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Aspects of Phonological Development in Sidaamu Afoo Speaking Children

by
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DECLARATION

I hereby declared that this MA thesis on ***Aspects of Phonological Development in Sidaamu Afoo Speaking Children***, is my own work, and the sources have been acknowledged by means of references in the body of the study.

Name	Signature	Date
Demoke Lojie		7/07/2015

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Abstract

This study tries to describe the phonological developments noted in Sidaamu Afoo speaking children. The research took a descriptive design, employing perceptual phonetic and phonological analysis. Data was collected from 6 children aged between 3; 6 and 5; 0 years. The data were collected by having the children repeat lists of single-words and sentences. The repetition tasks were supplemented by pictures describing the words and sentences that the children were supposed to say following the research's utterances. Spontaneous continuous speech were also recorded by having the children tell stories, narrate activities, etc. SONY digital tape and video recorders were employed to capture audio and video signals, as the children talk. Data collection was carried out in two domains: at home and school. The data were first recorded orthographically and then transcribed using IPA and ExtIPA, when deemed necessary.

The data were first analyzed individually, i.e., every child's phonological profile was analyzed and presented as separate case studies. The common speech production features were grouped together and presented as summaries of the phonological processes attested in the children. Attempts were also made to compare the results of the present study with other reports in the literature.

The findings of this study showed that although most of patterns of phonological developments observed in Sidaamu Afoo speaking children are also common in other languages, there are still some language specific features that are particular to individual languages. These differences mainly arise from the fact that languages differ in their phonemic inventories, phonotactic rules, and even overall phonological systems. An example of language specific-feature noted in Sidaamu-Afoo speaking children, i.e., feature not reported for other languages, is the ejectivisation of the implosive /ɗ/, i.e., realization of /ɗ/ as [t']. This pattern was noted in most of the children, implying that, although ejectives and implosives are both glottalic sounds, ejectivisation appears to be easier for children to acquire first than implosives. This relates to the additional physiological efforts and aerodynamic complexity that implosives require to be produced.

This study is by no means complete and conclusive and in fact suffers from generalizations and shallow analysis. It is just an attempt to describe an aspect of the phonological development of the children in question. But, it is hoped that the study can be a preliminary ground for further research to build up on.

Abbreviations and Symbols

1SG	First Person singular
3SGM	Third Person Singular Masculine
3SGF	Third Person Singular Feminine
Approx.	Approximant
Ext IPA	Extended IPA
Cons.	Consonant
F	Female
GEN	Genitive
IPA	International Phonetic Alphabet
M	Male
N.Ch.	Number of Children
SNNPRS	South Nation Nationalities and people Regional State
Per.	Percent
PERF	Perfective
WI	Word Initial
WM	Word Medial
>	Realized as
/ /	Phonemic Transcription
[ ]	Phonetic Transcription
*	Unusual (used for loan words)
⟶	Substituted with

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CHAPTER ONE: Introduction

1.1 Background of the Study

The process of acquiring spoken form of language by children has been studied for so long by people from various disciplines and for various purposes. Some studied how children acquire the sound system of their languages, while others were interested how children learn to process grammatical elements. Still others investigated how meanings of linguistic elements are learned or how children understand the various usages of their language in different social settings. The current study aims at examining phonological development in Sidaamu Afoo speaking children. Sidaamu Afoo, as referred to as by its speakers, is a highland east Cushitic language spoken in the Southern part of Ethiopia. A more detailed account of the language will be presented later. Before embarking on the discussion of what phonological development is, it is necessary to briefly define what phonology itself is. The term phonology refers to the study of how sounds are organized and used in natural language. Helin (2011:1) states that "the phonological system of language includes inventory of phonemes [mental representation of speech sounds] and their features, and the rules which specify how the phonemes interact with each other". Massamba (1996) also defines phonology as "sub- branch of linguistics, dealing with the structure and function of sounds with in natural language, and tells us how the sounds of language are functional as a system" (p.3). Phonology encompasses segmental aspects (i. e., vowels and consonants) and area of prosody (i.e., suprasegmental features of speech, such as stress and intonation).

Phonological development therefore concerns with how children learn phonological rules specific to their language. Phonological development deals with the gradual development of an organized adult like system of sound contrasts and is most associated with children. The basic question about phonological development is concerns that how children mentally represent the phonological system of their language in a way that support their ability to recognize, learn, and produce the words of the language they are acquiring. The child begins with representation of individual word forms and gradually develops a set of more schematic phonological word

templates and this is the starting point for phonological development. Children's phonological development includes segmental, syllable and word level of ambient language. It is this interesting aspect of first language acquisition that the present study concerns with.

1.2 What is this Study about?

The study aims at describing phonological development in Sidaamu Afoo[1] speaking children. More specifically, the study addresses issues relating to phonological perception and production of speech sounds in the language. The interaction between perception and production is a central to an understanding of the early of phonological development (Vihman, 1996). The study attempted to investigate order of sound acquisition, acquisition of various contrasts (e.g., voiced vs. voiceless contrasts, contrasts between plosives, ejectives and implosive), and establish developmental norms on phonological development in Sidaamu Afoo speaking children, aged between 3; 6 -5; 0 years. Moreover, the study tried to compare patterns of phonological developments noted in Sidaamu Afoo speaking children with those reported for other language speaking children.

1.3 Rationale of the Study

There are a number of studies investigating phonological development in children of varying linguistic backgrounds. However, there is still a lot to be studied specially in less-known languages such as Sidaamu Afoo. In Ethiopia there are more than 80 languages and there are very few sketchy studies on Amharic (e.g., Abebayehu, 2013) and a couple of ongoing PhD studies on aspects of language acquisition in Afan Oromo- speaking children. Apart from these, to the best of the researcher's knowledge, no other study exists on language development in Sidaamu Afoo speaking children, which is why it was deemed important to conduct this research. However, one may still question the relevance of studying child language development in general, and phonological development in particular. There are a number of reasons why it is important to study child language. First, several linguists and other cognitive scientists are convinced that understanding how children learn to

[1] The term "Sidaama" refers to the nation where as" Sidaamu-Afoo" refers to the language among the society

speak sheds light to linguistic and other cognitive theories. Second, we need to understand "normal" patterns of speech/language development in order to understand "abnormal" speech development or later speech disorder. So, results of studies of language acquisition feed in to areas of speech pathology and cognitive studies. Third, if we know how children acquire speech sounds, we will be in a better position to know to devise or reform orthographic systems so that children acquire basic literacy much easier.

1.4 The Current Study (Statement of the problem)

Previous linguistic works in Sidaamu-Afoo are few in number, and the existing few works unlike the current study are mainstream linguist studies, i. e., on phonology, morphology, syntax, etc. For instance grammar of Sidaama (Sidamo) (Kawachi,2007); Derived Nominal in Sidamo (Abebe, 1982); Sidamo Verb Morphology, Complement Clause in Sidamo , Phonological Government in Sidaama , and A grammar of Sidaama (Anbessa 1984, 1987, 1994, 2000) respectively. Kawachi (2007), in particular, did detailed study on various aspects of the language. He discusses about the inventory of consonant and vowel phonemes of the language, together with a detailed account of the phonology of the language. His description of the language also covers other aspects of the grammar, such as morphology, syntax. Anbessa also described the language in great length. These are few linguistic descriptions done on the language. The current study takes a shift from the main stream linguistic description to a psycholinguistic description of the language. This study tries to answer the following research question:

- How Sidaamu Afoo speaking children acquire and produce contrasts between phonemes?
- What are the phonological processes that occur between the ages of 3; 6-5; 0 years in preschool Sidaamu Afoo speaking children?

1.5 Objectives of the Study

The fundamental question about phonological development is how children mentally represent phonological system of their language like that of adults, and their ability to recognize, learn, and produce the words of the language they are acquiring. Theoretical phonologists, psycholinguists and researchers studying child language

have trying to find an answer to the questions of how phonology is acquired, which part of phonology innate, and which part has to be learned. The objectives of this study are patterned along these lines. Hence, the general objective of this study is to describe patterns of phonological development in Sidaamu Afoo speaking children. The specific objectives include:

- To describe orders of consonant acquisition.
- To investigate the choice made by the children between consonants while acquiring Sidaamu Afoo (e.g., between pulmonic and non-pulmonic consonants).
- To describe phonological processes employed at different ages by Sidaamu Afoo speaking children.
- To compare patterns of phonological developments of Sidaamu Afoo speaking children with reports in other languages.

1.6 Scope of the Study

Due to time and other constraints, this study is limited to the description of only the phonological development in Sidaamu Afoo speaking children. More specifically, it focuses mainly on segmental aspects of phonological development, particularly, on the development of consonant phonemes of the language.

1.7 Significance of the Study

As described in section 1.3., this study is of paramount relevance in filling the existing gap in the study of language acquisition, and in providing data for other areas of inquiry such as linguistics, speech pathology, cognitive studies, etc. It also offers important information for educators, guiding them on the fact that literacy materials need to devise based on how children acquire language and other skills and knowledge. The study could also serve as a starting point for other researchers who would like to build up on this study and pursue a more detailed study on language acquisition in Sidaamu Afoo.

CHAPTER TWO: Language Acquisition

2.1. Introduction

Various researchers, many of them psychologists and linguists have tried to offer theoretical explanations of how children acquire languages. Many of the theorists agree on certain main areas of language acquisition; others disagree basically. Language acquisition refers to how and when children learn to speak and understand their native language (Timothy, 2003). Acquiring a language includes learning sounds and sound patterns of the language (phonological development), lexical development, grammatical or morph- syntactic development, and pragmatic or sociolinguistic development. In addition, Timothy suggests that the language is shaped through learning, brain maturation, social interaction and cognitive development. Ortega and Morgan (2010), remark that language acquisition encompasses pairing forms and meaning together a feat in first language development means children must build phonological and semantic system. Concerning the emergence of language acquisition, Pinker (1995) proposed that language acquisition begins very early in the human lifespan, and begins logical enough with the acquisition of a language's sound pattern. Furthermore, language acquisition researches describe how child become complete to produce and understand language, and achieve language milestone. The end result of language acquisition is actually a grammar-the mental system that allows people to speak and understand a language.

This chapter reviews the key literature on the theoretical aspects of language acquisition forwarded by various scholars. It also discusses theoretical issues of first language acquisition that psychologists and linguists proposed. In addition, it discusses different views on first language acquisition. The chapter also provides stages (milestones) at which children acquire various aspects of their first language. More specifically, it discusses the phonological processes observed when children acquire their mother tongue. Finally, it discusses cross-linguistic differences and individual differences in phonological development.

2.2. Theories of Language Acquisition

Linguists and Psychologists propose various perspectives about language acquisition. Demirezen (1988) discusses the major theories about how language is acquired and taught. These theories of language acquisition include behaviorism, mentalism, rationalism, empiricism, and cognitivism-code theories. People who advocate behaviorism are called behaviorist, as mentalist, rationalist, empiricist, and cognitivist are those who are adherents of mentalism, rationalism, empiricism, and cognitivism, respectively. Detailed discussions of each theory will be provided below. As Demirezen said," behaviorism and mentalism are mainly applicable to the acquisition of firs language while the rest can account for foreign language acquisition" (Demirezen, 1988:135). There is a number of second language acquisition theories, but since the focus of current study in this chapter, it is discussed only the theories of first language acquisition.

2.3. Theories of First Language Acquisition

Psychologists argue that all human beings acquire a language, but there are many different languages in the world, and it seems that any human being is capable of learning any of these languages as a native language. Linguistic studies on first language acquisition have mainly focused on the psychological part of the development, much less on the social factors and individuality. There are several competent theories of first language acquisition. Among these the prominent ones are Behaviorism, Chomskian Nativism, Cognitivist and Social interactionism.

2.3.1. The Behaviorism Theory of First Language Acquisition

Behaviorism is basically a psychological theory in its essence. It is actually a theory of native language that was proposed by John Brodust Waston (Demirezen, 1988). Behaviorism was a dominant theory in the field of psychology during the first half of the twenty century. Behaviorist study only what is observable and try to find clues to changes in a child's behavior in the environment (Zahradnikova, 2011). The major principles of behaviorist theory rest on the analyses of human behavior in observable stimulus–response interaction and the association between them. According to this theory, language is determined by stimuli consisting of specific attributes of the

situation, by response the stimuli call up in the organisms, and by reinforcing stimuli that are their consequences. Basically the behaviorist theory of stimulus-response learning particularly is developed in the operant conditioning model of Burrhas Frederic Skinner (James and Newson, 2007). Skinner considers all learning to the establishment of habits as a result of reinforcement and reward. This is very reminiscent of Pavlov's experiment (Demirezen, 1988) which indicates that stimulus and response work together. Behaviorism claims that child language acquisition is governed by habit forming and reinforcement by imitation, repetition and analogy. When a child attempts oral language or imitates the sounds or speech patterns they are usually praised and given affection of their efforts. Thus, praise and affections become the rewards. This implies that babies obtain native language habits via varied babbling which resemble the appropriate words repeated by a person or object near him. This very reward reinforces further articulations of the same sort into grouping syllables and words in similar situations.

2.3.2. The Nativism Theory of First Language Acquisition

The Nativist approach to child language acquisition originated as direct antipode to behaviorism in the late 50ies of the 20th century and dominated the field until the last decade (Mashhadi, 2012). Nativists claim that children are born with an innate ability to acquire language because they do have language innately. Chomsky, the most eminent representative of nativism suggests that "language is the organ of the mind and it develops like other organs; and language acquisition is an internalization of systematic rules due to Language Acquisition Device (LAD)," (James and Newson, 2007:185). He believes that every child has language acquisition device or LAD, which encodes the major principles of a language and its grammatical structures in to a child's brain. The Universal Grammar (UG) is the grammar of human, which is the universal principle of organizing all languages, is hard-wired in brain, which contains a language acquisition device (LAD). Chomsky debates as the potential for language is an innate or in born mental capacity not the product of operant conditioning (Timothy, 2003). As Chomsky, LAD is a procedure that operates an experience acquired in an individual community and constructs from it, in a determinate way, as state of the language faculty. Since essentially all human children learn a human language, LAD has to be capable of operating for any child anywhere. He argued

that people regularly understand and produce sentences they have never heard before. According to this theory, the important thing about the language is that is stimulus-free, not stimulus-bound (or we can say anything anywhere without being controlled by precise stimuli).

2.3.3. The Cognitivist Theory of First Language Acquisition

Cognitive theories try to get inside the mind of the child and to propose the types of mental structures and thinking processes that may be taking place. Cognitivists argue that a child cannot move on to learning a new language skill until he or she is intellectually ready for the next stage. Jean Piaget, the Swiss psychologist, argued that children have certain psychological capacity or cognitive ability before they can learn particular aspects of using language in order to make themselves understood (Herman, 1971). According to this theory, language acquisition takes place within the context of the child's broader intellectual development. This means that a child first becomes aware of concepts, such as relative size, and only afterward do they acquire the words and patterns to convey that concept. Piaget emphasized the importance of social interaction to intellectual development. Baiju (2010) states that Piaget made language an internal part of his idea of intellectual development and the role of language development linked to the social interaction. Moreover, Piaget theorized that cognitive development preceded that of language, and language was simply one of children's ways of representing their familiar worlds, a reflection of thought, and that language did not contribute to the development of thinking.

2.3.4. Social Interactionist Theory of First Language Acquisition

This theory assumes that language acquisition is influenced by the interaction of a number of factors- physical, linguistic, cognitive, and social. Zahradni'kova' (2011) notes that social interactionism theory reaches a compromise between nature and nurture by suggesting that children acquire first language by established cognitive structure, which is stimulated by environmental input. From birth, children are surrounded by others who talk to or with them. This communication plays a part how the baby learns to speak his or her native language. Some argue that "nature" is entirely responsible for how a baby learns a language, while others (e.g., Skinner, 1975 cited in James and Newson, 2007) argue that "nurture" is responsible for how a

baby picks up his or her mother tongue. Social interactionist claims that the way a baby learns a language is both biological and social. The biological position relates to the maturation of infant's brain to manage with the linguistic input. This theory recommends that young children acquire the language by identifying the regularities in what is heard and applying those regularities in what they say. Viygotsky the founder of human cultural and biosocial development who proposed that a child's development depends on the interaction between individual maturation and a system of symbolic tools and activities that the child appropriates from his or her sociocultural environment (Kozulin, *et al.*, 2003). Vygotsky's work is often placed with this theory because of the emphasis he placed on the importance of social interaction to learn language (Baiju, 2010).

2.4. Milestones of Language Acquisition

The field of Psycholinguistics has attempted to answer the key questions, such as "how does a child learn his/her language so well in such a short time?" Observations of children acquiring different languages reveal that the stages are similar, possibly universal. Children go through different stages in acquiring their firs language. Children acquire their first language passing though stages, such as pre-language stage, holophrastic stage (one word stage), two word stage, and telegraphic stage (Thuresson, 2011; Eva, 2014).

2.4.1. Pre-language stage

Pre-language stage is the stage in which babies begin to produce language where they make a lot of cooing and babbling. This phase often takes place between the ages of approximately three and ten months. In this stage the child goes through two steps: cooing, and babbling.

2.4.1.1. Cooing stage (3 to 5 Months)

In few weeks after birth, infants start to cooing, gurgling, and playing with sounds and their abilities are constrained by physiological limitations (Slobin, 1994).Coos are sounds that babies make when they appear to be happy and contented. They began to make pleasant sounds like one long vowel. This is happening usually at age between

two and four months and at the same age they also begin to laugh, which is a great reward to parents.

They begin develop receptive skills and able to recognize the differences between a human voices and other noises. This voice is usually their mother's voice and the infants may show recognition by a facial expression such as a smile. During the first three months, infants will be practicing their vocal chords and making vowel sounds, mostly cooing and laughing. Babies are able to discriminate speech from other sounds from the moment of birth (Matthews, 1996) and pay close attention to speech and will listen to speech in preference to other kinds of auditory stimulation. Around three months, babies can hear the first recognizable sounds in forms velar consonants, such as [k] and [g], and even high vowels, such as [i] and [u] (Thuresso, 2011).

2.4.1.2. Babbling stage (6-9 Months)

The babbling or canonical babbling stage starts at the age of around six months when the child begins to sit up (Thuresso, 2011). A child produced a wide range of sounds and uses them in his/her play. The intonation patterns also start to grow in to the child's consciousness. In this stage infants produce different vowels and consonants, like ba-ba-ba and ga-ga-ga. Around 9-10 months, they start using intonation patterns and combination of ba- ba- ba- da- da (Slobin, 1994). Nasalization also appears at this stage .In the late stage of babbling they use complex syllable combinations (such as ma- da- ga- ba). Babbling in infants is universal, which shows the early babbling is independent of the particular language to which children are exposed. Children babble different syllables over and over sometimes only changing the syllable by one phoneme, e.g., ba, ba; bu, bu; bi, bi (Eva, 2011) and these multisyllabic utterances often are categorized as reduplicated babbles but there are also occurrences of variegated babble, which consists of syllable strings with varying consonants and vowels, like *bagidabu*. This continues until infants reach the ages of about ten months old. Gradually, babbling starts to become more and more like the language they are exposed to. By nine months, they are capable of responding to simple words. At this stage they learn to repeat the same sound or sounds over and over again usually produces syllable consisting of consonant plus vowel, which is often called *Reduplication* stage. According Oller, (1980, 1986) (as cited in Abebayehu, 2013), reduplicated babbling (e.g. *da da*) differ from variegated babbling or non-reduplicated

babbling, e.g. *ba bi.* Reduplicated syllables consisting of bilabial or alveolar consonants and low front vowels are used in many languages as children's names for parents. At about the same time child begins to use a few recognizable words, which he/she invents for himself/herself, which are called *Jargon*; and the development of jargon is an important stage in acquisition of language.

2.4.2. The Holophrastic stage (One word stage)

The word "holophrastic" is used to mean the single word phrase stage (Matthews, 1996) and it starts at around age 1; 0 and ends at about 1; 6. As its name suggests the only verbal means that the baby has to communicate is through the use of single word sentences. These words are not as basic as the meaning of just that single word. The child is able to fill the word with a set of other meanings, which are expressed using intonation patterns, pitch and gestures. The one word or holophrastic stage which can appear between the age of twelve and eighteen months and it is the time when comprehensible single unit can be uttered, such as 'milk', 'cookie' or 'cat' and this single terms uttered for everyday objects (Thrusson, 2011). In this stage, the child will be using perhaps about twenty meaningful words and great number of jargons and his/her communication with others is limited to single word utterance which is called holophrastic language. However, at this stage, they do not suddenly drop babbling, but their progress moves along with brain maturation as Crystal (2007) cited in (Zahrandi'kova', 2011) puts it. Moreover, at the time when the first word is uttered, maturation of different learning faculties is in motion, most importantly maturation of attention and memory. As Matthews (1996) stated pronunciation improves during the holophrastic stage and the vocabulary consists of a large portion of person and object words. Also Matthews suggests that there are some relational words at this stage but they do not form a large part of the language of child until the telegraphic period.

2.4.3 The Two word stage

Once children reach the age of eighteen months old, or within a few months of their first one word-utterance, children should be heading in to two-word stage where they put together two successive single words (Eva, 2014). This stage extends to twenty months and child's vocabulary has grown beyond about fifty words and begin the

process of pairing single words together appear, such as *baby chair*, *momny eat*, *cat bad, mammy cookie, etc.* Interpretations of speech depend on the context. In this stage, what was initiated with holophrase continues with telegraphic speech, speaking in two-word phrases. A child is able to understand very simple instructions and questions, during this period, for example, "Don't do that!" or "Stop that!" Examination of children's two-word utterances in many different language communities have suggested that everywhere in the world children at this stage can express the same kinds of thoughts and intentions in the same kind of utterances (Eva, 2014; Lust, 2006).

2.4.4 The Telegraphic Stage

The telegraphic period so called because of its terseness and lack of function words such as tense endings, verb endings, conjunctions, preposition, articles, pronouns, and auxiliaries which occur between the age of 1;6 to 3;0 and is thought of as the period during which function words are added to the multi word sentences (Matthews,1996). Slobin (1994) proposes that telegraphic stage of children from 24-30 months in which children emerge sentence structures of lexical words without functional or grammatical morphemes. By two years and half, they produce multiple-word speech and vocabulary continues to grow with better pronunciation. The words that are used are the absolute minimum requires conveying the meaning. Thursson (2011) states that telegraphic stage cannot be considered as a sentence yet, depending on the omission of the crucial elements which seems to be grammatical words, such as the, *is* and also word endings, such as *–ing.* As Thursson, during this stage the vocabulary goes through a major enlargement up until around the age of three, when the child's storage contains more than hundreds of words. The children are expressing themselves with sentences that are limited in meaning (Eva, 2014) and have yet to master the grammatical forms of the language such as number, gender, function words or inflections and their style is telegraphic because they sound like a telegram

2.5. Phonological Development

The course of phonological development in children for both perception and production speech sounds is remarkable because phonological development is a complex process and it begins well before a child starts to talk, and continues after

speech begins. In an attempt to answer the question of how children acquire the phonology of their language, several researchers have described the various factors that influence the course of phonological development.

2.5.1. Perception of speech sounds in children

Examining how children perceive language helps we better understand how they understand various aspects of language. It also tells us the fact that children already know a lot about the sound pattern of their language before they speak their first word. Children are able to distinguish between sounds, prosodic and phonotactic structures that are specific to their native language from those that are foreign. As a result, perceiving speech through native- language lens would assist them word recognition. Language perception determines what a sound means. During perceptual analysis an attempt is made to recognize or identify a sound by matching it up to a representation stored in memory (Timothy, 2003). Perceptual process in auditory and visual context to support speech perception and motor processes exist in motor context to support speech production. A central function of perception in the infant is surely to guide production by learning to the child learns to speak (Vihman, 1996).

2.5.2. Speech sounds production in children

Researches on phonological development make reference to the physical properties of speech sounds and the description of how they are produced, but they rely more on articulatory phonetics. Articulatory phonetics describes how human speech sounds are produced. For example, /z/ and /s/, /d/ and /t/, /g/ and /k/ differ in terms of voicing but are the same in terms of every other feature. Voicing refers to the time the vocal cords start vibrating relatively to the release of air. But voicing is not the only feature that differentiates speech sounds. A basic distinction among speech sounds is the difference between consonants and vowels. Consonant produced when the flow of air from the lungs through mouth is obstructed somewhere along the line; whereas vowel produced when the air flow is unobstructed. Therefore, consonants differ in both in where the vocal tract is closed and in how vocal tract is closed (the feature in place of articulation and manner of articulation respectively). Knowing that the system underlies the way speech sounds differ from one another is necessary for

understanding phonological rules and describing the systematic nature of children's early attempts at word production (Hoff, 2009; Vihman, 1996).

2.5.3. Order of Consonant and Vowel acquisition

Universal order of segmental phonological acquisition is proposed by Roman Jakobson that the concept of maximal contrast of consonants and vowels acquisition (Jakobson, 1941/1968, as cited in Lust, 2006; Van *et al,* 2013). According to this theory, children would begin with simple CV syllables as in utterance, like [pa], which involves /p/, a labial stop consonant where the vocal tract is closed maximally, and an undifferentiated /a/, where the vocal tract is opened as widely as possible. This is because consonants that are relatively easy to articulate (e.g. stops) will probably be acquired earlier than consonants that are difficult to articulate (e.g. laterals and trills); especially because young children's articulatory apparatus is physiologically still different from that of adults'. This is obviously seen that the children have more limited motor control abilities than adults. Jakobson (1941/68) suggested the following order of consonant and vowel acquisition: stops are acquired before fricatives, voiceless stops before voiced stops, and fricatives before affricatives. The order of acquisition of vowels, during the babbling stages as /a/, /e/, /ə/, /u/, / i / respectively at 6months and /o/ at 13 months.

In addition the acquisition of phonological contrasts between consonants and vowels result in a CV syllable, for example, the optimal contrast between maximal closure of a labial stop and maximally open vowel /pa/; contrast between nasal and oral stops /p/ versus /m/; contrast between labials and non-labial (dentals) /p, m/ versus /t, n/; contrast between wide (low) and narrow (high) vowels /a/ versus /i/; contrast between front and back vowels /i/ versus /u/; and finally contrast between high and mid vowels /i/ versus /e/ (Lust, 2006; Van et al, 2013).

2.6. Phonological Development Milestones

Studies have examined children's first words to know the presence and absence of particular phonemes. In other words, Scholars have been interested to understand the phonetic details of representation underlying early word perception. Gervain and Mehler (2009) noted that the most surprising perceptual ability of newborns is that

they are able to discriminate most sound contrasts used in the world's languages, suggesting that they are ready to learn any natural language. Sax and Weston, (2007) noted the following Phonological Development Milestone:

1. Between 0 - 8 Months

From 0 to 2 months infants make vegetative sounds-unintentional; attempts to use their voice but the productions are not speech like, e.g., gurgles, burbs, coughs and blow bubbles. From 2 to 4 months they begin cooing moves their tongue throughout mouth to produce vowel-like sounds (Hans, A. and E., 2014). From 3 to 6 months the emergence of quasi-resonant nuclei mouth is closed or partially open; sounds are not quite vowel-like; similar to nasal consonant and marginal babbling emerges (not well formed syllables) at this age. From 6 to 10 months, canonical babbling emerges consonant-vowel combinations, may be reduplicated (e.g. "da","muh" or"ba- ba - ba").Children are at sever risk for speech and language disorder and those with sever to profound hearing loss do not begin canonical babbling until after 11 months. They produce the sounds like m, n, d, b, y, and also produce a wide variety of sounds and sound combinations (Sax and Weston, (2007).

2. Between 8 -12 Months

In this age, jargon babbling emerges – not repetitive patterns; changes in vowels and consonants; has intonational contours of the language that they are acquiring (e.g., "do- ba- di") and vocalize during play (Matthews, 1996).

3. Between 12-18 Months

This is the age of inarticulate with the exception of a few words and accurate imitation of some words. It is the stages of the first 50 words beginning to be realized. In this age, most often their speech has CV shape (e.g., "ma","no") or reduplicated CVCV (e.g.,"bye", "bye"). They use the same consonants that were used in babbling. Common use of reduplication widely observed (repetition of the same syllable- e.g. "wawa" for water), syllable deletion (e.g. "nana" for banana), assimilation (one consonant begins to sound similar to another- e.g. "boop" for boot), consonant cluster reduction (e.g. "boo" for blue), and final consonant deletion (e.g. "be" for bed). Words are selected or avoided for expression based on favored sounds. (Matthews, 1996; Hoff, 2009).

4. Between 18-24 Months

During this age, their speech is 50% intelligible: 70% of consonants are correct; and by 24 months, 9 to 10 initial and 5 to 6 final consonants are used; CVC (e.g. "dog") and two syllable words (e.g. "puppy") emerge.

5. Between 24-36 Months

In this age, Speech is 75% intelligible by 36 months: children may omit final consonants; reduce consonant blends (e.g., "bue" for blue), or substitute one consonant for another. 90% of children have mastered some sounds: p, t, k, m, n, y, and h. they aware of ability to produce rhyme emerge.

6. Age: 36-48 Months

This age is becoming very intelligible connected speech, use of reduplication, syllable deletion, assimilations; but final consonant deletion is less common. They begin the use of stopping (substituting an explosive sound for one that is not, e.g. "hout" for house); fronting (producing a consonant in that front of the mouth when it should be produced at the back- e.g.,"tey" for key), cluster reduction (e.g.,"geen" for green), and liquid simplification continues (substitution of "w"or "y" for "r"or "l" e.g., "wed" for red), and 90% of children have mastered: b, d, g, k, ng, f, s, w (in addition to previously mastered sounds p, t, m, n, and y, h).

7. Age: 48-60 Months

At this age, children's knowledge of letter names and sound emerges: speech is 100% intelligible; omissions or substitutions of consonants; errors on s, ʃ, r, l, v, z, ʒ, tʃ, j, and θ may persist; more error present in difficult blends (e.g., "string")and ability to segment words in to syllables emerges (Sax and Westone, 2007).

2.7. Phonological Process

Phonological processes are defined as, "a set of mental operations that changes or omit phonological units as the result of the natural limitations and the capacities of human vocal production and perception" (Barbara et al, 2003: 623). Considered to express the paradigmatic and syntagmatic constraints in children's speech and these constraints are usually manifested in disyllabic and multisyllabic words (Saaristo-

Helin *et al.*, 2011). Linguists studying phonological development to characterize the processes by which the child simplifies his pronunciation of adult words, leading to the consistent use of certain forms at each stage of development. Other linguists describe phonological processes as they are the patterns of sound errors that typically developing children use to simplify speech as they are learning to talk. A phonological disorder occurs when phonological processes persist beyond the age when most typically developing children have stopped using them or when the processes used are much different than what would be expected. Below are some of the major phonological processes commonly attested in children's language are including: Substitution, Assimilation, and Syllable reduction.

2.7.1. Substitution

Substitution is the type of phonological process, which is the children's systematic replacement of one sound by an alternative that the child finds easier to articulate (O'grady, 2003; Barbara *et al., 2003*).These are includes backing, fronting, gliding, stopping, vowelization, affrication, de-affrication, alveolarization, depalatilization, and labialization.

a) Backing refers to the substitution of a consonant for one produced further forward in the vocal tract. This means when alveolar sound, like /t/ and /d/, substituted with velar sounds like /k/ and /g/, for example, "gog" for "dog". This is usually seen in more severe phonological delays.

b) Fronting refers to the substitutions of a consonant for one produced further back in the oral cavity. This means that when velar or palatal sounds, like /k/, /g/, and /ʃ/, are substituted with alveolar sounds like /t/, /d/.and /s/, for example, "tootle" for "cookle'.

c) Gliding refers to the substitution of liquid by glide, such as when /r/ becomes /w/ or /y/ or /l/ becomes /y/. For example, "wabbit" for "rabbit" or "yeyo" for "yellow"

d) Stopping refers to replacing of fricatives, affricates, and liquids by stops. This means when a fricative like (/f/ or /s/) or affricate (tʃ dʒ) is substituted with a stop consonant like /p/ or /d/. For example, "pan" for "fan" or "dump" for "jump".

e) Vowelization refers to the process of /l/ or er sounds replaced with a vowel. Example, "appo" for "apple" or "papuh" for "paper."

f) Affrication refers to when non affricate is replaced with an affricate (tʃ or dʒ), e.g. "dʒoor" for "door".

g) Deaffrication refers to when an affricate, like /tʃ/ or, /dʒ/ is replaced with a fricative or stop like /ʃ / or /d/, e.g. "ships" for "chips".

h) Alveolarization refers to when a non-alveolar sound is substituted with an alveolar sound. e.g. "tu" for "shoe".

i) Depalatization refers to when a palatal sound is substituted with a non-palatal sound. e.g. "fit" for "fish".

j) Labialization refers to when a non-labial sound is replaced with a labial sound. e.g. "pie" for "tie".

2.7.2. Assimilation

Assimilation is one of the phonological processes in child language, where a consonant sound starts to sound like another sound in the word. O'grady (2003) states that assimilation is the modification of one or more features of a segment under the influence of neighboring sound. It is observed in children's tendency to maintain the same place of articulation for all of the consonants or vowels in a word. Some of consonant assimilation of child language is denasalization, final consonant devoicing, prevocalic voicing, coalescence, and reduplication.

a) Denasalization refers to a nasal consonant like /m/ or /n/ changing to be a non-nasal consonant like /b/ or /d/. e.g., "doze" for "nose".

b) Final consonant devoicing refers to when a voiced consonant at the end of a word like /b/ or /d/ is substituted with voiceless consonants like /p/ or /t/. e.g., "pick" for "pig".

c) Prevocalic voicing refers to when a voiceless consonant in the beginning of the word like /k/ or /f/ is substituted with a voiced consonant like /g/ or /v/. e.g., "gomb" for "comb".

d) Coalescence refers to when two phonemes are substituted with a different phoneme that still has similar features. e.g., "foon" for "spoon

e) Reduplication refers to when complete or incomplete syllable is repeated. e.g.,"baba" for "bottle".

2.7.3. Syllable Structure

Syllable structure of child language includes cluster reduction, final consonant deletion, initial consonant deletion, weak syllable deletion and epenthesis.

a) Cluster reduction refers to a reduction of consonant clusters that begin words or when a consonant cluster is reduced to a single consonant. e.g., "tring" for "string", "pane" for "plane".

b) b) Final consonant deletion refers to leaves off a consonant at the end of the word. e.g., "do" for "dog".Initial consonant deletion refers to when the initial consonant in a word is left out. e.g., "unny" for "bunny".

c) Weak syllable deletion refers to when the weak syllable in a word is deleted. e.g., "nana" for "banana".

d) Epenthesis refers to when a sound is added between two consonants, typically the uh sound. e.g., "bu-lue" for "blue".

2.8. Cross- Linguistic Difference in Phonological Development

The influence of functional load on the order in which speech sounds are produced by children is seen more clearly in cross linguistic comparison. Hoff (2009) comparing children acquiring /v/ sound in English, Swedish, Bulgarian and Estonian, writes:

> *"For children acquiring English /v/ is a relatively late appearing sound, but among children acquiring Swedish, Bulgarian, and Estonian, /v/ is a much earlier acquiring; since in English /v/ has a low functional load, but in Swedish, Bulgaria, and Estonia /v/is more important to making the difference between different"(p.127).*

Such cross -linguistic differences indicate that the difficulty of producing different speech sounds cannot entirely explain why some sounds are acquired earlier than others. According Hoff (2009), in English /v/, children can get fairly far making different words sound different without mastering /v/ than in Swedish, Bulgarian, and Estonian /v/. There are also other cross -linguistic differences in phonological

development that also suggest that the motor difficulty of production cannot be the sole influence on the order in which sounds enter children's productive phonologies. Vihman and Kunnari (2006) tested the articulatory effect on perception by recording and transcribing the vocalization of 27 monolingual English and 26 monolingual Welsh children on bimonthly basis from 10 to 12 months. The children were tested for two weeks and recorded on closely matching lists of constructed to highlight one of two consonants of comparable input incidence (English /v/ vs. /t/; Welsh /b/ vs. /g/). That is, Welsh infants who frequently produced /b/ attended longer to the /g/ list- and vice versa. For English, /t/ but not /s/ was commonly produced by many children, but attention to /t/ vs. /s/ varied in inverse relation to extent of the infants' vocal experience with it, based on the recorded data. The findings clearly demonstrated an effect of motoric practice (together with the consequent auditory experience) on infant perception.

Vihman and Kunnari (2006) compared the length of medial consonants in five children each acquiring English, French, and Finnish, including both babble and identifiable words. It was shown that children acquire all three languages produced relatively long medial consonants for French, shorter consonants for English children, while the Finnish children showed the opposite trend of an increase both in mean length of medial consonant and standard deviation. This suggests that intervocalic production of long consonants is well within infants' motoric capacity from the onset of regular word production. Vihman and Kunnari, (2006) found that early production practice supported earlier onset of referential word learning on a study of 20 children aged 9 to 16 months. It was concluded that stable production control allows the child more readily to attend to and recall adult word forms and their associated meanings across different contexts. In a longitudinal study of 12 British children those exhibiting early mastery of supraglottal consonants were found to produce referential words earlier and to achieve a larger lexicon of referential words by 16 months.

Cross-linguistic differences are also proposed by Demuth (2011) on issues of relationships between lexical and phonological development in young children between the age of 1 and 3 years. The study concerns that the characteristics of the developing lexicon to several levels of phonological structure. This can be seen from a cross-linguistic perspective that both syllable structure and lexical development

appear to be closely tied to the frequency of the syllable structure and prosodic word shapes in the ambient language. As to Demuth (2011), Dutch -speaking children's development of syllable structure correlated with the frequency of syllable structures in child directed-speech. It was stated that learners acquire CVC and CCVCC word structure earlier than children learning a language where such structures are less frequent. It were identified that CVC structures are produced as early as the late states of babbling in English and German. In contrast the late acquisition of CVC syllables structures in Spanish. According Demuth, these patterns of development appear to reflect characteristics of the ambient language, where English-child directed speech has more coda consonant syllables than Spanish. In general, early phonological and lexical representation may be more fully intact and children exhibit an awareness of segment, syllable and word structure.

2.9. Individual Differences in Phonological Development

Even children acquiring the same language vary in their phonological development. For example, some babies start to babble earlier than others; but some babies acquire the ability to produce adult-sounding words earlier than others. This difference is in the rate of development. However, there are individual differences in aspect of phonological development other than rate. For instance, in the babbling stage, some children are "intonation babies", who babble long strings of jargon with the intonation contour of the target language (Hoff, 2009). Other children are "word babies", who tend to produce one short babble sequence at a time. Children also differ in the particular sounds they produce. Some children, for example, produce many nasal sounds; others produce few. These differences may be due to differences in articulatory abilities, but some children just seem to like certain sounds. Also children differ in the approaches they take to constructing a phonological system. Some children relay heavily on whole-word processes, assimilating adult words to a few patterns and avoiding unassimilable words. Other children have a large range of segmental phonological process. Also, children differ in particular processes they use in transforming target words in their own speech. Children who like to use reduplication will be good at maintaining the multisyllabic nature of adult words even if they cannot quite produce all the individual sounds. For example, a child who

reduplicates might produce *blanket* as /baba/, where as another child less inclined toward reduplication might say /bat/ (Hoff, 2009; Ferguson and Farwell, 1975).

2.10. Summary

Language acquisition refers to how and when children learn and understand their native language. Various researchers have explained how children acquire phonological systems of their language. The end result of language acquisition is actual grammar which allows people to speak and understands language.

In this chapter, different theories and perspectives of first language acquisition have been discussed to some details. These theories include behaviorism, nativism, cognitivism, and social interactionism. Behaviorism focuses on what is observable and tries to find clues to changes in child's behavior in the environment. The theory analyses human behavior in observable stimulus-response interaction and the association between them. Behaviorism is proposed by prominent psychologist B. F. Skinner. This theory suggests that babies obtain native language habits by varied babbling, which resemble that appropriate words respected by a person or object near him. Nativism claims that children are born with an innate ability to acquire language. Chomsky, the most known nativist recommends that language is the organ of mind and it develops like other organs. He argued Skinner in that language is an in born mental capacity not the product of stimulus-response relationship. Cognitivism focuses on mental structures and thinking processes. It argues that a child cannot learn new language until he/she intellectually ready. Jean Piaget known by this theory remarks that a child should have a certain psychological capacity or cognitive ability before he/she can learn language. Social interactionism theory suggests that the way babies acquire a language by both biological (nature) and environmental (nurture).

Psycholinguistics explanations there are different stages of first language acquisition. According Thuresson (2011) and Eva (2014), acquiring the first is achieved through the stages of pre-language, holophrastic, two word stage, and telegraphic stage. Pre-language stage includes cooing and babbling, which is from ages three to nine months. Cooing stage is the time of infants practicing their vocal cords and making vowel sounds. In the babbling stages, they produce different vowels and consonants. Holophrastic stage is the single word stage of children, and which appear the age

between twelve and eighteen. In the two word stage, children put together two successive single words and it is a period of child understands very simple instructions and questions. Telegraphic stage is the stages of children add functional words to the multiple word sentences, and it is between the age 1; 6 to 3; 0. During this period the child can express him/herself with sentences that are limited in meaning (Eva, 2014).

Phonological development occurs through different age levels of children, and it begins in early years. In each age level, children show varieties of sound production. Consonant and vowel acquisition order of children begin with CV syllable utterances. Children acquire earlier consonants, those are simple to articulate, (i.e., stops), and also the acquisition occurs contrast between vowels and consonants. Phonological process is said to be phonological disorder, which is the paradigmatic and syntagmatic constraints in children's speech, manifested in disyllabic and multisyllabic words, and can be seen in developing children. Linguists suggest that there are different phonological processes among young children. One of these is substitution. It is a systematic replacement of one sound by another. The other phonological process is assimilation, which is modification of one or more features of segment under the influence of neighboring sound. Syllable structure of child language includes cluster reduction, final consonant deletion, initial consonant deletion, weak syllable deletion and epenthesis. The influence of functional load on the order in which speech sounds are produced by children is seen in more clearly in cross-linguistic comparison. For example, Vihman and Kunnari (2006), tested for an articulatory effect on perception by recording and transcribing the vocalization of monolingual children of English and Welsh at age of ten to twelve. Vihman and Kunnari also compared the length of medial consonant of five children in three languages. When phonological development occurred, there is individual differences can be seen among the children, for example, variety of babbling in the same age levels.

CHAPTER THREE: An overview of the Language, Sidaamu Afoo

3.1. Introduction

This chapter attempts to provide about an overview of the language, Sidaamu Afoo and the people, Sidaama. It discusses where people live and its population size. It also offers a brief description of the language and matters relating to the language. The chapter ends by summarizing main points.

3.2. The language and the people

Sidaama is one of the fifty-six ethnic groups found in the Southern Nation Nationalities and People Regional State (SNNPRS), one of the regions in Ethiopia. More specifically, Sidaama people live in Sidaama Zone, consisting of nineteen *Woredas* 'districts'. The Sidaama Zone shares boarders with Oromo in North, East, South East and South West; Gedeo in the South; and Wolaytta in the West. Below is a map of Sidaama.

Population wise, there are various estimates found about the number of people who are ethnically Sidaama's and /or speaking Sidaamu Afoo. Kawachi (2007) using the Hudson's (1999, 2004) estimates, stated that the population size of Sidaama is 1,842,441. According to the 2007 Population and Housing Census of Ethiopia, the Sidaamu Afoo native speakers are 2,981,471. Girum (2013) estimates 3,216,671. Markos *et.al* (2011) also gives another estimate: 3,232,308. However the assessment fluctuating, the population size appears to be more than 3,000,000.

As stated above, the language of the Sidaama's is called Sidaamu Afoo or Sidaamu Qaale[2] by the people speaking it. The terms most and widely using in written forms are Sidaamu Afoo, and Sidaama as the term refers to both the language and the nation. In this thesis, the name Sidaamu Afoo is used to refer to the language and Sidaama to the nation/people.

Sidaamu Afoo is belongs to the Cushitic language family under the Afro-Asiatic phylum. The Cushitic languages are divided into four: North Cushitic, Central Cushitic, South Cushitic and East Cushitic, which is sub-divided into the High Land

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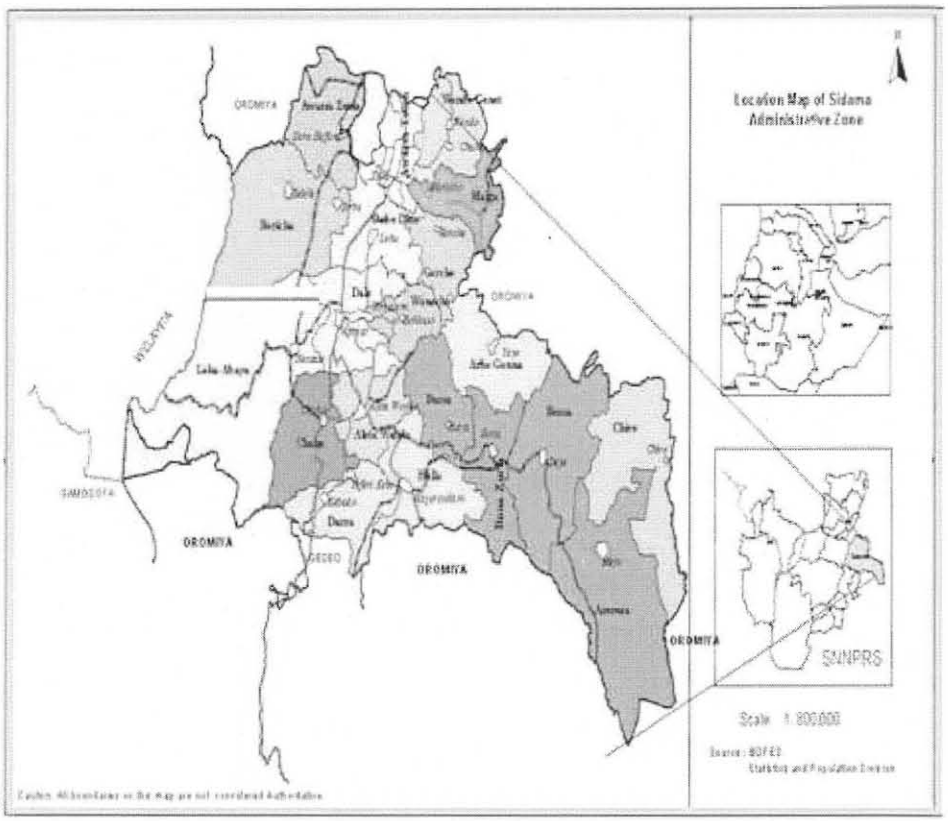
2. Literally Sidaamu-Afoo means mouth of Sidaama; Sidaamu Qaale means word of Sdaama

East Cushitic and the Low Land East Cushitic (Kawachi, 2007). Sidaamu Afoo belongs to the High land East Cushitic sub-group (Wedekind, 1990). It is closely related to languages, such as Kambaatisa, Halaaba-Kabeena, Hadiyyisa, Gedeuffa, and Burji.

Figure3.1. Sidaama Zone Geographical Location



Source: Sidama Zone Finance and Economic Bureau

3.3. The Phonemes of the Sidaamu Afoo

3.3.1. Consonant Phonemes of Sidaamu-Afoo

The table below contains the consonant phonemes of Sidaamu Afoo which are twenty-four in number (Abebe, 1982; Anbessa, 1987, 1994; 2000, Kawachi, 2007). The consonant phonemes are classified in terms of place and manner of articulation. The table below shows the inventory of consonant phonemes of Sidaamu Afoo.

	Bilabial	Labio-dental	Denti-alv.	Alveol.	Palato-Alveolar	Palatal	Velar	Glotal
Plain Stop	b		t d				k g	ʔ
Ejective	p'		t'				k'	
Implosive				ɗ				
Fricatives		f	s		ʃ			h
Affricates					tʃ dʒ			
Ejective					tʃ'			
Nasal	m			n		ɲ		
Liquids *Lateral*				l				
Trill				r				
Glides/approx.	w					j		

Table 3.1 Sidaamu Afoo Consonant Phonemes (adapted from Kawachi, 2007)

3.3.2. Vowel Phonemes of Sidaamu-Afoo

Sidaamu Afoo has ten contrastive vowels; of which five are short (/a/, /e/, /i/, /o/, /u/) and five are long (/aa/, /ee/, /ii/, /oo/, /uu/.The table below contains the vowel phonemes of Sidaamu Afoo.

	Short Vowels			Long Vowels		
	Front	Central	Back	Front	Central	Back
High	i		u	ii		uu
Mid	e		o	ee		oo
Low		a			aa	

Table3.2:*Vowel phonemes of Sidaamu Afoo (Adapted from Anbessa, 1987)*

3.4. Interesting Feature of the Language

3.4.1. Features of consonant phonemes

A. Ejectives

As Hudson and Ferguson (1976) cited in (Kawachi, 2007) reported, Sidaamu Afoo has a series of ejectives (/p'/, /t'/, /k'/, /tʃ'/), like other Eastern Cushitic languages and like other Ethiopian languages. All ejectives are voiceless in the language, and are illustrated in words in the example below.

(2, 1)

/kap'o/	'false'	/hak'k'e/	'trees'
/t'aʔmo/	'question'	/ma tʃ'a/	'ear'

B. Glottalization

Glottalized sonorants (e.g., /ʔl/, /ʔm/, /ʔn/, /ʔr/, /ʔy/) are clusters made up of two phoneme segments consisting of glottal stop and sonorant (Kawachi, 2007; Anbessa, 1994). The glottal stop /ʔ/ is a consonant phoneme in Sidaamu Afoo which is cluster with only sonorants; and it appears only medial of words as shown in the example. (2.2)

/buʔla/	'a type of food' made by weese	/haʔr-i/	'go'-3SGM.PRF.
/gaʔm-i/	'bite'-3SGM.PRF	/mine-ʔya	'house'-1SG.GEN.
/maʔna/	'bed'		

Vowel glottalization: - *No* Vowel phonemes come at word initial in Sidaamu Afoo; rather they are followed by a glottal stop /ʔ/ as shown in the example.

(2. 3)

ʔama	"mother"	ʔumo	"head'
ʔado	"milk"	ʔille	"eye"

C. Implosive

Unlike the other phonemes of Sidaamu Afoo, voiced implosive phoneme /ɗ/ is the only phoneme which is found in the language, and it appears initial and medial of a word

(2.4)

/tʃ'ojiɗ-u/	'speak'-3SGF/3PL.PRF	/haɗo/	'poison'
/ɗaansa/	'message'	/ ɗoohi/	'explosion'
/woɗa/	'calves'		

Loan phonemes such as /p/, /v/, /z/, /s'/, and /ʒ/ which are lack in the language and are used them in some extent by replacing for another segment, for example, /s / for /z/, /f/ for /p/, for example,' muuse' instead of 'muuze' "banana", ' isfoorte' instead of 'sport'.

D. Consonant Clusters

Sidaamu Afoo permits the occurrence of consonant cluster is maximally two. Clusters occur at word medial of hetrosyllabic consonans (Anbessa, 2000: 15). However, there is no cluster at word initial and final position in general. All consonants can occur in word initial position and in between vowels. The large majority of clusters of different consonants are of one of the following two types: sonorant-obstruent or glottal stop-sonorant (Kawachi, 2007; Anbessa, 1994). Examples, illustrating this are given below

1. Nasal+Stops (nb, nd, nt, nt',nk', nk, ng)

(2.5)

/boonbe/	'hollow'	/haant'e/	'fiber'
/henbeela/	'to shake'	/sun'q-i/	'kiss'-3SGM.PRF.
/mundee/	'blood'	/hinko/	'teeth'
/ʔaante/	'sequence'	/anga/	'hand'

2. Nasal+Fricative (ns, nʃ ,nf)

(2.6).

/tunso/	'darkness'
/ganʃo/	'a disease' of common cold
/gonfa/	'a garment' of older men

3. Nasal+Affricate (ntʃ, ntʃ', dʒ)

(2.7).

/mantʃo/	'man'
/huuntʃ'-i/	'squeeze'-3SGM.PRF.
/ʔandʒa/	'saliva'

4. Liquid+Stop (lt, lt', lb, lp', ld, lk, lk',lg, rb, rt', rt, rk, rk',rd)

(2.8)

/salto/	'stomach'	/holge/	'inside room'
/k'alt'-i/	'chock'-3SM.PRF.	/sirba/	'dancing'
/albas/	'face'	birt'e/	'tip of something'
/k'elp'eep'p'o/	'weight'	/t'eerto/	'faraway'
/bulduudda ikka	'be luxuryiant'	/ʔirko/	'support'
ilka/	'button'	/mark'a/	'infant'
/wolk'a/	'energy, strength'	/ʔurde/	'spear'

5. Liquid+Fricatives (ls, lʃ, lf, rs, rʃ, rf)

(2.9)

/balsa/	'overcrowded'	/harfa/	'poison'
/woʔnaalʃa/	'exercise'	/faarso/	'song'
/gilfa/	'feeble'	/farʃa 'yaa/	'be scattered'

6. Liquid+Affricates (lt∫, lt∫', ldʒ, rt∫. rt∫',rdʒ)

(2.10)

/halt∫o/	'desire, interest'	/kort∫o/	'a flee'
/balt∫'a assa/	'make to be 'turbulent' of fluid'	/tart∫'a/	'The name of village
/baldʒa jii/	'something be tasteless'	/burdʒe/	'Burji'

E. **Gemination**

Almost all of Sidaamu Afoo consonant phonemes are geminated except /h/, which has vowel like feature, and /d/, which is different in that it bears natural character of gemination (Dessaleny *et al.,* 2007). Gemination in Sidaamu Afoo is phonemic, i.e., gemination of consonant phonemes changes the meaning of words. Gemination occurs in Sidaamu Afoo only word medially. Consider the examples below.

(2.11)

/gowa/	'to sew'	/mala/	'advice'
/gowwa/	'foolish'	/malla/	'to hold firmly'
/masa/	'fright'	/boro/	'a meal for funeral ceremony'
/massa/	'take something to someone'	/borro/	'writing'

F. **Allophonic feature**

Sidaamu Afoo allows features of /**n**/ and glottalized /**ʔr**/ allophones.

1. /**n**/ allophones: /n/ has the following allophones: Voiced velar nasal /ŋ/, voice labiodental nasal /ɱ/, voiced palatal nasal /ɲ/, and a voiced alveolar nasal /n/.

(2.12)

/ʔanga/	[ʔaŋga]	'hand'
/gonfa/	[goɱfa]	'a garment of older men'
/haant∫'o/	haaɲt∫'o]	'munching of animal'

2. **/ʔr/** allophone: - glottalized /ʔr/ has the allophone of voiced alveolar implosive /ɗ/, as can be seen in /haʔr- a/ 'to go'

(2.13)

a. [haɗ-u] 'go'-3SGF.PRF.

b. [haʔr-i] 'go'-3SGM.PRF.

Glottalized /ʔr/ occurs elsewhere.

G. **Syllable Structure**

The syllable is a phonological unit, which groups sounds together. Most phonologists accept the syllable as an important phonological unit and the domain for various fields. Syllable can be divided in to an onset and rhyme, which consists of a nucleus and coda. Syllable ends in a consonant is said to be closed and ends in vowel is open syllable. However some languages are closed syllable structures, others are open syllable structures or both. Sidaamu Afoo has an open type of syllable structure, which is every word ends with only vowel phonemes (Kawachi, 2007; Anbessa, 1987).

(2.14)

/ʔado/ 'milk'

/buna/ 'coffee'

Although this is beyond the scope the present study, interesting features in morphology and syntax have also been observed in the language. Sidaamu Afoo allows some special features, for example, the negative marker or morpheme /di -/ is the only feature unlike other highland east Cushitic languages. Another feature is that the language has adnominal demonstratives, which is independent words, and lack definite articles (Anbessa, 1987). Loan phonemes such as /p/, /v/, /z/, /s'/, and /ʒ/ which are not found in the language are used in some extent by replacing the another segment, for example, /s / for /z/, /f/ for /p/:' muuse' instead of 'muuze' "banana"; 'isfoorte' instead of 'sport'.

3.4.2. Features of Vowel phonemes

As gemination for consonants, lengthened vs. shortens are the features for vowel phonemes in Sidaamu Afoo. All vowels can be lengthened and shortened in the lexicon. Examples of minimal pairs contrasting due to vowel length are shown below.

(2.15)

/i/ sit'a	'branches of bamboo'	dina 'to lump'
/ii/ siit'a	'to snuff tobacco powder through nostril'	diina 'enemy'
/e/ ela	'to offer'	tenne 'this one'
/ee/ eela	'underneath'	teenne 'flies'
/a/ mala	'advice '	ʃafa 'shake'
/aa/ maala	'meat'	ʃaafa 'sand'
/o/ ola	'to throw'	goda 'cave'
/oo/ oola	'drought'	gooda 'to sew up'
/u/ ula "	'to make smell'	fuga 'make compact
/uu/ uulla	"ground"	fuuga 'to be swelling'

CHAPTER FOUR: Design and Method

This study adopted a qualitative and descriptive research design, was carried out mainly by eliciting data from participants, transcribing their utterances and describing developmental realizations following the methods in mainstream linguistics and language acquisition. The study relies on primary linguistic data, collected using single word and sentence repetition tasks. In addition, attempts were also made to record participants telling stories.

4.1. Sampling

A purposive sampling approach was used to select participants because controlling the factors listed below (i.e., inclusion and exclusion criteria) is very crucial in such a developmental study. The participants, the children, were drawn from nursery school (or prekindergarten school children). The numbers of the subjects were six, three female and three male. They were all born in Sidaama Zone of Hula Woreda Bantiwaata Ollaa[3]; and their mother-tongue is Sidaamu Afoo. The children are between the age of 3; 6 to 5; 0 (from 3 years and 6 months to 5 years).

4.1.1. Subjects inclusion and exclusion criteria

The subject inclusion criteria were:

- Aged between 3; 6 - 5; 0
- Their mother tongue is Sidaamu Afoo, and monolingual in the language
- No problem with hearing or speaking
- Monolingual parents in Sidaamu Afoo
- Both parents with no hearing or speech problems

The subject exclusion criteria consist:

- The age below or above 3; 6-5; 0
- Parents and/or subject are bilingual
- Parents with on hearing or speech problems

[3] Literally 'Ollaa' refers a village, but nowadays it replaces the word 'kebele' in all Sidaama Zones.

4.1.2. Means of approaching subjects

The children were approached in two ways. The researcher initially approached the parents of the subjects to gather information about the children who might participate in the study. Information checked include: whether these parents have children who would meet the inclusion criteria, and are able to interact reasonably freely with a stranger, i.e., the researcher. Having received adequate information about the potential participants, the researcher then got permission from the children's learning places, i.e., Laleeno Heeshshote Caabbichi Ammanete Mine (Laleno Church of Life Light). It is important to note that, these days, in rural areas of the zone, children below the age of five learn at churches formally as preschool learners. So, the data were collected in the churches, in quite rooms, because it was thought that the children would better cooperate while they are with their peers, as everyone would compete to be asked and have their voice/faces recorded. However, the sound of one child recorded at home because he was sick at that particular time.

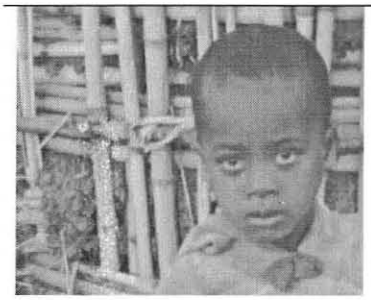
4.1.3. Participants

There data were collected from the control group of six children who are three male and three female in different age ranges. Moreover, in order to examine if developmental realizations fade out after the age of five, two older children, aged 5; 2 and 5; 6 were also recorded and analyzed to some degree. In Table 5.1., these children were named separately the end of the list. Below, in the same table, relevant information about the children who participated in this study is provided. The table is followed by another table containing portraits of the children mainly selected for this study. To keep the privacy of the children, their names have been changed.

Table 4.1 Demographic data on the six children selected for the study.

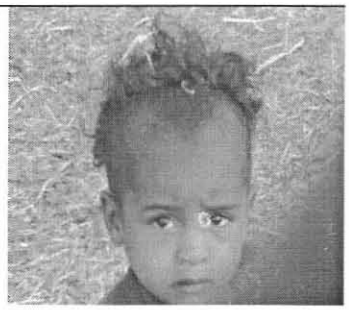
Participants	***Gender***	***Age***
Meduka	F	3; 6
Berkatu	M	4 ;1
Messu	F	3 ;10
Tibebu	M	3; 8
Mau	F	4 ;9
Selamu	M	3; 7
Enicha	M	5,6
Awawu	F	5;2

Table 4.2 Portraits of the six children selected for the study.



Berkatu

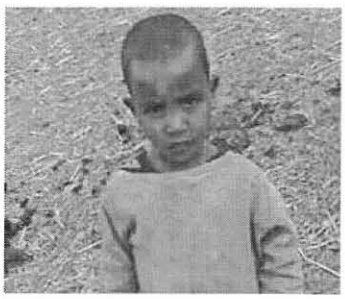
Mau



Medukka

Mesu

Salaamu



Tibabu

NB: Parents' consents were got to use these portraits in the thesis.

4.2. Data collection

The children's utterances were recorded in three contexts: single words and sentence repetition tasks, and some spontaneous speech. The data were first written orthographically and then transcribed in IPA (International Phonetic Alphabet) and ExtIPA (Extended IPA). As the researcher is a native speaker of the language, no other informants/translators were needed to help with the process of data collection and transcription.

4.2.1. Materials: Data collection instruments

The materials used to elicit data include a list of words and sentences carefully devised to collect data relevant to the study. The word list and list of sentences were prepared in such a way that they contain the maximum amount of each target consonant in each word/sentence. The data were collected using SONY digital audio recorder. Another SONY video recorder was also used to capture footages of children while they speak. The videos were recorded to supplement audio data.

4.2.2. Procedure

The study started with a review of related literature, mainly followed by the identification of research questions, formulation of data collection instruments. Data collection processes was planned well in advance, and necessary letters and permission were obtained from the academic department, at Addis Ababa University and from Bantiwaata elementary school, in Hula Woreda of Sidaama Zone to facilitate the data collection processes. Participants were recruited and data collection was carried out following the right approaches. The children were trained to take part in the actual data collection sessions. This helped the researcher familiarize himself with the children. Over the course of data collection, the researcher also used various incentives such as candies and biscuits to make boost the interest of the children to participate in the study. The data collection was done in two rounds: The first round was from February 29 to March 1, 2015; and the second one was carried out between March 22 and 24, 2015. This was done to the intera-speaker consistency in realizing the target utterances at two different points in time. The data showed that no significant variations were noted within a child in terms of the production of speech

sounds between the two points in time. The most important advantage of eliciting the data for the second time from the same children was that it made it possible to recheck first recordings and transcriptions as well as clarify utterances that were inaudible and vague at first round recordings. As will be discussed in section 4.2., the data were then analyzed and reported as presented in the results chapters.

4.2.3. Ethical Considerations

Like stated above, the researcher gained permissions from the concerned bodies, including the Department of Linguistics and the school where the data collection were carried out. Consents were also obtained from parents of the children. Parents were told about the nature of the research and there would be no harm involved if their children participate in the study. Appropriate answers were given to the questions raised by the parents. The questions were basically on the details of data collection, and on what would happen to the recordings (e.g., parents wanted to know if the recordings were to be used in radio or television broadcasts, etc).

4.3. Analysis

The children's productions of single-words and sentence repetition were transcribed, using repeated listening technique (three times), following Shriberg *et al.* (1984). Perceptual (as opposed to instrumental) phonetic and phonological analysis was used to analyze the data. Specifically, the analysis of the data was first done by identifying differences of realizations, from the target productions. Then, realizations of the children were grouped and analyzed in terms of phonological processes. Following that, attempts were made to draw possible generalizations from the data. Moreover, it was also tried to make cross-linguistic comparisons.

CHAPTER FIVE: Results

5.1. Introduction

This chapter describes the results of this study. The data presented describes phonological development of typically-developing Sidaamu Afoo speaking children. The chapter reports the results from perceptual phonetics and phonological analysis of the speech productions of the children in question. Speech production profiles of the individual children are presented and discussed sparely. The chapter also provides a summary of patterns of developmental realizations attested in typically-developing Sidaamu Afoo speaking children.

5.2. Phonological developments in Sidaamu Afoo speaking children

The twenty-four consonant phonemes of Sidaamu Afoo were included in the single word-list and sentences that the children required to say them out. As noted in chapter 3, Sidaamu Afoo phonological system permits for consonant phonemes to occur word-initially and word-medially, i.e., words do not end with consonants in this language. In what follows descriptions of the speech production patterns of the individual children will be presented in turn.

5.2.1. Meduka's phonological development

Meduka is a 3; 6 year old girl, whose speech production profile is presented in the table below. The table has two major sections, where target and realizations of pulmonic and non-pulmonic consonants are presented. This applies to the phonemic profiles of all of the children.

Table 5.1 Meduka's consonant phoneme realizations

Pulmonic consonants in word production																			
Place	Labial				Dental-alveol			Alveolar			Palato-alveolar			Palatal		Velar		Glottal	
Target	b	m	w	f	d	t	s	n	l	r	ʃ	tʃ	dʒ	ɲ	j	k	g	ʔ	h
WI	b	m	w	f	d	t	**ʃ**	n	**j**	**j**	ʃ	**t**	**d**	n	j	**t**	**d**	ʔ	h
WM	b	m	w	f	d	t	**ʃ**	n	**ɹ**	**j**	ʃ	**t**	**d**	n	j	**t**	**d**	ʔ	h
Non- pulmonic consonants: ejectives and implosive																			
Place	Labial				Denti-alveolar			Aveolar			Palato-alveolar			Velar					
Target	p'				t'			ɗ			tʃ'			k'					
WI	**b**				t'			ɗ			**t'**			**t'**					
WM	p'				t'			**t'**			**t'**			**t'**					

Meduka realizes /s/ as [ʃ], /l/ as [j] at the word initial and as [ɹ]at the word medial. She realizes /r/ as [j], /tʃ/ as [t], /dʒ/ as[d], /ɲ/ as [n], /k/ as [t] and /g/ as [d] in both positions. She realizes ejective consonants /p'/ as [b] at word-initial, /tʃ'/ and /k'/ as [t'] in both positions. She also realizes implosive /ɗ/ as [t'] in word medial. These realizations are described in terms of set of phonological processes informed below in the table.

Table 5.2 Meduka's developmental realizations

Process	Pattern	Target	Realization	Gloss
Backing	/s/ > [ʃ]	/sima/	[ʃima]	
Gliding	/l/ > [j], [ɹ]	/lalo/, /bale/	[ja ɹo], [baɹe]	'Cows', 'hole'
	/r/ > [j]	/risa/, /birra/	[jiʃa], [bijja]	'hawk', 'birr'
Stopping	/tʃ/ > [t]	/tʃuutʃi'/, /kintʃo/	[tuuti], [tinto]	'Put in to mouth',' stone'
	/dʒ/ > [d]	/dʒaala/, /adʒa/	[daaɹa], [ada]	'Friend', 'young'
Velar Fronting	/g/ > [d]	/gotʃ'o/, /ago/	[dot'o], [ado]	'sheep', ' drunk'
	/k/ > [t]	/kila/, /hiikko/	[tiɹa], [hiitto]	'Armpit', 'where'
De-Palatalization	/ɲ/ > [n]	/ɲammo/, /gaɲɲa/	[nammo], ganna]	'taste, 'mare'
De-Ejectiviation	*[4]/p'/ > [b]	/p'eet'ros/	[beet'ros]	'peter'
Ejectivization	/ɗ/ > [t']	/ɗibba/, /woɗa/	[t'ibba], [wot't'a]	'disease', 'calves'
Ejective Fronting	/tʃ'/ > [t']	/tʃ'affa/, /hotʃtʃ'o/	[t'affa], [hot't'o]	'swamp' a piece of cloth'
	/k'/ > [t']	/k'asi/, /maakk'e/	[t'asi], [maatt']	'He is pierced', 'pot'

5.2.2. Berkatu's phonological development

Table 5.3 Berkatu's consonant phoneme realizations

Pulmonic consonants																			
Place	Labial				Denti-alveol			Alveolar			Palato-alveol			Palatal		Velar		Glottal	
Target	b	m	w	f	d	t	s	l	n	r	ʃ	tʃ	dʒ	ɲ	j	k	g	ʔ	h
WI	b	m	w	f	**t**	t	s	**j**	n	**j**	ʃ	tʃ	dʒ	**n**	j	k	g	ʔ	h
WM	b	m	w	f	**t**	t	**ð**	**j**	n	**j**	ʃ	tʃ	tʃ	**n**	j	k	g	ʔ	h
Non-Pulmonic consonants: Ejectives and Implosive																			
Place	Labial				Denti-alveol			Alveolar			Palato-Alveol			Velar					
Target	p'				t'			ɗ			tʃ'			k'					
WI	**p**				**t**			**t**			**tʃ**			**k**					
WM	**p**				**t**			**t**			**tʃ**			**k**					

Berkatu realizes dental /d/ as [t], alveolar liquids /l/ and /r/ as [j] in both positions, voiced post-alveolar affricate/dʒ/ as voiceless affricate [tʃ] in word medial and palatal /ɲ/ as [n] in both positions. He realizes /s/ as voiced dental fricative[ð], which is not

[4] * Asterisk refers to that there is no any word begin with phoneme /p'/ word initial in Sidaamu Afoo, unless it is loan.

found in the language. He realizes ejectives and implosive, such as /p'/ as [p], /t'/ and /ɗ/ as [t], /tʃ'/ as [tʃ], and /k'/ as [k]

Table5.4 Berkatu's Developmental Realizations

Process	Pattern	Target	Realization	Gloss
	/d/ > [t]	/dayi/, /kadi/	[tayi], [kati]	'He came, He kicked
Devoicing	/dʒ/ > [tʃ]	/ʔadʒa/	[ʔatʃa]	'young'
Voicing	/s/ > [ð]	/kisi/	[kiði]	'He touched'
Gliding	/l/ > [j]	/lalo/, /bale/	[jajo], [baje]	'cows', 'hole'
	/r/ > [j]	/risa/, /birra/	[jiða], [bijja]	'Hawk'
De-Palatalization	/ɲ/ > [n]	/ɲammo/, /gaɲɲa/	[nammo], [ganna]	'taste, 'mare'
De-ejectivization	/tʃ'/ > [tʃ]	/tʃ'affa/, /hotʃ'o/	[tʃaffa], [hotʃo]	'swamp', 'piece of cloth'
	/p'/ > [b]	/dipp'i/	[dibbi]	'He wore'
	*/p' > [p]	/p'eet'iros/	[peetjos], [kuupe]	'Peter'
	/t'/ > [t]	/t'oni/, /wot'e/	[toni], [wote]	He offended, money
	/k' > [k]	/k'asi/, /maak'k'e/	[kaði], [maakke]	'He is pierced', 'pot'
Imp. Stopping	/ɗ/ > [t]	/ɗibba/, /woɗa/	[tibba], [wotta]	'disease', 'calves'

5.2.3. Messu's phonological development

Table 5.5 Messu's consonant phoneme realizations

Pulmonic Consonants																				
Place	Labial				Denti-alveol			Alveolar			Palato-alveola			Palatal		Velar		Glottal	
Target	b	m	w	f	d	t	s	n	l	r	ʃ	tʃ	dʒ	ɲ	j	k	g	ʔ	h
WI	b	m	w	**ʃ**	**t**	t	**ʃ**	n	l	**l**	ʃ	tʃ	**tʃ**	ɲ	j	k	g	ʔ	h
WM	b	m	w	**ʃ**	**t**	t	**ʃ**	n	l	**l**	ʃ	tʃ	dʒ	ɲ	j	k	g	ʔ	h
Non-pulmonic Consonants: Ejectives and Implosive																				
Place	Labial			Denti-alveolarl			Alveolar			Palato-alveolar			Velar						
Target	p'			t'			ɗ			tʃ'			k'						
WI	**b**			**t**			**t**			**tʃ**			**k**						
WM	**p**			**t**			**t**			**tʃ**			**k**						

Messu realizes labial sound differently from others, for example, voiceless fricative [ʃ] for /f/ and /s/ in both single word production and sentence repetition. She substitutes [t] for /d/, [l] for /r/ in both positions. She also realizes /dʒ/ as [tʃ] at the

word initial. Regarding non-pulmonic consonants, she realizes /p'/as [b] at word initial and [p] at word medial. She also realizes implosive /ɗ/ and ejective /t'/ as [t], affricate ejective /tʃ'/ as [tʃ] at positions and velar /k'/ as [k]. Details of her realization attempted to described and classified in terms of phonological process in the table below.

Table 5.6 Messu's developmental realizations

Process	Pattern	Target	Realization	Gloss
Backing	/f/ > [ʃ]	/fani/, /afi/	[ʃani], [ʔʃi]	'He opened', 'He knew'
	/s/ > [ʃ]	/sima/, /kisi/	[ʃima], [kiʃi]	seedling of weese, 'He touched'
Devoicing	/d/ > [t]	/dayi/, /kadi/	[tayi], [kati]	'He came, He kicked'
Gliding	/r/ > [l]	/risa/, /birra/	[lisa], [billa]	'Hawk', 'birr'
De-voicing	/dʒ/ > [tʃ]	/dʒaala/	[tʃaala]	'friend'
De-ejectivization	*/p' > [b]	/peet'iros/	[beetilooʃ]	'peter'
	/p'/ > [p]	/k'uup'p'e/	[kuuppe]	'eggs'
	/t'/ > [t]	/t'oni/, /wot'e/	[toni], [wote]	'He offended, 'money'
	/tʃ'/ > [tʃ]	/tʃ'affa/, /hotʃo/	[tʃaʃʃa], [hotʃtʃo]	'swamp, 'piece of cloth'
	/k'/ > [k]	/kasi/, /maakk'e/	[kaʃi], [maakke]	'He is pierced', 'pot'
Implosive Stopping	/ɗ/ > [t]	/ɗibba/, /woɗa/	[tibba], [wotta]	'disease, 'calves'

5.2.4. Tibebu's phonological development

Table 5.7 Tibebu's consonant realization

Pulmonic consonants																			
Place	Labial				Denti-alveol			Alveolar			Palato-alveolar			Palatal		Velar		Glottal	
Target	b	m	w	f	d	t	s	n	l	r	ʃ	tʃ	dʒ	ɲ	j	k	g	ʔ	h
WI	b	m	w	f	d	t	s	n	l	**l**	ʃ	**t**	**d**	**j**	j	k	g	ʔ	h
WM	b	m	w	f	d	t	**ʃ**	n	l	**l**	ʃ	**t**	**d**	**n**	j	k	g	ʔ	h
Non-pulmonic consonants: Ejectives and Implosive																			
Place	Labial				Denti-alveolar			Alveolar			Palato-alveplar			Velar					
Target	p'				t'			ɗ			tʃ'			k'					
WI	**b**				**t**			**d**			**t**			**k**					
WM	**P**				**t**			**t**			**t**			**k**					

Tibebu realizes dental /s/ as Palato- alveolar fricative[ʃ]. Even he produced /l/ correctly in single word; he realized it as alveolar tap [ɾ] at word medial in sentence repetition. He substituted lateral approximant [l] for alveolar trill /r/, [d] for voiced Palato-alveolar affricate /dʒ/, [t] for voiceless Palato-alveolar affricate /tʃ/. He realizes /ɲ/ as [j] at word initial and [n] at word medial. He also realizes [b] at the word initial and [p] at the word medial for voiceless ejective /p'/. He realizes [t] for /t'/, /tʃ'/ and implosive/ɗ/. He substitutes [k] for /k'/. The details are shown in the table below.

Table5.8 Tibebu's developmental realization

Process	Pattern	Target	Realization	Gloss
Backing	/s/ > [ʃ]	/sima/, /kisi/	[ʃima] [kiʃi]	'seedling of weese, He touched
Gliding	/r/ > [l]	/risa/, /birra/	[liʃa], [billa]	'hawk', 'birr'
Stopping	/dʒ/ > [d]	/dʒaala/, /ʔadʒa/	[daala], [ʔada]	'friend', 'young'
	/tʃ/ > [t]	/tʃuutʃi'/, /kintʃo/	[tuuti], [kinto]	'He put in to mouth', 'stone'
De-nasalization	/ɲ/ > [j]	/ɲammo/	[jammo]	'taste'
De-Palatalization	/ɲ/ > [n]	/gaɲɲa/	[ganna]	'mare'
De- ejectivization	*/p'/ > [b]	/peet'irosi/	[beetiloʃi]	'Peter'
	/p'/ > [p]	/k'uupp'e/	[kuuppe]	'eggs'
	/t'/ > [t]	/t'oni/, /wot'e/	[toni], [wote]	'He offended', 'money'
	/tʃ'/ > [t]	/tʃ'affa/, /hotʃtʃ''o/	[taffa], [hotto]	'swamp', piece of cloth'
	/k'/ > [k]	/k'asi/, /maakk'e/	[kaʃi], [maakke]	'He pierced, 'pot'
Implosive Stopping	/ɗ/ > [t]	/ɗibba/, /woɗa/	[tibba], [wotta]	'disease', 'calves'

5.2.5. Mau's phonological development

Table 5.9 Mau's consonant realizations

Pulmonic consonants																			
Place	Labial				Denti-alveol			Alveolar			Palato-alveolar			Palatal		Velar		Glottal	
Target	b	m	w	f	d	t	s	n	l	r	ʃ	tʃ	dʒ	ɲ	j	k	g	ʔ	h
WI	b	m	w	f	d	t	**ʃ**	n	**j**	**j**	ʃ	**t**	**d**	n	j	**t**	**d**	ʔ	h
WM	b	m	w	f	d	t	**ʃ**	n	**ɹ**	**j**	ʃ	**t**	**d**	n	j	**t**	**d**	ʔ	h
Non-pulmonic consonants: ejectives and implosive																			
Place	Labial				Ddenti-alveol			Alveolar			Palato-alveolar			Velar					
Target	p'				t'			ɗ			tʃ'			k'					
WI	**b**				t'			**t'**			**t'**			**t'**					
WM	**p**				t'			**t'**			**t'**			**t'**					

Mau's developmental of pulmonic consonant realization as [ʃ] for /s/, [j] in word initial and alveolar approximant [ɹ] in word medial for /l/. She realizes [j] in both positions for /r/. Also she realizes [d] for voiced affricate /dʒ/ and voiced velar stop /g/ but she realized [t] for voiceless affricate /tʃ/ and voiceless velar stop /k/. She produced /ɲ/ as [n] at both positions of the word but sometimes as [j] at the word

initial. Ejective /p'/ realized as [b] in word initial; no change in the word medial. /tʃ'/, /k'/ and Implosive /ɗ/ realized as [t'] in both positions.

Table 5.10 Mau's developmental realization

Process	Pattern	Target	Realization	Gloss
Backing	/s/ > [ʃ]	/sima/, /kisi/	[ʃima], [kiʃi	'seedling of weese', He touched'
Gliding	/r/ > [j]	/risa/, /birra/	[jiʃa], [bijja]	'hawk, 'birr'
	/l/ > [j]	/lalo/	[jaɹo]	'cows'
	/l/ > [ɹ]	/bale/	[baɹe]	'hole
Stopping	/dʒ/ > [d]	/jaala/, /ʔadʒa/	[daaɽa], [ʔada]	'friend ,'young'
	/tʃ/ > [t]	/tʃuutʃ'i/, /kintʃo/	[tuut'i], [kinto]	'put in to his mouth, stone
De-Nasalization	/ɲ/ > [j]	/ɲammo/	[jammo]	'taste'
De-Palatalization	/ɲ > [n]	/gaɲɲa/	[ganna]	'mare'
Velar Fronting	/g/ > [d]	/gotʃ'o/, /ʔago/	[dot'o], [ʔado]	'sheep', 'drunk'
	/k/ > [t]	/kila/, ~~/k'asi~~ /hiikko/	[tiɽa], [hiitto]	'armpit', 'where'
De-Ejectivization	*/p'/ > [b]	/peet'irosi/	[beet'roʃi]	'peter'
	/tʃ'/ > [t']	/tʃ'affa/, /hotʃ'o/	[t'affa], [hot't']	'swamp', 'piece of cloth'
Ejective fronting	/k'/ > [t']	/k'asi/, /maak'k'e/	[t'aʃi], [maat't'e]	'He is pierced', 'pot'
Ejectivization	/ɗ/ > [t']	/ɗibba/, /woɗa/	[t'ibba], [wot't'a]	

5.2.6. Selamu's phonological development

Table 5.11 Selamu's consonant realization

Pulmonic Consonants																		
Place	Labial				Denti-alveol			Alveolar			Palato-alveolar			Palatal		Velar		Glottal	
Target	b	m	w	f	d	t	s	n	l	r	ʃ	tʃ	dʒ	ɲ	j	k	g	ʔ	h
WI	b	m	w	f	d	t	s	n	**j**	**j**	ʃ	tʃ	dʒ	ɲ	j	k	g	ʔ	h
WM	b	m	w	f	d	t	**ð**	n	**j**	**j**	ʃ	tʃ	**tʃ**	ɲ	j	k	g	ʔ	h

Non-pulmonic consonants: Ejectives and Implosive					
Place	Labial	Denti-alveol	Alveolar	Palato-alveolar	Velar
Target	p'	t'	ɗ	tʃ'	k'
WI	**b**	**d**	**d**	**dʒ**	**g**
WM	p'	**d**	**ʔj**	**tʃ**	**g**

Selamu realizes consonants, such as [ð] for /s/ at word medial position and in sentence repetition as well. He realizes [j] for /l/ and /r/ in single word and sentence repetition. He produces [tʃ] for /dʒ/ at word medial in both word production and sentence repetition. He also realized as [b] and [p] at initial and medial for ejective /p'/, respectively/. He realized [d] for [t'], [g] for /k'/ at both positions, and [dʒ] at word initial and [tʃ] at word medial for /tʃ'/.He realizes [d] at word initial and [j] at word medial for implosive /ɗ/. Details provide below in the table.

Table5.12 Selamu's developmental realization

Process	Pattern	Target	Realization	Gloss
Voicing	/s/ > [ð]	/siit'o/,/hiissi/	[ðiido], [hiiði]	'Tobacco', 'where he put?
Gliding	/l/ > [j]	/lalo/, /bale/	[jajo], [baje]	'cows',' hole'
	/r/ > [j]	/risa/, /birra/	[jisa], [birra]	'hawk',' birr'
Devoicing	/dʒ/ > [tʃ]	/ʔadʒ/	[ʔatʃa]	'young'
De-ejectivization	*/p'/ > [b]	/p'eet'iros/	[beetijoði]	'Peter'
	/t'/ > [d]	/t'oni/, /wot'e/	[doni], [wode]	'He offended', 'money'
	/tʃ'/ > [dʒ]	/tʃ'affa/	[dʒaffa]	'swamp'
	/tʃ'/ > [tʃ]	/hotʃ'tʃ'o/	[hotʃtʃo]	''piece of cloth
	/k'/ > [g]	/k'asi/, /maakk'e/	[gasi], [maagge]	'He is pierced, 'pot'
Imp. Stopping	/ɗ/ > [d]	/ɗibba/	[dibba]	'disease'
Glottalization	/ɗ/ > [ʔj]	/woɗa/	[woʔja]	'calves'

5.3. Synopsis of the individual profiles

Generally, in the course of analyzing consonant acquisition by Sidaamu Afoo speaking children, it has been distinguished that the speech production correctly when the children are matched and what substitutions are used when they are not correct. Words those are provided to be produced structured with consonant phonemes/sounds in both initial and medial positions. Among the 24 consonant phonemes that the language has, the sounds or segments which were correctly produced by all subjects were 9 (37.5%). As observed in children's speech, consonants, such as /b/, /m/, /w/, /t/, /n/, /j/, /ʃ/, /h/, and /ʔ/ are produced correctly by all children. Those sounds are regarded as stops, nasals, approximants/glides and a fricative. The production of such

sounds correctly indicates that children acquired and mastered them first before ages of 3; 6 years. Only Stops /d, k, g/were to be produced incorrectly found in the speech of two children aged 3; 6 and 4; 9. However, more children age of 3; 7, 3; 8, 3; 10 and 4; 1 produced them correctly, and they tend to be acquired earlier than other consonants. Moreover a fricative /f/ were to be produced incorrectly in the speech of one child aged 3; 6. Therefore it is also acquired earlier nearly by all subjects than the rest consonants. However, consonants includes / tʃ, dʒ, ɲ, l, t', p'/ would be late acquired between the ages 3; 6 and 5; 0 years, because 3-4 children were found error in their speech production for each sound. This means more children still not acquired these sounds in the words of both positions; therefore they would be late acquired consonants in the language. Ejective /p'/ could not be acquired by all children's speech production at word initial; but it was produced correctly by 3 children at word medial position; so it is late acquired. The reason why it could not be produced word initial is that unless the word is loan, there is no Sidaamu Afoo word that begins with this sound. For example, the name /p'et'iros / 'peter' is a loan word and difficult for children to pronounce. However, it usually comes at medial position in several words in the language. Denti-alveolar fricative /s/ is acquired word initial by 3 children; but it was not acquired at word medial by any subject. Therefore it is also late acquired phoneme. Consonants such as /r, tʃ', k', ɗ/ definitely are not be acquired before age of five, since all subjects replaced them by other consonants at both positions in the words. On other hand, consonants which are substituted by other consonants or segments are totally 15 (62.5%). Hence those sounds would be acquired late after five years of age. The substitutions provide information about phonological processes which are realized both in initial and medial position of the words. The positions of substitution could be seen according to their segmental articulation, such as pulmonic, ejective, and implosive. Ejectives and implosive were substituted more frequently in both positions than pulmonic consonants. Further voiced affricate /dʒ/, and palatal nasal /ɲ/ were also substituted greatly as well at both positions among pulmonic consonants. In addition, lateral liquid /l/ was substituted prominently at word medial than others. The table below shows the substitution of sounds in percentage per the number of children. The acronyms Cons= for consonants, N.Ch= for number of children, and Per. = for percentage.

Table 5.13 The substitution of consonants in word positions

Word-initial substituted consonants					
Cons.	N.Ch	Per. (%)	Cons.	N.Ch	Per. (%)
/d/ [t]	2	33.3	/k/ [t]	2	33.3
/f// [ʃ]	1	16.6	/g/ [d]	2	33.3
/s/ [ʃ]	3	50	/p'/ [p, b]	6	100
/l/ [j]	4	66.6	/tʃ'/ [t', tʃ, t, dʒ]	6	100
/r/ [j, l]	6	100	/k'/ [t', k, g]	6	100
/tʃ/ [t]	3	50	/t'/ [t, d]	4	66.6
/dʒ/ [d, t]	4	66.6	/d/ [t', t, d]	5	83.3
/ɲ/ [n, j]	3	50			
Word-medial substituted consonants					
Cons.	N.Ch	Per. (%)	Cons.	N.Ch	Per. (%)
/d/ [t]	2	33.3	/k/ [t]	2	33.3
/f/ [ʃ]	1	16.6	/g/ [d]	2	33.3
/s/ [ʃ, ð]	6	100	/p'/ [p]	3	50
/l/ [ɹ, j]	4	66.6	/tʃ'/ [t', tʃ, t]	6	100
/r/ [j, l]	6	100	/k'/ [t', k, g]	6	100
/tʃ/ [t]	3	50	/t'/ [t, d]	4	66.6
/dʒ/ [d, tʃ]	5	83.3	/d/ [t', t, ʔj]	6	100
/ɲ/ [n]	4	66.6			

5.4. Phonological process in the speech of Sidaamu Afoo speaking children

The data from the six children have shown that the children used various developmental speech production features, which can be grouped into some common phonological processes. In this section, an attempt has been made to summarize the patterns of speech production attested in Sidaamu Afoo speaking children. Accordingly, in what follows, the various phonological processes noted in the children's speech are summarized.

5.4.1.1. Stopping or de-affrication

By definition, stopping refers to replacing fricatives, affricates, liquids, and glides with stops; while de-affrication is the process in which affricates are replaced by non-affricate sounds (O'grady, 2003). In this study affricates /tʃ dʒ/ and an affricated ejective /tʃ'/ were replaced by non-affricated sounds. Nevertheless, all the same here it is possible to say stopping because such affricate sound changed for stops as /t d /. Stopping in other languages, for example, Amharic speaking children found that they realized voiced fricative /v/ as bilabial stop /b/ (Abebayehu, 2013). In Sidaamu Afoo speaking children, stopping was observed in three children, such as Medukka, Tibebu, and Mau. They substitute affricates, such as /tʃ, dʒ/ with stops (i. e., /tʃ/ > /t/ and /dʒ/ > /d/) in the following words: /tʃuutʃ'i/ 'he put in to mouth', /kintʃo/ 'stone', /dʒaala/ 'a friend', and /ʔadʒa/ 'young', and produced as [tuut'i, kinto], [daala], [ʔadʒa], respectively both in word initial and medial. Stopping also observed in the speech of Tibebu unlike the others two. He realized post-alveolar ejective /tʃ'/ as /t/ at both positions, in the words /tʃ'afffa/ 'swamp' and /hotʃ'o/ 'piece of cloth', and produced them respectively as [taffa] and [hotto]. However, stopping of fricatives, liquids, and glides have not been observed in a speech of the children in this study.

5.4.1.2. Fronting

Fronting refers to the substitutions of a consonant for one produced further back in the oral cavity. In other words fronting is replacing a sound with a sound that is made more towards the front of the mouth. In the process of fronting, the concrete example can be observed among children when they substitute velar sounds /k/ and /g/ with alveolar /t/ and /d/), respectively (Barlow and Gierut, 1999; O'grady, 2003). In velar fronting, a velar consonant normally made with the middle of the tongue in contact

with the palate toward back of the mouth, is replaced with consonant produced at the front of the mouth (Bowen, 1998). Bowen also reported palatal fronting as the fricative consonants /ʃ/ and /ʒ/ replaced by fricatives that are made further fore ward on the palate, towards the front teeth /s/ and /z/, respectively. However, in Sidaamu Afoo speaking children fronting has been observed as velar fronting, ejective fronting and palatal fronting.

Velar fronting were observed in two children, i.e., Meduka and Mau. They both produce and realize the words in the same manner, for example, /gotʃ'o/ 'sheep' and /kila/ 'armpit' as [dot'o] and [tila], in which /g/ produced as [d] and /k/ as [t], respectively. Ejective fronting is another phonological process observed in Sidaamu Afoo speaking children, which is uncommon and not indicated in other languages. This process is also observed in the same children when they produce post-alveolar ejective /tʃ'/ and velar ejective /k'/ as denti- alveolar ejective [t'] in both word initial and medial. They realized them in the words, such as /tʃ'affa/ 'swamp' and /k'as-i/ 'he pierced' as [t'affa] and [t'aʃ-i], respectively.

Palatal fronting refers to when a palatal sound substituted with a non-palatal sound. In the data of this study, palatal fronting was observed in four children (i.e., Medukka, Berkatu, Tibebu and Mau) who replaced /ɲ/ with /n/ and /j/.Three of them realized /ɲ/ as [n] in the words, such as /ɲammo/ 'taste' and /gaɲɲa/ 'mare' and pronounced as [nammo] and [ganna], respectively in both initial and medial positions of the words. However, Tibebu differently produced the same word as [jammo] and realized /ɲ/ as [j] in word initial. But he produced the word /gaɲɲa/ as [ganna] and realized [n] in word medial.

5.4.1.3. Backing

Backing refers to the substitution of consonants for one produced further forward in the vocal tract. Most often the process of backing is the substitution of alveolar sounds, like /t/ and /d/ with velar sounds. In Amharic speaking children backing observed as alveolar fricative /s z/ backed to the post-alveolar place and realized as /ʃ/ (Abebayehu, 2013). However, in Sidaamu Afoo speaking children such process is uncommon. But backing of denti-alveolar fricative /s/ to post-alveolar fricative /ʃ/ place seems one of the phonological processes in Sidaamu Afoo speaking children.

As data shown in the tables 5:2, 5:6, 5:8, and 5:10 above, four children, such as Medukka, Messu, Tibebu, and Mau backed the denti-alveolar fricative /s/ to the post-alveolar fricative place and realized as /ʃ/. Three of them produce the words, such as /sima/ 'seedling of weese' and /kis-i/ 'he touched' as [ʃima] and [kiʃ-i], respectively in both word initial and medial. Tibebu, unlike the others backed not word initial, but medial as [kiʃ-i]. Moreover, backing of labiodental fricative /f/ to post-alveolar fricative /ʃ/ observed in the speech of only child, Messu. She changes labio-dental fricative /f/ to post-alveolar fricative /ʃ/ in both positions of the words. She produces words, like /fan-i/ 'he opened' and /ʔaf-i/ 'he knows' respectively as [ʃan-i] and [ʔaʃ-i], and she realizes /f/ as [ʃ].

5.4.1.4. Gliding

Gliding refers to the substitution of liquid by glide, such as /l/ → [j] or /r/ → [w] or [j]. In Amharic speaking children, gliding of /l/ and /r/ to /j/ is common (Abebayehu, 2013). Similarly, in Sidaamu Afoo speaking children of this study, gliding is occurred in substitution of both lateral /l/ and trill /r/ with /j/, which is observed in four children includes Medukka, Berkatu, Mau and Selaamu. But only two of them, Berkatu and Selamu realized both /l/ and /r/ as /j/ in word initial and medial. They produce words, such as /lalo/ 'cattle 'as [jajo], /bale/ 'hole' as [baje], /risa/ 'hawk as [jisa], and /birra/'birr' as [bijja]. Although Medukka and Mau produce /r/ as [j] in both positions, they realize /l/ as [j] only at initial position in the single word. In the sense of gliding, the substitution of alveolar trill /r/ to bilabial approximant /w/, which realizes in English-speaking children (Leung and Brice, 2012) is uncommon in Sidaamu Afoo speaking children.

5.4.1.5. Substitution of /r/

In Sidaamu Afoo speaking children, substitution of /r/ with [l] was understood only in two children, Messu and Tibebu. These two children substitute /r/ with /l/ in the words, such as /risa/ 'hawk' and /birra/ 'birr'; and pronounced word initial incorrectly as [liʃa] and word medial as [billa], respectively. Also in other languages, for example Amharic, children realized /r/ as [l], [j], [ɯ] and less often [ʀ] (Mekonnen, 2008 cited in Abebayehu, 2013).

5.4.1.6. Substitution of /l/

In Sidaamu Afoo speaking children, unlike the other processes, substitution of /l/ with alveolar approximant[ɹ] observed in two children, Medukka and Mau. This odd process have seen at the medial position of single word production, in the word /bale/ 'hole' produced as [baɹe], in which /l/ realized as [ɹ]. However this sound is not found in Sidaamu Afoo consonant inventory. Such type of phonological process of substitution is also uncommon in other languages.

5.4.1.7. Substitution of Implosive /ɗ/: Ejectivization, stopping, and glottalization.

i. Implosive Ejectivization

Ejectivization refers to non-ejective sound replaced by ejectives. Although ejectivization is uncommon across languages, it is observed in Sidaamu Afoo speaking children based on actual data. As data pointed out, the implosive /ɗ/ was substituted with denti-alveolar ejective /t'/. It is one of phonological process understood in Sidaamu Afoo speaking children, which is observed in speech of two children, Medukka and Mau. In their speech, Medukka and Mau replaced implosive /ɗ/ by denti-alveolar ejective [t'] in the word /ɗibba/ 'disease' at syllable initial word initial and produced it as [t'ibba]. At the word medial, Mau also replaced the word /woɗa/ 'calves' as [wot't'a], in which she realizes /ɗ/ as [t'].

ii. Implosive Stopping

Implosive stopping is an odd across the languages of phonological process. However, in Sidaamu Afoo speaking children, implosive /ɗ/ was stopped, i.e., /ɗ/ replaced by /t/ and /d/. This incidence is well-known in the speech of four children while they are producing given words. Two of them, Berkatu and Messu substitute /ɗ/ with /t/ both positions in /ɗibba/ 'disease' and /woɗa/ 'calve, and realized as [tibba] and [wotta], respectively. Tibebu and Selaamu altered this sound with [d] in word initial and pronounced as [dibba] instead.

iii. Implosive Glottalization

Although glottalization is less frequent in child languages, it could be observed in Selaamu's speech that he replaces /ɗ/ by [ʔj]. Selaamu pronounces the word /woɗa/ 'calves' as [woʔja], in which he realizes /ɗ/ as [ʔj].

5.4.1.8. Assimilation/Consonant Harmony

Assimilation is another phonological process that occurs when one sound is replaced by another due to the influence of other sound in a word (Leung and Brice, 2012). The assimilation found in the speech of Sidaamu Afoo speaking children includes, voicing, devoicing, de-nasalization, and de-ejectivization.

i. Voicing of /s/

Voicing is the process of assimilation in which voiceless consonants tend to be voiced when they are preceding vowels. The voicing is conditioned by the voiced sounds that occur around them. It is observed in the data that voiceless denti-alveolar fricative /s/ undergoes the voicing process between vowels. Two children, Berkatu and Selaamu replaced /s/ with /ð/ in the words, like /kisi/ 'he touched' and /basu/ 'cat' respectively as [kiði] and [baðu] at word medial. However the sound /ð/ is uncommon and does not exist in sound system of Sidaamu Afoo.

ii. De-voicing of /d/ and /ʤ/

Devoicing refers to when a voiced consonant devoiced in a word. In other words it is replacing of voiced consonant by voiceless in a word. In the data of this study, /d/ and /ʤ/ devoiced and changed in to /t/ and /ʧ/, respectively. Such process could be observed in the speech of three children namely, Berkatu, Messu, and Selaamu while they are producing words include, /day-i/ 'he came', /kad-i/ 'he kicked', /ʤaala/ 'friend', and /ʔaʤa/ 'young'. Two of them, Berkatu and Messu realized /d/ as /t/ at both positions of the words. Berkatu and Selaamu realize /ʤ/ as /ʧ/ at the word medial, and Messu realizes as well it at the word initial. Abebayehu (2013) noted the devoicing of word final /d/ in monosyllabic words in Amharic speaking children. He also identified devoicing of the alveolar and post-alveolar fricative /s ʒ/ and less frequently devoicing of /g/.

iii. De-nasalization

De-nasalization refers to a nasal consonant changing to be non-nasal consonants. It is the process of place assimilation occurred in nasal consonants where they do not change manner of articulation and voicing states. As McCarthy and Smith, (2003) noted de-nasalization occurred when place assimilation of nasal sounds, for example, /n/ replaced by [m, ŋ, and p] when they are influenced by neighboring sounds. However, in Sidaamu Afoo speaking children de-nasalization has been observed in two children (Tibebu and Mau). These children realized /ɲ/ as [j] in word initial in the word /ɲammo/ 'taste', and pronounced it as [jammo]. Because the function of this sound is limited in the language, it challenged children while they are producing words with this sounds.

iv. De-ejectivization

Almost all children produced ejective consonants by replacing their counterparts of pulmonic consonants in this study. That is that they de-ejectivise ejectives consonants in to their pulmonic counterparts in the words. As data shown below, the children substitute ejectives by their pulmonic consonant targets. Amharic speaking children who are younger than four years replacing ejectives consonants to their pulmonic counterparts; however at the age of five, no any such processes observed among them (Abebayehu, 2013). In Sidaamu Afoo speaking children de-ejectivization could be observed in the speech of the subjects whose age above four years. Table 5.15 shows de-ejectivization noted in Sidaamu Afoo speaking children.

Table 5.14 Developmental Substitutions of ejectives by their pulmonic counterparts

Pattern	***Target***	***Realization***	***Gloss***
/p'/ > [p]	/k'uupp'e/	[k'uuppe]	*'eggs'*
/t'/ > [t]	/wot'e/	[wote]	*'money'*
/tʃ'/ >[tʃ]	/tʃ'affa/	[tʃaffa]	*'swamp'*
/k'/> [k]	/k'as-i/	[kas-i]	*'He pierced'*

5.4.1.9. Cluster Deletion and Substitution

A cluster is a sequence of consonants that occupy a single position in syllable structure. In other word, cluster consists of two or more consonants in the same syllable without a vowel separation. As stated in chapter 3, Sidaamu Afoo does not allow more than two consonant clusters. Moreover the language exist the cluster only medial position of the words. Cluster substitution of the speech occurred in the words after first cluster deleted, and replaced by the next cluster repeating itself, which produced geminated word. Deletion and substitution of cluster is common in the speech of Sidaamu Afoo Speaking children, especially ages below five years old. In cluster substitution process, after weak/ unstressed cluster deleted, the stressed cluster repeated itself and replaced that of the deleted consonant and it is phonetically geminated. For example, in the word /sirba/ 'dance' the first cluster 'r' deleted and substituted by the repeating of 'b' itself as /bb/, and produced as [sibba]. Tnis type of cluster substitution in Sidaamu Afoo speaking children is particular because no other languages have been observed with such processes. As data indicates most subjects acquired nasal clusters with stops and affricates before five years. For example, four children produced words correctly, which are clustered of nasal+ stops /nt, nt', nk/, etc. and nasal+ affricates /ntʃ/.This can be observed in the production of words, such as /funt'e'/, 'a name of person', /hinko/ 'teeth', /k'oontʃo/ 'a bottle gourd', /kintʃo/ 'a stone'. From the clusters, two of the children deleted unstressed /n/ in their speech, and realized words by doubled up stressed sounds as [futte], [hikko], [k'ootʃtʃo], [kitʃtʃo], respectively. This substituted sound is repeated itself to replace the deleted one. However, none of the children can produce clusters of liquids+stops /lb/, liquids +fricative /lʃ/, and liquid+ affricate /rtʃ /. In such clusters all children deleted liquids (/l r/) and replaced with second cluster doubled words, such as /ʔalba/ 'face', /ʃiilʃi/ 'make to be melted', /dartʃo/ 'leaf', and realized them as [ʔabba], [ʃiiʃʃi], and [datʃtʃo]. The table below illustrates phonological developmental processes of the children with their respecting ages.

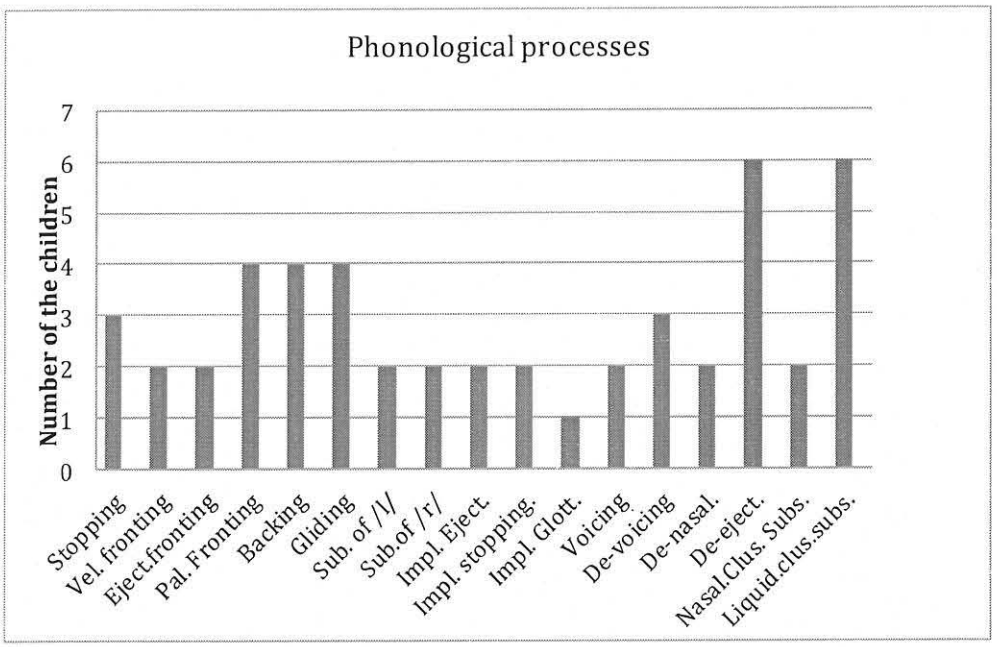
Table 5.15 Phonological processes in the speech of the children

Process			Process		
1. Substitution (64.7%)	N.Ch.	Ages	**2. Assimilation** (23.5%)	N.Ch.	Ages
Stopping	3	3;6, 3;8, 4;9	Voicing	2	3;7, 4;1
Fronting: *Velar*	2	3;6, 4;9	Devoicing	3	3;7, 3;10, 4;1
Ejective	2	3;6, 4;9	De-nasalization	2	3;8, 4;9
Palatal	4	3,6, 3;8, 4;1, 4;9	De-ejectivization	6	3;6, 3;7, 3;8, 3;10, 4;1, 4;9
Backing	4	3;6, 3;8, 3;10,4;9			
Gliding	4	3;6, 3;7, 4;1, 4;9	**3.Cluster Substitution** (11.8%)	N.Ch.	Ages
Substitution of /l/	2	3;6, 4;9			
Substitution of /r/	2	3;8, 3;10	Cluster with nasal	2	3;7, 4;1
Subst. of implosive:			Cluster with liquids	6	3;6, 3;7, 3;8, 3;10, 4;1, 4;9
Implo. Ejectivization	2	3;6, 4; 9			
Implo. Stopping	2	3;10, 4;1			
Implo. Glottalization	1	3;7			

The table illustrates the phonological processes that are manifested among the speech of Sidaamu Afoo speaking children. From the total (64.7%) percentage of consonant substitutions, palatal fronting, backing and gliding have occurred with many children, than other processes, such as assimilation, and cluster reduction. Stopping also has been seen in the speech of half of the children. However, the processes such as velar and ejective fronting, substitution of /l r/, and ejectives are observed with the speech of a few children. On the other hand, assimilation covers (23.5%) of total processes, including voicing, devoicing, de-nasalization, and de-ejectivization. In a group, de-ejectivization occurred in almost all children. De-voicing has seen with half of the children aged 3; 6 to 4; 1. The situation of de-ejectivization at all children noticed that

those children do not acquire ejectives before ages of five. Finally, cluster substitution, which covers (11.8%) of total process, occurred almost in all children's speech, which is also not acquired before ages of five. Although the clusters with nasals have been completed by some children, a few have still substituted by others. Clusters with liquids, in all children's speech were deleted and replaced by other segment. The replacement takes place with one of the most stressed segment in same clusters which is repeated itself to be geminated. Figure 5.1 below illustrates varieties of phonological processes observed at Sidaamu Afoo speaking children, which the processes have had per total number of the subjects.

Figure5.1.Phonological processes in Sidaamu Afoo speaking children



The data indicates that the speech developmental realization or phonological processes in Sidaamu Afoo speaking children presented here is actually not age-appropriated. For example, it is possible to compare the realization of Meduka's and Mau's speech according to their ages. Nevertheless difference between lengthen a year; most probably they realize phonological aspects in the same manner in their speeches. The important thing here is phonological acquisition and development in Sidaamu Afoo speaking children at ages between 3; 6 to 5; 0 has no clear cut differences observed respecting to their ages, since their speech is frequently noticed to have fluctuations. However, substitution of /r/, and implosive glottalization disappeared after four years old. But the other processes could be seen before and after four years of ages. As the corpus of data indicated, Sidaamu Afoo speaking children acquire only limited consonant phonemes within five years. This informs us that the phonological acquisition of Sidaamu Afoo speaking children will be not completed before the age of five years. This can be seen across the children, for example, one of the children, named Enicha whom the researcher did not included as main subjects, is 5; 6, completed the acquisition of all consonants in the language, even sounds which encountered others. As it observed in this study, the most important difficult sounds to acquire for children at ages of before five are *ejectives and consonants clusterof liquids* (i.e., liquid+stop,

liquid+fricative,andliquid+affricate). These have been seen in all the speech of the subjects at both initial and medial position of the words. But other pulmonic consonants produced as much as they can even though they lost their targets.

5.5. Summary

To summarize, this chapter is mainly concerning of data analysis and interpretation of phonological development and phonological processes occurred in Sidaamu Afoo speaking children. Starting from the participants, the data collection was made from six children whose ages were between 3; 6- 5; 0. Intending of keep its uniformity, the data collection was done in two rounds that are in between three weeks interval. The main instrument of data collection was audio and video recordings. Word lists and sentence repetition used as the main assessment/protocol, which is structured with 24 consonant phonemes in both word initial and medial position. All the data transcribed in International Phonetic Alphabet (IPA) system.

Children's phonological development tried to analyze individually and illustrated their realization of consonant sounds in word positions, (i.e., both initial and medial positions of the words). Some consonants were produced accurately in both positions by all children, and which seemed to be acquired first. However, most consonants were substituted by other consonants in their speech. As data illustrated, sixty-two percent of consonant phonemes were substituted by others and realized differently at all. For instance, the substitution of non-pulmonic consonants, such as ejectives by all subjects sticks out comparing to the rest consonants in their production.

Phonological process is a rule to simplify pronunciation of words in a language. Phonological processes of the children have distinguished in to their broader parts includes, Substitution, Assimilation, and cluster reduction. As data indicated, in Sidaamu Afoo speaking children substitution rate is more than two other processes, which is 64.7%. Assimilation and cluster reduction covers 23.5% and 11.8%, respectively. Generally, there are several types of phonological processes observed in Sidaamu Afoo speaking children includes stopping, fronting, backing, gliding, and substitution of /l/, /r/, and /ɗ/, assimilation of voicing, devoicing, de-nasalization, de-ejectivization, and cluster reduction.

Most of developmental speech characteristics presented in this study are similar to patterns reported for other languages. However, some peculiar differences observed in this study. For instances, ejective fronting, substitution of implosive /ɗ/ includes, implosive ejectivization, implosive stopping, and implosive glottalization. De-ejectivization and cluster substitution includes liquid+stops, liquid+ fricative, or liquid+affricates replaced (100%) by other consonants in the speech of all children. This implies that Sidaamu-Afoo speaking children do not acquire ejectives and words with consonant clusters, especially liquid clusters before ages of five. In the same way, palatal fronting, backing, and gliding were observed (67%) in most children's speech, aged from 3; 6 to 4; 9. Stopping of affricate and devoicing contains the third (50%) which is found in half of the children's speech, including the same ages remarked above. Nevertheless, velar fronting and ejective fronting, substitution of /l/, /r/, and /ɗ/, voicing, and de-nasalization observed in few children (not more than two for each process).This also shows that such processes are common for Sidaamu-Afoo speaking children up to their age is five, but the exception is that the substitution of /l/ with alveolar approximant /ɹ/ because this consonant is uncommon and the language does not allow it. However, those processes are going to be disappearing after ages of five.

CHAPTER SIX: Discussion and Conclusion

5.6. Introduction

This final chapter discusses the main findings of this study and provides conclusion. The discussion basically emphasizes on cross-linguistic similarities and differences suggested in the studies of different languages. Cross-linguistic information on speech development enhances to compare to findings from other languages, because of the assumption that speech development follows a universal pattern. However, cross-linguistic findings stress the need to account for language-specific patterns of development. Therefore theoretical aspects of firs language acquisition, proposed by different scholars confirmed in cross-linguistic perspectives which could be also seen in current study. The general tendencies of developmental realization and particular phonological processes observed in Sidaamu Afoo speaking children significantly noted in this study. The findings which explored in the study would be recapitulated in the conclusion part. Moreover the limitation and recommendation would be suggested with entire outlook of the child language acquisition in language specific and across the languages.

5.7. Cross-linguistic Similarities and differences in Phonological Development

Cross-phonological studies on language acquisition suggest that there are only broad developmental patterns that can be described as universal (Topbas, 2006). During the early part of a child's life, the infant's developing abilities in speech perception and production, together with cognitive development, lead to universal similarities among children acquiring different languages. These universal phenomena are usually witnessed in the early phases of phonological developments (Saaristo-Helin *et al.*, 2011). Cross-linguistic comparison of the acquisition of phonology is of great interest and importance from an explanatory, theoretical point of view (Fox, 2000). However, children's phonological inventories are not similar within and across the languages; rather the similarity is observed on core features.

Research on phonological development in different languages reported cross-linguistic similarities and differences. Consonant phoneme development of children is one of phonological studies observed in different languages. For example, the

consonant substitution and realization of Sidaamu Afoo speaking children found similarity across the languages. Thus Amharic is one of the languages which phonological development of children has been studied. As reported in the study of Amharic-speaking children, word-initial and final substitution of consonant phonemes were observed in the speech of a few children. Amharic-speaking children substituted /s/ with /ʃ/ word-initial in the speech of one child aged 4; 2; and /r/ with /l/ in the speech of two children who were aged 4; 8 and 5; 3 (Abebayehu, 2013). Moreover, in the study reported that word-final substitution of sounds; i. e., word-final sound /d/ replaced by /t/, and /dʒ/ replaced by /tʃ/ in the speech of two children mentioned above; however the position is differs with respect to the current study. In the current study, the same process occurred word-medial at ages of 3; 7, 3; 10, and 4; 1. In this study /r/ is substituted with /l/ observed only in the speech of two children ages of 3; 8 and 3; 10; nevertheless more children substituted it with /j/ at both positions of the words contrarily in that of observed in Amharic-speaking children.

Regarding the order of acquisition, consonants such as nasals /b, n/, stops /t, b, ʔ/, glides /w, j/ and fricatives /ʃ, h/ were acquired earlier and mastered before the ages of 3; 6 in Sidaamu Afoo-speaking children. The same order acquisition was noted of consonant phonemes in English speaking children between the ages of 2; 0-4; 0 as nasals, stops and glides are mastered early; whereas liquids, fricatives and affricates are develop later (Macleod, et al, 2011). This is also connected with the study reported in Malaysian English speaking Chinese children that they mastered their language phonology with ages of 3; 0-3; 05 (San, 2010). In English acquiring children, the phonemes include liquid /r/ and fricatives /θ, ð, ʒ, z, v/ (which are not parts of current study) usually acquired late with articulatory problems even after five years (Saaristo-Helin *et al.,* 2011; Dodd et al., 2003). Post-alveolar fricative /ʃ/ is also acquired late in English. In this study /ʃ/ is acquired earlier by all children. The same order also can be seen in the acquisition of Cantonese sounds reported as nasals, glides, and front stops, and they completed all consonants by age of five (Leung and Brice, 2012). Phonological acquisition can be also seen in Turkish-speaking children, in that Turkish-speaking children acquire consonant phonemes at ages from 2; 6 to 4; 0 with the exception of /ɾ/ and clusters (Topbas, 2006). Accordingly, the order of Turkish-speaking children phonological acquisition includes, stops > nasals > affricates > glides/ liquids > fricatives > flap. Although nasals, stops, glides and

fricative were acquired earlier in Sidaamu-Afoo speaking children, denti-alveolar fricative /s/, affricates /tʃ, dʒ/, palatal nasal /ɲ/, lateral liquid /l/, bilabial ejective /p'/, and denti-alveolar ejective /t'/ were acquired late as observed in the speech of more children. However, in Sidaamu Afoo speaking children, alveolar trill /r/, post-alveolar ejective /tʃ'/, velar ejective /k'/, and implosive /ɗ/ would be acquired and completed after ages of five; because all children could not produce these sounds in both positions of the words. In the same sense, reported phonological development in Finnish learning children, shown that they finalize phonological acquisition starting from four to five years of age (Saaristo-Helin *et al.,* 2011). Beyond this German-speaking children completed the phoneme of their language acquisition at the age of 6 years, and the order of acquiring their first language were labials > alveolars > velars, fricatives, and affricates > clusters (Fox, 2000). Likewise in the study of French acquisition children, fricatives such as /s, ʃ/ are late consonants and mastered above the age of 53 months. In British English Speaking children Poole (1934) cited in Dodd et al (2003), reported that /s/ appeared in the 5; 6 year old age group.

Cross-linguistic similarities and differences in phonological processes also could be seen in different language studies. Phonological processes are defined as a "set of mental operations that change or omit phonological units as the results of natural limitations and capacities of human vocal production and perception" (Dodd *et al.*, 2003). Phonological processes are natural deviations that occur as one is developing a language, but if they persist, in children they can be a sign of a phonological disorder (Leung and Brice, 2012). Sidaamu Afoo phonological process characters analyzed in this study and described similarities and differences across the languages suggested in different studies. *Stopping* is one of phonological processes observed in Sidaamu Afoo speaking children. Although stopping refers to fricatives, affricates, liquids, and glides replaced by stops in the languages (Leung and Brice, 2012; Dodd, 2003 *et al.*, 2003; Abebayehu, 2013), in Sidaamu Afoo speaking children observed only affricates /tʃ/ and /dʒ/ substituted by stops /t/ and /d/, respectively. In addition, ejective /tʃ'/ also substituted by /t/. Unlike Sidaamu Afoo speaking children, stopping is reported in English speaking children as fricative replaced by a stop, i.e., /t/ for /s/ and /d/ for/ð/ (Leung and Brice, 2012; Dodd *et al.*, 2003). Moreover, for some languages, such as Amharic and Malaysian English speaking Chinese children also

observed that stopping of a fricative /v/ replaced by /b/ (Abebayehu, 2013; San, 2010).

Fronting is another phonological process observed in Sidaamu Afoo speaking children. Cross-linguistic similarities of fronting can be seen in English speaking children, that is velar fronting. Leung and Brice (2012) reported velar sounds of English speaking children, such as /k/ and /g/ were substituted by sounds produced anteriorly as /t/, and post-alveolar fricative /ʃ/ substituted by dent-alveolar /s/. In Amharic-speaking children, fronting was noted in the speech of one child realized /d/ for /g/ (Abebayehu, 2013). In addition to velar fronting of /d/ for /g/ and /t/ for / k/, ejective fronting of /t'/ for both /tʃ'/ and /k'/ and palatal fronting of /n/ for /ɲ/ were also noted in current study. However, palatal fronting is more prominent than velar and ejective fronting in Sidaamu Afoo speaking children. *Backing* in Sidaamu-Afoo is also common phonological process in early ages. Backing of dent-alveolar fricative /s/ and labiodental fricative /f/ to post-alveolar fricative /ʃ/ noted in the speech of four subjects in this study. The same process with backing of /s/ to /ʃ/ reported across the languages, for example, two Amharic-speaking children realized /s z/ as /ʃ/ at ages of 4;2 and 4;8 (Abebayehu, 2013). Backing of labiodental fricative which appeared in one subject's speech at ages of 3; 6, is unusual in other languages. In English speaking children, backing swas observed as a bilabial /b/ substituted by alveolar /d/ (Leung and Brice, 2012). In German-speaking children, backing were reported as post-alveolar fricative /ʃ/ substituted by palatal fricative /ç/ at word initial ages of 3 year (Fox, 200).*Gliding* is also observed in this study. As data indicated in the speech of four children, liquids /l r/substituted with glide /j/. Gliding can also be seen across the languages, for example, English speaking children, substituted /l/ and /r/ for /w/ (Leung and Brice, 2012). Gliding of /l r/ observed in Sidaamu Afoo speaking children is the same process reported in Amharic-speaking children, that is /l/ and /r/ being realized as /j/ is common (Abebayehu, 2013). Moreover, liquid gliding suggested in the study of Malaysian English speaking Chinese children, yet the processes suppressed at the age of 4; 00 (San, 2010).

Substitution of /l, r, d/ were observed in the speech of the children. Substitution of /l/ by alveolar approximant /ɹ/ in two Sidaamu Afoo speaking children appeared in this study however this phoneme is not actually found in the language. Unlike in this

study of /j/ and /ɹ/, substitution of /l/ was found in other languages for example, Cantonese-English speaking children and Mandarin Chinese, realized as /ɻ/ (Leung and Brice, 2012; San, 2010). The substitutions of /r/ were observed in current study in the speech of two children, who realize it as /l/ at both positions of the words. Across the languages, for example, as reported in Amharic-speaking children it was also observed the same realization at ages of five (Abebayehu, 2013). Moreover, it is observed in Italian speaking children reported by Bortolini and Leonard (1991) and Maltese speaking children reported by Grech (1998) cited in (Fox, 2000). Implosive /ɗ/ substituted by ejective /t'/, stops /t/ and /d/, and /glottalized /ʔj/ in this study is an odd respecting other languages, because this type of substitution has not been observed across the languages. *Voicing* is another phonological process found in this study. Voicing is the substitution of voiced consonants for voiceless consonants. As mentioned in chapter five, voicing observed in the speech of two children that voiceless fricative /s/ were replaced by voiced fricative /ð/ in two children's speech although /ð/ is lacking in the phonemes inventory of the language. Voicing across the languages, for example, Leung and Brice (2012) reported that voiceless fricative /s/ were substituted by voiced post-alveolar fricative /ʒ/ in Cantonese speaking children. *De-voicing* was also observed in the speech of the children. Devoicing of sounds in Sidaamu Afoo speaking children observed in the speech of three subjects while replacing /d/ and /dʒ/ by /t/ and /tʃ/, respectively. It is reported the same process in the speech of Malaysian English speaking Chinese children (San, 2010). Fricatives /v/ and /z/ devoicing occurred also in Malaysian English speaking Chinese Children. In Amharic-speaking children, word initial, medial and final devoicing noted in the speech of two children aged 4; 2 and 4; 8 (Abebayehu, 2013). Word-initial devoicing in Amharic is /dʒ/ substituted by /tʃ/, word-medial devoicing includes /ʒ/ substituted by /ʃ/ and /g/ substituted by /k/. Word final devoicing is /d/ substituted by /t/. However the devoiced sounds across the languages similar, the current study not allows /ʒ/, /z/, and /v/ sounds. *De-nasalization* of sounds appeared in the speech of the children. The only de-nasalization sound occurred in Sidaamu Afoo children were noted as /ɲ/ replaced with /j/ at word- initial in the speech of two children. However there is no closed similarity across the languages, for example, McCarthy and Smith, (2003) reported de-nasalization of /n/ replaced by /ŋ/ and /p/. *De-ejectivization* is the one salient phonological process realized prominently in the current study. De-ejectivization noted in the speech of all children in this study, that they replaced

ejective consonants with their pulmonic counterparts. The ejective sounds in the language include, /p', t', tʃ', k'/ replaced by /p, t, tʃ, k/ at both positions of the words. The similarity of de-ejectivization were also noted in Amharic-speaking children including /s'/, which the current study ignored (Abebayehu, 2013). *Cluster Deletion and Substitution* is another prominent phonological process noted in the language. Sidaamu Afoo consonant cluster permitted of nasal clusters and liquid clusters of the word-medial which already mentioned in previous chapters. In the cluster acquisition in this study, nasal clusters (/nt/, /nk/, /nt'/, /ntʃ/) acquired earlier by more subjects. However, liquid clusters (/lb/, /lʃ/, /rtʃ/) were not acquired by any child in general. This is supported by the study of children acquiring Turkish where liquids were subject to deletion when they occurred in cluster (Topbas, 2006). Regarding the cluster deletion and substitution in current study, the first unstressed cluster were deleted and the second stressed cluster repeated itself and geminated, for instance, in the word /sirba/ 'dance' the first cluster 'r' deleted and substituted by the repeating of 'b' itself as /bb/, and produced as [sibba]; and this type of substitution is not observed in other languages. However, in other languages, for example, English-speaking children, consonant cluster reduced to a single consonant or both consonants were totally omitted (Leung and Brice, 2012). Cross-linguistically, cluster acquisition similarity to current study were noted in Turkish-speaking children that nasal +stops /nk/, /nt/ acquired earlier than flap + stops /ɾt, ɾk/ and liquid +stop /lp/ at later ages (Topbas, 2006). Liquids found in Turkish-speaking children are commonly subject to deletion in the cluster. In Amharic-speaking children, the word-final (/-st̪/ and /-nt̪/) consonant cluster are commonly reduced to /t̪/ (Abebayehu, 2013).

5.8. Theoretical Implications in Phonological Development

One of the major claims of phonological theory is that phonological development follows universal pattern. All theories stress the high similarity found across languages but also distinguish language specific. The similarities found in phonological development across children acquiring different languages; for example, universal cognitive abilities, general perception and production abilities and maturation. The results of the studies on other languages more agreed with the findings on phonological acquisition of the current study. In cross-linguistic comparisons of phonological acquisition, the error patterns in children's speech that

have most frequently been described for all languages investigated are much similar to the one found in this study. However the order of consonant phoneme acquisition, ages of acquisition and type of error patterns were differ across the languages. For example, Cantonese-speaking children found to complete their phonological acquisition by the ages of 3; 6 years, German speaking children by the age of 3; 11 years and English-speaking children later than the age of 4; 6 years (Fox, 2000). The current study also meets the hypothesis suggested in such studies that, Sidaamu Afoo speaking children complete their phonological acquisition by ages late after five years. It is dared to say that based on the tangible facts from the speech of the subjects. As stated in the analysis part of chapter five, phonological acquisition of the children observed in this study individually and tried to analyze and determined the results according to their ages, acquisition order, substitution positions, and types of phonological processes occurred with such substitutions.

The implication of consonants of word initial and medial substitution and realization of children's speech was analyzed. From twenty-four consonant phonemes of the language account, nine consonant phonemes were acquired by all subjects before ages of 3; 6, which is already described in chapter five. Nevertheless, 15 consonants were not completely acquired in the speech of the subjects. Moreover, some consonants, such as /r, tʃ', p', k'/ 100% not produced by any child at word initial, and /r, s, tʃ', ɗ, k'/ are too, at word medial. These sounds in general were not acquired before five years of age in Sidaamu Afoo speaking children. Therefore, these sounds must be acquired after five years. In the same way, sounds including /l, dʒ, t', ɲ / 66.6% were not acquire at both positions of the words. This implies that children acquire them late between ages of 3; 6 to 5; 0 years. Theoretical suggestion of early and late acquired consonants reported in the linguistic researches practically seen in this study. As several studies suggested, Sidaamu Afoo speaking children acquired nasals (without /ɲ/), stops, fricatives (without /s/) acquired earlier whereas affricates, liquids, ejectives, and implosives acquired last, including /s/ and /ɲ/ (Leung and Brice, 2012; Topbas, 2006; Dodd, 2003; Fox, 2000). However, in most of the studies across the languages ejectives and implosive acquisition did not reported, because this consonant inventory lacks in their languages.

As suggested in the study (Lust, 2006; Van *et al*., 2013), consonants that are relatively easy to articulate will probably be acquired earlier than consonants that are

difficult to articulate (e.g., laterals and trills).This is realized in the current study that the order of acquisition of consonant phonemes in children were noted as nasals, stops, and glides, acquired first than affricates. However the uncommon order is that fricatives /ʃ/ and /h/ were acquired earlier in Sidaamu Afoo speaking children, but in other languages, for example, in English /ʃ/ is acquired later (Dodd *et al*, 2003). Most of the phonological processes in other languages are also observed in Sidaamu Afoo speaking children including stopping, fronting, backing, gliding, voicing, devoicing, and unstressed cluster reduction (Leung and Brice, 2012; Fox, 2000; O'grady, 2003). Although the same process occurred across the languages, the sound which is substituted may be differing concerning such process in its manner of production. For example, English stopping sounds /s/ > /t/ and /ð/ > /d/, while Sidaamu Afoo stopping sounds /tʃ/ and /tʃʾ/ > /t/ and /dʒ/ > /d/. However, the phonological processes which the language-specifics found in this studies include ejective fronting, implosive substitution includes: implosive ejectivization, implosive stopping, and implosive glottalization. Moreover, the features of some phonological processes diverse from that of universally appear in other languages. For example, backing observed as labiodental fricative /f/ substituted for post-alveolar fricative /ʃ/, and also substitution of /l/ for alveolar approximant /ɹ/ which is different feature from other languages. This is why Sidaamu Afoo consonant phonemes inventory of both pulmonic and non-pulmonic consonants, ejectives and an implosive. Although phonological realization of pulmonic consonants widely observed in other languages in the world, Sidaamu Afoo phonological realization encompasses non-pulmonic phonological realization other than pulmonic consonants, so that it differ in this features from the other languages' phonological realization.

5.9. Conclusion

The aim of this study was to describe phonological development in Sidaamu Afoo speaking children. Phonological development of children in this study focused on acquisition of consonant phonemes of the language. As it has noted in previous chapters, consonant phoneme acquisition of the children individually investigated their speech realization in word positions. Each child's phonological substitution and realization tried to show in tables, that is the speech production of word initial and medial position. The age of the subjects considered for this study was from 3;6 to 5;0.

It is found that Sidaamu Afoo speaking children acquire their phonology from ages of 3; 6 and complete at 5; 0 and also still after five years. As described in the previous chapter, the order of phonological acquisition were described that nasals without /ɲ/ , stops, glides and fricatives without /s/ were found acquired first in this study. Other consonants acquired late. The most prominent variation in consonant acquisition was ejectives, liquids, and implosive, which were not acquired by all children until ages of five. Moreover, cluster reduction and substitution were noted to be late acquired especially liquid clusters. Substitution and realization of consonants were also analyzed cross-linguistically. Some consonant substitution and realization were observed similarity across the languages. For example, Amharic-speaking children substitute denti-alveolar trill /r/ by lateral /l/. Different phonological processes were found by analyzing the results of children's speech. Such phonological processes were described by cross-linguistic similarities and differences in that of reported different studies of child language languages. Some phonological processes in this study are similar to findings in other languages studies. For example, fronting of /k/ in Amharic and English, gliding of /l r / and substitution of /r/ in Amharic, devoicing of /d dʒ/ in Amharic and Malaysian English speaking Chinese, de-ejectivization in Amharic, and cluster acquisition order in Turkish speaking children (Abebayehu, 2013; Leung and Brice, 2012; San, 2010; Topbas, 2006). However, although the findings revealed similarity in languages, there were also some language-specific differences. In generally, the important findings in this study described so far are that the concept on the language-specific as following phonological acquisition hypothesized:

- Sidaamu Afoo speaking children should acquire the following phonemes at a very earlier stage, because they are part of words of high communicative meaning: /b m w t n j ʃ h ʔ/
- Sidaamu Afoo speaking children should complete the acquisition of their phonological system late in five and even after five years.
- Sidaamu Afoo speaking children are high prominently not being acquired consonants such as ejectives, implosive, and consonant cluster with liquids before ages of five.
- Backing of /f/, substitution of /l/, ejective fronting, and implosive substitution includes: implosive ejectivization, implosive stopping, and

implosive glottalization are some language-specific findings. These findings provide suggestion compared to theories of universal phonological acquisition.

5.10. Limitations and Recommendations

The findings in this study reported are not without limitation at all. Several factors limited the findings in this thesis, but some suggestions for future research needed from this limitation. The study was affected in lack of any work (documentation) regarding phonological development in Sidaamu Afoo speaking children. This is the problem to determine the ages when Sidaamu Afoo speaking children begin acquiring the phonology of their language. Moreover, the small number of children (subjects) may affect the validity of result due to high individual variations. Furthermore, this normative data did not reflect the whole population of Sidaamu Afoo speaking children because geographical diversity and socioeconomic status differences of Sidaama people may affect this study.

The findings of this study together with the limitation indicated above give direction for future research:

- It is very important that well-documented studies on speech development of typically-developing Sidaamu Afoo speaking children exist.
- Sidaamu Afoo speaking children should be assessed at schools at younger age in order to examine their phonological acquisition.
- Speech development of Sidaamu Afoo speaking children should be researched carefully using longitudinal study to complete the normative data.
- Especially for consonants that are produced significant variants in Sidaamu Afoo speaking children includes ejectives, implosive and liquids should be considered carefully in studies of phonological acquisition of children.
- Acoustic analysis should be done to accurately describe the differences of phonological features in Sidaamu Afoo speaking children.
- Further studies needed considering geographically diversity and socioeconomic status of Sidaama in speech of typically-developing children.

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APPENDIX 1: Single Word Lists of Consonant Phoneme

1. /b/	basu	/basu/	'cat'
	alba	/ʔalba/	'face'
2. /p'/	pheexiroosi	/p'et'roosi/	'peter'
	quuphe	/k'uup'p'e/	'eggs'
3. /m/	macca	/matʃ'tʃ'a/	'ear'
	ama	/ʔama/	'mother'
4. / w/	wixa	/wit'a/	'seed'
	qawwe	/k'awwe/	'gun'
5. /f/	fani	/fani/	'He opened'
	afi	/ʔafi/	'He knows'
6. /d/	dayi	/daji/	'He came'
	kadi	/kadi/	'He kicked'
7. /t/	tima	/tima/	"bread'
	ute	/ʔute/	'thorns'
8. /t'/	xoni	/t'oni/	'He offended'
	woxe	/wot'e/	'money'
9. /ɗ/	dhibba	/ɗibba/	'disease,
	Wodha	/woɗa/	' calves'
10. /s/	sima	/sima/	' seedling of weese[5]
	kisi	/ kisi/	' He touched.'
11. /n/	naacha	/naatʃtʃa/	'crocodile'
	ane	/ʔane/	'me'
12. /l/	lalo	/lalo/	'cows'
	bale	/bale/	'hole'
13. /r/	risa	/risa/	'hawk'
	birra	/birra/	'birr'
14. /ʃ/	shaana	/ʃaana/	'cabbage'
	woshsha	/woʃʃa/	'dogs /calling'

[5] Weese- a type of plant in which traditional food is made

15. /dʒ/ jaala /dʒaala/ 'friend'
aja /ʔadʒa/ 'young'
16. /tʃ/ chuuci /tʃuutʃ'i/ 'put *in to mouth*'
Kincho /kintʃo/ 'stone'
17. /tʃ'/ caffa /tʃ'affa/ 'swamp'
Hocco /hotʃ'tʃ'o/ 'piece of cloth'
18. /ɲ/ nyammo /ɲammo/ 'taste'
ganya /gaɲɲa/ 'mare'
19. /j/ yara / jara/ 'little/poor'
20. /g/ goco /gotʃ'o/ 'sheep'
ago /ʔago/ 'drunk'
21. /k/ kila /kila/ 'armpit'
hiikko /hiikko/ 'where'
22. /k'/ qasi /k'asi/ 'He is pierced'
maaqqe /maak'k'e/ 'pot'
23. /ʔ/ ona /ʔona/ 'empty'
Ko'o /koʔo/ 'there'
24. /h/ hadhu /haɗu/ 'She has gone.'

APPEENDIX 2: Sentence Construction with Each Consonant Phoneme.

1. /b/ Hillo *buna abbi* /hillo buna ʔabbi/. 'Hillo brought coffee

2. /p'/ *Pheexiroosi* seemma *diphi.* /p'eet'iroosi seemma dip'p'i/ 'Peter wore cotton cloth'

3. /m/ *Mitte ama* daggu. /mitte ʔama daggu/ 'One mother came.'

4. /w/ *Woxe* maxaafa *hawi.* / wot'e mat'aafa hawi/ 'Wote forgot a book'

5. /f/ *Funxe tufo tufi* . /funt'e tufo tufi/ 'Funxe is vomiting.'

6. /d/ *Daqe ado* duni. /dak'e ʔado duni/ 'Daqe spilled milk down.'

7. /t/ *Techo atewa* dayemmo. /tetʃo ʔatewa dajemmo/ 'Today I will come to you'.

8. /t'/ *Xeenu maxine* shiilshi. /t'eenu mat'ine ʃiilʃi/ 'The rain melted the salt'.

9. /ɗ/ *Dhuqqo* saa *hidhi.* /ɗuk'k'o saa hiɗi/ 'Dhuqqo bought a cow'

10. /s/ Beettu *siixo hiissi?* /beettu siit'o hiissi/ 'Where did the boy put tobacco powder?

11. /n/ *Naado ona* mine ei. /naado ʔona mine ʔei/ 'Naado enter an empty house.'

12. /l / .Kalo *lame* kincho *oli.* /kalo lame kintʃo ʔoli/ 'Kalo threw two stones'.

13. /r/ *Rosu* mine rakke *ha'ri.* /rosu mine rake haʔri/ 'Go to school soon.'

14. /ʃ/ *Shama* anga *mooshshi'r*i. /ʃama ʔanga mooʃʃiʔri/ 'Make dry up your wet hand.'

15. /dʒ/ *Jilo fajjo* xa'miri. /dʒilo fadʒo t'aʔmiʔri/ 'Jilo requested for permission.'

16. /tʃ/ *Chigo qooncho* hiiqqi. /tʃigo k'oontʃo hiik'k'i/ 'Chigo broke a bottle gourd.'

17. /tʃ'/ *Cea kooccu.* /tʃea kootʃ'tʃ'u/ 'Birds are noisy'

18. /ɲ/ Isi *nyerri* yaanni dayi. /isi ɲerri jaanni daji/. 'He came crying'

Isi hinko *hinyi* yii. /ʔisi hinko hiɲɲi jii/ 'He opened his teeth.'

19. /j/ *Yuse hayye* assitu. /juse hajje ʔassitu/ 'Yuse did sing hayye.[6]'

20. /g/ Guyye gide hagi. /gujje gide hagi/ 'Guyye laid the grain.

21. /k/ *Kaase hiikkitu*? /kaase hiikitu/ 'Where is the ball?'

22. /k'/ *Qarre haqqe* doli. /k'arre hak'k'edoli/ 'Qarre cut trees'

23. /ʔ/ Ogoru ko'o no. /*ʔogoru koʔo* no 'The bag is there'

24. /h/ *Hoga oohe?* /hoga ʔoohe/ 'would I give you a leaf?'

NOTE: No Sidaamu Afoo words begin with phoneme /p'/ at the word initial unless the word is borrowed, for instance, '/p'eet'roosi/.

[6] Hayye- oral folk song of women in Sidaama