females	16	372	53.0	23.25	12.113	45	8
Total	32	702	100.0	21.94	10.568	45	8

As the figures in the above table illustrated, adverbs had 20.63 frequencies mean in boys’ and 23.25 mean was registered from girls’ speech. However, due to age differences, the size of adverbs had divergent frequency within the same gender group. A good example of this is both the maximum (45) and the minimum (8) frequencies were registered from girls’ side. However, as the group mean indicated, the adverbs had slight exceedance in the girls’

speech. In addition, each child's ability and choice of words was also the other contributing factors on the frequent occurrence of adverbs.

Table 82 Type and frequency of different adverbs in children's speech

Statistics	MADV	PLADV	TADV	FADV
N	32	32	32	32
Sum	89	238	264	96
Mean	2.78	7.44	8.25	3.00
SD	2.075	3.784	5.358	2.817
Max	8	15	23	11
Min	0	2	2	0

It was attempted to detect the existence of different adverbs and their frequency in Amharic speaking children's speech. For example, manner (**MADV**) adverbs such as /tollo/ or, /tolotollo/ 'quickly' /dɪngət/ 'incidentally' /bəfit'nət/ 'quickly', /kəs-billa/ 'slowly', /bəfirat/ 'fearfully' and /ɪndəzih/ 'like this' were some of the adverbs detected in children's speech; these adverbs constituted 2.78 mean frequency and the maximum was 8 and minimum zero. Place adverbs (**PLADV**), were more frequent than manner. Adverbs appeared with the combination of preposition and nouns and other words. Phrases like /wədə laj/, 'upward' /wədə tatf/ 'downward', /izih ga/ 'just here', /izia ga/ 'over there', /izih/ 'here' and /izia/ 'there' /wədəzəpaw/ 'there' were regularly occurring place adverbs types; these adverbs had 7.44 mean coverage and the maximum count was 15 and the minimum was 2 words.

Whereas, time (**TADV**) adverbs took the highest share; it had 8.25 mean coverage and the maximum frequency was 23 and the minimum 2 words. Adverbs such as, /gəna/ 'yet', /nəgə/ 'tomorrow', /tɪnant/ or /tɪnanɪtna/ 'yesterday', /matta/ 'at night', /t'əwat/ 'in the morning', /kəzabəhual/ 'then after' /zare/ 'today' /baləfəw/ 'in the previous' /bəmik'ət'ləw/ 'next' were identified in an individual child's speech. These adverbs were detected frequently and appeared in different word positions, especially, the adverb /kəzabəhual/ 'then' was the most frequent adverbs in all children's speech.

However, adverbs which indicate frequency (**FADV**) such as, /bəjəkənu/ 'daily', /matamata/ 'always at night' / in the evening', /ahunɪnm/ 'now again', /hulle/ or /hullehulle/ 'always' /ɪndəgəna/ 'again', /andante / 'sometimes' were detected in limited frequency. These adverbs covered 3.0 frequency mean and their occurrence ranges from zero to 11 words. The other

general adverbs like /bək'a/ ‘enough’, /bət'am/ ‘very’, /bitʃawan/ ‘lonely’, /abra/ ‘together’ were also detected in some children’s speech.

Generally, as the finding endorsed, adverbs had a different representation in children’s speech and their frequency differed one from the others. Time and place adverbs were relatively more prevalent than others were and they had a significant distribution in each child’s speech. Whereas, MADVs (manner) and FADVs (frequency) were the least recurring types; and in some children’s speech, they were not even detected. To sum up, like other lexicons, the occurrence of adverbs differed from age group to group. In older age children’s speech, adverbs had a better frequency; and different types adverbs were also registered in older age (4; 5 to 5; 0) girls’ speech.

5.7.2 .5 Pronouns

In Amharic language, pronouns may occur as words or morphemes in place of nouns. These include personal, possessive, interrogative, demonstrative and indefinite pronouns. These pronouns had different frequency occurrence in children’s speech and as treated in the following table.

Table 83 Types and token frequency of pronouns

	PPRO	INDRO	RPRO	DPRO
Total	184	164	166	703
%	15.11	13.47	13.64	57.764
Mean	5.75	5.125	5.187	21.97
SD	6.445	6.431	2.712	9.163
Max	25	23	8	49
Min	5	0	0	10

As shown, the frequency occurrence of different pronouns presented in the above table and the mean value of each pronoun illustrated in the mean graph below.

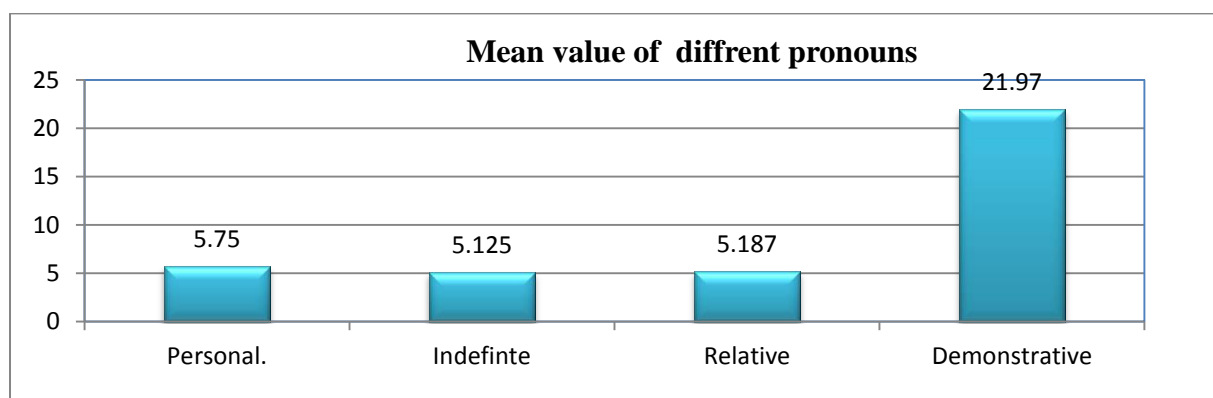


Figure 13 The mean Value of different pronouns

The above table and mean graph illustrate the frequency of different pronouns in children's speech. Personal pronouns like 1st person /ine/ 'I', /ijɲa/ 'we', /jonne/ 'my' /jɛrase/ 'mine' second person possessive /jɛnantə/ 'yours' were registered from children's speech. Personal pronouns like 3rd person singular /isu/ 'her', /isuam/ 'she', /jɛsu/ 'hers' /isu/ 'he' and /jɛsu/ 'his' were the other type pronouns, which were commonly observed. Whereas 3rd person plural /inəs/ 'they', /inəs/ 'them' /kə-inəs/ 'from them' were found in some children's speech. These personal pronouns altogether constituted 5.75 mean frequency; their frequency ranges from 5 to 25 in thirty two children's speech.

Indefinite pronouns like /manim/ 'no one', /minamin/ 'something', /minnim/ 'nothing' and /intin/ 'something' were detected and these pronouns had 5.125 mean coverage and their frequency ranges from zero to 23. However, such pronouns were not frequent in most children's speech and even not detected in others.

In line with this, relative pronouns (RELPRO) such as, /man/ 'who' /ləmin/ 'why', /jɛt/ 'where' /jɛtɲawa/ 'which one (female)', /jɛtɲaw/ 'which one (male)' or /jɛtu / 'which one (male)' /jɛtɲotɲu / 'which of them' /indet/ 'how' and /kɛjɛt/ 'from where' were found and they had 5.187 frequency mean. These pronouns did not exist in some children's speech and they had less frequency in other children's speech too.

Unlike other pronouns, demonstratives were the most frequent ones. Demonstratives, such as /jitɲ/ 'this (female)', /jitɲɲawa/ 'this one (female), /jatɲi / 'that (female), /jatɲɲawa/

‘that one (female)’ /jihe/ ‘this (male)’ /jiheɲaw/ ‘this one (male)’, /ja/ ‘that (male)’, /inəzih/ ‘these’, /inəzia/ ‘those’, /inəzihɲotʃ/ ‘these ones’ and /inəziaɲotʃ/ ‘those’ were frequently detected. Especially, demonstrative like /jitʃ/ ‘this (female)’ and /jihe/ ‘this (male)’ covered the largest share. Generally, demonstratives had 21.97 mean frequencies in thirty-two children’s speech and its frequency ranges 10 to 49. In sum, in Amharic speaking children’s speech, different pronouns had different frequency but demonstratives covered the largest share from groups.

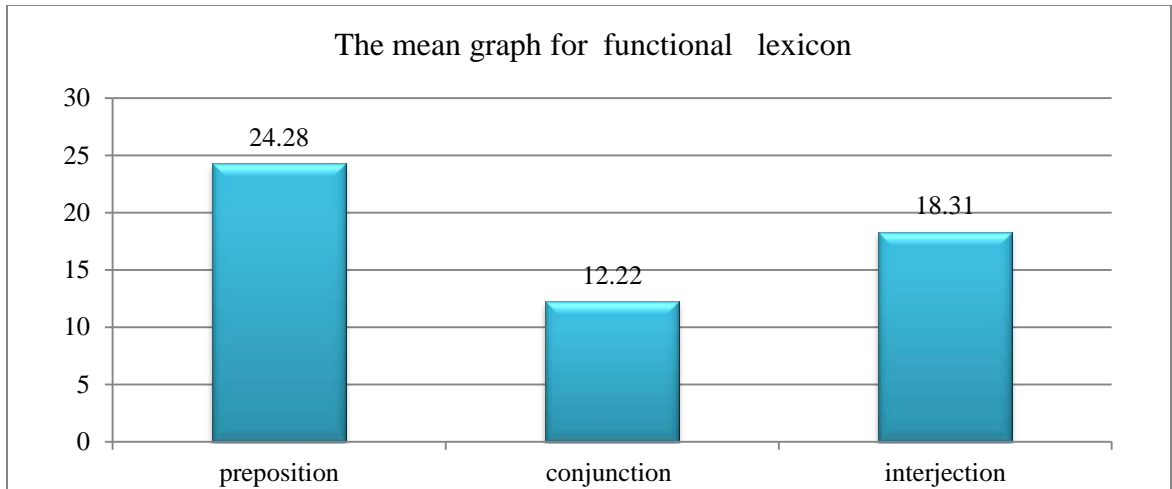
5.7.2.6 The frequency of functional lexicons

Prepositions, conjunctions, and interjections are functional words, which were used in a sentence or phrase. Prepositions like, /wədə/, ‘to’, /wust/ ‘in’, /gar/ ‘with’ and, /laj/ ‘on’ which indicate place were commonly observed in an individual child’s speech, whereas, conjunctions were very few in number. Conjunction /ina/ or /na/ ‘and’ was the dominant one and the word /gin/ ‘but’ had infrequent occurrence. However, a conjunction /kəza/ ‘then’ was also seen in all children’s speech. The other functional category treated under here was interjection. The common interjections seen in all children speech were /weji/, /aji/ ‘no’, /awo/ ‘yes’ but the word /awo/ covered the largest portion.

Table 84 Frequency of preposition, conjunction, and interjection

Stat	Preposition	Conjunction	Interjection
N	32	32	32
Sum	777	391	586
Mean	24.28	12.22	18.31
SD	8.243	5.841	9.603
Max	39	25	53
Min	10	3	6

As depicted, preposition had 24.28 mean frequency coverage from children’ total lexicon and the maximum count were 39 and the minimum was 10 with a range of 29 words. Similarly, interjection covered 18.331 frequency mean but the maximum was 53 and the minimum count was 6 with a range of 47 words, whereas, conjunction was one of the least frequent lexicon category in children speech , they appeared with 5.841 frequency mean, the maximum was 25, and the minimum frequency count was 3.



In sum, functional words as if preposition, conjunction, and interjection were detected in each child’s speech. These lexicons appeared differently across age groups. Generally, these words had significant representation and contributed their share to the development children’ lexicon.

Summary

In this section, it was attempted to describe the nature and the frequency occurrence of different lexicon. As the findings highlighted, three to five years old children had large number of nouns and verbs. In addition, adjective, adverbs and pronouns had a significant contribution. Children also made use of different conjunctions, prepositions, and interjections in their entire speech. However, the occurrence of these lexical domains differed from child to child and from age group to others in in their types and frequency. As a result, except adverbs and conjunctions, the other lexical domains had a great augmentation in the two older age (4 to 5 years) group’s children’s speech and girls had better performance in using and expressing ideas with new words. Generally, children’s lexicon was composed of different domains but some children’s words were not free from word- meaning errors.

5.7.3 Word -meaning error

The name that children give to object, animals, and different things in their lexical development sometimes corresponds closely to the meanings employed by adults. However, in other instances, children’s reference to call name of the objects and animals differs from the real meaning or the target words due to overextension and underextension. As it was

observed, children who were the subject of this study were observed calling different animals with the same name. Moreover, children had a tendency of inventing words and switching code to another language; such common phenomena were observed in this study.

Overextension

As it was observed during the recording session, some children were attempting to compensate their vocabulary limitations in different ways. One of this indication was particularly overextension; for example, the 3;2 years old girl child C2, used the word /bərə / ‘ox’ for /lam/ ‘cow’, /bæg/ ‘sheep’, /fijəl/ ‘goat’ and other four legged wild animals such as, / zihon/ ‘elephant’ and /gumarre/ ‘hippo’ and child C6 also used the word /bæg/ for all four legs animals. Similarly, child C10 from the second age group consistently used the name /ahija / ‘donkey’ for animals referring /fərəs/ ‘horse’, /bək’lo/ ‘mule’ ,and /giməl/ ‘camel’. However, after they had been told, they called the name of these animals properly. This confirms that when children are unable to remember the real name of objects or animals; they have the tendency to overextend the name they know in similar pattern. This evidence was supported by different researchers cross linguistically ; for example, Wagner (2001) and O’Grady (2005) claimed that till children learn the right word ,they attempt to overextend the word they know; for example, the word ‘dog’ can be over extended to other four legged animals.

Code switching and invention

Some children observed inventing new words or keep silent; when they did not know the real name of objects or animals, they saw in the pictures. Invention of new words was common to compromise their limitation. For example, child C1 invented a word /pəro/ referring animals /ellij/ ‘tortoise’, /ɪbab/ ‘snake’ and /azo/ ‘crocodile’ and child C2 used /kutʃu/ for /tʃatʃut/ ‘chicken’ and /wof/ ‘bird’ till she was told their names and child C22 invented the word [angare] for /zihon/ ‘elephant’. Similarly, child C28 from the fourth age group, before orientation how to describe the pictures, she invented a new word [tʃutʃuba] for picture of /gumarre/ ‘hippopotamus’ and /zihon/.

Code switching was regularly detected in all children’s speech. Since children were taken from the school environment, they had the exposure of learning animals and objects names in the English; this influenced them to switch from Amharic to English while counting numbers and calling different objects and animal’s names. For example, the words ‘apple’

'orange', 'pen' and 'book', 'dog' and 'cat' were frequently called in English instead of the Amharic names /pom /, /birtukan/, iskrbito/ and, /məs'əhaf /, /wufa/ and, /dimət/ respectively. Switching from Amharic to English was the other developmental phenomenon observed in all children's speech and it was a common tendency, especially, children who are exposed to the private school's environment.

Generally, different children had different mechanisms to compensate or overcome their limitation of calling the target words. If they are not certain about the name of objects or things, children easily invent suitable words or they overextend the name of other objects or animals they know or kept silent. Indeed, children were capable of overcoming their vocabulary limitation by employing different mechanisms.

Summary of the section

Children seem to differ somewhat in the type and number of words they produce. Their difference also observed in the frequency and domain of words. This difference was evident in the number of nouns, verbs, adjectives, adverbs and other functional words. As the findings indicated, nouns were the largest word domain; it took relatively the biggest portion of lexical size and animals, places', objects' names and common nouns has been the most frequently recurring category of nouns observed in children's speech. Children also used different verbs to express actions, events and feelings during their talk and the occurrence of these verbs took the second largest lexical shares. Verbs like progressive, auxiliary, and past were the most prevalent verbs in all children's speech followed by imperfective and perfectives. The other verbs as if infinitives, gerund, and passive were evident to the different composition of verbs in children's speech. Next to verbs, adjectives contributed their significant share in the growth of children's lexicon. In addition, different adjectives like number, size /shape/ length, quantity, and quality and adverbs like time, place, and frequency were also the other components of children's lexicon. Similarly, the manifestation of pronouns, prepositions, and interjections portrayed the compositional development of children's lexicon.

Generally, the overall findings of lexical data narrate that three to five year old children were able to use the different class of lexicons despite the frequency and items difference. They had also a tendency to create different mechanisms to overcome their vocabulary limitation and the commonality of using references (overextension) and inventing new

words assured the situation. In line with this, the process of children's language development, their ability to express and describe things determined by the type and number of words they used. The flow of these words was likely to be predisposed by children age and gender as well as IDs.

The finding of this study also indicated that the size and occurrence of different new words were registered from different groups but the frequency greatly augmented in two older age groups' speech, especially, in girls. As nouns, verbs, adjectives, and adverbs' tables portrayed, age exerted its influence on the size and occurrence of new words. When children grow old the type and number of words rapidly increases. The way they express their ideas becomes better and the type and number of lexicon show dramatically increment. In addition, the size of lexicon in general, nouns, verbs, adjectives and other words, in particular, had better frequency in girls' speech than boys ,especially, in older (4 to5 years) girls.

5.8 Discussion

This study was designed to describe the development of phonology and lexicon in typically developing Amharic-speaking children's speech. It was carried out incorporating thirty-two Amharic speaking children's speech data. These data were audio recorded, transcribed, and segmented phonologically, and lexically. These segmented data were transferred to table form, and analysis was made to describe the developmental process of phonological and lexical elements. It was also attempted to treat the acquisition process in relation to age and gender and the discussion was made as follows.

5.8.1 Phonological representation in Amharic speaking children's speech

As the findings of this study indicated, difficulty or ease of the consonants due to manner and place of articulation determines children's phonological acquisition process. The frequent occurrence of phonemes in words and the exposure children had with that word were more important points to be mentioned as contributing factors.

In Amharic speaking children's speech who participated in this study, the stops (365.72), followed by lateral, liquid and glides (r, l, j&w) (353.09) had the highest frequency occurrence. Fricatives (230.44) were the third most prevalent consonants followed by nasals (194.22) and affricatives (67.06) and ejectives (53.66) were the least comparing the

other. However, the frequency of these consonants varied when they were treated individually.

As far the total occurrence of individual consonant is concerned, Fig 4 depicts the mean frequency of each consonant. From the group, the stop /t/ (156.44), the liquid /l/ (144.88.38) and the nasal /n/ (111.91), followed by /w/ (91.44)) had the highest coverage. In addition, the glide /j/ (79.47), the bilabial stop /b/ (69.66), the nasal /m/ (68.26) the fricative /s/ (65.31) and /h / (60.06) were the other frequent group of consonants which had a significant representation across age groups. The stop /k/ (50.0) and, /d/ (49.0), the fricative /z/ (48.36), the affricative /tʃ/ (40.38) and /r/ (40.38) took the fourth place respectively. On the other hand, the ejective /t'/ (35.05), the stop /g / (33.97) and the fricative /f/ (32.22) had considerable manifestation. The fricative /ʃ/ (22.28), /ʒ/ (16.31), the nasal /ŋ/ (15.31), ejective /k'/ (14.09), and /tʃ'/ (13.0) were the other group of consonants which was detected in the majority of the children's speech. Whereas, affricative /dʒ/ (8.75), the stop /p/ (6.0), the ejective /p'/ (2.47), the fricative /s'/ (2.41) and /v/ (1.1.78) were the least frequent consonants as their total frequency mean indicated. As a researcher observation, the frequency of some consonants has been very high due to children used some words frequently in different tasks they engaged in. Substitution of one consonant by other was the other contributing fact of the highest prevalence of some consonant phonemes For example, apart their frequent occurrence in the target words, the highest frequency of /t/, and/l/ was registered due to substitution incidence. Frequency of inputs is supported by constructivist idea, phonemes that occur more frequently within the environment of the child are acquired early (Sibanda, 2014).

Even though the total frequency mean of these consonants placed them in the above sequence, their representation differed from age group to age group and from child-to-child. In addition, the presence of these consonants was also influenced by child's choice of words and ability to utter them. Along with, the stops /b/, /t/, /g/, and /k/; fricatives /f/ /s/, /ʃ/, /ʒ/, /h/, nasals /m/ and /n/ and /lateral/l/ the glide /j/ and /w/, embodied across age groups and in each child's speech. The presence of these consonants in each child's speech also proved that children at this age bound already acquired those consonants. In addition, except in a few children's speech, consonant like fricative / z/, /dʒ/, nasal /ŋ/, and the affricative /tʃ/ had also a significant representation. The stop /d/, as a total consonants count, it had a

considerable representation, especially, in aged between 4 to 5 years children's speech. However, some aged between 3 to 3; 5 years children and a few from other age groups had difficulty of pronouncing /d/ and they were commonly observed substituting it by [t] in different positions.

Similarly, except children C7 and C8's, ejectives such as /t'/ /k'/, /p'/ /s'/and /tʃ'/ were hardly noticeable in aged between 3 to 3; 5 years old children words. Some children's like C12 from the second age group and C21 from the third did not also realize these consonants. By the same token, except children C4, C6, and C7, from the first age group, children C12 and C13 from the second, C21 from the third and C29 from the fourth age group did not acquire the consonant /r/ yet. From this ground, it possible to say, in some children's language development process, the acquisition ejectives /t'/ /k'/, /p'/ /s'/and /tʃ'/ and /r/ takes time or goes beyond this age range (3 to 5 years).

In sum, except ejectives and the consonant /r/, aged between three to five years old children uttered properly most of (75%) the Amharic consonants at CV, CVC and CVCV, level words. However, when the consonants appeared in different sound sequences, the number of syllables increased in a word and the consonants occurred in a cluster, children were observed facing difficult of uttering words properly. As a result, they were trying to compensate this limitation by substituting, deleting the consonants and vowels or dropping one of the clustered consonant from the group. Because of this incidence, children's words hosted different developmental realization processes.

5.8.2 Amharic speaking children's phonology developmental processes (errors)

Children were unable to produce certain sounds or sound combinations of the adult language; they simplified the sound system of a word to compensate their restrictions they had in developing articulatory and mental systems (Ingram 1976; Bhatt 1967; Stole-Gammon, 2006). This is the reason that different phonological processes were attested in their speech and the findings of this research have shown how different developmental processes influenced children's words. Commonly, substitution, deletion, cluster reduction and assimilation (consonant harmony), and in some case addition and inversion were detected in age between three to five years old children's speech.

Substitution refers to any consonant it can be stops, fricatives, affricatives, liquid, glides, or ejective being substituted by other consonants; and the process of substitution in children's speech included stopping, fronting, devoicing, backing, nasalizing and gliding.

Stopping is one of the phonological processes, which is taken as a substitution of nasals, fricatives, affricates, liquid, and glides by stops. In this study, stopping was detected in some children's speech. For example, child C2 substituted the nasal /m/ as [t] in the word [təkinaw] 'car' for the target /məkinaw/. The same word also hosted other stopping incidence in children C14 and C23's speech; both pronounced the word /məkina/ 'car' as [bəkina] substituting /m/ by [b]. In addition, substitution of the affricative /dʒ/ by [d] or /dʒ/ by [t] was also detected in few children's words. For example, child C16 uttered the word /lidʒ/ as [lid] replacing /dʒ/ by [d] whereas child C12 substituted /dʒ/ as [t] like in the word /dʒib/ 'hyena' and /lidʒot/ 'children' as [tib] and [litot^h] respectively. The other stopping & fronting pattern that some children commonly shared was the substitution of /tʃ/ by [t^h] and this pattern was taken from children C2, C8, C12, C13, C14, C16' and C23s speech. These children frequently replaced /tʃ/ by [t^h] like in the word /dimətotʃ/ 'cats' as [dimətot^h] and /wəfotʃ/ 'birds' as [wəfot^h] (see tables 34 and 43). Whereas, stopping /f/ as [p] was only seen in child C11's one word [pələs] 'horse' for the target /fərəs/ and child C29 substituted /v/ as [b] in the word /Tv/ as [tibbi] but such a substitution was not common in other children's speech. This infrequent existence of /v/ as /b/ was also stated by Abebayehu's (2008 and 2013) research reports in the same word. In addition, the presence of stopping is also reported from other languages such as English (Smith, 1973; Ingram 1976; Grunwell 1985); Hindi (Srivastava 1974), and Czech (Pačesova, 1968) stopping /v/ by [b] frequently described. Similarly, the substitution of fricatives, affricatives by stop consonants were also mentioned in Arabic; for example, Alqattan (2015) have described the frequent existence of stopping patterns in Arabic-speaking children's speech and as his report have indicated that Arabic speaking children commonly realized /ð/ as [d], /ɣ/ as [k], /s/ as [t], and /dʒ/ as [d]. This confirms that the commonness of stopping cross-linguistically.

Fronting is defined as the substitution of any consonant, which exists further backing in the oral cavity by relatively front consonants. Different fronting patterns were discovered in all aged between three to five years old children's speeches. These children followed different

patterns of fronting, for example, child C2 substituted /d/ as [b] in the word /dabo/ as [babo], and child C28 /z/ as [f] only in word [zaf] ‘tree’ as [faf]. The other fronting was /ɲ/ to [n] which was detected in children C2, C8, C19 and C23s words like /təɲntua/ ‘he has slept’ as [təntua] and /jəɲna/ ‘ours’ as [jəna]. The other pattern of fronting was /ʃ/ as [s], as children C4, C6, C8 and C9 pronounced words like /ʃəmiz/ ‘shirt’ /tɪnʃ/ ‘small’ and /wɪʃa/ ‘dog’ as [səmiz], [tɪnʃ] and [wusa] respectively. Likewise, children C27 and C29 substituted /ʃ/ as [s] in the word /wɪʃətuan/ ‘her lie’ as [wusətuan] and /ʃəmizoʃ/ as [səmizoʃ]. Fronting of /ʒ/ as [z] was also detected in children C8 and C21’s words like /ʒiwaziwe/ ‘swing’ [ziwaziwe] and /tʃ/ to [tʰ] was also shared by different age group children like in the word /kʰutʃ/ ‘sit’ as [kutʰ] and /tʃʰamma/ ‘shoe’ as [tʰamma] and /ijətəʃʰəwotu/ ‘giraffes [ijətətʰəwotu] and other words (see tables 34, 43 50 and 57). Although substitution of /tʃʰ/ as [tʰ] was attested in different children’s speech, this pattern was more frequently seen in child C29’s words.

Whereas, fronting /k/ by [t] was only detected child C28’s one word /kəzia/ ‘then’ as [təʃia], and this word also hosted both backing /z/ as [ʒ] and fronting /k/ as [t]. In general, fronting was attested from different age group children’s speech with different patterns but the most frequent patterns, in this study, were substitution of /ʃ/ as [s] and /tʃʰ/ as [tʰ]. In line with this, the presence fronting in young children’s speech was supported by Ababayehu’s (2013) findings. He has described the substitution of /k/ as [t] and /g/ as [d] in some words; children realized /k/ as [t] and /g/ as [d] like /koka/ ‘cocoa’ as [total] and /gəbəja/ ‘market’ as [dəbəja]. The existence of fronting has also mentioned in different languages; for example, in Arabic, children fronted /g/ as [k] (Alqattan, 2015) and in Québécois French (Rose 2000 & 2011).

Backing is one of the common developmental processes, which can be described as substitution of front consonant in the oral cavity by a relatively back one. It was common to see backing in different children speech. Substitution of /z/ by [ʒ] was one of the frequently attested backing pattern in children C1, C2, C3 C8, C13, C14, C16, C20 and C28’ speech. For example, children C1, C2, C3 C8, and C20 commonly substituted /z/ by [ʒ] in the word /zaf/ as [ʒaf], /muz/ as [muʒ] whereas children C3 and C8 from the first age group and C13 and C14 from the second pronounced word /zihon/ ‘elephant’, /azowotʃ/ ‘crocodiles’ and /kəzia/ ‘then’ as [ʒihon], [aʒowotʃ] and [kəʒa] replacing /z/ by [ʒ]. Similarly child C28 substituted /z/ by [ʒ] in her two word [inʒih] and [biʒu] for the target words /inʒin/ ‘these’

and /bizu/ ‘many’. Generally, backing /z/ as [ʒ] was frequently recurring pattern in a number of words in aged between three to five years children’s speech. In addition, backing the alveolar fricative /z/ and /s/ to post-alveolar consonant [ʃ] was attested in children C1, C2, C3 and C8 from the first age group ,C17, C18, C20 and C21 from the third and C28, C29, C31 and C32 from the fourth age group children’s speech. For example, children C1, C2 and C8 uttered the word /kuas/ as [kuaʃ], /səwotʃ/ ‘people’ as [ʃəwotʃ], and /abəsa/ ‘lion’ as [abəʃa] and many other words by backing /s/ to [ʃ] (see table 35). In addition, child C28, replaced /s/ by [ʃ] like in the word /fərəs/ ‘horse’ as [fərəʃ] and /k’əmis/ ‘dress’ as [k’əmiʃ] and child C32 only in word /siga/ ‘meat’ as [ʃiga]. Some words were also affected by backing and devoicing of /z/ by [ʃ] like child C3’s word /muz/ as [muʃ] and C21’s word /inəzih/ ‘these’ as [inəʃih] and C21 substituted /t’/ by [tʃ] in the word /t’intʃəl/ ‘rabbit’ as [tʃitʃəl] whereas substitution of the nasal /n/ by [ŋ] was detected in child C26’s word /inənətoʃua/ ‘her mothers’ as [inənətoʃua].

In sum, substitution of /z/ by [ʃ], /z/ by [ʒ] and /s/ by [ʃ], were the most frequent backing patterns which were attested in many children’s speech but substituting /ʒ/ as [dʒ] and /n/ as [ŋ] had a limited manifestation. As far as backing is concerned, a parallel pattern of backing /s/ and /z/ as [ʃ] has also been reported by Abebayehu (2008) findings of 2;0 up to 3;4 years Amharic speaking children speeches. It also described in different researches in Arabic speaking children’s speeches. As the report has confirmed, Arabic speaking children substitute /θ/ as [s], /d/ as [k] and /d/ as [g]) and the report confirmed that backing is the common attested patterns in Arabic children’s speeches (Amayreh & Dyson 2000; Ammar & Morsi 2006; Alqattan, 2015). Similarly, Japanese-acquiring children substitute the more posterior [ç] for target /s/ (Beckman et al, 2003; Li & et al. 2009).

Devoicing denotes the substitution of voiced consonants by voiceless ones. In this study, devoicing of a voiced consonant at the initial, medial, and final positions was identified from different age group children’s words. However, a repeated devoicing was attested in aged between 3 to 4 years old children’s speech. For example, substitution of /b/ by [p] at the initial and medial position was registered from C2, C12 and C21’s words like [əppələʃ/ əpələhu] ‘she (I) eating’ for the target [jəbəla/ hu/ tʃ], [dəppəl/ dəptəl] ‘Exercise book’ for the target /dəbtər/ and [pəg] ‘sheep’ for /bæg/ especially child C12 devoiced /b/ by [p] in her entire speech.

The other devoicing pattern which were manifested in twelve children's (C1, C2, C3 , C4,C5, C6 C11 ,C12, C15,C16 C21 and C29) speech was substitution of /d/ by [t]. For example, children C2, C12 and C21 devoiced /d/ by [t] at the initial position like in the word /dīmət/ 'cat' as [tīmət] , /doro/ 'chicken' as [tolo], /dabo/ 'bread' as [tabo], /dana/ 'Tv drama' as [tana] and at final position in the word /and /andand/ 'one/ some' as [ant/antant]. Devoicing of /d/ by [t] was also attested at the medial position like in child C11's word /guadəɲɑ/ 'friend' as [guatəɲɑ]. Similarly, devoicing of the fricatives /z/ and /ʒ/ by [ʃ] was the other pattern, which affected the target realization some words, for example, child C19 uttered the word /ʒiwaʒiwe / 'swing' as [ʃiwaʃiwe] devoicing /ʒ/ by /ʃ/. Substitution of /z/ as [s] was also observed in children C1 and C4's words like /ʃəmizotʃ/ 'shirt' as [səmizot], /muz/ 'banana' as [mus]. Similarly children C4 and C5 and C7's words like /zihon/ 'elephant' as [sihon], /zaf/ 'tree' as [saf] were affected by devoicing of /z/ by [s]. Generally, devoicing such as, /b/ as [p], /d/ as [t], /z/ & /ʒ/ as [ʃ] and /z/ as [s] were the visible patterns detected in aged between three to five years children's speech.

Nasalization involves the substitution of any consonant by nasals but it was not a common feature in most of aged between three to five years old children's speech in this study. This developmental feature was only attested in two girls' (C18 and C19) speech. Children C18 and C19 substituted the consonant /r/ by /n/ in the word [gummane] for the target /gummare] 'hippo' and child C18 uttered the word/ bəsafa] 'with barrel' as [bəsama]. In addition, child C19 substituted /r/ and /l/ as a nasal [n] in her entire speech. She realized /l/ as [n] like in the word /lamotʃ/ 'cows' as [namotʃ] and /fiʒəlotʃ/ 'goats' as [fiʒənəotʃ] In addition, the girl substituted /r/ by [n] in words like /t'ərəp'eʒa/ 'table' as [t'ənəp'eza] and /birabiro/ as [binabino] and /firafire/ 'fruit' as /fɪnəfɪne/. Generally, the consonant /l/, which had a more salient occurrence in other children's speech, and /r/ had zero realization in child C19's words; she either substituted or deleted.

Gliding involves the substitution of liquid by a glide, such as /l/ to [j] or /r/ to [w] or [j]. This was seen in children C2, C3, C17, and C22's words. For instance, child C2 substituted /l/ by /w/ in the word /libs/ as [wubs] . Whereas, gliding was more prominently attested in child C3's words as she realized /r/ & /l/ as [j] like in words /firafire/ 'fruits' as [fiʒəfɪje], /bərə/ 'ox' [bəje], /gummare/ 'hippo' as [gummje] and /lella/ 'other' as [leja]. Similar patterns of gliding was also detected in child C17 one word /t'ərəp'eʒa/ 'chair' as [t'əjəp'eʒa]. In

addition, Child 22 substituted /h/ to [w] in the word /zihonun/ ‘the elephant’ as [ziwonun]. As far as gliding is concerned, Ababayehu's (2008) reported that gliding /l/ & /r/ to [j]. Similarly, the most common type of gliding in English is the replacement of /r/ by [w] (Smit, 1993), and in Arabic the /r/ by [j] & [w] as it is reported by Alqattan (2015). However, in this study, the substitution of /r/ by [w] was not attested across age groups, but gliding /r/ & /l/ by /j/ and /l/ by [w] and /h/ by [w] were attested.

Substitution of /r/

As this findings indicated, some of aged between three to five years children encountered difficulty of uttering /r/ and they commonly replaced by [l]. For example, children C1, C2, C3, C5, C6, C8 from the first age group, children C11, C12, C13 and C16 from the second child C21 from the third and child C29 from the fourth age group commonly replaced /r/ by [l] in different word level. For example, children C1, C2 and C3 realized the word /bærewof/ ‘oxen’ as [bællewot^h], /gumare/ ‘hippo’ as [gumalle], and /fīrafīre/ ‘fruits’ as [fīlafīle]. They also pronounced the word /doro/ as [dolo] and /sar/ as [sal]. Similarly C12, C13 C13 and C16 uttered the word /kangaro/ ‘kangaroo’ as [kangalo] and /nisramora/ ‘eagle’ [nislamola], məret/ ‘earth /ground’ as [məlet], /kəbəro/ drum’ as [kəbəlo] and /təmari/ ‘student’ as [təmali], /t’irat’ire/ as [t’ilat’ile]. Likewise, child C21 from the third age groups completely substituted /r/ by [l] in his entire speech like in the word /afər/ ‘soil’ as [afəl] and /kut’ir/ ‘number’ as [kutīl]. In addition, child C29 from the fourth age group had difficulty of uttering /r/ like in the following words /nəbir/ ‘tiger’ as [nəbīl], /k’urs/ ‘breakfast’ as [kuls] and /birabiro / ‘butterfly’ as [bilabilo]. Substitution of /r/ by [l] was also noticeable in some children’s speech across the age groups. And the finding also supported by studies in other languages; like in Spanish by Carballo and Mendoza (2000), in Polish Łobacz, (2000) in Arabic Dyson and Amayreh, (2000) and Alqattan (2015) and in English Howard and Heselwood (2002), they reported that /r/ is an approximate, which is acquiring rather late cross linguistically.

De-ejectivisation is the other substitution process that refers to the replacement of ejectives by pulmonic counterparts. Despite the individual child’s differences in the realization of ejectives, de-ejectivisation was attested across age groups. For example, except child C7, all aged between 3;0 to 3;5 years, children C12 and C16 from the second, and C19 and C21 from the third did not able to pronounce the ejectives. They substituted /t’/ as [t],

/tʃ/ as [tʃ], /s/ as [s] and /k/ as [k] and /p/ as [p] in different word positions. These children were frequently seen facing difficulty of uttering ejectives. This indicated that ejectives are likely acquired later than their pulmonic counterparts are and the acquisition of these consonants may take time in some children's phonological development process.

Cluster reduction: a consonant cluster is a sequence of consonants that occur in a single position without separated by vowels in syllable structure. Cluster reduction, therefore, means the reduction or deletion of one or more members of clusters from the target word. In this study, cluster reduction was prominently visible across age groups. No child in this study pronounced correctly a word with clustered consonants. One of the common cluster reduction patterns observed in many children's words was dropping /n/ from the cluster /nb/ like in the word /wənbər/ 'chair' as [wəbəj/wəbəl] in the first age group and in other children as [wəber]. The word /anbəsə/ 'lion' appeared as [abəsə/abəʃa] and the word /gɪnbər/ 'forehead' as [gɪbər/gɪbəl]. In addition, from the cluster /rb/, children commonly dropped /r/ and retained [b] like in the word /furbə/ 'plaited hair' as [fuba] and [iskirbito] 'pen' as [ikibito] or [iskibito] as some children dropped /s/ from the cluster /sk/. Whereas some children were observed dropped /b/ from the cluster /bt/ in the word /dəbtər/, 'exercise book's as [dətər]. Children also left /r/ from the cluster /rs/ like in the word /irsas/ 'pencil' and /borsa/ 'bag' and /k'ursen/ as [isas], [boʃa] or [bosa]. They also drop /n/ from the cluster /ng/ and retained [g] like in the word /aʃangulit/ 'toy' as [aʃangulit] and /kangaro/ 'kangaroo' as [kagaro] or [kagalo]. From the cluster /rʃ/, children also dropped /r/ like in the word /b'irʃ'ik'o/ 'glass' as [b'irʃ'ik'o]. Child C24 uttered the word /aɣnita/ 'she found/got' as [aɣita] by dropping /ɲ/ and retained [g] and the boy also released /n/ from the cluster /ng/ like in the word /arənguade / 'green' as [arənguade].

Generally, numbers of target words with different clustered consonants were detected in thirty two Amharic speaking children's speech and all of them reduced to singleton. Cluster consonants such as /lb/, /mb/, /nb/, /t'b/ & /rb/ were condensed to [b] but the cluster /tb/ as [t]. From the cluster /td/&nd/, children commonly retained [d] and dropped /t/, /n/ and from the cluster /rʃ/ and /rg/ there was a high possibility of dropping /r/ and holding [tʃ] and [g]. Children were also observed dropping /n/ and /ɲ/ from the cluster /ng/, /gn/ in different words. The other cluster reduction distinguished in some children's speech was dropping /r/ from /rm/ in the word /t'ərmus/ 'bottle' as [t'əmus] and /rt / as [t] like in the word

/birtukan/ as [bitukan] in child C21's speech. Clusters like /bt/ and /lw/ were also reduced to /b/, and /l/. The consistent reduction of consonants from its pair was a common pattern in young Amharic-speaking children's speech. Generally, as the finding of this study indicated, cluster reduction depends on the nature and appearance of clusters; if nasals fricatives or glides clustered with stops, children retained the stops and dropped the other; whereas if the fricatives and liquids are clustered, the liquids/ glides may have great probability to be dropped. Gleason and Nan explanation concedes with the evidence found in this study. As they report, children drop one or two of the clusters from the group while they are unable to pronounce together; they may pronounce the word 'store' as [tour] or [sour] and the noun 'school'. As [ku:l] or [su:l] (Gleason and Nan (2009:79). As research, reports from different languages have also indicated an age of cluster consonant acquisition. As indicated, children begin to acquire simple and few cluster consonants at the age of 4 to 5 years (Smit et al., 1990; Shriberg and Kwiatkowski, 1980). However, an article which gives a review report about the acquisition of cluster consonants in many world languages have indicated that children start to produce cluster consonants at age of 6 to 7 years and a complete acquisition goes to 8 to 9 year McLeod & Arciuli, 2009; Templin, 1957; Smit et al., 1990). In line with this, despite individual variation in each group, words that appeared with cluster consonants were reduced to a singleton in aged between 3 to 5 years old Amharic speaking children's words. The finding of this study and the report from many world languages have proved that a target realization of clustered consonants is a time taking process and their development is gradual and the complete master goes 7 to 9 years.

Assimilation (consonant harmony)

As far as assimilation is concerned, Ababayehu (2008) described that the assimilation feature of 2;8 years old boy. As he explained, the boy occasionally realized /f/ as [t̪], like in the words as /fan̪ta/ 'a brand of soft drink' or 'share' and /fi̪t̪/ 'face' he realized them as [t̪a̪ta̪] and [t̪i̪t̪], respectively. Similarly, in this study, assimilation was detected in three children's words. for example child C6's assimilated /s/ by [f] in the word /safa/ as [fafa] and Child C11 consistently pronounced the word /zind̪zəro/ 'monkey' as [d̪z̪id̪zəro] assimilating the affricative [d̪z̪] as /z/ and child C29 pronounced the word /bərəmil/ 'barrel' as [bərəmərəmil] and /t̪ilk/ 'big' as [k̪ilk]. In sum, assimilation was not as frequent as other

phonological features but its occurrence in some children's words may help to describe the diverse appearance of children's words in their acquisition process.

Deletion is the process of truncating consonants and weak vowels from the words. Children, in all age groups, were observed deleting some consonants from their words. Deletion of the nasals /n/ & /m/, the stop /b/ & /t/ were seen in some children's words, but most of aged between three to five years old children were commonly engaged in deleting the consonant /h/, /w/, and /r/ from the initial, medial and final positions in a certain word. For example, the consonant /h/ and /w/ were constantly affected by deletion at the initial and medial position like in the word /hullət/ 'two' as /ullət/ and the verb /ijəhedu/ 'going' as [ijədu] or [edu]. Similarly, the word /wuha/ 'water' was uttered as [uha] or [ihua] losing the consonant /w/ from the target word from initial position. Deletion of the geminating /n/ from the target word /wonniz/ 'as [woz] was detected, and some children also deleted the glide /j/ from the demonstrative pronouns like /jitsem/ 'this' as /itsem/ and a segment /ij/ from the word /ijəbət'əsəf/ 'cutting' as [əbt'əsəf]. Whereas deletion of /m/ was registered from some children's words like /minim/ 'nothing' appeared as /inim/ and /misa-ika/ as [isaka] and /məkina/ as [əkina]. In addition, deletion of /b/ and the front long vowel /e/ in the word /betəsəbua/ 'her family' as [təsəbua] and /l/ from the word /lidzotf/ 'children' as [idzotf] and /ella/ as [ella] were also the other pattern observed in children's speech. In sum, deletion of /b/, /d/, /m/ /n/, and /z/ was registered in some children's words, whereas, deletion of /l/, /r/, /h/, /j/ and /w/ were commonly detected across age group. However, majority of the older age (4;5 to 5 years) children engaged in deletion when the number of syllables in a word increased if not, most of their words were free from such developmental feature.

As a general summary of phonological realization process, aged between 3 to 5 years old children's words were affected by different developmental features as most of the children did not accomplish the acquisition of phonological components of the target language at this age bound. As the results indicated, children likely took different developmental paths and the time to acquire a certain consonant phoneme although they were found in common phonological features. For example, the same age group children pronounced the same word differently like the word /zihon/ as [jihon] or [ziwon] or [zon] and other words also appeared in the same excessively. In order to avoid 'difficult' sounds from the target words

or limit the structure of the word to their more plausible sound system, children always substituted, delete, or reduced the consonants from the cluster. The length of syllables and sound sequence a word had an influence on the production of different consonants. Children commonly seen dropping all clustered consonants from different words. This signals that aged between 3 to 5 years old children do not articulate properly cluster consonants and their complete acquisition requires time beyond this age range.

Similarly, the frequent occurrence of the different phonological features was likely predisposed by children's age and gender; older age children, especially, girls had better realization and production of different consonant phonemes. As the finding has indicated, children, in the same age group had varied consonant realizations due to their individual difference. The researcher's from her observation have also considered that early exposure to a pre-school environment possible one of the contributing factors because children who got oral practice at school earlier than others had a better realization and production of the Amharic consonant phonemes in different words. Generally, a target realization and production of Amharic consonant phonemes possibly a time taking process and their development differs from an individual to individual as well from age group to age group. However, as the data have shown, all frequent occurring consonants in children's words are likely acquired earlier than others, thus the frequency of input that children get from their environment and the ability of children to accumulate and produce the consonants likely exerts its positive impact and this evidence is supported by cross linguistic data (Lacerda and Sandburg, 2006).

5.8.3 Lexical representation in Amharic speaking children's speech

In the process of language development, children try to express a string of ideas using different words. The way they express their feelings, describe what they saw, narrate a story or event, and ask the question can be developed with different lexicons; using nouns, verbs, adjectives, adverbs, and conjunctions. That is the main reason that children who participated in this study often attempted to do these. However, in their oral interaction, the occurrence of different lexical domains had varied frequency and items. As the findings indicated, the total lexical size found in all thirty-two children's speech was 15479 (mean 483.72) with the maximum 807 and minimum count 250 words. From the total size of the lexicon, nouns (161.59) and verbs (137.41) had the highest frequency coverage. Adjectives (44.56)

followed by prepositions (24.28) adverb (21.94) and demonstratives (21.97) had a significant representation. The other classes of lexicons like pronouns, conjunctions, and interjections contributed their share to the development of children's overall lexical size. In line with this, sharing the highest portion lexical size, nouns as a one class of lexicon includes common nouns, objects/things, animals, plants, fruits, and place name. The combination of these categories has built up a large size of noun comparing to others. However, the type and frequency of each category differed one from the other. From categories, objects and things 'names had highest (44.06) frequency mean and they covered the highest portion of nouns followed by animals' names (38.25).

The frequency of plants, fruits, and vegetables' names constituted 28.47 mean frequencies. The others, such as, common nouns (26.41) and places' name (24.41) appeared in all children's speech. The frequency of nouns also had a different frequency across age groups. Their size and the type increased hierarchically; which means children who were aged between 4; 5 to 5 year used more nouns than the younger ones. On the other hand, the total frequency count of nouns had a slight increment in girls' speech, but the girls had a better performance in using different type of nouns than boys. In sum, the general constituents of children's nouns were concrete names of the object, animals, plants, vegetables, fruits, place, and common names and the frequency of these nouns had a strong positive correlation to child's age. However, the manifestation of nouns at large in children's speech did not include nouns, which indicate abstract ideas, process, or events.

Similarly, verbs, which took the second largest lexical share, comprised different categories. Progressive (31.69), past (23.78), and auxiliary verbs (21.09) were the most prominent verb types in children's speech respectively. These covered the highest portion of the total verbs' size. Children frequently used progressive and auxiliary verbs during picture description, whereas, the manifestation of past verbs was also more noticeable in storytelling tasks due to this, these verbs were more frequent than other verbs. In addition, verbs like imperfect (14.84), perfective (14.28) followed by infinitive (10.66), jussive (imperative) (8.34) and gerund (8.19) had a significant share on the growth of children's verbs. However, passive (4.59) was the least frequent type and it was not detected in some children's speech. Children also differed in their choice of verbs while describing things, expressing their ideas, and narrating events. In some children's speech, a certain verb was more

monotonously observed, but others used various types; in this regard, older age children (4; 5 to 5 years) had better performance and expression. Likewise, the occurrence of different categories of verbs, as well new verb items, was better detected in girls' speech than boys did. In sum, the distribution of verbs in type and frequency approved that this age circle children's verbs development and representation. Apart from verbs, adjectives had a reasonable depiction; from the total, number as modifier had a large coverage. Numbers, especially, in the first age group, had more frequent occurrence than other adjectives. However, the varied frequency and type of size/shape /length/, color, and quantity adjectives appeared meaningfully in four age groups children's speech. While the occurrence of quality adjectives limited to the fourth age group. Like nouns and verbs, the growth of adjectives in type and frequency is likely guided by children's age and ability to interact with ideas, describing objects, and narrating events. Generally, the size of adjectives, like other lexical groups, grows large in older age group children's speech; and, girls had a better performance in using different adjectives.

To the growth of children's lexical size, adverbs also contributed their fair share. Adverbs such as time, place, frequency and manner occurred in varied frequency. These adverbs were diversely seen across age groups. Time and place adverbs had relatively a better coverage, whereas; adverbs of manner and frequency had a limited occurrence. These adverbs did not even have a representation in some children's lexicon, especially, in the first age group. However, their existence gestures the development and composition of adverbs in children's lexicons.

To sum up, different classes of adverbs were exhibited in different frequency across age groups and in an individual child's speech, but the existence of these adverbs in type and frequency excelled in older age; (4;5 to 5 year) girls' speech. As far as pronouns are concerned, demonstratives appeared frequently in all children's speech. Children were constantly observed using demonstratives when they were unable to call the name of objects and animals; they demonstrated using the pronouns /inəzih/, /inəzia/, /jitʃ/, /or /janaw/. This brought the frequency of demonstratives to the highest position. On the other hand, personal, indefinite, and relative pronouns were seen, but they were not as frequent as demonstratives. Generally, the frequency occurrence of different pronouns increased in type and compositions in aged between 4; 5 to 5 years older age groups children's speech.

Similarly, prepositions like direction indicators such as /log/, 'up' /tatʃj/ 'bottom' /wust'/'in', /wədə/ 'to be regularly recurring active words and the coordinative conjunction /ina/ or /no/ 'and' had a significant representation in all children's speech but the conjunction /gin/ or /nəgrgin/ 'but' only limited to some children's speech.

To summarize, children appeared differently in the way they make use of a different class of words in describing objects, narrating events, and expressing their ideas, and these brought differences in the types and number of words they produced. Nouns and verbs took the relatively the highest portion of the total lexicon across age groups. Most of the nouns in children's speech was concrete objects, animals, and plant names, which depict visual images in children's minds.

Some verbs had the highest coverage across age groups. On this regard, aged between 3 to 5 years children had better performance and comprehension in using progressive, past and auxiliary verbs whereas passive needs time to be acquired. The late acquisition of passive is supported by Kirby's (2010: 2-3) reports. As she noted, "passive is not comprehended and perceived properly by small children and they had poor performance on the construction of passive." Similarly, number and size /shape/ length adjectives had a better place in all children's speeches. Moreover, adverbs as if time and place were properly perceived and produced, whereas, the manifestation of manner and frequency were restricted to some children's speech. The composition of children's lexicon also encompassed pronouns, prepositions, conjunction, and interjections. Generally, from this discussion, it is possible to deduce that aged between three to five years children can produce different domains of words and the size of nouns and verbs took the lion share of the total lexicon.

Summary of the chapter

In this chapter, it was attempted to describe the development of phonology and lexicons and the finding signals that Amharic speaking children's (age between three to five) acquired most of the Amharic phonemes, except ejectives, and lateral /r/. In addition, the lexicon like nouns, verbs, and adjectives were the dominant active words; but the absence of derived and abstract nouns and adjectives was a likely indicator for the acquisition of such nouns and adjectives need time. On the other hand, the presence of different pronouns, prepositions, and conjunctions augmented the growth of children's lexical size. Children who had a better phonological realization show better performance and production of the

different lexicons. Generally, from the above discussion, it can be recapped that age, gender and IDs take great account for the development of different linguistics components. They potentially contribute a lot to the growth and arrangement of different words in a phrase, clause, and sentences and this discussion leads the research to summarize the main finding in the following chapter.

CHAPTER SIX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

The current study primarily aimed to describe the development of phonology and lexicons in typically developing Amharic speaking children's speeches by employing cross-sectional research design and collecting data using picture description, picture naming, storytelling, and elicitation tasks. The study came up with several insights and findings presented, interpreted, and discussed in chapter five. This, the last chapter, summarizes the major findings of the study that emerge from qualitative and quantitative data analysis, and finally, it draws conclusions and recommendations.

6.2 Summaries

The research was carried out by taking the speech data from thirty-two typical developing Amharic speaking children. This was done to answer the research questions, which were primarily set to examine the nature of children's phonological realization, and pattern of development. In addition, questions were set to describe the frequent occurrence and types of lexicons manifested in children's speeches. An attempt was also made to examine the impact of age and gender on the development of children's language. To answer these research questions with this ongoing research, the speech data were audio recorded, transcribed and the analysis was made by employing both qualitative and quantitative methods. The qualitative data analysis method was employed to describe children's consonant realization and developmental features as well as to examine the type and class of words found in children's speech. Whereas, quantitative method was used to describe the frequent occurrence of different consonants and lexicons, finally, the findings from both qualitative and quantitative analyses were interpreted, discussed and the main points were summarized as follows.

- As the findings of this study indicated, Amharic consonant phonemes, in general, had significant representation in children's words. Consonants phonemes at CV, CVC, CVCV levels and other simple word sound sequence, they had a better realization by most of aged between three to five years old children. In addition, as individual's consonant frequency mean in the graph (fig .4) Portrayed that

consonants such as /t/ /l/, /n/, /j/, /w/, /b/, /s/ /m/ and /h/, in general, had the highest frequency prevalence and /k/, /d/ /g/, /f/, z/, /ʃ/, /ʒ/ and /tʃ/ and /r/ were the second group of consonants which had significant representation. Whereas, the affricative /dʒ/, the ejectives /pʔ/, /tʔ/, /kʔ/ tʃ/ and /sʔ/ were the least in their frequency occurrence.

- Despite the individual child's difference, the frequent occurrence of different consonant phonemes grew larger in aged between 4 to 5 years children's speech. However, in younger aged group, especially, in aged between 3 to 3; 5 years old children's speech, the total frequency of different consonant phonemes was distantly less than older groups due to the small size of the lexicon and consistent deletion of segments of different words.
- The overall frequency of different consonant phonemes approved their exhibition in children's speech, but the nature of consonants realization, and developmental patterns found in each child's word differed from one age group to others and child-to-child. This was the main reason that children's words accommodated different phonemic structures and phonological processes like, substitution, deletion, cluster reduction, and assimilation.
- As the findings in section 5.6 have indicated, substitution of one consonant by other was regularly observed developmental processes in most of the children's speech. A number of children's words passed through a substitution process; like fronting, stopping, backing & devoicing, nasalizing, gliding, and substitution of /r/ by /l/. Substitutions of /d/ by [b], /d/ by [f], where the infrequent fronting patterns detected in aged between three to four years old some children's speech. However, children, from different age group, commonly fronted the fricative /ʃ/ by [s], the affricative /dʒ / by [z], the back nasal consonant /ɲ/ by [n], the affricative /tʃ/ by [t^h] and /tʃʔ/ by [tʔ] and these fronting patterns were also attested in different word's positions. In addition, stopping the nasal /m/ by [t] ,the affricative /dʒ/ by [d] or by [t] were also the other patterns detected in aged three to four years some children's words whereas, stopping the nasal /m/ by [b] and the fricative /v/ by [b] were attested in aged between 4;5 to 5 years old two children's speech.

- As consonants' realizations summary tables have depicted, backing and devoicing patterns were attested in different age groups. Substitutions such as, /b/ to [f], /n/ to [ɲ], /ʒ/ to [dʒ], /ʃ/ to [tʃ] and /tʰ/ to [tʃʰ] were the backing patterns taken from children's words, however, backing /s/ to [ʃ], /z/ to [ʒ] and /z/ to [ʃ] were the common patterns observed across age groups. Similarly, devoicing the voiced consonant by voiceless one was apparently noticeable. Some aged between three to five years old children devoiced the bilabial /b/ as [p] or [f], /d/ as [t], /z/ as [s] and /ʒ/ to [ʃ], whereas devoicing /g/ by [k] only detected in child C3's one word. However, devoicing, /z/ by [s] and /ʒ/ by [ʃ] was a common and the frequent patterns of substitution attested in different children's words.
- The other substitution process, which was not common in many children's words, was nasalization, especially, substitution of /l/ & /r/ by a nasal [n] was consistently attested only in child C19's speech. Besides, gliding /l/ to [w], /b/ to [w], /h/ to [w] was registered but these patterns did not exceed their occurrence from one word. Whereas, the realization of /l/ & /r/ as [j] was the other common gliding pattern, which was frequently attested in child C3's speech and in child C17's one word only.
- Moreover, some children's words were also affected by de-ejectivisation process. substitutions of /tʰ/ by [t], /tʃʰ/ by [tʰ] or /tʃʰ/ by [tʃ], /kʰ/ by [k] and /sʰ/ by [s] were the common patterns of de-ejectivization and these patterns of development were attested across age groups and all the patterns were frequent in most of the first age group (3;0 to 3;5 children's words).
- Apart from different substitution processes, children's words were also affected by deletion of vowels and consonants. As findings have confirmed, consonants like /b/, /d/, /t/, /m/ /z/ /l/, /h/, /r/, /j/ and /w/ were frequently deleted from a certain word types. Especially, the glottal fricative /h/ and the semivowel consonant /w/ encountered at the initial, medial, and final deletion like in the '/wuha/' 'water'. In addition, the weak central vowel /ə/ and upper /i/ were consistently affected by segment deletion.

- Similarly, almost all words, which appeared with clustered consonants in children's speech, were also affected by reduction process. Children even who had matured phonological realization had difficulty of uttering clustered consonants. If the consonant appeared in cluster forms; every child had a great possibility of dropping one of the clustered and made it a singleton. The most frequent cluster reduction patterns attested in this study were the reduction of /mb/, /nb/, /rb/, /lb/ & / and /t'b/ to [b] and the cluster /tb/ to [t]. Similarly, the cluster /nd/ & /td/ to [d], /ng/ & /rg/ to [g], /sk/ to [k], /rs/ to [s] and /rʃ/ to [ʃ]. In sum, any consonant which can be fricative, affricative, nasal, glide or lateral, if they are clustered with stop, children retained the stop and dropped the others, whereas when stop clustered with other stop, one of them could be dropped. When glides and /r/ are clustered with any consonant, the glide and /r/ are easily condensed. Moreover, in this study assimilation, addition, and inversion of consonants were observed in few children's words.
- As the result from different lexical development tables have indicated, children's lexicon were established its size with a combination of different class of words like nouns, verbs, adjectives, adverbs, pronouns, conjunction, and interjection. Nouns, which had the highest coverage of children's lexicon, comprised common nouns, objects/things, animals, plants and fruits and place names. The combination of these lifted up the total size of nouns to the first place. However, the type and token frequency appeared differently in in each child's speech. The highest frequency of objects and things 'name followed by animals' names were registered. In addition, plants, vegetables and fruits, and places names and common nouns had a significant distribution in all children speech. The findings have also proved that most of the nouns attested in children's speeches were names concrete objects and things, which immediately depict images of something but more expressive and abstract nouns were not detected. In general, despite the types and frequency differences in individual child's speech, nouns had a visibly great presence. This is likely evident to say that nouns are the first active words class in typically developing Amharic speaking children's speech development and they are likely acquired earlier than other class of words.

- In addition, children frequently observed using different verbs while describing pictures, narrating events, and replying to the questions they were asked. This observed situation could prove the regular manifestation of verbs in children's speech, especially; progressives were the most salient category of verbs, which had the highest distribution in each child's speech. Similarly, auxiliary and past verbs were largely prevalent next to progressive. The other verbs like imperfective, perfectives, infinitive, and gerund were attested across age groups, whereas, passive seemingly needs time to be acquired. In general, the existence of verbs as a whole, and their types, in particular, had a wide-ranging of distribution across age groups, and their frequency and types greatly augmented in older children's speech and girls had better performance using different type verbs than boys did
- By far, adjective was the third frequent lexical domain in children's speech. Children used different adjectives to describe things, objects, or events and number as a modifier took the large portion of adjectives size. The other adjectives like size/shape/length, quantity, and color were embodied noticeably ,although they differed one from the other in their frequency but quality adjectives were only discovered in some aged between 4;5 to 5 years children's speech, particularly, in girls'. Generally, different categories adjectives appeared in different types, and they had a better representation except quality adjectives, which restricted its presence to older age group girl's speech.
- Moreover, from children's speech, different adverbs were registered as one class of the lexicon. Adverbs, which indicate time and place, were more visible than others were, while, manner and frequency, they were limited their occurrence to older age groups. Relatively, such adverbs had a better representation in older (4; 5 to 5 years) girls' speech than boys. The occurrences of different adverbs in their right position were also attested in girls' speech. In sum, adverbs, as one-class lexicon, their representation was a sign of the growth of children's lexicon how varied in type and frequency. Similarly, pronouns, conjunctions, prepositions, and interjection contributed their significant shares to the development of children lexicon.

- Generally, from the findings of this study, it is also possible to summarize that the children's age, gender, and IDs (individual child's ability difference) had a great contribution to the acquisition of different phonemes and lexicons. Children, somewhat, differed in their phonemic realization; they uttered the same consonants differently, when one child used fronting pattern, the other substituted it by relatively back one or the same age group child correctly uttered it. Similarly, they also differed in their choice words to describe picture and narrate stories. Some children, from the same group, had better performance in uttering a long sentence, which comprised different expressive words and phrases whereas the others used frequently more redundant words in the same tasks they engaged in. This is a good indication to say individual difference (ID) directly influences the developmental pattern of children's phonology and lexicons.
- In addition, phonological and lexical description tables revealed that child's functional age had a direct correlation with the development of children's phonology and lexicons. As a result, the two older age (4 to 5 years) group's children's had a better phonological realization and the majority of their words were free from substitution patterns; the frequent occurrence of target consonants grew large in their speech. Similarly, the development of lexicon had a big augmentation in type and frequency. As far as the contribution of gender is concerned, the development of phonology and lexicons were also better described in the majority of older age (4; 5-5 years) girls' speech; these girls had matured phonological realization and better performance in using a different lexicon comparing to their group counterparts. However, younger age (3; 0 to 4 years) girls did not excel in such a way, because of this, the total frequency occurrence of consonants and lexicons did not show a big difference between girls and boys.

6.3 Conclusions

Based on the summaries points presented the following conclusions were drawn.

- Most of aged three to five years old children have matured phonological realization and they have already acquired the majority of the Amharic consonant phonemes. However, there were also some children, particularly, in aged between 3 to 4 years and two older boys from the third and fourth groups, who could not realize the

ejectives /tʔ/, /pʔ/, /kʔ/, /tʃʔ/ and /sʔ/ and the lateral /r/ in their speech. This has cued that ejectives and the lateral /r/ are late acquired consonants in children's language development process. In addition, the time taken to acquire each ejective and /r/ varies from child to child. In general, ejectives and /r/ are taken as the late acquired consonant phonemes that are likely going beyond five years.

- As the result indicated, it is possible to conclude that the sound sequences and the number of syllables in a word influenced the target realization of different consonant phonemes. Due to this reason, different phonological processes were attested in children's words, especially, substitutions of one consonant by the other back, front or stop ones were commonly frequent; and the common substitution features attested in this study include fronting, stopping, backing, and devoicing, nasalizing, gliding and substitution of /r/. Particularly, fronting, backing, and devoicing had common places in children's words across age groups, although there were children whose words did not meet any substitution phenomenon.
- Likewise, deletion of consonant or a segment from the target words and reduction of one consonant from the cluster were consistently observed incidents in all children's speeches. These phonological features attested, in this age bracket, seemly take time to diminish until children develop target realization of different consonants and vowels. This ensures that the acquisition of different consonants and vowels have started earlier than age three but until age five, a complete phonological development may not be granted in the language acquisition process.
- In addition, children's speech development is predisposed by the acquisition of phonology and lexicons. As the finding of this study has depicted, aged between three to five years old children ably used different nouns, verbs and other lexical domains. From the categories, nouns and verbs were the first largely attested lexical domains, which took the lion's share of total size. Despite not frequent as nouns and verbs, the other lexical categories such as, adjectives, adverbs, pronouns, and other functional words appeared significantly and added up their share to the growth of children's lexicon. Generally, the presence of these groups of words in children's speeches was a likely an indicator that aged between three to five years children's capability of using different classes of words to express ideas or describe events.

This also highlighted that this age bracket is a time for a rapid development of children words in type and frequency even though a comprehensive acquisition of lexicons is an ongoing process which requires a long period to be accomplished.

- This study has also attested word-meaning related errors in children lexicon. When children came across difficulty to recall the target word even after they heard it, they used different mechanisms of compensation. Some children invented their own words, whereas, the other used referent; they overextend the name of things or objects they know before to the other, which has similar behavior or appearance. Inventing words and reference were particularly attested in aged between three to four years year in some children's speeches. Generally, invention, reference, and code switching are perhaps children's escaping mechanisms from the difficulty of recalling the target word; however, to give a firm conclusion, this issue requires research in depth with a large number of participants.
- In addition, the functional development of children's phonology and lexicon are predisposed by children age, IDs, and gender. These three factors have their own impact to the development of children's language in general, phonological, and lexical acquisitions in particular. Children's phonological realization and lexical development have a direct strong correlation to children age. Older age (4; 5-5 years) children had a relatively better production of lexicon and realization of different phonemes compared to younger (3 to 4 years). Therefore, children's age difference is a likely functional variable, which has a significant impact on the development of children's phonology and lexicons as a whole.
- However, children differed one from the other in their contemporary lexical accumulation, realization of different phonemes and compensation of their limitation. Within the same age group, children appeared different in type and choice of words and the length of utterances they produced. Even from the first age group (3 to 3; 5 years) there were children who had matured phonological realization and a better lexical production. On the other hand, children from older age groups were also observed with immature phonological development and production of lexicons, so this is a guiding evidence how children's contemporary

ability and individual difference (IDs) have an effect on their all-round language development as well as early or late acquisition of phonology and lexicon.

- As far as gender is concerned, the frequency count of different consonant phonemes and lexicons have indicated that the existence of relatively slight exceedance in girls 'side. However, as developmental realization tables in different sections have approved, most of the girls, especially, older (4; 5 to 5) aged had by far matured phonological realization and lexical production. In comparison, the types of words and sentences girls uttered were better than boys. Although, the total frequency occurrence of Amharic phonemes and lexicons did not show such a big difference, girls excelled boys in their active speech production (usage of different class of words and types) and realization of different phonemes. Hence, the study found it worth to conclude that gender is a functional active variable, which indicated the matured development of phonology and lexicon in girls' speech.
- At last, it is possible to give a general highlight about the development of full-fledged language that is functionally predisposed by children's age, gender, and individual differences (IDs). Moreover, children's language development takes many years and comprises phonological, morphological, and lexicalm acquisition; and the production of grammatically correct sentences requires the development of these language components. The growth of children's lexicon is also tidily interwoven to the acquisition of phonological and morphological elements. Therefore, it is likely to say that the interaction between phonology, morphology, and lexicon exerts an indispensable impact on children's language acquisition to delay or foster. However, to see the clear impact of these language components and to draw a sound conclusion the area requires a further study in depth.

6.4 Recommendations

Based on the summaries and the conclusions made, the following recommendations were drawn.

- A number of factors may interact each other to ensure the development of children's language in general, phonological, and lexical development in particular. This research attempted to address the acquisition of different consonant phonemes and the process that children's words pass through at this specific age bound (three to

five years). The finding has also provided significant information on the area as summarized. However, detailed description and documentation about the nature of phonology and lexicons in children's language acquisition process demands a large-scale research project, which includes different factors and large size participants, thus the concerned bodies in the area need to work cooperatively.

- It was also tried to describe which class of lexicons children acquired at this age bound and the result has depicted that the frequent manifestation nouns, verbs, adjectives, other word classes, and their types in spite of the visible difference across age groups. However, the growth of the well-developed lexicon is seemingly time taking. Therefore, children need a great focus and attention from people around them at home and at school when they take part during the conversation as this helps them to be an input and means of oral practice. From the information gained in this study, it is recommended that continuous interaction of children with parents, peers and teachers enhances their language development in general and the acquisition of phonology and lexicon in particular.
- As it was attempted to summarize, children's language development is predisposed by different contributing factors like age, gender, and IDs. In addition, the acquisition of phonology and lexicon highly interact with each other. The sound sequence and the number of syllables in a word may influence the target realization of different phonemes while different realization of these phonemes in a word affects the target word's meaning and appearance. Thus, mastery of language use includes such important elements. This implies that the acquisition of phonology and lexicon has an interactive pattern of development. Thus, to see the clear picture of this interaction of phonology and lexicon, the area requires further research project.
- The findings of the research have also provided detailed information on how individual difference matters and creates variation in children's production of different phonemes and words. Children have different paths and mechanisms of developing their speech despite most of their ways have similar patterns. This research highlighted the influence of IDs on the acquisition of children's language to be rapid or delayed. As a result, this is a good insight for policymakers, experts, and

the preschool book writers to consider the situation and make it a benchmark while designing and preparing preschool materials. Moreover, preschool teachers need to identify the visible speech ability and personal differences observed among children as this helps them to pave a way of teaching mechanisms, which holds the difference at equilibrium.

- Finally, research on children's language acquisition in Ethiopian context requires the engagement of different language experts and student researchers and this research can be used as a stepping-stone by offering clues for further researchers in the same area with different scopes or researchers who are interested in different languages.

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APPENDICES

APPENDIX I

FORMAT OF A CONSENT LETTER SENT TO CHILDREN'S PARENTS

Addis Ababa University

School of graduate studies

Department of Foreign language and literature

Consent letter

Dear parents, currently I am conducting a research on Amharic speaking children phonological and lexical acquisition and the data will be collected by recording three to five years old children's utterances. In order to do this, children involvement is the first requirement of the research. The research data will be collected from two schools. One of the cite is your child's school. I,the researcher, intend to include your child/children as they fulfill the first selecting criteria. However, before the recording begins; it was found that very important to send a consent letter to all parents whose children are three to five old. I want to inform you that your children speech's data only used for this research purpose. In addition, your child involvement does not affect his/her class time as it will be done in their play and break time in fun and playing manner. Dear parents, the involmnet of your child has a big value for this research accomplishment but it does not have any harm or pressure on you child's all round well-being. Thus, you are cordially requested to take the situation in to consideration and show your consent. If you are volunteer about your children involvement in the children's speech data recording activities, please a put a tick mark on the 'agreed box' or 'disagreed box'. then, write your name and sign on the space provided. if you show your consent on the involvement of your child,, please have a look at the information sheet attached and fill the necessary information properly as it is really important for the next selection criteria.

I thank you very much in advance.

I have agreed No, I have not agreed

Parents' Name _____

signature _____

Date _____

N.B: If any parent who wants to terminate the agreement and stop the child's involvement or who wants to inform that the child's speech data not to be take and used, you can inform the situation to the school as soon as possible. I can be done as your request

Addis Ababa University
School of graduate studies
Department of Foreign languages and literature

Information sheet

Dear parents, currently I am conducting a research on Amharic speaking children phonological and lexical acquisition and the data will be collected by recording three to five years old children's utterances. In order to do this, we need your child/children involvements and your children speech's data only used for this research purpose. if you have agreed and signed the attached consent letter, please fill properly the information asked in this paper.

Thank you to you consent and cooperation

Background information

1. Dear parents please mention both fathers and mothers educational level on the space provides.

Father : _____

mother : _____

2. What kind of economic status does the family you have?
A. Low B. medium C, higher
3. In what kind of job/work do both mothers and fathers engage in? Please mention.
Mother's : _____
Father's: _____
4. What language/s do you use /speak at home for family communication ?
A. Amharic only B. Amharic & other languages
5. If your home language is Amharic, is there anyone who speaks other language living with family?
A. yes B. no
6. Is there anyone who speak other local language who has frequent contact with your child?
A. yes B. No
7. Is there any word or phrases which your child sometimes utter while he /she speak with family which part of other local language? A. yes she/he has, B. No, she/he hasn't

II. Children's profile

8. Child full Name _____
Birth date _____ month _____ year _____
9. How do you evaluate your child's language development in relation to his/her age?
A. delayed B. medium C. active D. very active
10. How is your child approach and communication ability with his/her family or friends?

አዲስ አበባ ዩንቨርሲቲ
የድህረ ምረቃ ኮሌጅ
የውጭ ቋንቋዎች ስነጽሁፍ ክፍል

የወላጆቻችን ፈቃድ መጠየቂያ ቅጽ
ውድ የህጻናት ወላጆች፤

ይህ የሶስተኛ ድግሪ ጥናት እና ምርምር የሚደረገው በህጻናት የቋንቋ እድገት ስለሆነ የህጻናቱን ንግግር በመቅረጸ ድምጽ ለማስቀረት ከወላጆች በቅድሚያ ፈቃድ ማግኘት አስፈላጊ መሆኑ ታሚናነት ይህንን የወላጆቻችን ፈቃድ መጠየቂያ ቅጽ ልክናተል። በመጀመሪያ ወላጆቻችን የሚቀረጸው የህጻናት ንግግር የሚወለው ለጥናት እና ምርምር ብቻ በመሆኑ እንዲወቁ ና የልጆች ተሳትፎ ምንም ጉዳት ስለሌለው እንዲሁም የህጻናቱን የትምህር ጊዜ በማይነካ በእረፍ ጊዜ የሚደረግ ነው። በመሆኑም ህጻናቱን በዚህ ጥናት እና ምርምር ተሳታፊ ከመሆናቸው በፊት የወላጆች ፍቃድን ካገኙ አስፈላጊ በመሆኑ ጉዳዩን ተረድተው ፍቃድዎን እንዲገልጹልን በአክብሮት እጠይቃለን። ፈቃደኛ ከሆኑ ከዚህ በታች በተቀመጠው ቦታ ‘እስማማለሁ’ ወይም ‘አልስማማም’ በሚለው ቦታ ላይ ምክት ያድረጉ። ከተሰማሙ ስመዎትን በመጻፍ በፊርማዎትን ያረጋገጡ። እንዲሁም ከቅጹ ጋር የተያዘውን መጠይቅ በምሙላት ይተባበሩን። ስለመልካም ትብብርዎ በቀድሞ ዕናመሰግናለን።

የህንጻ ቅጽ አንብቤ የልጄ በልጄ ተሳትፎ

ቃኛ ነኝ ‘እስማማለሁ’ ቃኛ አደለሁም ‘አልስማም’

ስም :-----

ፊርማ:-----

ቀን : -----

- በማንኛውም ጊዜ ሃሳብዎችን የሚቀይሩ ከሆነ እንዲሁደረግም ቀረጻዉ እነዳይደረግ ወይም ቀረጸው ድምጽ ለጥናት ነ መረመሩ አነዳየዉል በቅድሚያ ካሳወቁን አያለምንም ቅሬታ እናስተናግድዎታል።

ስለ መልካም ትብብርዎ በጣም እናመሰግናለን!

አዲስ አበባ ዩኒቨርሲቲ
የድህረምረቃ ኮሌጅ
የውጭ ቋንቋዎችና ስነ-ፀሀፍ ክፍል

ዉድ የሕፃናት ዎላጆቹ

በዚህ በሕፃናት ቋንቋ እድገት ላይ በሚደረገው ጥናትና ምርምር የሕፃናቱ ንግግር በመቅረፅ ድምፅ ለማስቀረት የሕፃናቱ ተሳትፎ አስፈላጊ ነው። እንዲሁም የሕፃናቱ ንግግር ለጥናትና ምርምር ተግባር ብቻ የሚዉል መሆኑን እና የሌጅዎን የትምህርት ጊዜ የማይነካና በረፍትንና በጨዋታ ጊዜ ብቻ የሚደረግ ነው። እንዲሁም የልጅዎት በሂደቱ ለማካተት የአረስዎ ፈቃደኛነት መጠየቅ አስፈላጊ በመሆኑ እንዲሁም ፈቃደኛ ከሆኑ ከዚህ በታች ያሉት መጠይቆች ባገባቡ እንዲሞሉልን በትህትና እንጠይቃለን።

1 .አጠቃላይ መረጃ

1. አባዘዎት ዎላጅ / አሳዳጊ የትምህርት ደረጃ ይግለፁን።
 ሀ. የእናት: -----
 ለ. አባት :-----
2. የቤተሰቡ የገቢ ሁኔታ ምን ይመስላል?
 ሀ. ዝቅተኛ ለ. መካከለኛ ሐ. ከፍተኛ
3. የቤተሰቡ የስራ ሁኔታ :-
 ሀ. የእናት ስራ :-----
 ለ. የአባት ስራ :-----
4. የሀፃነት/ች አፍ መፍቻ እና ቤተሰቡ የሚጠቀምበት የአሀገር ዉስጥ ቋንቋ ምነድን ነው?
 ሀ. አማርኛ ብቻ ለ. አማርኛ እና ሌላም ቋንቋ
5. መልስዎት አማርኛ ቋንቋ ብቻ ከሆን ቤት ዉስጥ ሌላ የሀገር ውስጥ ቋንቋ የሚናገር ሰው አለ ?
 ሀ. አዎ አለ ለ. አይ የለም
6. ባካባቢያችሁ ከልጅዎ ጋር ቅረበት ግንኙነት ያለዉ ሌላ ቋንቋ ተናጋሪ ሰው አለ?
 ሀ. አዎ አለ ፤፤ ለ. አይ የለም

11. ልጆችን የተመለከተ መረጃ

7. የልጅዎን ሙሉ ስም -----የተዉልድ ቀን -----
 ወር -----ዘመን -----ዓ.ም
8. የልጅዎን ቋንቋ እድገት እንዴት ይገመግሙታል ?
 ሀ. የዘገየ ለ. መካከለኛ ሐ. ፈጣን መ. በጣም ፈጣን
9. የልጅዎ የንግግር ወይም ሀሳብን የመገለፅ ችሎታ እንድት እንዲት የገመግሙታል ?
 ሀ. ዝምተኛ ለ. ፈጣን ሐ. በጣም ፈጣን
10. ልጅዎ ከቤተሰብ እንዲሁም ከእድሜ አኩያዎቹ/ቻ ጋር ያላት/ለው የመባባት ችሎታ እንዴት ያዩታል?
 ሀ. ዝምተኛ ለ. መካከለኛ ሐ. ፈጣን
 መጠይቁን ባግቡ ስለሞሉልን እናመሰግናለን !!

CHILDREN'S ELICITATION QUESTIONS FORMAT IN AMHARIC AND ENGLISH
VERSION

Addis Ababa University
School of Graduate Studies
Department of foreign language and Literature
English version

This research data collection method was design to gather different information from children's utterances in order describe Amharic speaking children's phonological and lexical acquisition. Children will be asked about their routines home and school's activities. the some elicitation questions were prepared as follows

1. What is your name?

2. When do you come to school, in the morning or at night?

3. With whom do you come to school?

4. What do you do after you come to school?

5. What materials do you have at school and home?

6. What do you do in the class?

7. What do you do after school?

8. Who cooks/ prepare your lunch/meal?

9. How many brothers and sisters do you have?

10. What do you do with your siblings?

አዲስ አበባ ዩኒቨርሲቲ
የድህረምረቃ ኮሌጅ
የውጭ ቋንቋዎችና ስነ-ፀሀፍ ክፍል

ከህፃናት ጋር የተደረገ ጥያቄና መልስ

ይህ ከህፃናት ጋር የሚደረግ ጥያቄ ና መልስ የህፃት የንግር አቅም እንዲሁም ድምፀጽና የቃላትን ጥምረት እና ህፃናት የራሳቸውን የቀን የቀን ድርጊተ በቃላት /ሲያብራሩ ለማየት ተብሎበ በጥያቄና መልስ መለኩ የተዘጋጀ የተዘጋጀ ነው።

1. ስምህ/ሽ ማን ነው?

2. ወደ ትምህርት ቤት መቼ ነው የምትመጣው/ጭው ጠዋት ነው ማታ ?

3. ትምህርት ቤት ከማን ጋር ነው የምትመጣው/ጭው?

4. ትምህርት ቤት ከመጣ/ሽ በኋላ ምን ትሰራህ /ሽ ?

5. ክፍል ውስጥ ምን ታደርጋለህ?

6. ትምህርት ቤት ምን ይዘህ/ሽ ትመጫለህ/ ሽ?

7. ከትምህርት ቤት ስትመለስ/ሽ እቤት ምን ትሰራ/ሪ አለህ/ ሽ?

8. ማን ነው ምሳ የሚራልህ/ሽ ?

9. ስንት ወንድሞችና እህቶች አሉህ/ሽ ?

10. ከምንድምህ/ሽ/ከህቶሽ ጋር እቤት ምን ታደርጋለህ?

APPENDIX III

TYPE AND TOKEN FREQUENCY OF DIFFERENT LEXICONS

Code	sex	Age	lex	ONW	N	V	Adj	Adv	Pro	Con	Dem	pp	inte
C1	F	3;1;16	342	109	119	92	30	13	20	5	14	21	28
C2	F	3;2;5	392	119	112	94	53	12	13	7	24	19	26
C3	F	3; 2;23	318	101	103	86	56	23	23	10	39	29	30
C4	F	3;2;14	324	135	120	80	44	12	12	7	13	10	20
C5	M	3;3;15	319	107	128	86	35	10	14	11	12	10	13
C6	M	3;3;6	250	98	101	78	22	15	15	13	19	26	13
C7	M	3;2;26	280	129	106	99	36	11	12	15	12	12	15
C8	M	3;3: 8	333	125	119	90	45	12	13	15	14	19	18
C9	F	3;9:23	446	192	153	115	41	45	18	3	29	25	17
C10	F	3;10:2	498	170	159	125	50	8	5	6	10	18	10
C11	F	3;11:28	446	155	153	115	44	22	15	13	25	23	6
C12	F	3;10	350	197	135	105	33	15	10	5	12	11	8
C13	M	3;10:17	390	182	150	119	32	20	14	5	18	20	12
C14	M	3;9:24	383	149	142	130	10	36	18	4	14	16	12
C15	M	4;0:5	484	150	161	120	60	12	25	19	23	26	12
C16	m	3;10:7	501	113	167	119	21	60	21	11	35	37	30
C17	F	4;5;0	537	179	180	119	45	21	25	5	27	29	53
C18	F	4;5;12	559	201	166	150	49	29	16	16	14	39	16
C19	F	4;5;19	537	281	199	157	40	15	12	19	23	38	34
C20	F	4;5;2	525	240	204	145	43	12	13	15	20	26	14
C21	M	4;6;7	444	227	194	160	53	16	17	20	17	15	19
C22	M	4;5;21	458	164	161	129	49	20	20	23	19	19	20
C23	M	4;6;9	554	207	186	133	50	17	13	13	20	39	17
C24	M	4;5;0	537	240	193	189	42	21	8	10	28	26	18
C25	F	4;11;10	683	281	201	193	57	37	8	9	27	28	15
C26	F	4;11:6	748	239	239	242	35	39	55	8	49	31	30
C27	F	4;11;20	807	281	205	182	48	41	26	15	29	23	6
C28	F	4;11;26	675	249	149	199	43	30	18	13	34	29	17
C29	M	4;11;23	583	223	213	205	53	34	11	16	13	34	12
C30	M	4;11;12	676	241	154	228	59	39	18	20	30	27	16
C31	M	4;11:21	590	207	209	165	48	33	12	25	14	22	9
C32	M	4;11;2	560	201	190	145	50	31	8	15	26	30	18
Total			15479	5922	5171	1426	702	514	631	533	726	832	631

- Age indicated in the table was children's exact age while the speech recorded

APENDEX IV

TOKEN FREQUENCY OCCURRENCE OF CONSONANT PHONEMES IN THIRTY-TWO CHILDREN'S SPEECH

NO	Code	sex	b	d	g	p	t	k	m	n	ŋ	v	f	z	s	ʃ	ʒ	h	tʃ	dʒ	p'	t'	k'	tʃ'	s'	r	l	j	w
1	C1	F	40	4	10	0	111	18	10	48	12	0	17	13	25	18	25	25	30	0	0	0	0	0	1	0	36	27	43
2	C2	F	42	3	14	0	118	20	15	56	4	0	23	22	27	28	18	18	11	0	0	0	0	0	0	0	48	90	124
3	C3	F	40	3	14	0	134	20	35	56	8	2	27	3	20	13	28	18	38	5	0	0	0	0	1	0	48	102	48
4	C4	F	56	23	31	3	150	50	39	73	5	17	18	5	79	50	10	50	50	11	0	0	2	12	0	6	136	74	47
5	C5	M	62	11	12	2	130	59	14	41	9	4	25	13	48	40	13	18	0	8	0	0	0	0	3	0	151	60	59
6	C6	M	53	34	18	5	144	46	40	98	13	0	24	31	49	20	8	31	50	0	0	34	10	11	0	45	120	100	81
7	C7	M	40	18	35	8	135	41	40	69	6	2	22	10	50	16	6	48	65	9	0	15	3	0	0	10	120	62	51
8	C8	M	41	10	30	4	130	37	43	70	3	0	18	12	32	33	3	43	28	0	0	0	0	0	0	0	120	61	40
9	C9	F	65	18	35	12	145	41	40	65	12	3	22	20	64	14	8	43	48	10	0	15	8	13	0	10	130	62	51
10	C10	F	84	58	36	5	247	58	50	135	18	0	30	61	20	13	15	7	50	13	1	33	10	10	4	55	150	80	105
11	C11	F	56	48	33	6	138	45	59	100	14	3	34	43	51	25	20	40	61	13	9	45	15	15	2	12	155	70	100
12	C12	F	15	35	44	25	199	47	50	98	17	3	36	66	79	14	16	58	15	0	0	0	16	0	0	0	153	23	50
13	C13	M	58	45	11	4	164	35	39	58	15	4	32	33	46	20	17	40	5	8	2	33	0	0	3	0	128	64	55
14	C14	M	79	18	15	2	150	68	19	54	12	2	19	21	58	12	13	29	30	10	3	24	2	24	2	15	150	66	71
15	C15	M	58	38	21	3	130	49	47	108	18	0	21	35	54	15	10	35	28	8	0	36	11	23	0	45	120	100	81
16	C16	m	71	39	18	4	125	40	37	122	14	0	30	25	60	13	15	29	42	9	2	39	16	31	4	53	136	89	78
17	C17	F	76	61	44	1	138	59	77	124	18	0	35	64	82	21	56	110	64	10	5	56	18	13	3	60	141	43	115
18	C18	F	71	55	39	3	141	45	62	129	16	0	38	45	74	35	43	102	73	9	3	61	20	17	4	54	150	52	105
19	C19	F	78	47	41	4	150	51	68	133	19	0	33	35	63	40	34	89	81	15	2	49	17	21	3	69	146	48	104
20	C20	F	64	53	46	3	137	48	70	140	16	10	25	10	70	43	56	72	75	21	2	37	19	18	4	74	149	104	89
21	C21	M	41	56	27	18	141	55	76	95	25	0	40	21	48	36	35	63	24	17	0	0	0	0	0	0	160	68	96
22	C22	M	82	65	27	4	147	34	80	100	19	1	25	61	66	15	25	32	18	0	34	41	0	16	5	88	142	110	76
23	C23	M	56	109	51	3	98	93	153	111	24	0	21	174	105	35	0	105	18	0	5	59	25	5	2	50	149	66	163
24	C24	M	105	66	56	7	198	69	63	107	13	3	42	74	124	40	5	45	41	10	0	81	25	15	2	86	158	92	124
25	C25	F	100	54	28	4	157	51	107	107	11	0	45	70	69	10	6	76	53	12	5	78	29	15	5	77	163	70	107
26	C26	F	109	129	74	0	222	69	119	233	22	0	44	80	94	6	0	81	40	11	2	60	53	20	8	107	176	106	183
27	C27	F	138	92	47	2	255	66	169	211	21	0	52	76	96	13	5	103	35	13	2	83	43	21	7	99	222	117	176
28	C28	F	83	77	50	2	193	46	83	113	18	2	51	73	86	20	9	111	48	8	0	37	28	32	4	56	134	133	73
29	C29	M	108	58	51	8	158	76	101	181	20	0	39	65	80	16	8	99	0	10	1	75	16	0	5	0	283	91	77
30	C30	M	82	79	39	3	182	56	99	210	30	1	46	101	82	13	6	102	45	17	2	48	27	34	1	62	165	128	124
31	C31	M	87	69	34	2	158	73	112	163	28	0	57	95	69	10	5	94	48	13	3	50	17	28	2	75	151	99	103
32	C32	M	89	93	56	2	181	67	105	173	10	0	40	100	120	16	4	106	53	10	2	47	21	22	2	80	150	86	94

APPENDIX V

THIRTY-TWO CHILDREN CONSONANT AND DEVELOPMENTAL REALIZATION TABLES

Name	Place	labials				(dent) alveolar						Post alveoli			pal	velar			Glottal			
Target		m	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	ʧ	ɟ	ŋ	k	g	ʔ	h
C1	SIWI	ó	-	p	f		n	l	ó	t	ʃ	ɟ	l	ʃ	ɟ	ʧ	ɟ	ŋ	k	t		ó
	SFWF	m	p	bm	f		n	l	t	t	ʃ	z/s	l	ʃ	ɟ	ʧ	ɟ	ŋ	k	g		h
Ejectives																						
	Place	labial		(Dentil)velar				Post velar			velar											
	Target	P'		t'				s'			ʃ'				k'							
	SIWI	-		t'				-			ʃ'				k'							
	SFWF	-		ó				-			ʃ'				k'							
Child C1's words illustrating developmental realization																						
Processes	Pattern	Realization	Target	gloss	Source																	
Devoicing	/b/ → [p]	ipələtʃ	ijəbələtʃ	(she)eating	Pic.Dscrpt																	
	/d/ → [t]	ant	and	One	Pic.Dscrpt																	
	/z/ → [s]	mus	muz	Banana	Pic.Dscrpt																	
Backing	/s/ → [ʃ]	ʃuli	suri	Trouser	Pic.Naming																	
	/z/ → [ɟ]	ɟzafu	zafu	The tree	Pic.Dscrpt																	
	/ʒ/ → [ɟ]	[ɟʒiwadʒiwe]	ʒiwadʒiwe	Swing	Pic.Dscrpt																	
nasalization	/b/ → [m]	[ɟʒimotʃ]	[ɟʒibotʃ]	Hyena	Pic.naming																	
Substitution/r/	/r/ → [l]	fələs	fərəs	Horse	Pic.naming																	
		sal	sar	grass	Pic.naming																	
		[ɟʒolo	ɟʒoro	ear	Pic.naming																	
		dolo]	doro	chicken	Pic.naming																	
		ik'ul	t'ik'ul	black	Pic.Dscrpt																	

Deletion	/b/ → [ɔ]	[əsafa]	bəsafa	With barrel	Pic.Dscrpt
	/d/ → [ɔ]	[əppəl]	dəbtər	Ex.book	Elicitation
	/m/ → [ɔ]	[ətəna]	məkina	Car	Pic.naming
		isaka]	misa-ika	Lunchbox	Elicitation
	/t/ → [ɔ]	ilik]	tilik	Big	Pic.Dscrpt
	/w/ → [ɔ]	[ət'atʃ]	wət't'atʃ	Climbed	Pic.Dscrpt
	[ofotʃ]	wofotʃ	Birds	Pic.Dscrpt	
	/j/ → [ɔ]	[ət'ət'u]	ijət'ət'u		Pic.Dscrpt
Cluster reduction	/rs/ → [s]	[bosa]	Borsa	Bag	Elicitation
		[isas]	[irsas]	Pencil	Elicitation
	/nb/ → [b]	[wobəl]	wobəl	Chair	Elicitation
	/lk' → [k']	[awəkələhu]	awək'ələhu	Put off	Elicitation
Assimilation	/m&s' → [f]	[afafa]	məs'əhaf	Book	Pic.Dscrpt
	/d,b&t/ → [p]	[əppəp]	dəbtər	Ex.book	Pic.Dscrpt

<i>C2's consonant realizations</i>																					
Age 3;2:5	Place	<i>labials</i>					<i>(dent) alveolar</i>						<i>Post alveoli</i>			<i>pal</i>	<i>velar</i>		<i>Glottal</i>		
name C2	Target	n	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	ʧ	ʤ	k	g	h	ʔ
	SIWI	t	-	p	f		n	j	t	t̥	ʃ	ʒ	l	ʃ	ʃ	t _h	ɲ	k	g/k	ɔ	
	SFWF	n	p	b	f		n	j	t	t̥	ʃ	ʃ	l	ʃ	ʃ	t _h	ɲ	k	g	h	
Ejectives																					
	Place	<i>labial</i>		<i>(Dentil)vela r</i>		<i>Post velar</i>		<i>velar</i>													
	Target	P'		t'	s'	ʧ'		k'													
	SIWI	-		t	-	t ^h		k													
	SFWF	-		t	-	t ^h		k													
C2's words which illustrate different developmental realization																					
Process		Pattern				Realization		Target		Gloss		Sources									
Stopping		/m/ → [t]				t3kinaw		m3kinaw		car											

Fronting	/d/ → [b] /f/ → [tʰ] /ɲ/ → [ɲ]	babo kəkobotʰ ijəbələtʰat tənttua guadənawa	dabo kəkobotʃ ijəbələtʃat [təntʃual guadəɲawa	Bread Stars (she)eating slept friend	Storytelling Pic.naming Sorytelling Pic.descript Pc.descript
Devoicing	/b/ → [p] /d/ → [t]	dəppəl timətua təmo təna	dəbtər dimətua dəgmo dəna	Ex.book The cat also drama	Pic.naming Pic.naming Pic .descript Elicitation
Backing	/s/ → [ʃ] /z/ → [dʒ] /z/ → [ʒ]	ʃəwotʃ ifʊ kuaf dʒiwadzɪwe zaf muʒ	səwotʃ isu kuas zɪwazɪwe zaf mus	People He Ball Swing The tree banana	Pic.naming Pic.naming Pic.naming Elicitation Pic.descript Pic.descript
Gliding	/l/ → [w]	wubs	libs	Cloth	Elicitation
Substitution/r/	/r/ → [l]	dəllotʰ fɪlafɪlle belləwotʰ sal tikul	dərowotʃ fɪrafɪre berəwotʃ sar t'ik'ul	Hens Fruits Oxen grass black	Pic.descript Pic.descript Pic.descript Pic.descript Pic.descript
De-ejectivisation	/kʰ/ → [k] /tʃʰ/ → [tʰ] /tʰ/ → [t]	tɪlik ijələkəmu tatutotʰ tota ajituan	tɪlik' ijələk'əmu tʃ'atʃ'utotʃ t'ot'a ajit'uan	Big sorting Chickens Ape The rat	Pic.descript Pic.descript Pic.descript Pic.descript Pic.descript
Cluster reduction	/ng/ → [g] rs/ → [s]	aʃagulit ikibito bosa	aʃangulit iskirbito borsa	A toy Pen Bag	Elicitation Elicitation Elicitation
Deletion	/m/ → ∅ /h/ → ∅ w/ → ∅	inim ullət hua	minim hullət wuha	Nothing Two water	Elicitation Pic.dscript
Pulmonic consonants					

Age 3;1	Place	labials			(dent) alveolar					Post alveoli			pal		velar		Glottal					
name C3	Target	m	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	tʃ	ɔʒ	ŋ	k	g	h	?
	SIWI	m	-	b	f		n	j	t	t	ʃ	ʒ	j	ʃ	ʃ	tʃ	ɔʒ <td>ŋ</td> <td>k</td> <td>g/k</td> <td>ø</td> <td></td>	ŋ	k	g/k	ø	
	SFWF	m	p	b	f		n	j	t	t	ʃ	ʃ	l/j	ʃ	ʃ	tʃ	ɔʒ <td>ŋ</td> <td>k</td> <td>g</td> <td>h</td> <td></td>	ŋ	k	g	h	
Ejectives																						
	Place	labial	(Dentil)velar		Post velar			velar														
	Target	P'	t'	s'	tʃ'			k'														
	SIWI	-	t	tʃ	tʃ			k														
	SFWF	-	t	-	tʃ			k														
C3 developmental realization																						
process		Pattern			Realization			Target		Gloss		Source										
Devoicing		/d/ → [t]			ant wotəbet			and wodəbet		One to home		Pic.descrpt Pic.descrpt										
		/z/ → [ʒ]			ʃəiwəʃiwe			ʒəiwəʒiwe		Swing		Pic.descrpt										
		/g/ → [k]			təkəbita			təgəlbit'a		upside down		Pic.descrpt										
Backing & Devoicing		/z/ → [ʒ]			muʃ			muz		banana		Pic.descrpt										
Backing		/s/ → [ʃ]			kuəʃ abəʃa atʃətʃm			kuas anbəsa atʃət'm		Ball Lion She(not give)		Pic.descrpt Pic.naming elicitation										
		/z/ → [ʒ]			ʒiwon ʒaf			zihon zaf		Elephant tree		pic'dscrpt pic.dscrpt										
		/r/ → [j]			bəjəwotʃ dojowotʃ məbjətʃ fiʒef ije] gaja]			bərəwotʃ dorowotʃ məbrat fiʒaf ire gar		Oxen Checkens Light Fruits With		pic'dscrpt pic'dscrpt elicitation pic'dscrpt pic'dscrpt										
Substitution /r/		/r/ → [l]			tikul isal			t'ik'ur sar		Black Grass		pic'dscrpt pic'dscrpt										
Substitution of ejectives		/k'/ → [k]			kana bəjəkənu]			k'ana bəjək'ənu		Tv.channal Daily		Elicitation Elicitation										

	/s/ → [tʃ]	tɪjɪk	tɪjɪk'	Big	Pic.dscrpt
	/t/ → [t]	tʃaj	s'əhaj	The sun	Pic.dscrpt
		totit	t'ot'jit	Ape	Pic.dscrpt
Substitution /l/	/l/ → [j]	[jamotʃ]	lamotʃ	Cows	Pic.dscrpt
		[fijəjotʃ]	fijəlotʃ	goats	Pic.dscrpt
		[jəja]	lella	other	Pic.dscrpt
Deletion	/b/ → ∅	tʒsɜbua	betʒsɜbua	Her family	Pic.dscrpt
	/h/ → ∅	[ujət]	Hullet	Two	Pic.dscrp
		[etətʃ]	ijəhedətʃ	Going	Pic.dscrp
Cluster reduction	/nb/ →	[abəɔʃa]	anbəsa	Lion	Elicitation
			borsa	Bag	Elicitation

3;2:14	Place	<i>labials</i>					<i>(dent) alveolar</i>						<i>Post alveoli</i>				<i>pal</i>	<i>velar</i>		<i>Glottal</i>		
Child C3	Target	n	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	ʃ	dʒ	ɲ	k	g	h	ʔ
	SIWI	n	-	b	f		n	l	t	t	s	z/s	l	ʃ	ʒ	ʃ	dʒ	-	k	g	ó	
	SFWF	n	p	b	f		n	l	t	t	s	s	r/l	ʃ	ʒ	ʃ	dʒ	ɲ	k	g	h	
Ejectives																						
	Place	<i>labial</i>	<i>(Dentil)velar</i>					<i>Post velar</i>				<i>velar</i>										
	Target	P'	t'	s'					ʃ'				k'									
	SIWI	-	t	-					ʃ				k									
	SFWF	-	t	-					ʃ				k									

C4's developmental realization					
Processes	Pattern	Realization	Target	Gloss	Source
Fronting	/ʃ/ → [s]	səmis	ʃəmis	shirt	Pic.dscrpt
Devoicing	/d/ → [t]	ant sitist	and sidist	one six	Pic.dscrpt Pic.dscrpt
	/z/ → [s]	sihon muz	zihon muz	elephant banana	Pic.dscrpt Pic.dscrpt
	/k' → [k]	bəkolo kətʃine kitəlotʃ	bək'olo k'ətʃ'ine kitəlotʃ	Corn Giraffe Leaves	Pic.naming Pic.dscrpt Pic.dscrpt

	/tʰ/ → [tʰ] /tʃʰ/ → [tʃʰ]	tɪlik totit tɪlle kutʃ itʃawətələhu	tɪlikʰ tʰotʰit tʰire kʰutʃʰ itʃʰawətələhu	Big Ape Creal/seed Sit Playing	Pic.dscrpt Pic.dscrpt Pic.dscrpt Elicitation elicitation
Substitution /r/	/r/ → [l]	dollowotʃ allat mellet ijəlot	dorowotʃ arat meret ijərotʰə	Hens/chicken Four Ground Running	Pic.naming Pic.dscrpt Pic.dscr elicitation
Deletion	/b/ → ø /j/ → ø	goz itʃi	gobəz jitʃi	Clever This(female)	elicitation

Age 3;3	Place	labials					(dent) alveolar					Post alveoli					pal	velar			Glottal		
name	Target	m	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	ʒ	ɟ	ɟ	ŋ	k	g	h	?
C5	SIWI	v	p	b	f	-	n	l	t	d/t	ʃ	z	l	ʃ	-	ʒ	ɟ	ɟ	ŋ	k	g	h/ø	
	SFWF	m	p	b	f	-	ø	l	t	t	ʃ	z	l	ʃ	-	ʒ	ɟ	ɟ	ŋ	k	g	h/ø	

Ejectives

	Place	labial	(Dentil)velar	Post velar	velar	
Target		Pʰ	tʰ	sʰ	ʃʰ	kʰ
SIWI		-	t	-	ʃ	k
SFWF		-	t	-	ʃ	k

C5 's Developmental realization

process	Pattern	Realization	Target	Gloss	Source
Devoicing	/d/ → [t] /z/ → [s]	wənt saf sihon	wənd zaf zihon	Male Tree Elephant	Pic,dscrpt Pic,dscrpt Pic,dscrpt
Backing	/m/ → [v]	səvavawi	səmajawi	blue	Pic,dscrpt
Substitution /r/	/r/ → [l]	gumalle filafle allat wullo	gumare firafre arat wuro	Hippo Fruits Four cat	Pic,dscrpt Pic,dscrpt Pic,dscrpt Pic.naming
De-ejectivisation	/k/ → [k]	kitəl kəj	kʰitʰəl kəj	Leaf Red	Pic,dscrpt Pic,dscrpt

		/t'/ → [t] /tʃ'/ → [tʃ]	tilik tɪkul tota tʃɪlawan tʃamma kətʃɪne afitʃa	tilik' t'ik'ul t'ot'a tʃ'irawan tʃ'amma kətʃɪne afitʃa	Big Black Ape Her tail Shoes Giraffe Nose	Pic,dscript Pic,dscript Pic,dscript Pic,dscript Pic.naming Pic,dscript Pic.naming
Deletion		/b/ → ø /m/ → ø /l/ → ø /n/ → ø /h/ → ø	təsəbua əkina bis idʒotʃ kifun edu	betəsəbua məkina libs lidʒotʃ inkifun hedu	Family Car Cloth Children sleep	Pic,dscript Pic.naming Pic.naming Pic,dscript Pic,dscript Pic,dscript
Cluster reduction		/sk/ → [k] /t'b/ → [b] /rtʃʔ/ → [tʃʔ] /rs/ → [s]	ikibito tabual bitʃiko tis	iskirbito tat'bual birtʃik'o tirs	Pen Washed glass teeth	Elicitation Pic,dscript Pic. naming Pic. naming

Age 3;3:6	Place	labials			(dent) alveolar						Post alveolar				pal	vela	Glottal					
name	Target	m	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	tʃ	dʒ	ŋ	k	g	h	?
C6	SIWI	m	p	b	f	-	n	l/r	t	d	s	z	r	ʃ	ʒ	tʃ	dʒ	ŋ	k	g	h	
	SFWF	m	p	b/f	f	-	n	l	t	d/t	s	z	r/l	ʃ/s	ʒ	tʃ	dʒ	ŋ	k	g	ø	

Ejectives							
	Place	labial	(Dentil)velar			Post velar	velar
	Target	P'	t'		s'	tʃ'	k'
	SIWI	P'	t'		s'	tʃ'	k
	SFWF	P'	t'		s'	t'	k'

Child C6 Developmental realization					
process	Pattern	Realization	Target	Gloss	Source
Final devoicing	/d/ → [t]	wətə	wədə	To	Elicitation
Fronting	/ʃ/ → [s]	tɪns	tɪnʃ	small	Pic. dscript
	/b/ → [f]	dəftər	dəbtər	ex.book	Elicitation
Substitution	/tʃ'/ → [tʃ]	ijətət'əwotu	ijətətʃ'əwotu	Playing	Pic. dscript

Lateralization	/l/ → [r]	raj	laj	on	Pic.dscrpt																	
Substitution /r/	/r/ → [l]	t'ik'ul	t'ik'ur	Black	Pic.dscrpt																	
Deletion	/r/ → ∅	tət tət	tərət tərət	Story	Storytelling																	
	/z/ → ∅	uhonotʃ	zihonotʃ	Elephants	Pic.dscrpt																	
	/w/ → ∅	kətʃinotʃ	kətʃinewotʃ ahija	Giraffes	Pic.dscrpt																	
	/h/ → ∅	aja	jihəpawn	Donkey	Pic.naming																	
	/j/ → ∅	iepawn	tɪmhirtbet	This one	Pic. dscrpt																	
	/m,h,r/ → ∅	tɪtbet		School	Pic.dscrpt																	
Cluster reduction	//rb/ → [b]	bəkbito	bəskirbito	pen	Elicitation																	
	/sk/ → [k]				Pic.naming																	
	/rm/ → [m]	t'əmus	t'ərmus	Bottle	Pic naming																	
	/rs/ → [s]	bosa	borsa	Bag	Elicitation																	
	/rtʃ/ → [tʃ]	tʃəsən	tʃərsən	Finished	elictation																	
		sətʃe	sərtʃe	Doing																		
Age3;2;26	Place	labials				(dent) alveolar				Post alveoli				pal	velar		Glottal					
name C7	Target	m	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	tʃ	dʒ	ŋ	k	g	h	?
	SIWI	m	p	b	f	-	∅	l	t	d	s	s	r	ʃ	ʒ	tʃ	dʒ	-	k	g	∅	
	SFWF	m	p	b	f	-	∅	l	t	d	s	s	r	ʃ	ʒ	tʃ	dʒ	ŋ	k	g	h	
Ejectives																						
	Place	labial	(Dentil)velar				Post velar				velar											
	Target	P'	t'	s'		tʃ'				k'												
	SIWI	-	t	-		tʃ'				k'												
	SFWF	-	t	-		tʃ'				k'												
C7 Developmental realization																						
process		Pattern		Realization		Target		Gloss		Source												
Devoicing		/z/ → [s]		saf		zaf		tree		Pic.descrpt												
Deletion		/l/ → ∅		tɪku		tɪliku		Big		Pic.descrpt												
		/k'/ → ∅		tɪku		t'ikur		Black		Pic.descrpt												
		/h/ → ∅		iwa		wuha		water		Pic.descrpt												
Cluster reduction		/nt'/ → [t']		tət'əlt'ilo		tənt'əlt'ilo		Hanging		Pic.descrpt												
		/ntʃ'/ → [tʃ]		afɪtʃ'a		afɪntʃ'a		nose		Pic.descrpt												

Age 3;3: 8	Place	labials			(dent) alveolar							Post alveoli			pal	velar		Glottal				
name	Target	m	p	b	f/s	v	n	l	t	d	s	z	r	ʃ	ʒ	tʃ	dʒ	ŋ	k	g	h	ʔ
C8	SIWI	m	-	b	f	-	n	l	t	d	s	s	l	ʃ	ʒ	t ^h	dʒ	n	k	g	h	
	SFWF	m	-	b	f	-	n	l	t	d	ʃ	ʒ	l/j	s	ʒ	t ^h /j	dʒ	n	k	g	ø	
Ejectives																						
	Place	labial			(Dentil)velar							Post velar			velar							
	Target	P'			t'	s'							tʃ'			k'						
	SIWI	-			t'	-							t'			k'						
	SFWF	-			t'	ʒ							t'			k'						
C8's Developmental realization																						
process	pattern	Realization			target			Gloss			Source											
Fronting	/p/ → [n]	ətəna			ijətəna			Sleeping			Pic.dscrpt											
	/z/ → [z]	ziwaziwe			ziwaziwe			Swing			Pic.dscrpt											
	/ʃ/ → [s]	wusa təŋʃu			wuʃa tənsu			dog wokeup			Pic.dscrpt Storytelling											
stopping	/tʃ/ → [t ^h]	ajət ^h lamot ^h fiʒəlot ^h			ajətʃ lamotʃ fiʒəlotʃ			She saw Cows Goats			Pic.dscrpt Pic.dscrpt Pic.descrpt											
Backing	/z/ → [ʒ]	zaf azot ^h			Zaf azowʃ			Tree Crocodiles			Pic.dscrpt Pic.dscrpt											
	/f/ → [s]	biʒu silm			biʒu film			Many Film			Pic.descrpt Storytelling											
	/s/ → [ʃ]	kəʃəw paʃta kuaʃ			kəsəw pasta kuas			from people Spageti ball			Pic.dscrpt Elicitation Elicitation											
	/tʃ/ → [tʰ]	kʰətʰinewot ^h bitʰa nətʰ kʰutʰbilləw			kʰəʃinewotʃ bitʃa nəʃ kʰuʃbilləw			Giraffes Yellow White They sit down			Pic.dscrpt Pic.dscrpt Pic.dscrpt Pic.dscrpt											
	/sʰ/ → [ʒ]	niʒuh			nisʰuh			Clean			Pic.dscrpt											

Substitution /r/	/r/ → [l]	sal wullije filafîle fələs	sar wurje fırafıre fələs	Grass Cat Fruits Horse	Pic.dscrpt Pic.dscrpt Pic.dscrpt Pic.dscrpt
Deletion	/j/ → ø /n/ → ø /l/ → ø /s/ → ø /h/ → ø /r/ → ø	asələw abəbə ibəllat ehed iwa k'ulfagə	ıjasərəw ıjanəbəbə libəluat sihed wuha k'ulfargə	tiding reading To eat her Going Water Locked	Pic.dscrpt Pic.dscrpt Pic.dscrpt storytelling Pic.dscrpt Storytelling
Cluster reduction	/rs/ → [t]	k'ut	k'urs	Breakfast	Storytelling

3;9:23	Place	labials				(dent) alveolar					Post alveoli					pal	velar		Glottal			
name	Target	m	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	tʃ	dʒ	ŋ	k	g	h	ʔ
C9	SIWI	m	p	b	f	-	n	l	t/	d	s	z/s	r	s	ʒ	tʃ	dʒ	ŋ	k	g	h	
	SFWF	m	p	b	f	-	ø	l	t	d	s	z	r	ʃ	ʒ	tʃ	dʒ	ŋ	k	g	ø	

Ejectives

	Place	labial	(Dentil)velar		Post velar	velar
Target		P'	t'	s'	tʃ'	k'
SIWI		-	t'	-	tʃ'	k'
SFWF		-	t'	-	tʃ'	k'

C9's developmental realization

Process	Pattern	Realization	Target	Gloss	Source
Fronting	/ʃ/ → [s]	səməz	ʃəməz	shirt	Pic.dscrpt
Cluster reduction	/ntʃ/ → [tʃ]	afıtʃ'a	afıntʃ'a	nose	Pic.dscrpt
	/rs/ → [s]	bosa	bosa	Bag	Storytelling
	/tm/ → [m]	simot	sitmot	dying	Story telling
Deletion	/w/ → ø	ihua	Wuha	Water	Pic.dscrpt
	/h/ → ø	ije	jıhe	this	Pic.dscrpt
Inversion	Z&n	nozotʃ	zihonotʃ	Elephant	Pic.dscrpt

3;10;2	Place	labials					(dent) alveolar					Post alveoli					pal	velar			Glottal	
name	Target	m	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	ʧ	ʤ	ɲ	k	g	h	?
C10	SIWI	m	p	b	f	-	n	l	t	d	s	z	r	ʃ	ʒ	ʧ	ʤ	ɲ	k	g	h	
	SFWF	m	p	b	f	-	n/ó	l	t	d	s	z	r	ʃ	ʒ	ʧ	ʤ	ɲ	k	g	ó	
Ejectives																						
	Place	labial			(Dentil)velar			Post velar			velar											
	Target	P'			t' s'			ʧ'			k'											
	SIWI	P'			t' s'			ʧ'			k											
	SFWF	P'			t' s'			ʧ'			k											
C10' s developmental realization																						
	process	Pattern				Realization				Target				gloss			Sources					
1	Substitution	/h/ → [w]				bwula				bəhuala				After /back			Elicitation					
		/k' / → [k]				tɪlkje				tɪlk'je				The big one			Pic. dscrpt					
2	Cluster reduction	/nb/ → []				wəbər				wənbər				Chair			Pic. naming					
		/n/&l/ k/f				ikɪfun				ɪnkɪfun				sleep			Pic.dscrpt					
3	Deletion	/h/ → ø				jəpaw				jɪhəpaw				This one			Pic.dscrpt					
		/t/ → ø				atʃawutənaltʃ				tatʃawutələtʃ				Play with us			Elicitation					
		/w/ → ø				ihua				wuha				water			Pic.dscrpt					
4	Inversion	/tʃ'&/k' → ø				tʃ'ək'me				k'ətʃ'ine				giraffee			Pic.dscrpt					
3;11;28	Place	labials					(dent) alveolar					Post alveoli					pal	velar			Glottal	
name	<i>Target</i>	<i>m</i>	<i>p</i>	<i>b</i>	<i>f</i>	<i>v</i>	<i>n</i>	<i>l</i>	<i>t</i>	<i>d</i>	<i>s</i>	<i>z</i>	<i>r</i>	<i>ʃ</i>	<i>ʒ</i>	<i>ʧ</i>	<i>ʤ</i>	<i>ɲ</i>	<i>k</i>	<i>g</i>	<i>h</i>	<i>?</i>
C11	SIWI	<i>m</i>	<i>p</i>	<i>b</i>	<i>p/f</i>	<i>-</i>	<i>n</i>	<i>l</i>	<i>t</i>	<i>d</i>	<i>s/ó</i>	<i>z</i>	<i>l</i>	<i>ʃ</i>	<i>ʒ</i>	<i>ʧ</i>	<i>ʤ</i>	<i>ɲ</i>	<i>k</i>	<i>g</i>	<i>h/ó</i>	
	SFWF	<i>m</i>	<i>p</i>	<i>b</i>	<i>f</i>	<i>-</i>	<i>n</i>	<i>l</i>	<i>t</i>	<i>t</i>	<i>s/ʒ</i>	<i>s</i>	<i>l/ó</i>	<i>ʃ</i>	<i>ʒ</i>	<i>ʧ</i>	<i>ʤ</i>	<i>ɲ</i>	<i>k</i>	<i>g</i>	<i>h/ó</i>	
Ejectives																						
	<i>Place</i>	<i>labial</i>			<i>(Dentil)velar</i>			<i>Post velar</i>			<i>velar</i>											
	<i>Target</i>	<i>P'</i>			<i>t' s'</i>			<i>ʧ'</i>			<i>k'</i>											
	SIWI	<i>-</i>			<i>t' s'</i>			<i>ʧ'</i>			<i>k'</i>											
	SFWF	<i>ó</i>			<i>t' -</i>			<i>ʧ'</i>			<i>k'</i>											
Words which illustrate C11's developmental realizations																						
process	pattern				realization				Target				gloss			source						
fronting	/f/ → [p]				pələs				fərəs				Horse			Pic .dscrpt						

devoicing substitution/r/	/d/ → [t]	tabo	dabo	Bread	Elicitation
		antant	andand	Some	Elicitation
		gatəɲa	guadəɲa	friend	Elicitation
	/r/ → [l]	tələten	tərəten	My story	Storytelling
		fille	fire	Seed	Pic. Dscript
nəbələtʃ		nəbərətʃ	She was	Storytelling	
Cluster reduction	/nb/ → [b]	gəɪbal	gɪnbar	For head	Pic.naming
	/r g / → ø	adgo	adɾigo	Doing	Elicitation
	/l/ → ø	bɪʃˈk'o	bɪʃˈik'o	Glass	Pic.naming
		məsu	məlsu	answer	Storytelling
Deletion	/l/ → ø	ella	lella	other	Elicitation
	/m/ → ø	ɪsaka	mɪsaka	Lunchbox	Elicitation
	/j/ → ø	ɪbt'əsəʃ	ɪjəbət'əsəʃ	Cutting	Pic. Dscript
	/h/ → ø	ullət	hullət	two	Pic. Dscript
A Assimilation	/z/ → [dʒ]	dʒɪdʒoro	zɪndʒɾo	monkey	Pic. Dscript

3;10;0	Place	<i>labials</i>					<i>(dent) alveolar</i>					<i>Post alveoli</i>				<i>pal</i>	<i>velar</i>		<i>Glottal</i>			
name	Target	m	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	tʃ	dʒ	ɲ	k	g	h	ʔ
C12	SIWI	m	p	p	f	-	n	l	t	t	s	z	l	ʃ	ʒ	t ^h	dʒ/t	ɲ	k	g	h/ø	
	SFWF	m	p	p	f	-	n	l	t	t	s	s	l	ʃ	ʒ	t ^h	dʒ	ɲ	k	g	h/ø	

Ejectives

	Place	<i>labial</i>	<i>(Dental)velar</i>		<i>Post velar</i>	<i>velar</i>
Target	P'		t'	s'	tʃ	k'
SIWI		p	t	s	t	k
SFWF		p	t	s	t	k

C12 developmental realization

Process	Pattern	Realization	Target	Gloss	Source
Devoicing	/b/ → [p]	pəg pəlla nəpərətʃ	bəg bəlla nəpərətʃ	Sheep Ate She was	Pic.dscript Pic.dscript storytelling

	/d/ → [t]	polsa təptəl tabo timət ant tolo	polsa dəbtər tabo dimət and doro	Bag Ex.book Bread Cat One Hen	Elicitation Elicitation pic naming storytelling Pic. naming pic naming
	/z/ → [s]	mus saf aso	muz zaf aso	Banana Tree Crocodile	Pic. dscrpt Pic. dscrpt Pic. dscrpt
	/ʒ/ → [ʃ]	ʃiwaʃiwe	ʒiwaʒiwe	Swing	Pic. dscrpt
Stopping	/dʒ/ → [t]	tib litot ^h	dʒib lidʒotʃ	Hyena Children	Pic. naming Pic. dscrpt
	/tʃ/ → [t ^h]	fijəlot ^h wotalət ^h betəsəbot ^h ua	fijələtʃ wotalətʃ betəsəbotʃua	Goats She climbed Her family	Pic. dscrpt Pic. dscrpt
De ejection	/kʰ/ → [k]	tikul tilik kəj	tʰikʰur tilikʰ kʰəj	Black big Red	Pic. dscrpt Pic. dscrpt Pic. dscrpt
	/tʃʰ/ → [t]	tɪlawan itawotaləhu itəlsaləhu pita	tɪlawan itʃʰawotaləhu itʃʰərsaləhu bitʃʰa	Her tail I play I finish Yellow	Pic. dscrpt Elicitation Elicitation Pic. dscrpt
	/tʰ/ → [t]	t ^h atutot ^h atənaləhu tələmpeza	tʃʰatʃʰutotʃʰ atʰənaləhu tʰərəpʰeza	Chickens I study Table	Pic. dscrpt Elicitation Elicitation
	/sʰ/ → [s]	səj səgul	səhaj sʰəgur	The sun Hair	Pic. dscrpt Pic naming
Substitution/r/	/r/ → [l]	kangalo nislamola gummale fələs bəlisas isklivito	kangaro nisramora gummare fərəs bəirsas iskribito	Kangaroo Eagle Hippo Horse With pencil Pen	Pic .naming Pic naming Pic. dscrpt Pic. naming Elicitation Elicitation

						filafɪle alələŋguate allat ijapaləluat						filafɪle alələŋguate arat ijabarəruat				Fruits Green Four Chasing					Pic.dscrpt Pic.dscrpt Pic.dscrpt Pic.dscrpt	
3;10;17	Place	<i>labials</i>				<i>(dent) alveolar</i>						<i>Post alveolar</i>				<i>pal</i>	<i>velar</i>			<i>Glottal</i>		
name	Target	n	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	ʧ	ʤ	ɲ	k	g	h	ʔ
C13	SIWI	n	p	b	f	-	n	l/r	t	d	s	z	l	ʃ	ʒ	ʧ	ʤ	ɲ	k	g	h	
	SFWF	n	p	b/f	f	-	n	l	t	d/t	s	z	l	ʃ	ʒ	tʰ	ʤ	ɲ	k	g	ʔ	
Ejectives																						
	Place	<i>labial</i>	<i>(Dentil)velar</i>		<i>Post velar</i>			<i>velar</i>														
	Target	Pʔ	tʔ	sʔ	ʧʔ			kʔ														
	SIWI	Pʔ	tʔ	sʔ	ʧʔ			k														
	SFWF	Pʔ	tʔ	sʔ	tʔ			kʔ														
C13 developmental realization																						
process		Pattern		Realization		Target		gloss		Source												
Backing		/z/ → [ʒ]		zihon		zihon		Elephant		Pic.dscrpt												
		/b/ → [f]		dəftəl		dəftəl		Ex.book		Elicitation												
		/tʃ/ → [tʰ]		babotʰ		ibabotʃ		Snakes		Pic.dscrpt												
Substitution of /r/		/r/ → [l]		tʃ'ila		tʃ'ira		tail		Pic.dscrpt												
				fɪlafɪle		fɪlafɪre		fruits		Pic.dscrpt												
				s'əgulatʃəwn		s'əguratʃəwn		their hair		Pic.dscrpt												
				təmali		təmari		student		Pic.naming												
				t'ilat'ile		t'irat'ire		cereals		Pic.dscrpt												
				bälle		bære		ox		Pic.naming												
				dolo		doro		hen		Pic.naming												
				jədul		jədur		wild		Pic.naming												
		calot		carot		carrot		Pic.naming														
Cluster reduction		/mh/ → [m]		tɪmltbet		tɪmhɪrtbet		School		Elicitation												
		/rt/ → [t]		iskɪbito		iskɪrbito		Pen		Elicitation												
		/rb/ → [b]		bəbosə		bəborsə		Bag		Elicitation												

		/rs/ → [s] /rtʃ/ → [tʃ]	bəbitʃ'k'o	bəbirtʃ'ko	With glass	Elicitation																
Assimilation		/K' → [z]	təzəzika	təzəkizk'a	Upsidedown	Pic.naming																
Place		<i>labials</i>			<i>(dent) alveolar</i>			<i>Post alveolar</i>			<i>pa</i> <i>l</i>	<i>velar</i>		<i>Glottal</i>								
name	Target	m	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	tʃ	dʒ	ŋ	k	g	h	?
C14	SIWI	m/b	p	b	f	-	n	l	t	d	s	z	r	ʃ	ʒ	tʃ	dʒ	ŋ	k	g	h	
	SFWF	m	p	b	f	-	n	l	t	d	^s ʃ	z/ʒ	r	ʃ	ʒ	tʃ	dʒ	ŋ	k	g	ó	
Ejectives																						
	Place	<i>labial</i>			<i>(Dentil)velar</i>			<i>Post velar</i>			<i>velar</i>											
	Target	P'			t'			s'			tʃ'											
	SIWI	P'			t'			s'			tʃ'											
	SFWF	P'			t'			s'			tʃ'											
C14 developmental realization																						
Process	Pattern		Realization		Target		Gloss		Source													
Stopping	/m/ → [b]		bəkinaw		məkinaw		The Car		Elicitation													
Backing	/z/ → [ʒ]		kəʒa		kəzia		Then		Story telling													
Lateralization	/d/ → [r]		worko		wodk'o		Fall Down		Pic. dscript													
Cluster reduction	/nb/ → [b]		abəsa wobər		anbəsa wobər		Lion Chair		Pic.naming Elicitation													
	/ntʃ/ → [tʃ]		afitʃ'a		afintʃ'a		Nose		Pic naming													
	/nt'/ → [t]		gət'ila		gət'ila		Detached		Pic .dscript													
	/wk'/ → [k']		ak'aləhu		awk'aləhu		I Know		Elicitation													
Deletion	/t'/ → ∅		təsto		təsət'to		Hunging		Pic.dacript													
	/j/ → ∅		ɪnformen		junformen		Uiform		Elicitation													
	/w/ → ∅		ɪhua		wuha		Water		Pic.descript													
			məs'af ak'aləh		məs'əhaf awk'aləhu		Book I Know		Elicitation Elicitation													
4;0:5	Place	<i>labials</i>			<i>(dent) alveolar</i>			<i>Post alveoli</i>			<i>pal</i>	<i>velar</i>		<i>Glottal</i>								

name	Target	m	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	ʧ	dʒ	ɲ	k	g	h	?
C15	SIWI	m	p	b	f	-	n	l/ ɔ̃	t	d/t	s	z	r	ʃ	ʒ	ʧ	dʒ	ɲ	k	g	h/ɔ̃	
	SFWF	m	p	b/f	f	-	n	l	t	d	s	z	r	ʃ	ʒ	ʧ	dʒ	ɲ/m	k	g	h/ɔ̃	
Ejectives																						
	Place	<i>labial</i>			<i>(Dentil)velar</i>				<i>Post velar</i>				<i>velar</i>									
	Target	P'			t'		s'		ʧ̃				k'									
	SIWI				t'		s'		ʧ̃				k'									
	SFWF				t'		s'		ʧ̃				k'									
C15's developmental realization																						
Process	Pattern	Realization				Target				Gloss				source								
Devoicing	/d/ →	[t]				tabo				dabo				bread				storytelling				
Gliding	/b/ →	[w]				awusu				absu				Givesomething				storytelling				
Substitution/b	/b/ →	[f]				dæfter				dæbter				Ex.bo				Pic.Naming				
Lateralization	/l/ →	/r/				bɪrakbord				bɪlakbord				Blackboard				Pic. naming				
Deletion	/h/ →	ɔ̃				mæs'af				mæs'əhaf				Book				Pic. naming				
	/l/ →	ɔ̃				it'əjkɪh				lit'əjkɪh				Let me ask you				Storytelling				
	/k/ →	ɔ̃				izələk				lizələk				Piggyback				storytelling				
	w →					jik'əmətəl				jik'k'əmətəl				Sitting				storytelling				
Cluster reduction	/rs/ →	[s]				Bosa				Borsa				Bag				Pic.naming				
						Aledəm				alhedəm				I don't go				Story telling				
Assimilation	/p/ →	[m]				quadmamatʃotʃ				quadəɲamat ʃotʃ				Friends				Storytelling				
Age	Place	<i>labials</i>				<i>(dent) alveolar</i>				<i>Post alveoli</i>				<i>pal</i>	<i>velar</i>		<i>Glottal</i>					
	Target	m	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	ʧ	d	ɲ	k	g	h	?
C16	SIWI	m	p	b	f	-	n	l	t	d	s	z	l	ʃ	ʒ	t ^h	-	ɲ	k	g	h/ɔ̃	
	SFWF	m	p	b	f	-	n	l	t	t	s	z	l	ʃ	ʒ	t ^h	d	ɲ	k	g	ɔ̃	
Ejectives																						
	Place	<i>labial</i>	<i>(Dentil)velar</i>				<i>Post velar</i>				<i>velar</i>											
	Target	P'	t'		s'		ʧ̃				k'											

	SIWI	t'	s'	t'	k'		
	SFWF	t'	s'	t'	k'		
C16 developmental realization							
No	Process	Pattern	Realization	Target	Gloss	Source	
1	Substitution Fronting	/dʒ/ → [d]	lid	lidʒ	Child	Elicitation	
		/tʃ/ → [t]	dimɔtɔt	dimitɔtʃ	Cats	Pic. dscrpt	
	Backing	/z/ → [z]	wəfɔt	wəfɔtʃ	Birds	Sp. speech	
		/tʃ' / → [tʃ]	ziwaziwe	ziwaziwe	Swing	Pic. dscpt	
	Substitution/r/& ejectives/k'/		kut'	k'utʃ'	Sit	Elicitation	
			t'amma	tʃ'amma	shoe	Elicitation	
			/z/ → [s]	ʃəmisɔt	ʃəmisɔtʃ	Shirts	Pic. descrpt
			/b/ → [f]	dəftəl	dəbtər	Ex.book	Elicitation
			/r/ → [l]	məlet	məret	earth	Elicitation
			k' / → [k]	amola	amora	Big bird	Elicitation
				kəbəlɔ	kɔbɔrɔ	drum	Elicitation
				kəj	k'əj	Red	Pic. dscrpt
				tɪlik	tɪlik'	big	Pic.dscrpt
2	Cluster reduction	/ng → [g]	kagalo	kangaro	kangaroo	Elicitation	
		/rs/ → [s]	isas	irsas	pencil	Elicitation	
3	Deletion	/h/&/r/ → ∅	tmtbet	tɪmhɪrtbet	school	Elicitation	
		/h/ → ∅	edətʃ	hedətʃ	She went	Pic.dscrpt	
C17 's delopmental realization							
	process	Pattern	Realization	Target	gloss	Source	
1	Substitution (devoicing backing subst//tʃ/gliding	/z/ → [ʃ]	ʃiwafɪwe	ziwaziwe	Swing	Picdscrpt	
		/t' / → [tʃ]	tʃ'itʃəl	t'ɪntʃəl	rabbit	Pic.dscrpt	
		/tʃ/ → [ʃ]	ʃəkɔlet	tʃəkɔlet	Chocolate	Pic.dscrpt	
		/r/ → [j]	t'əjəp'esa	t'ərəp'eza	Table	Elicitation	
2	Cluster reduction	/rb/ → [r]	ʃuba	ʃurba	Plaited	Pic. dscrpt	
		rs/ → [s]	bəsas	bərsas	with pencil	Elicitation	
			k'usen	k'ursen	breakfast	Elicitation	

		/nb/ → [b]	wəbər	wənbər	chair	Pic naming
		/bt/ → [t]	dətər	dəbtər	Ex.book	Elicitation
		/lw/ → [w]	awədm	alwədm	I don't like	Elicitation
3	Deletion	/h/ → ∅	aja	ahja	donkey	Pic dscrpt
		/t/ → ∅	ikərs'ɪlɲaləʃ	tɪk'ərs'ɪlɲalətʃ	to sharpen	Elicitation
		/n/ → ∅	Woz.	Wənnɪz.	River	Pic.dscrpt
		/w/ → ∅	uha	wuha	water	Pic.dscrpt

Pulmonic consonants

Age	Place	<i>labials</i>					<i>(dent) alveolar</i>					<i>Post alveoli</i>				<i>pal</i>	<i>velar</i>		<i>Glottal</i>			
Name	Target	n	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	tʃ	dʒ	ɲ	k	g	h	ʔ
C18	SIWI	n	-	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	tʃ	dʒ	ɲ	k	g	h	
	SFWF	n	-	b	f/m	v	n	l/∅	t	d	s/ʃ	z	r/∅	ʃ/ʃ	ʒ	tʃ	dʒ	ɲ	k	g	∅	

Ejectives

	Place	<i>labial</i>	<i>(Dentil)velar</i>		<i>Post velar</i>	<i>velar</i>
Target	P'		t'	s'	tʃ'	k'
SIWI	-		t'	s'	tʃ'	k'
SFWF	-		t'	s'	tʃ'	k'

C18's developmental realization					
process	Pattern	Realization	Target	Gloss	source
Nasalization	/r/ → [n]	gummane	gummare	Hippo	Pic.dscrpt
	/f/ → [m]	bəsama	bəsafa	With barrel	Pic.dscrpt
Backing	/s/ → [ʃ]	bətəʃəbotʃua	bətəsəbotʃua	Her family	Pic dscrpt
	/ʃ/ → [tʃ]	ʃikrikrotʃ	ʃikrikroj	Rounding	Elicitation
Cluster reduction	/wk/ → [k]	akaləhu	awkaləhu	I know	Elicitation
	/mh/ → [t]	timitbet	timhirt-bet	School	Elicitation
	/rt/ → [t]	abəsa	abəsa	Lion	Pic. naming
	/nb/ → [b]	wobər	wonbər	Chair	Pic. naming
Inversion	/r/ → [s]	bəisras	bəirsas	Pencil	Elicitation

Pulmonic consonants																							
Age	Place	labials				(dent) alveolar				Post alveoli				pal	velar		Glottal						
Name	Target	m	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	ʒ	ʒ	ɟ	ŋ	k	g	h	?
C19	SIWI	m		b	f	-	n	n	t	ʃ	ʒ	n	ʃ	ʃ	ʒ	ʒ	ɟ	ŋ	k	g	ó		
	SFWF	m		b	f	-	n	n	t	ʃ	ʒ/s	n	ʃ	ʃ	ʒ	ʒ	ɟ	ŋ	k	g	ó		
Ejectives																							
	Place	labial		(Dentil)velar		Post velar		velar															
	Target	P'		t'	s'	ɸ'																	
	SIWI	-		t	s'	ɸ'																	
	SFWF	-		t	s'	ɸ'																	

C19's Developmental realization table						
	process	Pattern	Realization	Target	gloss	Source
1	Devoicing	/z/ → [ʃ]	ʃəwəʃəwe	zəwəzəwe	Swing	Pic.dscrpt
		/t'/ → [t]	təntʃən	t'ɪntʃəl	rabbit	Pic.dscrpt

	Nasalizing	/l/ → [ɲ]	namotʃ	lamotʃ	goat	Pic.dscrpt
		/r/ → [ɲ]	fijənotʃ	fijəlotʃ	Cows	Pic.dscrpt
2	Cluster reduction	/rs/ → [s]	t'ənəp'eʃa	t'ərəp'eza	Table	Pic.naming
		/nb/ → [b]	binabino	birabiro	betterfly	pic. naming
		/nb/ → [b]	bəsas	bərsas	with pencils	Elicitation
		/lw/ → [w]	k'usen	k'ursen	breakfast	Elicitation
			wəbən	wənbər	chair	Elicitation
			awədm	alwədm	I don't like	Elicitation

4;5;2	Place	labials					(dent) alveolar					Post alveoli					pal	velar			Glottal	
Name	Target	n	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	ʒʰ	ʒʒ	ɲ	k	g	h	ʔ
C20	SIWI	n	-	b	f	v	n	l	t	d	s	ʒ	r	ʃ	ʒ	ʒʰ	ʒʒ	ɲ	k	g	h	
	SFWF	n	-	b	f	v	n	l	t	d	ʃ	ʒ	r	ʃ	ʒ	ʒʰ	ʒʒ	ɲ	k	g	ʔ	
Ejectives																						
	Place	labial		(Dentil)velar					Post velar					velar								
	Target	P'		t'					s'					ʃʷ					k'			
	SIWI	-		t'					s'					ʃʷ					k' / g			
	SFWF	-		t'					ʃʷ					ʃʷ					k' / g'			

C20 developmental realization

process	Pattern	Realization	Target	Gloss	Source
Backing	/s/ → [ʃ]	mɪʃa	misa	Lunch	Pic. dscrpt
		aʃərat	asərat	Tied	Pic.dscrpt
		k'əʃbilla	k'əsɪlla	Slowly	Pic dscrpt
		amɪʃt	amɪst	Five	Pic.dscrpt
		zaf	zaf	Tree	Pic.dscrpt
	/z/ → [ʒ]	muʒ	muʒ	Banana	Pic.dscrpt
		aʒowtʃ	azowtʃ	Crocodiles	Pic.dscrpt
		ijəʒələlətʃ	ijəzələlətʃ	Jumping	Pic. dscrpt
		inəʒih	inəzih	These	Pic. dscrpt

C21's Developmental realization																						
No	process	pattern	Realization	Target	gloss	Source																
1	Substitution Devoicing	/b/ → [p]	ɛjɜpɜlu	ijɜbɜlu	Eating	Pic. dscrpt																
		/d/ → [t]	antu	andu	The one	pic. dscrpt																
		/t'/ → [t]	totit	t'ot'it	The ape	Pic.dscrpt																
	Backing& devoicing	/t'/ → [tʃ]	kitʃəl	k'it'əl	leaf	Pic.dscrpt																
		/z/ → [ʃ]	algəʃahum	algəzahum	Not bough	Elicitation																
			məʃih	məzih	These	Pic.dscrpt																
		/k'/ → [k]	kutil	k'ut'ir	number	Elicitation																
			ijəkolətətʃ	ijək'orət'ətʃ	Cutting	Pic. dscrpt																
		/tʃ' → [tʃ]	bitʃa	bitʃ'a	yellow	Pic.dscrpt																
/r/ → [l]	afəl	afər	soil	Pic. dscrpt																		
2	Cluster reduction	/jnt/ → [t]	agita	agnitta	She got	Pic.dscrpt																
		/rs/ → [s]	bosawan	borsawan	Her bag	Pic.dscrpt																
		/sk/ → [k]	lakəmtbət	lask'əmit'bət	To put	Elicitation																
		/t/ → ø	liwota	litwot'a	To climb	Pic.dscrpt																
		/h/ → ø	sited	sithed	Going	Pic.dscrpt																
3	Deletion	/r/ → ø	aguade	arɜnguade	Green	Pic.dscrpt																
		/h/ → ø	ullɜt	hullɜt	two	Pic.dscrpt																
		/w/ → ø	ullo	wurro	Cat	Pic.Dscrpt																
			azotʃ	azowotʃ	crocodiles	Pic.dscrpt																
	Inversion & clst.red	/k/ & /t/	bikutan	birtukan	Orange	Sp.dscrpt																
		/rt/ → [t]	bitukan	birtukan	Orange	Pic.dscrpt																
4:6:7	Place	<i>labials</i>					<i>(dent) alveolar</i>					<i>Post alveoli</i>				<i>pal</i>	<i>velar</i>		<i>Glottal</i>			
Name	Target	m	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	ʝ	ɟ	ŋ	k	g	h	?
C21	SIWI	m	p	b	f	-	n	l	t	d	s	s	l	ʃ	ʒ	ʝ	ɟ	ŋ	k	g	h	
	SFWF	m	p	p	f	-	ø	l	t/l	t	s	z	l	ʃ	ʒ	ʝ	ɟ	ŋ	k	g	ø	
Ejectives																						
	Place	<i>labial</i>					<i>(Dentil)velar</i>					<i>Post velar</i>		<i>velar</i>								
	Target	P'					t'					s'	tʃ'	k'								

		SIWI				t				s		tʃ			k					
		SFWF				t				s		tʃ			k					

4;5:21	Place	labials					(dent) alveolar					Post alveoli					pal	velar		Glottal		
Name	Target	m	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	tʃ	dʒ	ɲ	k	g	h	?
C22	SIWI	m	p	b	f	-	n	l	t	d	s	z/s	r	ʃ	ʒ	tʃ	dʒ	ɲ	k	g	h/	
	SFWF	m	p	b	f	-	n/∅	l	t	d	s	z	r	ʃ	ʒ	tʃ	dʒ	ɲ	k	g	∅	

Ejectives						
	Place	labial	(Dentil)velar		Post velar	velar
	Target	P'	t'	s'	tʃ'	k'
	SIWI	P'	t'	s'	tʃ'	k'
	SFWF	P'	t'	s'	tʃ'	k'

C22's developmental realization						
No	process	Patter	realization	Target	gloss	Source
1	Substitution	/h/ → [w]	ziwonun	zihonun	elephant	Pic.dscrpt
2	Cluster reduction	/rs/ → [s]	bosa	borsa	purse	Sp.dscrpt
		/nb/ → [b]	abəsa	anbəsa	lion	Pic.dscrpt
3	Deletion	/h/ → ∅	ijed	ijəhede	going	Pic.dscrpt
		/w/ → ∅	uha	wuha	water	Pic.dscrpt
4	Addition	[m]	t'ərəmp'eza	t'ərəp'eza	table	Elicitation
		[n]	k'əntʃ'ine	k'ətʃ'ine	giraffee	Pic dscrpt
5	Inversion	/t/&s/ → ∅	isras	irsas	pencil	Sp.dscrpt

4;6:9	Place	labials					(dent) alveolar					Post alveoli					pal	velar		Glottal		
Name	Target	m	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	tʃ	dʒ	ɲ	k	g	h	?
C23	SIWI	m/b	p	b	f		n	l	t	d		z	r	ʃ	ʒ	tʃ	dʒ	ɲ	k	g	h/∅	
	SFWF	m	p	b	f		n	l	t	d		z	l/∅	ʃ	ʒ	tʃ	dʒ	ɲ	k	g	∅	

Ejectives						
	Place	labial	(Dentil)velar		Post velar	velar

	Target	P'	t'	s'	tʃ'	k'
	SIWI	P'	t'	-	tʃ'	k'
	SFWF	P'	t'	-	tʃ'	k'

4;5	Place	<i>labials</i>					<i>(dent) alveolar</i>					<i>Post alveoli</i>					<i>pal</i>	<i>velar</i>		<i>Glottal</i>		
Name	Target	m	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	tʃ	dʒ	ɲ	k	g	h	?
C24	SIWI	m	p	b	f	-	n	l	t/ø	d	s	z	r	ʃ	ʒ	tʃ	dʒ	ɲ	k	g	h	
	SFWF	m	p	b	f		n/ø	l	t	d	s	z	r/ø	ʃ	ʒ	tʃ	dʒ	ɲ	k	g	ø	

Ejectives										
	Place	<i>labial</i>	<i>(Dentil)velar</i>		<i>Post velar</i>		<i>velar</i>			
	Target	P'	t'	s'	tʃ'	k'				
	SIWI		t'	s'	tʃ'	k'				
	SFWF		t'	s'	tʃ'	k'				

C24 developmental realization						
No	process	pattern	Realization	Target	gloss	Source
1	Cluster reduction	/ɲt/ → [t]	agita	agnitta	Got	Pic.dscrpt
		/rs/ → [s]	bosa	borsa	Bag	Pic.dscrpt
			tɪsun	tɪrsun	Tooth	Pic.dscrpt
		/nb/ → [b]	abɜsa	anbɜsa	Bag	Pic.dscrpt
		/rb/ → [b]	iskibito	iskirbito	Pen	Elicitation
2	Deletion	/t/ → ø	lɪwota	lɪtwot'a	To climb	Pic.dscrpt
			sited	sithed	Going	Pic.dscrpt
		/h/ → ø	akilt	atikilt	Vegetables	Pic.dscrpt
		/r/ → ø	iwa	wuha	Water	Pic.dscrpt
			Aguade	arɜnguade	Green	Pic.dscrpt
			Asasost	asrasost	Thirteen	Pic. naming
			koʃəməm	koʃəməw	Eat	Storytelling

	Place	<i>labials</i>					<i>(dent) alveolar</i>					<i>Post alveoli</i>					<i>pal</i>	<i>velar</i>		<i>Glottal</i>		
4;11;10	Target	m	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	tʃ	dʒ	ɲ	k	g	h	?
C25	SIWI	m		b	f		n	l	t	d	s	z	r	ʃ	ʒ	tʃ	dʒ	ɲ	k	g	h	
	SFWF	m		b	f		n	l	t	d	s	z	r	ʃ		tʃ	dʒ	ɲ	k	g	ø	

Ejectives																							
		Place	<i>labial</i>				<i>(Dentil)velar</i>				<i>Post velar</i>				<i>velar</i>								
		Target	P'				t' s'				tʃ				k'								
		SIWI	P'				t' s'				tʃ				k'								
		SFWF	P'				t' s'				tʃ				k'								
C25 developmental realization																							
process			pattern				Realization				Target				Gloss				Source				
Cluster reduction			/sk/ → [k]				bukit				biskut				Biscuit				Elicitation				
			/ng/ → [g]				arəguade				arənguade				Green				Pic dscrpt				
			/mb/ → [b]				t'iruba				t'irmuba				whistle				Pic. naming				
			/ts/ → [s]				sasəra				satsəra				not doing				Elicitation				
			/rs/ → [s]				k'usen				k'ursen				my breakfast				Elicitation				
							bosajen				borsajen				my bag				Elicitation				
			/fr/ → [f]				t'ifen				t'ifren				my nail				Sp.speech				
			/gh/ → [g]				arəguŋ				adərəghuŋ				I did				Sp.speech				
Deletion			/j/ → ∅				itʃem				jitʃem				this one				Sp.speech				
4;11:6	Place	<i>labials</i>				<i>(dent) alveolar</i>				<i>Post alveoli</i>				<i>pal</i>	<i>velar</i>		<i>Glottal</i>						
Name	Target	n	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	tʃ	ɔʒ	ŋ	k	g	h	?	
C26	SIWI	n	p	b	f		n/ŋ	l	t	d	s	z	r	ʃ	ʒ	tʃ	ɔʒ	ŋ	k	g	h		
	SFWF	n	p	b/f	f		n	l	t	d	s	z	r	ʃ	ʒ	tʃ	ɔʒ	ŋ	k	g	h/∅		
Ejectives																							
		Place	<i>labial</i>				<i>(Dentil)velar</i>				<i>Post velar</i>				<i>velar</i>								
		Target	P'				t' s'				tʃ				k'								
		SIWI	P'				t' s'				tʃ				k'								
		SFWF	P'				t' s'				tʃ				k'								
C26 developmental realization																							

Process	Pattern	Realization	Target	Gloss	Sources
Backing	/b/ → [f]	dəftər	dəbtər	Ex. book	Pic. naming
	/n/ → [ɲ]	ɪnənətɔtʃua	ɪnənətɔtʃua	Her mother	Pic.dscrpt
Cluster. reduction	/td/ → [d]	bɪrədɪst	bɪrədɪst	Casserole	Elicitation
	/ng/ → [g]	afagulɪt	afagulɪt	Toy	Elicitation
Deletion	/t/ → ø	jəbsɪrə	jəbet-sɪrə	Homework	Elicitation
		liwodkʰ	litwodkʰ	To fell	Pic. dscrpt
	/w/ → ø	ihua	wuha	Water	Pic dscrpt

4;11;20	Place	labials					(dent) alveolar					Post alveoli			pal	velar		Glottal				
Name	Target	m	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	ʧ	dʒ	ɲ	k	g	h	?
C27	SIWI	m	p	b	f	-	n	l	t	d	s	z	r	s/ʃ	ʒ	ʧ	dʒ	ɲ/	k	g	h	
	SFWF	m	p	b	f	-	n	l	t	d	s	z	r	ʃ	ʒ	ʧ	dʒ	ɲ/	k	g	h	
Ejectives																						
	Place	labial	(Dentil)velar			Post velar			velar													
	Target	P'	t'	s'		ʧ'			k'													
	SIWI	P'	t'	s'		ʧ'			k'													
	SFWF	P'	t'	s'		t'/ʧ'			k'													

C27 developmental realization						
process	Pattern	Realization	Target	Gloss	Source	
Fronting	/ʃ/ → [s]	wusətuan	wuʃətuan	Her lie	Storytelling	
	/tʃ/ → [tʰ]	ʃəmizotʃ	ʃəmizotʃ	Shirts	Pic. dscrpt	
		bəmət'ərəʃa	bəmətʰərəʃa	At the end	Storytelling	
Cluster reduction	/nd/ → [d]	wədme	wəndɪme	My brother	Elicitation	
	/bt/ → [t]	dətər	dəbtər	Ex.book	Elicitation	
	/nd/ → [d]	mɪrɪdə	mɪrnɪdə	Soft drink	Elicitation	
Deletion	/h/ → ø	ɪjɛdʊ	ɪjəhedʊ	Going (they)	Pic.dscrpt	
		s'aj	s'əhaj	The sun	Pic dscrpt	
	/j/ → ø	ordanos	jərdanos	Child'sname	Elicitation	

4;11;26	Place	labials					(dent) alveolar					Post alveoli			pal	velar		Glottal				
Name	Target	n	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	ʧ	dʒ	ɲ	k	g	h	?
C28	SIWI	n	p	b	f		n	l	t	d	s/ʒ	f	r	ʃ	ʒ	ʧ/ʃ	dʒ	ɲ/ø	k	g	h	

	SFWF	n p b f	n l t d	<i>f/ó</i>	<i>f</i>	r	ʃ	ʒ	ʧ	ɟʒ	ɲ/	k	g	h/ó
Ejectives														
	Place	<i>labial</i>	<i>(Dentil)velar</i>	<i>Post velar</i>		<i>velar</i>								
	Target	P'	t'	s'	tʃ'		k'							
	SIWI	P'	t'	s'	tʃ'		k'							
	SFWF	P'	t'	s'	/tʃ'		k'							

C28 developmental realization Table					
process	Pattern	Realization	Target	Gloss	Source
Fronting	/z/ → [f]	faf	Zaf	Tree	Pic.dscrpt
	/k/ → [t]	təʃa	kəzia	then	Pic.dscrpt
	/tʃ/ → [ʃ]	ʃəkoleɪt	tʃəkoleɪt	chocolate	Elicitation
Backing	/s/ → [ʃ]	milaʃ	milas	Tongue	Pic.naming
		fərəʃ	fərəʃ	Horse	Pic.naming
	/s'/ → [tʃ']	k'əmiʃ	k'əmis	dress	Pic.naming
	/z/ → [ʒ]	tʃ'aj	s'əhaj	Thesun	Pic.dscrpt
		inzih	inzhin	These	Pic.dscrpt
		bizu	bizu	many	Pic.dscrpt
Deletion	/t/ → ó	at'ibliɲalətʃ	tat'ibliɲalətʃ	Washe fo me	Elicitation
		tʃatʃ'otʃ	ʃatʃ'utotʃ	chickens	Pic.dscrpt
	/r/ → ó	atəmlətʃ	tastəmlalətʃ	she teaches	Elicitation
		fafire	firafire	fruits	Pic.dscrpt
	/l/ → ó	idʒotʃ	lidʒotʃ	children	Pic dscrpt
Cluster reduction	/ng/ → [g]	aʃagulit	aʃangulit	Toy	Elicitation
	/st'/ → [t']	wut'	wust'	In	Pic.dscrpt
	/nb/ → b]	wobər	wonbər	Chair	Elicitation
Assimilation	/z/ → [f]	fafotʃ	wafotʃ	Birds	Pic.dscrpt

Age	Place	<i>labials</i>			<i>(dent) alveolar</i>					<i>Post alveoli</i>					<i>pal</i>	<i>velar</i>	<i>Glottal</i>				
Name	Target	m	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	ʧ	ɟʒ	ɲ	k	g	h
C29	SIWI	m	p	b	f	n	l	k	d	<i>f</i>	z	<i>l</i>	ʃ	ʒ	<i>t^h</i>	<i>d</i>	<i>n</i>	k	g	h	?
	SFWF	m	p	b	f	n	l	k	d	<i>f</i>	z	<i>l</i>	ʃ	ʒ	<i>t^h</i>	<i>d</i>	<i>n</i>	k	g	h	<i>ó</i>

Ejectives

	Place	<i>labial</i>	<i>(Dentil)velar</i>	<i>Post velar</i>	<i>velar</i>		
Target	P'		t' s'	ʃ'	k'		
SIWI	P'		t' s'	t'	k'		
SFWF	P'		t' s'	t'	k'		
C29 developmental realization							
Process	Pattern		Realization	Target	Gloss	Source	
Stopping	/v/ →	[b]	tibbi	TV	Television	Pic. naming	
Devoicing devoicing	/d/ →	[t]	abukato	abukado	Avocado	Pic.naming	
	/d/ →	[t]	wənitm	wənidm	brother	Pic.descript	
Fronting	/tʃ/ →	[tʰ]	təgət'ətʰ	dənəgət'əʃ	panicked	Pic.dscript	
	/tʃ/ →	[t']	ellijwotʰ	ellijwoʃ	Tortoise	Pic.dscript	
Substitution/r			afint'a	afintʃ'a	Nose	Pic.naming	
			it'oh	itʃ'oh	I shout	Story telling	
			k'ət'ne	k'əʃ'en	giraffe	Pic.dscript	
			t'akka	ʃ'akka	Forest	Pic.dscript	
			mət'awota	məʃ'awotʃa	Play/game	Elicitation	
			t'ammajən	ʃ'ammajən	My shoes	Pic.naming	
		/ʃ/ →	[s]	səmisot	ʃəmizotʃ	Shirts	Pic.Dscript
		/z/ →	[s]				
		/r/ →	[l]	nəbil	nəbir	Tiger	Pic.dscript
				k'uls	k'urs	Breakfast	Elicitation
			kənfəl	kənfər	lip	Pic. naming	
			t'ilawan	ʃ'ilawan	Her tail	Pic.descript	
			kəbəlo	kəbəro	Drum	Pic. naming	
			bilabilo	birabiro	butterfly	Pic. naming	
Cluster reduction	/nb/ →	[b]	abɜsa	anbɜsa	Lion	Pic.dscript	
	/ng/ →	[g]	itəgəna	indəgəna	again	Pic.dscript	
Assimilations	/b/ →	[m]	bəməmil	bərəmil	barrel	Pic.dscript	
	/t/ →	[k]	kilk	tilk'	Big	Pic. dscript	
Deletion	/də/ →	ó	təbika	tədəbik'a	hiding	Pic.dscript	
Age	Place	<i>labials</i>	<i>(dent) alveolar</i>	<i>Post alveoli</i>	<i>pal velar</i>	<i>Glottal</i>	

4;11:23																						
Name	Target	m	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	ʧ	ʤ	ɲ	k	g	h	?
C30	SIWI	m	p	b	f	-	n	l	k	d	s	z	r	ʃ	ʒ	ʧ	ʤ	ɲ	k	g	h	
	SFWF	m	p	b	f	-	n/ǝ	l	k	d	s	z	r	ʃ	ʒ	ʧ	ʤ	ɲ	k	g	h/ǝ	
Ejectives																						
	Place	<i>labial</i>			<i>(Dentil)velar</i>			<i>Post velar</i>			<i>velar</i>											
	Target	P'			t' s'			ʧ̣'			k'											
	SIWI	P'			t' s'			ʧ̣'			k'											
	SFWF	P'			t' s'			ʧ̣'			k'											
30's Developmental realization																						
Process	Pattern	Realization			Target	Gloss			Source													
Cluster Reduction	/rs/ → [s]	isas			irsas	pencil			Elicitation													
	/n g / → [g]	ligɹɪʃ			lɪŋɹɪʃ	let me tell you			Elicitation													
	/nb/ → [b]	gɪbɐ			gɪnbɐ	forehead			Pic.naming													
		wɔbɐ			wɔnbɐ	chair			Pic.naming													
	/rg/ → [g]	ɔdgo			ɔdrigo	He did			Elicitation													
deletion	/rɟ̣' / → [ʧ̣']	bɪʧ̣'k'o.			bɪrɟ̣'ik'o	glass			Pic naming													
	/w/ → ø	ihua			wuha	water			Pic.dscrpt													
	/h/ → ø	ijədu.			ijəhedu	Going			Pic.descrpt													
Age 4;11:21																						
Age 4;11:21	Place	<i>labials</i>			<i>(dent) alveolar</i>			<i>Post alveoli</i>			<i>pal</i>	<i>velar</i>		<i>Glottal</i>								
Name	Target	m	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	ʧ	ʤ	ɲ	k	g	h	?
C31	SIWI	m	p	b	f		n	l	k	d	s	z	r	ʃ	ʒ	ʧ	ʤ	ɲ	k	g	h	
	SFWF	m	p	b/f	f		n	l	k	d	s	z/ʒ	r	ʃ	ʒ/ʤ	ʧ	ʤ	ɲ	k	g	h/ǝ	
Ejectives																						
	Place	<i>labial</i>			<i>(Dentil)velar</i>			<i>Post velar</i>			<i>velar</i>											
	Target	P'			t' s'			ʧ̣'			k'											
	SIWI	P'			t' s'			ʧ̣'			k'											
	SFWF	P'			t' s'			ʧ̣'/t'			k'											
31's developmental realization																						
process	Pattern	Realization			Target	Gloss			Source													
substitution	/b/ → [f]	dəftɐ			dəbtɐ	Ex.book			Elicitation													

Backing	/s/ → [ʃ]	ʃabrirat	sijabarirat	Chasing	Elicitation
	/z/ → [dʒ]	dʒiwadʒiwe	zɪwazɪwe	Swing	Pic.dscrpt
Cluster reduction	/lf/ → [f]	afəlɪgm	alfəlɪgm	I don't want	Elicitation
	/rb/ → [b]	bəsəbis	bəsərbis	By service	Elicitation
Deletion	/h/ → ø	s'aj	s'əhaj	The sun	Picdescript
	/w/ → ø	ijedu ihua	ijəhedu wuha	(they) going Water	Pic.dscrpt Pic.descript

Age 4;11:2	Place	<i>labials</i>			<i>(dent) alveolar</i>							<i>Post alveoli</i>			<i>pal</i>	<i>velar</i>		<i>Glottal</i>				
Name	Target	m	p	b	f	v	n	l	t	d	s	z	r	ʃ	ʒ	ʒʃ	ɟʒ	ŋ	k	g	h	?
C32	SIWI	m	p	b	f		n	l	t	d	s/ʃ	z	r	ʃ	ʒ	ʒʃ	ɟʒ	ŋ	k	g	h	
	SFWF	m	p	b	f		n	l	t	d	s	z	r	ʃ	ʒ/	ʒʃ	ɟʒ	ŋ	k	g	h/ø	
Ejectives																						
	Place	<i>labial</i>			<i>(Dentil)velar</i>				<i>Post velar</i>			<i>velar</i>										
	Target	P'			t'				s'			ʃ̣'					k'					
	SIWI	P'			t'				s'			ʃ̣'					k'					
	SFWF	P'			t'				s'			ʃ̣'					k'					

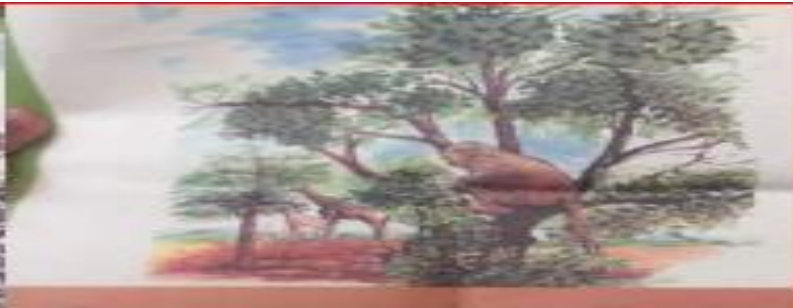
C32's Developmental realization					
Pro[cess]	Pattern	Realization	Target	gloss	Source
Backing	/s/ → [ʃ]	ʃɪga	sɪga	Meat	Elicitation
Cluster reduction	/tw/ → [w]	lɪwot'a	litwot'a	To climb	Pic. dscrpt
	/nb/ → [b]	wobər	wobər	Chair	Elicitation
		abəsa	anbəsa	Lion	Elicitation
Deletion	/j/ → ø	Ezo	Jizo	Holding	Elicitation
	/h/ → ø	saj	s'əhaj	The sun	Pic.dscrpt
	/w/ → ø	ihua	wuha	water	elicitation
		azotʃ	azowotʃ	crocodile	Pic.dscrpt

APPENDIX VI
NARRATIVE PICTURE





One sunny day little monkey swings through the trees. She wants to see all the animals that live in the forest.



First she sees two giraffes eating leaves. One giraffe is tall but the other giraffe is short.



When little monkey comes to the river, she sees two elephants. One elephant is dirty, but the other elephant is clean.



Then she sees two hippos. One hippo is wet but the other hippo is dry.



On the river bank little monkey sees two crocodiles. One crocodile is short, but the other crocodile is long.



Little monkey sees two tortoises. One tortoise is big, but the other tortoise is small. Little monkey is feeling tired and hungry now. She decides to go back home.



On her way back home, she sees two snakes. One snake is fat but the other snake is thin.



Near her home little monkey sees her family. Her mother, her father and her brothers and sisters are all eating bananas in a tree. Do you think little monkey is sad? Oh no! Little monkey is very, very happy!

DESCRIPTURE NAMING NG AND DESCRIPTION





