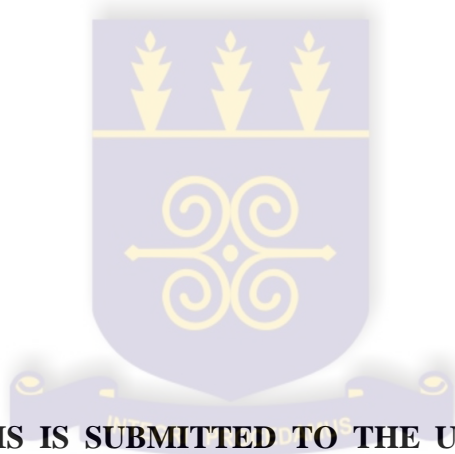


**THE PHONOLOGY OF A THREE YEAR OLD SAFALIBA-SPEAKING
CHILD**

BY

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(10278007)



**THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA,
LEGON IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR
THE AWARD OF M.PHIL LINGUISTICS DEGREE**

JULY, 2015

DECLARATION

I, Ruth Karehina Bodua-Mango hereby declare that, except for the references which have been duly acknowledged, this thesis is entirely mine, prepared under the supervision of Dr. George Akanlig-Pare and Dr. John Tetteh Agor and no part of it has been submitted previously for the award of a degree anywhere else.

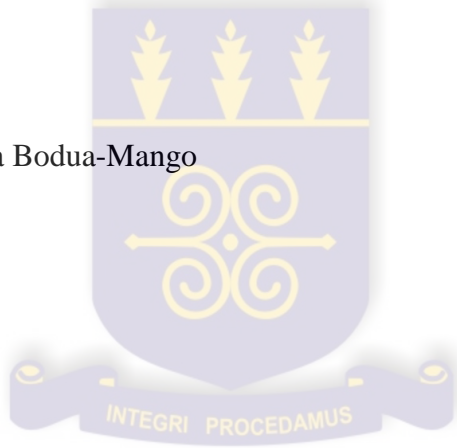
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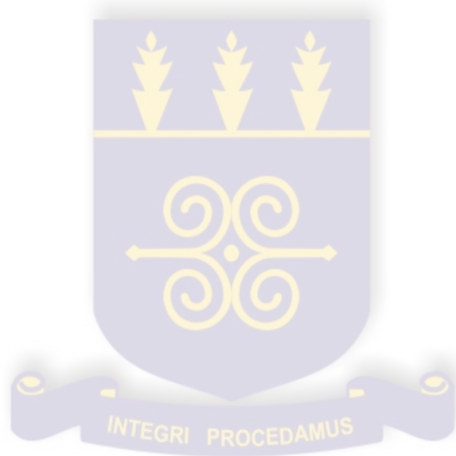
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Date.....

Dr. John Tetteh Agor

DEDICATION

This thesis is dedicated to my nephews and nieces; Dunia, Adam, Alfred, Asabea, Offeibea and Ayibea. Your first words aroused my curiosity to research into child phonology.



ABSTRACT

This thesis explores the language of a three year old Safaliba-speaking child from a phonological perspective. The findings of this work are largely based on primary data collected during a two month field-work between December 2014 and January 2015. Primary data was collected by means of elicitation: interviews and discussions recorded using an audio sound recorder. Native speaker intuition was relied on for gathering, transcribing, and analysing the data. Even though the study is descriptive, it adopts an eclectic approach.

The study begins with a description of the phonemic inventory of the language and then goes on to describe the phonemic inventory of the three year old Safaliba-speaker. With these as the foundation, differences, similarities and strategies that three year old Safaliba-speakers use in their quest to speak the language are identified. The results show that three year old Safaliba-speakers are able to distinguish between vowels in terms of their oral-nasal and their length qualities. However, out of the twenty-five consonants in the language, the three year old is able to produce sixteen of them. Fricatives are more difficult for them to produce as compared to stops, nasals, semivowels and laterals. The main strategy used by three-year old Safaliba-speakers is substitution. This, to a large extent, coincides with what is reported in the literature and explains universals and unmarked versions in languages all over the world.

ACKNOWLEDGEMENTS

I thank the almighty God for his guidance and protection, wisdom, strength and good health which has made this work possible.

To my supervisors Dr. George Akanlig-Pare and Dr. John Tetteh Agor, I say thank you for your patience, encouragement and dedication throughout each stage of my thesis. Thank you for all the comments and suggestions. I will always be indebted to you.

I would also like to thank Prof. Kropp Dakubu, Dr. Paul Schaefer, Prof. Albert Awedoba, Dr. Stephen Acheampong, Mr. Saaka Adams, Dr. Jonathan Allen Brindle and Aunty Agartha for their advice and encouragement throughout this work.

I would like to express my sincere appreciation to all my informants especially Samata, Lighor, Barikisu, Kaniti, Father and Kwame who helped me with the data. “Aní ya tuma”. Also, thanks to the department of linguistics, University of Ghana for laying the foundation for me. Special thanks go to Dr. James Saanchi, Dr. Fuseini Hudu, Dr. Evershed Amuzu and Prof. K.K. Saah of the department of linguistics for mentoring me.

I would not be who I am but for my family. A big thank you to my family for their prayer and support. To my sister Mrs. Fati Bodua-Seidu, I say you are an inspiration.

To all my friends especially Ayesha, Jennifer, Patience, Razack, Asor, Gideon and Ekow, I say thank you all.

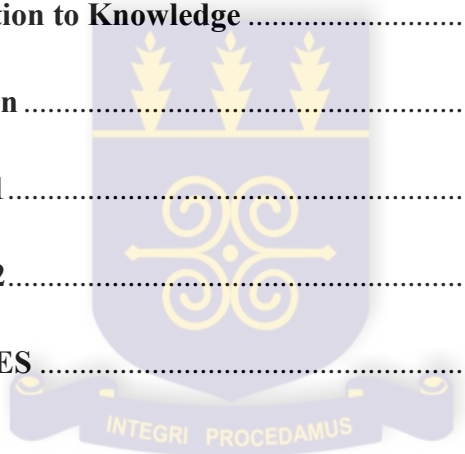
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LIST OF ABBREVIATIONS

1PL	First Person Plural
1SG	First Person Singular
3PL	Third Person Plural
3SG	Third Person Singular
ATR	Advanced Tongue Root
CHVH	Cross-Height Vowel Harmony
DEF	Definitive
DET	Determiner
FACT	Factitive
LAD	Language Acquisition Device
NEG	Negative
PL	Plural
PST	Past Tense
SG	Singular
SPE	Sound Pattern of English
cf.	Compare

SYMBOLS

.	Syllable break
→	Is realized as
σ	Syllable
[]	Child's output
//	Adult's language
:	Vowel length

CHAPTER ONE

GENERAL INTRODUCTION

1.0 Introduction

This thesis describes the phonology of the three year old Safaliba child. The central goal is to understand the developmental pattern of the phonology of the Safaliba child. The thesis will also explain the similarities and differences between the child's and the adult's language.

The purpose of this chapter is to give a brief background to the study. The chapter also describes the socio-linguistic background of the Safaliba people. It takes into consideration their culture: language, history, occupation, and the economic background. The problem statement, relevance and method employed in carrying out the study have also been addressed in this chapter. The chapter concludes with the organization of the study.

1.1 A Background to Child Language Study

One of the most interesting phenomena studied by linguists is language acquisition. O'Grady (2005) states that, nothing is more important to a child's development than the acquisition of language. Language acquisition occurs spontaneously and is one of the most remarkable achievements of childhood. It is remarkable because little or no explicit teaching seem to be necessary (Rice 1989).

Language is a means by which people communicate. It is described as “an intrinsic aspect of our human inheritance” (Fowler 1974:1). Gass and Selinker (2001:93) state that language is a form of communication but children communicate long before they have language – at least in the way we normally think of language.

According to Trask (1999: 169), language acquisition begins very early, probably even before the child is born. It is believed that sound is carried through the mother's womb to the unborn child. The child therefore acquires language by listening to sounds in the environment. There is evidence to show that listening to language is an easier and fast way that enables children to acquire language. The surrounding environment is the major source of acquiring language.

In the study of the growth of language in children, acquisition is used to refer to the process or result of ‘picking up’ a particular aspect of a language, and ultimately the language as a whole (Crystal 2008:8). Language acquisition is the process by which humans acquire the capacity to perceive and comprehend language, use words and sentences to communicate. The acquisition of language is a silent but rapid process and we do not have a memory of how it was acquired. Yet, it is “doubtless the greatest intellectual feat any of us is ever required to perform” (Bloomfield 1933:29; cf Gleitman et al. 1988) cited in Lust (2006:1).

Studies in child language acquisition have been of interest to researchers for a very long time. Contemporary literature on child language acquisition began to appear in the 1960's but emerged as a strong area of

inquiry only during the 1970's and the 1980's (Rice 1989). It is a universal phenomenon and a remarkable achievement of childhood with little or no conscious efforts being made. The study of child language sits at an interface among linguists, developmental psychologists, sociologists, anthropologists and educationists (Rice 1989). Rice adds that child language links basic questions about the nature of the human intellectual competencies to applied questions of how to teach young children.

Most works on language acquisition have focused on the stages and the processes of language acquisition and how the environment affects language acquisition. This thesis will focus on the phonology of the child's speech and give explanations for the observed differences between the speech of the child and that of the adult Safaliba speaker.

There are various views about the whole acquisition process. Chomsky (1965, 1975) and McNeill (1970), argue that language is not learnt but rather it unfolds as part of maturational processes. They add that the maturational process, like physical skills such as walking, requires a basic supportive environment. There is an inbuilt mechanism, the language acquisition device (LAD), which aids in language acquisition (Chomsky 1965, 1975; McNeill 1970). Chomsky compares the LAD to the computer which is programmed for language and reads certain kinds of input. In that regard, the language a child hears serves as an input and then the child acquires the relevant rules of the target language.

At the extreme end, behaviourists like (Watson (1924), B.F Skinner (1957) and Ellis (1985) argue that children are able to speak a target language

because they imitate what they hear around them. They further argue that reinforcement from parents and other members of the community aids in the language development of the child. Piaget (1983) placed acquisition of language within the context of the child's mental or cognitive development. He argues that language is just one aspect of the child's overall intellectual development.

Bruner (1957) believes that a child has to understand a concept before he or she can acquire the particular language from which expresses that concept. Bruner believes that children have an innate capacity that helps them make sense of the world and that cognitive abilities develop through active interaction. Unlike Piaget however, Bruner argues that social factors, particularly language, were important for cognitive growth.

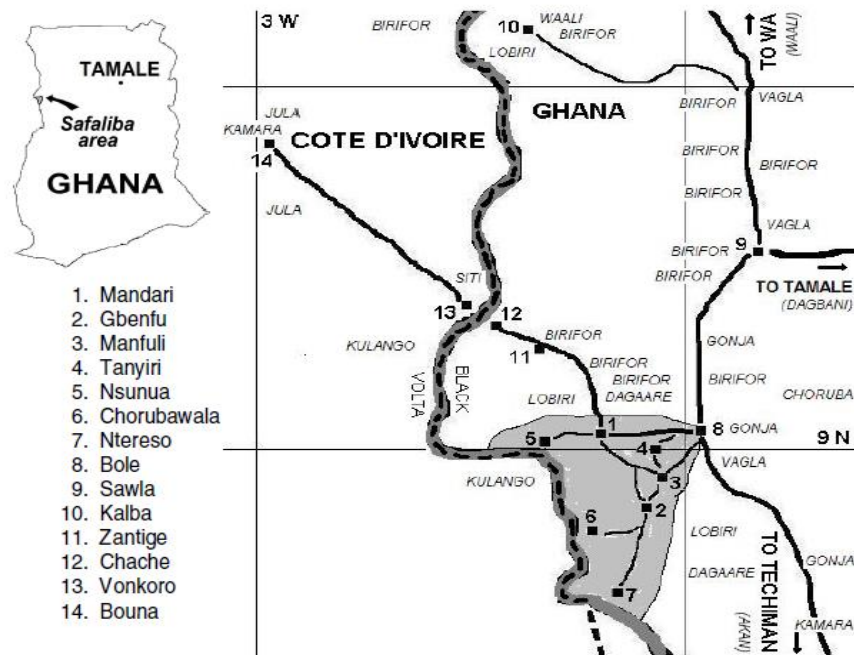
The above suggests that there is no consensus on how children acquire or learn language. However this lack of consensus has no effect on this study as it seeks to only compare and contrast child language and adult language so as to throw more light on how child language is structured.

1.2 The Safaliba Language and its People

Safaliba is a language spoken in the Bole District of the Northern Region of Ghana. It is spoken by about 5000 -7000 people in approximately fifteen villages. The largest Safaliba speaking village in Ghana is Mandari. Other Safaliba speaking villages are Gbenfu, Tanyiri, Manfuli, Nsunua, Chorubawala

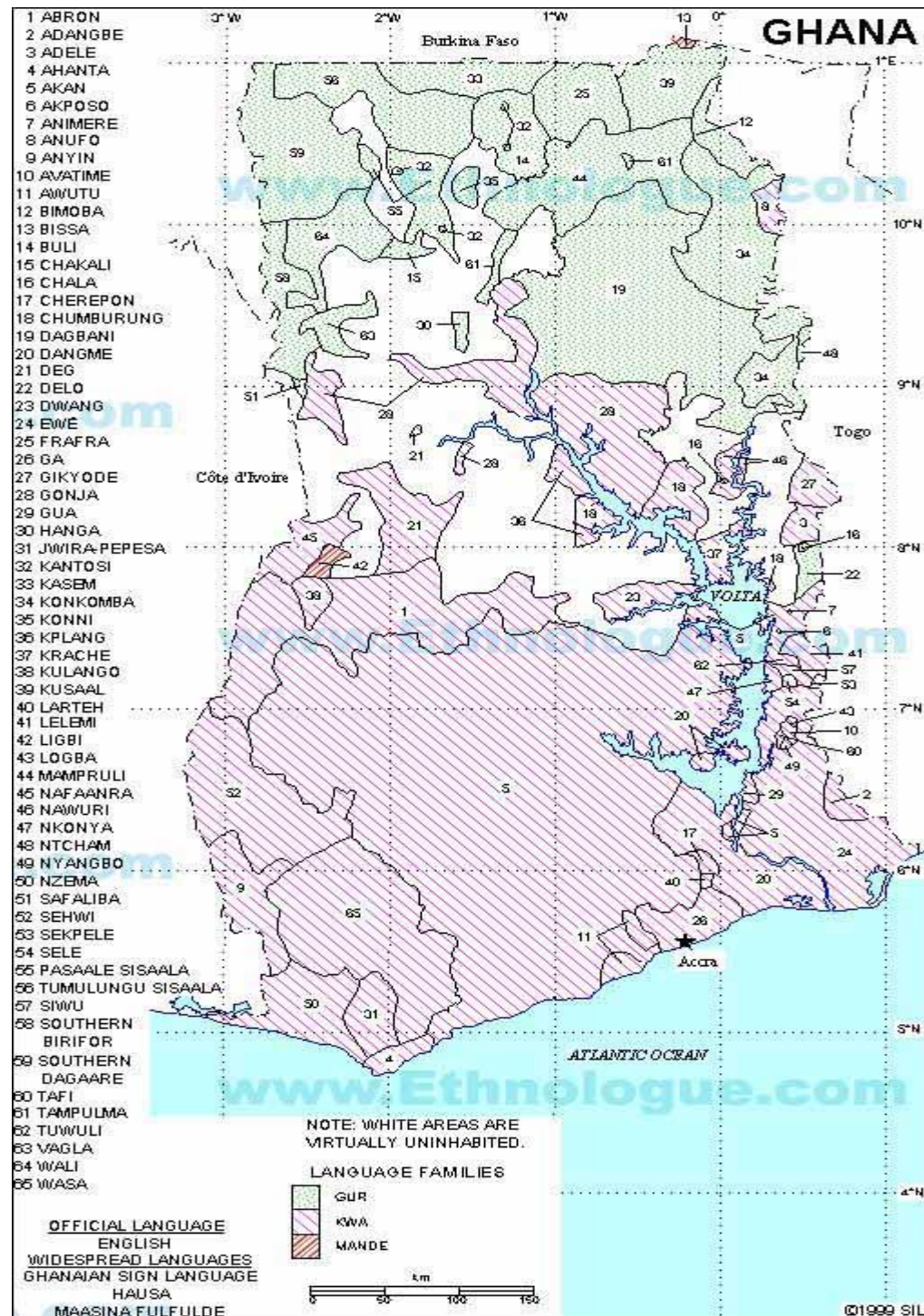
and Ntereso. As a result of inter-marriages and migration, some speakers of Safaliba have settled in Bole, Sawla and Kalba (Schaefer 2009:5).

Figure 1.1 Safaliba Speaking Villages



Adopted from Schaefer 2009:6

Figure 1.2 The Language Map of Ghana



Source: www.Ethnologue.com.

Safaliba speakers, since time immemorial inter-marry with people from other ethnic groups in the area. Examples of some of these ethnic groups are the Gonjas, Vaglas, Chorubas and members of the Siti ethnic groups (Schaefer and Schaefer 2003:1).

There were other Safaliba speaking villages which have become extinct due to wars and diseases such as river blindness. Some of these villages were Wulasi, Siguru, Wabili, Sikiri and Gitenwini. Safaliba speakers are also found in few villages in La Cote d'Ivoire namely Vonkoro, Bondoukou and Bouna. Both the people and the language are called Safaliba, and speakers are referred to as Safalibas while a single individual is referred to as a Safaluu (Schaefer 2009). Depending on the village you come from, you may be referred to as one coming from that village. For example people from Mandari could be referred to as *Mandaya*, and those from Gbenfu as *Gbennima*.

It is worth noting that Safaliba has no dialects however due to migration of the Julas into the Muslim section of Mandari, one would notice slight differences in the pronunciation of some Safaliba words. This could be as a result of the Jula's difficulty in pronouncing certain words in Safaliba due to the absence of certain sounds in their native language. According to Bodua-Mango (2012), the Jula's originally migrated from La Cote d'Ivoire. However, they have now integrated with the Safaliba people and speak the language as a result of inter-marriage. Safaliba speakers practice the patrilineal system of inheritance.

1.2.1 Local Political Administration and Festivals

Safaliba speakers in Mandari are headed by a Gonja chief responsible for the major running of activities in Mandari. There is the Safalinaa (Safaliba Chief) in Mandari responsible for administrative duties.

The local political administration of the Gonja people is Pyramidal by nature. For one to become a Bolewura (chief of Bole) he has to first be a Mandariwura (Mandari Gonja chief). The highest level of the structure consist of the Overlord, known as the Yagbonwura, whose seat is in Damongo. He performs both administrative and cultural duties, and is the general custodian of the Gonjaland. The next in the hierarchy are the paramount chiefs, divisional chiefs, and finally the sub-chiefs. Reporting of responsibilities and policy dissemination in Gonjaland is a two track approach thus the top-down power flow and the bottom-up feed-back approach of political chieftaincy administration among the ethnic groups.

The administrative duties are handling of disputes among the ethnic groups in the Gonjaland. The Safalinaa (Safaliba chief) performs the administrative role in dispute resolutions, taking royalties from settlers who cultivate crops on the Safaliba land, planning for occasions, and performing traditional duties such as festivals and sacrifices to appease the gods of the land. When any of the administrative roles is unsolved by the Safalinaa he transfers it to the resident Gonja-Safaliba chief (Mandariwura) to administer and dispense justice.

The Cultural responsibilities include pouring of libation to the ancestors and gods, and making sacrifices during the Festival, Deng. During the Deng

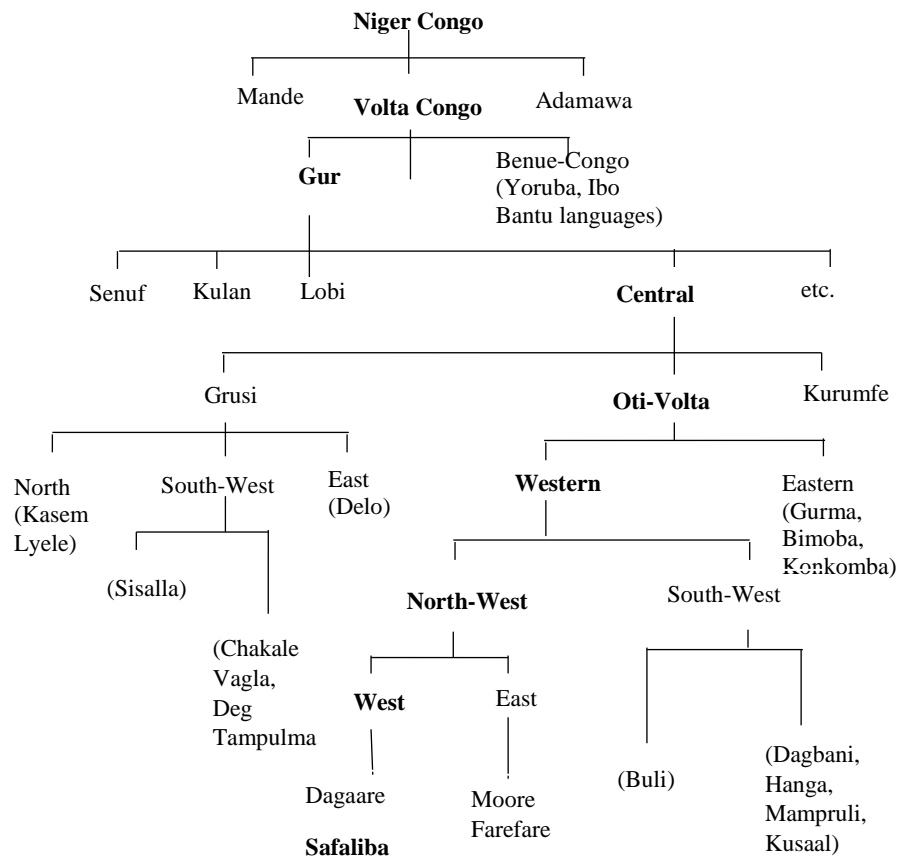
festival, people go to Sonyo to make sacrifices and pledges to Sonyo-Kipo, the Sonyo deity. Cultural responsibilities include superintending over festivals such as Ambatigi and Dongu. The Ambatigi festival is a post-harvest festival celebrated by all Safaliba people. It is an annual thanksgiving celebration to the ancestors.

Ambatigi means 'who is not satisfied'. During Ambatigi the Safaliba people throw fire to exorcise hunger. Safaliba people also celebrate the Damba festival which was originally celebrated by the Dagombas, Gonjas, Mamprusis, Nanumbas and the Walas who have muslim backgrounds. It is usually celebrated somewhere between March and July, among the various ethnic groups but not celebrated at the same time amongst them.

The most common dance among Safaliba speakers is the Zingɔ dance. It is a traditional dance performed when a chief is being enskinned. It is also performed during funerals. The dance is mostly performed overnight before the enskinment or burial in the locality.

1.2.2 Linguistic Classification of Safaliba

Naden (1988) classifies Safaliba as a Niger-Congo, Atlantic-Congo, Volta-Congo, North, Gur, Central, Northern, Oti-Volta, Western, Northwest language. Safaliba is closely related to Waali, Dagaare, Birifor and Farefare. According to Dakubu (2005) Safaliba is closely related to Dagaare as they both belong to the Western Oti-Volta group of central Gur languages.

Figure 1.3 Genetic Classification of Safaliba

Adopted from Dakubu 2005:4

Dakubu (2005:4) adds that, the current classification of languages is primarily based on Lexicostatistics, a technique used to determine the degree to which various pairs of languages and dialects share their basic vocabulary.

1.2.3 The Economic Background

The area is sparsely populated with undulating woodlands. The traditional occupation of the Safaliba people since pre-colonial times is subsistence

farming and this has been their major means of livelihood. The Safaliba people cultivate food crops such as yam, cassava, maize, millet and guinea corn. Surplus crops are either sold or exchanged for edible items such as salt, fish and milk. Other crops cultivated in recent times are beans, groundnuts, rice and cotton. Cash crops such as cashew have become a recent source of income with some inhabitants owning plantations. One such plantation is the Alakabo Farms. The Safaliba people are known to hunt during the dry season when harvesting of the crops planted during the raining season is taking place. Safaliba people also raise livestock such as sheep, goats, cows, fowls, guinea-fowls and ducks to supplement their income.

Fishing is a predominant commercial activity among the inhabitants of Nsunua, Ntereso, and Chorubawala. Some Ewe speakers migrated and settled around these areas and have taken over fishing on a large scale. The inhabitants of these communities intermarry with the Ewes. One other cherished occupation is commerce and transport business within the district. This is especially the case among the Muslim Safaliba speakers in the area (Schaefer and Schaefer 2003:1).

1.2.4 Religious Affinity

According to oral tradition, traditional religion was the key religion of the Safaliba people. As time went on, Islam was introduced by the Jula from Cote d'Ivoire. This view is supported by Bodua-Mango (2012) who explains that

religiously, Safaliba people are largely traditional believers and Islam was brought into the community by immigrants from Cote d'Ivoire.

Christianity was introduced a few decades ago and as such the Christian population constitute a minute percentage of the population. However, Christianity is rapidly becoming common with churches being established here and there. Interestingly, the source of membership into the Christian faith has mainly been among the traditional believers with the Muslim population relatively unaffected.

Among the Muslim population, Jula is used as the medium of instruction in the Arabic schools. It is also used for religious instructions or debates. Safaliba, however, is used for preaching in the mosque. This view is also shared by Schaefer and Schaefer (2003:1). Sometimes, Gonja or Jula is used as the local dialect instead of Safaliba. Many Safaliba speakers who live in Sawla and the surrounding towns are related to the Muslim section in Mandari (Schaefer and Schaefer, 2003:1).

1.3 Statement of the Problem

It is well known universally that children learn language by imitating others (their parents, siblings, relatives and friends) in their community. The child's success at learning a language is dependent on the quality of the input the child receives. If the quality of the input he or she receives in the environment is poor, then the child's output is not likely to be better. Children may combine sounds and words into patterns we have never heard, making the analyses of their utterances problematic. There are other factors that affect a child's

language acquisition, particularly the phonological component. This may be influenced by the kind of friends the child picks, the lingua franca of the area of settlement, and the use of jargons in the language.

There are few studies done on child language acquisition in Africa. Some of these include (Dryson 1980; Kumi 1988; Adjei (2002). In light of child language, Safaliba has recorded no description and documentation and so there was a need for this research in order to understand the phonological development patterns of the Safaliba child. This thesis therefore aims at giving a meaningful description of the nature and acquisition process of the language of the three year old Safaliba speaking child. The stages of acquisition of language are universal, and independent of one's dialect. This study will thus provide new data to either further authenticate this claim or otherwise. The main focus of this thesis is to look at Safaliba phonology and to give explanations to observed phonological differences between an adult Safaliba speaker and that of a three year old Safaliba speaker.

1.4 Research Questions

Three main research questions guide this study. They are as follows:

1. What is the nature of a three year old Safaliba-speaking child's language?
2. How phonologically different is the three year old Safaliba child's language from that of the Safaliba adult's?

3. Are there any universal strategies of language acquisition that can be found in the Safaliba child's language?

1.5 Objectives of the Study

This thesis examines the language acquisition of six 3-year old Safaliba speaking children. The objectives of the study include the following:

1. Investigate the nature of a three year old Safaliba-speaking child's language;
2. Examine the phonological similarities and differences between the three year old Safaliba child's language and that of the Safaliba adult's.
3. To identify universal strategies adopted by the Safaliba child.

The study would also give a detailed description and explanation to observed phonological patterns of the child's speech in the data. The work would also find out if the Safaliba child conforms to the universal strategies of acquiring phonology.

1.6 Research Methods

The data for this study is largely primary, collected by means of elicitation through interviews and discussions recorded using an audio sound recorder.

Data is gathered from six 3-year-old Safaliba speaking children made up of three males and three females in ordinary and natural conversations at separate

times. These conversations were then transcribed and used as data for the study. The researcher's native speaker intuition was also relied on for gathering, transcribing and analysing the data.

The reason for choosing three-year olds is that, at age three, children already have a large vocabulary and so they would have a strong effect of phonotactic frequency on their production of the vocabulary (Storkel, 2001).

1.7 Organization of Thesis

This thesis is divided into five chapters. Chapter one, the general introduction, presents a background and other related information about the thesis. This background information includes the Safaliba language and its people, the origin of Safaliba and the economic background of the people. The chapter also outlines the research problem, objectives and significance of the study. The methodology used in the research is described in this chapter.

Chapter two is dedicated to Literature review, theoretical framework, and research method. Chapter three gives an overview of Safaliba phonology and phonological processes and serves as a basis to account for differences in child phonology and adult phonology. Chapter four presents the analysis of the data while chapter five deals with conclusions and recommendations.

1.8 Overview of Chapter One

This chapter gives a brief background to the study and examines the socio-linguistic background of the Safaliba people. It takes into consideration their language, history, occupation, culture and the economic background. Other issues addressed include the problem statement, relevance and method used in the study. The chapter concludes with the organization of the study.

CHAPTER TWO

LITERATURE REVIEW AND RESEARCH METHODS

1.0 Introduction

This chapter reviews literature relevant to the study. First, it reviews literature of some competing theories of child language acquisition. Second, child phonology, Safaliba phonology and the phonology of some related indigenous languages are appraised. The chapter also discusses the theoretical framework and the research methods.

2.1 Competing Theories of Child Language Acquisition

Child language acquisition is one phenomenon that has attracted considerable attention and controversy. Agor (2010:25) explains that there are two classically opposed views articulated to explain how children acquire their mother tongue. He further explains that arguments are raised by proponents in support of the respective positions held. This section reviews the two classically opposed theoretical views that account for how children acquire their mother tongue. These theoretical views are the Empiricist and the Rationalist positions.

2.1.1 The Empiricist View of Child Language Acquisition

The empiricist included researchers such as Watson (1924), Thorndike (1932) and Bloomfield (1933). They are of the view that researchers as scientists should shun speculative explanation of language and focus exclusively on the objective description of the observable facts. In relation to child language acquisition, the best known proponent of the empiricist approach is Skinner (1957) who explains that language acquisition is a behaviour and like other forms of human behaviour, it is learnt by a process of habit-formation in which the main components are:

- i. The child imitates the sounds and patterns which he hears around him.
- ii. People recognise the child's attempt as being similar to adult models and reinforce (reward) the sounds, by approval or some other desirable reaction.
- iii. In order to obtain more of the reward the child repeats the sounds and patterns, so that they become habits.
- iv. In this way, the child's verbal behaviour is conditioned until habits coincide with the adult models.

(Littlewood 1984:5; Ellis 1985:20-23; Mitchell & Myles 2004:30; Agor 2010:29)

Skinner's (1957) suggestion of child language acquisition is attacked by Chomsky (1959). Ellis (1985:30) captures vividly aspects of Chomsky's criticism as follows:

The concept of ‘analogy’, which Skinner had evoked to account for the language user’s ability to generate novel sentences, was ridiculed as far too crude a notion to capture the creative use of language that lay with each individual’s competence. Also, the concept of ‘imitation’ and ‘reinforcements’ were rejected as inadequate, both because they could not account for the creativity of language, and because it was shown in L1 acquisition that parents rarely corrected formal errors or rewarded correct utterances, and that children were only able to imitate utterances which lay within their existing competence and could not, therefore, learn habits this way (Ellis, 1985:30).

The debates by Chomsky and Skinner are important for the current study. For example, the rationalist view explains why every child is capable of acquiring language. It also explains why an animal would never be able to speak even if given the best linguistic input. The empiricist view also explains why a Safaliba child would acquire Safaliba and not Ga or Ewe. This means both views are valid and should be seen as complementing each other.

2.1.2 The Rationalist View of Child Language Acquisition

Chomsky’s (1959) attack on Skinner’s theory of language acquisition led to a restatement of the rationalist view on language acquisition and learning. In language acquisition the term ‘rationalist’ relates to the view that certain skills and abilities are inherent or hard-wired into the brain at birth. This view is embedded in ‘innatism’ which refers to the view that human beings are born

with the ability to acquire and learn skills such as language. Rationalist theorists of language include Chomsky (1966), McNeill (1966; 1970), Lenneberg (1967), Fodor (1983), and Pinker (1984).

Chomsky (1966), is the most prominent proponent of the rationalist position. To him, the ultimate source of linguistic knowledge is the Language Acquisition Device (LAD) which lies somewhere in the brain. In later descriptions of Chomskyan theories, the LAD is referred to as 'language faculty'. According to Chomsky (1987:50), "there is a specific faculty in the mind/brain that is responsible for the use and acquisition of language, a faculty with distinctive characteristics that is apparently unique to the species in essentials".

The language faculty is renamed Universal Grammar (UG) which is described as part of the genotype specifying one aspect of the initial state of the human mind and brain (Chomsky 1980:82). Ellis (1985:43) presents Chomsky's notion of the Universal Grammar in the following words:

The Universal Grammar, then, exist as a set of innate linguistic principles which comprised the 'initial state' and which controlled the form which the sentences of any given language could take.

However, Chomsky's rationalist theory of language acquisition launched in the late 1950's, has been criticised by many. According to Agor (2010:33), even within the rationalist camp, there are disagreements about the nature and the function of the LAD. As a result, two main positions emerged: general nativism and special nativism. The rationalist outlook is also referred to as nativist view. The general nativism position holds that there is no specific

device intended for language learning. It is explained that there are ‘general principles for learning that are not only for language learning and may be used in other types of learning’ (Eckman, 1996:398).

In recent years, the opposition to the nativist theory of language acquisition has multiplied. Chomsky (2000:50) himself acknowledges this huge opposition when he says “there is a huge literature arguing against the innateness of language. There is nothing defending the thesis... Lots of people reject the proposal that language is innate but nobody ever answers them”.

To conclude, I would like to argue that neither nature nor nurture alone is responsible for language learning; both complement each other.

2.2 Studies on Child Acquisition of Phonology

The current research seeks to address the acquisition of Safaliba phonology by three-year olds. Younis (2008) states that “when a child learns to talk, he is acquiring four different areas: sound (phonology), vocabulary (semantics), syntax (grammar and morphology) and usage (pragmatics)”. Rice (1989:149) had earlier expressed the same view. He further groups language acquisition into three components to elucidate how all these fit together to account for the spontaneous manifestation of language:

1. Language to be acquired (the task to be mastered);
2. The child’s abilities and predispositions that he or she brings to language acquisition; and

3. The environmental setting, that is the language that the child hears and the speaking context.

According to Fikkert (2000), understanding the development of phonological systems should be of great importance to understanding phonological knowledge, at least on the postulation that there is continuity between child phonology and adult phonology since child and adult languages can only differ in limited ways. The current research also touches on both child and adult phonology of Safaliba by comparing the two phonologies to identify differences and similarities between them since there is continuation between child phonology and adult phonology.

Apart from these works, which are particularly dedicated to the importance of child phonology, it is important to mention works that examine strategies of phonological acquisition. These works would provide evidence of cross-linguistic studies, universal and language specific evidence of children's phonological development. The current research looks at the various definitions of phonology and examines the phonological processes adopted by the Safaliba-speaking child. It is important to have an understanding in phonological knowledge of children in order to understand phonological representations and systems.

Phonology, according to Smith (2010:1), "constitutes a natural sub-part of the study of I-language and one area of phonological investigation is devoted to studying the acquisition of phonological knowledge by the child exposed to primary linguistic data from the ambient language." On the other hand, to Yule (2010:45), "Phonology is essentially the description of the

systems and patterns of speech sounds in a language.” Therefore phonology is the basis of language development.”

According to Yvan and Inkelas (2011), child language is generally described as a simpler version of a target language with many phonological patterns. The challenge therefore lies in the interpretation of developmental patterns given that the differences between child phonology and adult phonology can be attributed to perception, grammar and production. Hayes (1997) describes the phonology of a child as a mechanism or pattern used by children to reduce the complexity of adult forms to what they can handle with their limited articulatory abilities.

According to Younis (2008), “phonological process can be defined as what the child brings to the language in order to simplify adult words. They are often recognized by parents as simple pronunciation errors. (See: Ingram, 1978:64; Massucci, 2007: 1 and Walsh, 2007: 2). Fikkert (2000), notes that child language differs from adult language in the logic that, a child’s phonological organization is immature, and does not permit contrasts that the adult language exhibits, but it is not fundamentally different. Similarly, Lust (2006:57) also reports that several phonological processes used by children show that children’s production are deformed in that, they do not match the adult form. These deformations are basically as a result of their inability to articulate some sounds.

Throughout the relevant literature, (Yvan and Inkelas 2011, Hayes 1997, Fikkert 2000, Lust 2006 and Younis 2008), child phonology is seen as a simple, deformed and immature version of adult phonology because they do

not have the capabilities to produce the complex adult forms. The research sees these definitions as inappropriate and states that, though children's speech differ from that of the adult's, the child's phonology is unique, systematic and a rule governed language. Children therefore have to be appreciated for the efforts made in their quest to use language. These studies (Smith 1973, Jakobson 1960 and O'Grady and Sook 2001) are evidence of both chronology in the acquisition of sounds and that children's language are acquired systematically and so should not be seen as immature or simple.

The current research agrees with Rice (1989:155) who states that overall, "the study of children's language provide insight into fundamental human mental abilities and contributes to formal models of linguistic knowledge, provide a challenge to accounts of how children learn and how adults can teach, and reminds us of the priority of the social/communicative nature of human existence". Also, to acquire a native language, a child must do two things: learn the words of the language and extract the relevant phonological characteristics of those words (Storkel and Morrisette 2002:24).

Also, according to Lust (2006:144), children must discover the units required in order to map from the continuous acoustic stimulus to a digital knowledge of language, make fine distinctions in both perception and production, discover which differences are linguistically significant and which ones are not, that is, which are contrastive in their language(s). The research therefore will focus on child phonology typically the sounds and patterns in child language by giving explanations to the phonological patterns from the data gathered.

According to Ingram (1976:11) acquisition of first words begins at age 1 and ends around age 6 or so. The main advances take place between age 2 to age 4. The three year old therefore will have a larger vocabulary and so have a stronger effect of phonotactic frequency on their production of vocabularies (Storkel 2001). In establishing the nature of child language development, the choice of the phonology of a three-year old Safaliba-speaking child in comparison with that of an adult is therefore appropriate.

2.3 Empirical Studies on Child Acquisition of Phonology

The phonological development of children has been researched into by many researchers and interesting findings have been made. According to Grijzenhout and Joppen (2003), in the literature on the early acquisition of English and Dutch (Ingram 1978, Smith 1973, and Fikkert 1994a, b), it is usually assumed that the first words in child speech consist of a plosive followed by a vowel, thus, the first words that children produce supposedly have a CV-structure.

Jakobson (1941) cited in Hyman (1975) state that, in all languages, sound segments tend to be learned in a relatively fixed order by children. There is chronology in the acquisition of sounds therefore certain general tendencies cannot be missed. He observes that children learning English acquire [f] before they acquire [θ]. Therefore it is more likely for a word like *thumb* to be pronounced with an initial [f]. Also a word like *three* may become homophonous with the word *free*. In the same light of general tendencies,

voiceless stops are learnt before back consonants as well as front consonants such as [p] and [t] and back consonants such as [k].

O'Grady and Sook (2001:331) explain that, although there is a good deal of difference from child to child with regards to the order in which speech sounds are mastered in production and perception, they state the following universal tendencies:

1. Vowels are generally acquired before consonants (by age three).
2. Stops tend to be acquired before other consonants.
3. In terms of place of articulation, labials are often acquired first, followed (with some variation) by alveolars, velars, and alveopalatals. Interdentals (such as [θ] and [ð]) are acquired last.
4. New phonemic contrasts manifest themselves first in word-initial position. Thus, the /p/-/b/ contrast, for instance, is manifested in pairs such as /pat-bat/ before /mop-mob/.

Jakobson (1960) cited in Hyman (1975) found that, there is a relationship between the order in which sounds are acquired by children and the implicational universals distinguished on the basis of phonological inventories. A language will not have /b,d,g/ unless it has /p,t,k/ and likewise a child will most probably not learn [b,d,g] until he has learned [p,t,k]. The correlation is not unintentional, but rather results from the relative complexity of some sounds (for example, [b,d,g] as compared to [p,t,k]). These findings on language universals are relevant to the current thesis as they will help in identifying universal strategies adopted by the three year old Safaliba-speaker.

The investigation on children's language development will not be complete without looking at language specific works on phonological development and evidence of the concept of phonological universals of children. Rauch (2003) researched into the phonological development, specifically consonant harmony of a German child's language. The pronunciation of a child aged one year eight months and twenty-eight days and one year nine months and fourteen days is compared with that of the adult pronunciation. Rauch found that, the child preferred coronal harmony in which velar and labial sounds assimilate to coronal sounds. Also, he observed that progressive assimilation occurs more frequently than regressive assimilation.

Younis (2008a:54) found that substitution is one of the several phonological processes observed in Mosuli Arabic at the age of two. Findings from his investigations show that substitution occurs initially, medially and finally in all consonantal features. With regard to place of articulation, most instances of substitution occur in dental (alveolar), velar and uvular sounds especially. Alveolar plosives /t/ and /d/, are the easiest for children while fricative sounds seem difficult to the children. The most recurrent substitution observed is /s/ to /t/. Likewise Fikkert (1994) shows that Dutch children had difficulties with fricatives as compared to stops and so they develop different strategies to avoid initial fricatives. They either omit fricatives or replace them with stops which are easier for them to produce.

Mowrer and Burger's (1991) study on seventy Xhosa-speaking children aged two to six years, found that their subjects mastered twenty phonemes common to both Xhosa and English earlier than the English-speaking control group did. By age three Xhosa-speaking children according to the study,

mastered 31 to 41 consonants including some affricates and clicks. Also the sounds which were difficult to articulate and acquired late are the same as those sounds English, German and Swedish children find difficult to articulate. Younis' (2008b) study also deals with some phonological processes used by children speaking Mosuli Arabic at the age of two. These are phonological processes including consonant harmony, metathesis, substitution, cluster reduction, weak syllable deletion and reduplication. The study revealed that consonant harmony occurs in voicing, place of articulation, manner of articulation and *tafxim*. Substitution normally occurs at the age of two and continues till the age of six. Also, metathesis appears in a few number of words at the age of two and increases between the third and fourth years. His work shows that reduplication starts with the first attempts of the child to speak and it gradually increases until it can hardly be found except in few words. In order to reduce consonant clusters, the child deletes the difficult consonant quite similarly to what he does when he deletes the difficult syllable in polysyllabic words.

Richtsmeier (2010) researched on evidence for describing child errors as substitution. These errors include stopping, word-final devoicing, word-initial devoicing, fronting and gliding. His analysis is solely based on transcribed data and exclusively focuses on substitution errors. Results of the study show that there is no reliable evidence for the concept of substitution therefore, he suggests that future research on child speech errors should be directed to why children produce contrasts that are inaudible to the adult listener. He adds that, two to three-year-old children exhibit pervasive

stopping, but it becomes less common as they age. Stopping primarily affects the fricatives /v, ð/ (Smit 1993) as cited in Richtsmeier (2010).

The study by Al-Buainain et al (2003) aimed at highlighting some examples of the phonological processes that are common in the speech of Qatari children from ages 1 year and 4 months to age 3 years and 7 months old. Results of the study reveal that the speech of Qatari children reflects the various phonological processes similar to those observed in other studies (Al-Buainain, 1999, 2003, Amayreh and Dyson, 2000, Saleh et al., 2007). However, the most common amongst the phonological processes found are cluster reduction, final consonant deletion, substitution, and assimilation. Younis (2008) also analyses utterances produced by children and he states that it was relatively problematic because children committed errors in their speech. Such errors include deletion, metathesis, cluster reduction and so on. He continues by saying that these errors cannot be analysed unless the hearer is fully aware of the phonological processes which are closely related to language acquisition.

Dodd et al (2003) reports a normative study on the phonological development of British English-speaking children. Speech samples of 684 children, aged between three years and six years eleven months, were randomly selected from nurseries and schools in eight different areas throughout the United Kingdom. Two aspects of speech development, the age of acquisition of sounds (phonetic acquisition) and the age that error patterns were suppressed (phonemic acquisition) were investigated. Also the effects of age, gender and socio-economic status on speech sound development was investigated. The study found that older children had more accurate production

and fewer error patterns in their speech. The study revealed no gender differences in the younger age groups however, in the oldest age group, it found the phonological accuracy measures was more with girls and less with boys.

Fox (2000) found that, German-speaking children acquire their phonological system during their first four to five years of life, labial and alveolar stops and nasals being acquired first, followed by fricatives and velars, with sibilants and clusters next in the development. Fox recommended that increased employment of assimilatory processes beyond the age of 5 years should be taken as an indication of language difficulties in the child.

Akpan's (2006) research on assimilatory processes employed by Ibibio children aged two and a half to four and a half year old children to get the adult target or forms. Subjects were tested on twelve phonetic vowels and twenty-one phonetic consonants. The study established that assimilatory processes are normal in the speech of normally developing Ibibio children. These processes include homorganic nasal assimilation of both vowels and consonants, nasalisation of vowels and consonants, voicing, and labialisation. The processes are expected to decrease with increase in chronological age.

Skoruppa et al. (2013) research investigates assimilation, a phonological alternation by which a feature of one sound spreads to an adjacent sound, causing it to change. Like many other languages, it was found that English allows for assimilation of place of articulation in alveolar consonants: word-final alveolar stops and nasals, such as [t] and [n] can become labial [p] or [m] respectively when followed by a labial consonant that is [p], [b] or [m].

Adjei (2002) explores the emergence of phonology of four pre-school Ewe speaking children for a period of 8 months. Results of her research shows that nasals with the exception of velar nasals, glides, bilabials and alveolars are acquired before back consonants and that fricatives and liquids are acquired later.

Dryson (1980) studies a two and half year old Akan child and concludes that, the linguistic environment affects the language of a child and that the acquisition of tone and intonation clearly precedes segments especially in Akan being a tone language. She also identifies the problem of the two and half year old child to be difficulty in vowel quality and not vowel harmony. Her findings also reveal that, it was easier for the two and half year old to acquire labials before other sounds like dentals, alveolars, velars, etc.

Kumi's (1988) work on the language of a three year old Akan-speaking child found that, even though the three year old might have problems producing certain consonant sounds, the child is capable of perceiving the differences that exist among the consonants. This, she says, supports Hyman's (1975) assertion that children are able to perceive the differences that exist between and among sounds. Also, Kumi (1988) found that, where words have more than two syllables, metathesis occurs and that the three year old acquires vowels before consonants.

2.4 Phonology of Safaliba and Related Languages

Apart from works that have focussed on child language, it is important to review literature on Safaliba and other closely related languages. The thesis compares the speech of the adult Safaliba speaker to that of the three year old Safaliba speaker. Lust (2006:144) indicates that the child is required to discover phonological and phonotactic rules, combine sound segments into larger phonological units of the target language. Also Ladefoged (2003:1) indicates that without the understanding of sounds, one cannot describe the phonology of a language, hence the need for a review of Safaliba phonology and other closely related languages.

The amount of research on the phonology of Safaliba is limited and the only known published linguistic analysis on the phonology of Safaliba is “*The Phonology of Safaliba*” by Schaefer and Schaefer (2003), published by the Institute of African Studies, University of Ghana under its collected language notes series. Safaliba phonology is similar to that of languages in the Western Oti-Volta Sub-family like Dagaare (Bodomo 1997 and Kennedy 1966), Farefare (R. Schaefer 1975), Birifor (Kuch 1993) or more distantly, Kusaal (Spratt and Spratt 1968), Mampruli (Naden 1988:22, Naden 1990) and Dagbani (Olawsky 1996), as cited in Schaefer (2009:70).

Schaefer and Schaefer (2003) discuss briefly the phonology of Safaliba. They note that Safaliba has nine oral phonemic vowels /i, ɪ, e, ε, u, ʊ, o, ɔ, ɑ/, all which have their contrastively long counterparts. Also, with the exception of /e/ and /o/, the rest can have nasal counterparts. With regard to the distribution of vowels in Safaliba, no short vowel can occur word-initially; however, they

do occur word-medially and word-finally. Also, all short vowels occur word-medially in both open and closed syllables.

Safaliba has twenty-five consonantal phonemes at six places of articulation that is labial, alveolar, palato-alveolar, velar, labiovelar and glottal and a single syllabic nasal phoneme /N/ which is not specified for place of articulation (Schaefer and Schaefer 2003). All consonants in Safaliba occur in syllable initial position. Also, the consonants /p/, /tʃ/, /dʒ/, /kp/, /gb/, /z/, /h/, /ŋm/, /w/, /ʔ/ rarely occur in word-medial position. The syllable structure of Safaliba according to Schaefer and Schaefer (2003) is predominantly [CV(V) (C)] with CV, CVV and CVC being common. Even though Safaliba has the CVC structure, it has a restriction such that the syllable coda must always be a nasal consonant. Safaliba gives preference to the CV and CVV structure.

Safaliba has an active vowel harmony system (Schaefer and Schaefer 2003:5), with four of the nine basic vowels being advanced tongue root (+ATR) also described as close or as tense and the remaining five being unadvanced tongue root (-ATR) or open or lax.

Similarly, Kuch (1993) and Dundaa (2013) in their study of Birifor, a closely related language, state that Birifor has nine phonemic oral vowels /i, ɪ, e, ε, u, ʊ, o, ɔ, ɑ/ and each of them have their contrastively long and nasal counterparts. It is however rare to have a nasalised /ẽ:/ in Birifor. Also, Birifor has a total of twenty-five consonant phonemes; twenty-one plain consonants and four glottalized consonants.

Bodomo (1997), in his study of Dagaare, notes that Dagaare has nine oral vowels /i, ɪ, e, ε, u, ʊ, o, ɔ, ɑ/. With regards to vowel length in Dagaare, all

nine vowels have contrastive long counterparts. Also, all oral vowels with the exception of /e/ can be nasalized when they occur before nasal consonants. He also notes that Dagaare has twenty-five consonants.

Kuubezelle (2013) describes Dagara as a language which has nine oral vowels /i, ɪ, e, ε, u, ʊ, o, ɔ, ɑ/ unlike the central dialect of Dagaare which has ten oral vowels. All the nine vowels in Dagara have both long and nasal counterparts. The phenomenon of all oral vowels being nasalized in Dagara is key in distinguishing Dagara from Dagaare (central dialect) which has an exception of /e/. Dagaare is unique from Buli and Kusaal in having nasal vowels which the latter do not have. Dagara has twenty-seven consonants.

Akanlig-Pare (1994) in his dissertation on aspects of Buli phonology notes that Buli has nine short and three long oral vowels. He states that vowels can only be nasalized in the environment of nasal consonants at a phonetic level. Also, all the nine short vowels in Buli can occur in closed syllables except /ε/ and only /o, ɔ, ɑ/ can occur as isolated vowel syllables. In his description of consonants in Buli he states that Buli has twenty-three consonants at the phonological level.

The studies discussed above offer vital contribution to the understanding of the acquisition process of the phonology of Safaliba.

2.5 Research Methods

This section presents the methodological procedures followed in this thesis. It describes the instruments and the tools used in collecting and analysing the

data. The thesis investigates the acquisition of Safaliba by six monolingual Safaliba speaking children. Data collected was used in describing the phonemic inventory of the language and that of the three year old Safaliba-speakers.

2.5.1 Participants and Data Sources

The data used in this study were collected from 6 three-year olds Safaliba speaking children. Specifically, the children were between three years and three years five months old. They all lived in Mandari, the largest Safaliba speaking village in Ghana.

The six children were randomly selected. They were three boys and three girls and were monolingual speakers of Safaliba. They had no history of speech or hearing impairment as determined by the questionnaire answered by their parents. They had never been to school. The six participants were selected based on the following predetermined criteria.

1. Ingram's (1989) proposal of an absolute minimum of three participants:- Ingram proposes that, in studies like this current research, more than one child should be selected. He explains that the number 3 "is used as an absolute minimum necessary to determine general features of acquisition" (Ingram 1989:21).
2. The willingness of the parents to allow their children to take part in the data collection phase of the research.
3. The availability of parents to assist their children to provide the needed data.
4. Safaliba must be the only language spoken at home.

5. At least of one the parents of each participants should be a Safaliba speaker.
6. All the participants should be acquiring Safaliba as their first language and none of them should have hearing or speech impairment.
7. The children should be at the multi-word utterances stage.

2.5.2 Data Collection Procedure

In December 2014, the researcher organised a party for all children in Mandari. This was to enable the researcher to familiarize with all the children and their parents in the community. At the party, the current researcher randomly selected about twelve of them and interacted with them. Based on the criteria for selection mentioned in page 35-36, six children were selected. The researcher proposed to be friends with them. Prior to the recording, the researcher established rapport with all the six children. Also the researcher told the children that she would be visiting them at home to sustain the friendship. The researcher had a discussion with the parents about the possibility of their children taking part in this study. Eventually six of them were selected based on the criteria listed in sub-section 2.5.1.

The researcher investigated and compared linguistic knowledge of the six children at a particular point of their development. Specifically, the researcher observed and recorded the children interact with friends and caregivers. The speech samples were recorded over a period of two months, between December 2014 and January 2015. The speech samples were recorded on a Sony IC recorder ICD-PX312. The recordings took place at the respective

homes of the children in the presence of the parent and the researcher. Recordings took place thrice a week and lasted for approximately 40 minutes per session and 10 sessions per child. The speech samples were then transcribed and analysed. According to Demuth (1996a) cited in Lust (2006) one prominent method of studying young children's knowledge of a language is by studying their language production through the recording and transcription of natural speech.

During the recording session, the recorder was placed on a table near the child. The recording occurred while the children were either playing, looking at picture books (picture-naming assessment as seen in the literature) or while the parents or the researcher were interacting with them. If the child moved to a different position in the room, the recorder was repositioned as well. Since the utterances of these children were to be examined phonologically, any interference of background noise could be a threat to the quality of data recorded. Therefore, parents were asked to remove noisy objects like bowls and noisy toys from the environment. Television and radios were also turned off. The stimulus materials used include picture books for nursery schools which contained pictures of common items (household items, fruits, vegetables and animals). Also items like spoons, plates, oil, knife, slippers, were placed in front of the children and they were asked to name them as the researcher lifted or pointed to the items one after the other. The children were also recorded as they played with each other. The children were asked certain questions by their parents or the researcher about body parts, clothing, etc. Sometimes the researcher took notes about interesting developments while the children interacted with their parents or with their friends. Also the parents

of the participants were asked to take note of any new and interesting development.

The words used in the experiment contained all the Safaliba consonant and vowel phonemes occurring in all possible word positions.

2.5.3 Data Transcription

Data collection was done systematically and recordings were transferred to the computer in WAV format and this made it easier to listen to the recordings repeatedly in order to have accurate transcriptions. The first step was to listen to the recordings several times and write down the words produced by the children. The second step was to transcribe the words phonemically based on standard Safaliba transcription as seen in (Schaefer and Schaefer 2003).

Thirdly, the researcher listened to the recordings again to give a phonetic transcription of the children's utterances. In the course of transcribing the data, focus was on the vowels and consonants that the three year olds produced. The study was also interested in the phonological strategies employed by these three year old Safaliba-speakers. The researcher's intention was to describe the differences between the speech of the adult Safaliba speaker and that of the three year old Safaliba speaker, and also to identify language universals. These transcriptions of the three year olds were then compared to those of the competent adult Safaliba speakers. The researcher's native speaker intuition was also relied on for gathering and analysis of the data.

2.5.4 Data Description

The research is aimed at describing the differences between the speeches of a three year old Safaliba speaker to that of the adult Safaliba speaker. The focus of the study is to determine the level of consonant and vowel acquisition achieved by the children, the types of phonological processes manifested in their speech, and to determine what universal tendencies their speech manifests. Utterances by the children are given in square brackets [] and the standard Safaliba pronunciation in slashes / / and the meaning of the words in English in inverted commas ‘’. On the whole, the data collection was successful and the analysis made in chapter three and four are based on the data gathered.

2.5.5 . Limitations To The Study

Even though elicitation was generally successful, a number of challenges came up. A study of child language should start very early in the child’s life ideally from six months when babbling is said to start in order to present a better picture of phonological growth. However due to time constraint this was impossible.

Environmental differences like the involvement of parents can affect the results. Also, Children were sometimes shy to speak. This also affected the data collection process.

Recordings in some cases were not done consistently due to illness of either the parent or the child. The data collection period coincided with the period of

harvest, some parents spent most of the day on the farm and so got home tired. The Harmattan weather was also unfavourable at that time of the year.

2.6 Theoretical Framework

This work is descriptive oriented, thus it is not strictly adhering to any formal linguistic theory. However, doing a description without theoretical underpinning is problematic since descriptions usually require some degree of analysis, and analysis cannot be carried out without some minimal set of theoretical hypothesis (Casali 1995). Therefore, whilst not adhering strictly to any formal linguistic theory, the research situates its discussion within Generative Phonology outlined in Chomsky and Halle (1968) and also incorporates the Comparative Method by Ragin (1987).

The thesis presents a detailed description of the phoneme repertoires and phonological patterns used by three year old Safaliba speakers. The main aim of this work is to describe the nature of the child's language and to give explanations to the similarities and differences between the child's language and the adult version. The reason for this eclectic approach is to cater for the multifaceted nature of the thesis. For instance, the Comparative Method will be used to cater for the section that compares the phonology of the three-year-old Safaliba-speaker with that of the adult's, while Generative Phonology would be used to explain the nature of the differences.

The comparative method developed over the 19th century out of attempts to reconstruct the proto-language. Key contributions were made by the Danish scholars Rasmus Rask and Karl Verner and the German scholar Jacob Grimm.

In linguistics, the comparative method is a technique used in studying the development of languages by performing a feature-by-feature comparison of two or more languages with a common ancestry. This method is used to discover the development of phonological, morphological, and other linguistic systems, as well as to confirm or refute hypothesized relationships between languages.

Comparative method is a central part of linguistics which tries to find out the differences and similarities that exist between or among languages. A comparative description brings out specific characteristics of the languages that are being compared than if the languages were to be analysed in isolation. The comparative method is useful and forms a very solid theoretical foundation as this method is used to account for actual variation, establish typological connections, make predictions, give explanations and justify them theoretically. It is more consistent with the goal of interpreting and explaining specific phenomenon and addressing historical specificity. This feature of comparative method makes it especially well-suited for the task of building theories and synthesising existing theories (Ragin 1987).

In this research, a comparative analysis of the phonology of the three year old Safaliba child and that of the adult Safaliba speaker is justifiable in that it will provide evidence for variation between them and the degree of relatedness. To make a meaningful comparison, the research examines the phonology of the Safaliba adult and that of a three year old Safaliba child separately after which they are compared. The comparison will help disaggregate the two phonologies and make generalisations about the

relationship between them. This method is therefore a holistic and interpretative approach.

The Generative phonology theory outlined in Chomsky and Halle's (1968) *Sound Pattern of English (SPE)* is a theory preoccupied with rules for modifications of features specification. It is a component of generative grammar that assigns the precise phonetic representations to utterances in such a way as to reflect a native speaker's internalized grammar. It also seeks through linguistic generalisations to describe the structure of language. It is a model where phonemes are represented as underlying units (segments) each defined by a distinctive feature matrix. One of the fundamental properties of the SPE theory was the claim that the deepest and most interesting principle of universality of grammar would be found in the form and function of phonological rules. Fundamentally, Generative phonology projects underlying phonological structures onto surface syntactic structures or phonetic forms.

The crucial components of generative phonology are:

1. Levels of phonological representation. There are two levels which are:
 - a. An underlying representation which is the most basic form of a word before any phonological rules have been applied to it. Underlying representations show what a native speaker knows about the abstract underlying phonology of the language.
 - b. A phonetic representation is the form of a word that is spoken and heard.

2. Phonological rules map underlying representations onto phonetic forms. They delete, insert, or change segments, or change the features of segments.
3. Derivations are sets of stages used to generate the phonetic representation of a word from its underlying representation as represented in the diagram below.



4. Distinctive Features which make it possible to capture the generalities of phonological rules. For example, the word 'sip' is represented with the following feature matrix:

s	i	p
Cor	+Syll	Labial
+Ant	+High	-Cont
-Cont	-Back	-Voi
-Voi	-Round	

5. Linearity, in which a stream of speech is portrayed as a sequence of discrete sound segments. Each segment is composed of simultaneously occurring features.

The application of this theory in this current research therefore helps the research explain the differences between child phonology and adult phonology. It would provide a systematic description of the phoneme repertoires and phonological patterns used by the three year old Safaliba speaker.

CHAPTER THREE

THE SAFALIBA SOUND SYSTEM

3.0 Introduction

This chapter presents a sketch of Safaliba phonology. It describes the consonant and vowel inventory of the language. Since this sketch represents the phonology of the adult Safaliba speaker, it will be used as the basis for the comparison between the child's phonology and the adult's. The differences between the adult's phonology and that of the child will indicate the child's phonological development patterns. This chapter focuses on the segmental phonology of Safaliba. It begins with a description of the vowel and consonant inventory of Safaliba, their distribution and some phonological processes.

Phonology is a branch of Linguistics which basically describes the system and patterns of speech sounds in a language. Based on theory, every speaker therefore unconsciously knows about the sound system of their language (Yule 2010:42). The knowledge of phonology is therefore very essential. Speech sounds are classified into two major categories, thus vowels and consonants.

Crystal (2008:517) states that, vowels are one of the major classifications of speech sounds and can be defined phonetically and phonologically. Phonetically, vowels are sounds produced without radical constriction in the oral cavity. He goes further to explain that with the articulation of vowels, the air escapes uniformly over the centre of the tongue.

Vowels produced with the air escaping only through the mouth, are oral vowels while the vowels produced with some air concurrently being released through the nose are nasal vowels. Vowels are sounds produced with a relatively free flow of air and are typically voiced sounds. Their description is usually based on the way in which the tongue influences the shape of the oral cavity through which the air flow must pass (Yule, 2010). Vowels are simply described as sounds produced with a relatively free flow of air (Yule, 2010:33).

Crystal (2008:103) defines consonants as “sounds made by a closure or narrowing of the vocal tract so that the air flow is either completely blocked, or so restricted that audible friction is produced”. Consonants are often described in terms of the place and manner in which they are articulated and the mode of vibration of the vocal folds during their articulation. Consonants can be defined both phonetically and phonologically. Phonetically, consonants are produced with a more radical restriction of the airflow than for vowels. Phonologically, consonants function as the margins of syllables, either singly or in clusters.

“The syllable is the heart of phonological representations” (Katamba, 1989:153). It is also the unit in terms of which phonological systems are organized. The most common type of syllable in languages is the CV-syllable, which is a consonant (C) before the vowel (V) simply represented as CV.

With regards to the composition of the syllable, Kenstowicz (1994:252) states that the syllable is traditionally made up of the mandatory nucleus preceded by an optional consonantal onset and followed by an optional consonantal coda. The nucleus plus coda form a tighter link than the onset plus nucleus. According to him, traditional grammar recognizes an additional sub-constituent

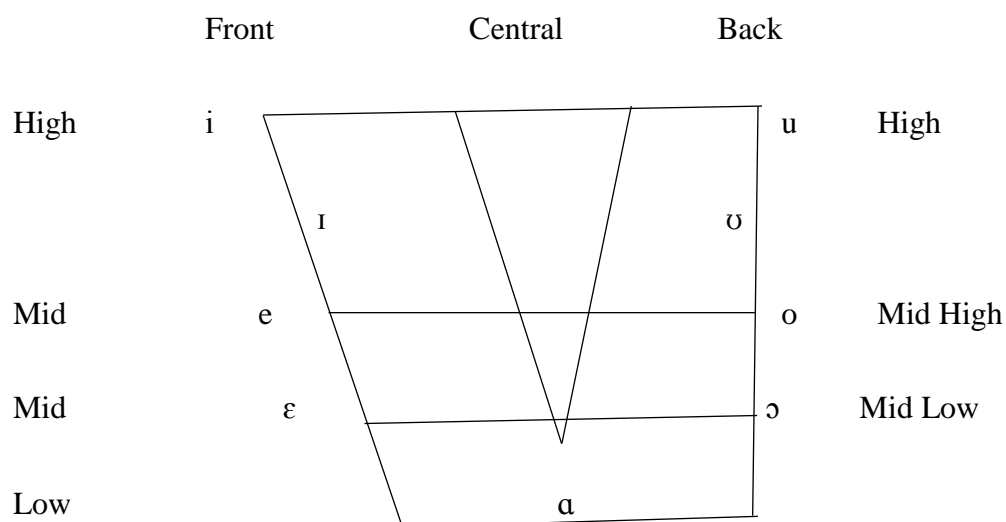
referred to as the rhyme or the rime which includes the nucleus and the coda. To him, the nucleus is usually made up of a vowel and this is the essential element because it is the only obligatory element in that position, unlike onset and coda which may or may not be present.

3.1 The Safaliba Vowel System

Safaliba has nine oral vowels with nasality and length being contrastive. Each vowel in Safaliba has its contrastive long and nasal counterpart with the exception of /e/ and /o/ which have no nasal counterparts. The nine oral vowels in Safaliba are represented in figure 3.1 below.

3.1.1 Oral Vowels

Safaliba has nine oral vowels similar to most Gur languages, such as Dagaare (Bodomo, 1997), Birifor (Kuch, 1993 and Dundaa, 2013) and Dagara (Kuubazelle, 2013). The chart below shows the oral vowels of Safaliba in their positions on the standard vowel chart showing relative tongue height and position. This is discussed in more detail in section 3.1.6.

Figure 3.1 The Safaliba Vowel Chart

The vowels in Safaliba are divided into two sets based on whether or not they are pronounced with an “advanced tongue root” (ATR), which is not shown on the chart above. This is discussed in more detail in section 3.1.6

The vowels in Safaliba are phonetically described as follows:

/i/: High front unrounded and advanced [+ATR].

/ɪ/: High front unrounded and unadvanced [-ATR].

/e/: Mid front unrounded and advanced [+ATR].

/ɛ/: Mid front unrounded and unadvanced [-ATR].

/u/: High back rounded and advanced [+ATR].

/ʊ/: High back rounded and unadvanced [-ATR].

/o/: Mid back rounded and advanced [+ATR].

/ɔ/: Mid back rounded and unadvanced [-ATR].

/ɑ/: Low central unrounded and unadvanced [-ATR].

3.1.2 Vowel Distribution

This section presents words showing the distribution of the vowels of Safaliba. The presence or absence of a consonant in the coda makes it either an open or closed syllable. Example 3.1 below shows the distribution of the nine short vowels in both open and closed syllables.

Example 3.1

	Word	Gloss
/i/:	kpi	‘die’
	dígí	‘chase’
	libí:rì	‘money’
	ísígì	‘get up’
/ɪ/:	bì	‘ripe/ cooked’
	dígì	‘take’
	yírì	‘village’
	zíŋ	‘blood’
/e/:	yé	‘say’
	yémmì	‘forget’
	lé	‘fall’
	zóyé	‘tails’

/ɛ/:	kpè	‘enter’
	gè	‘get angry’
	tébí	‘hit’
	pésí	‘to take notice’
/u/:	kútú	‘nail’
	kúrí	‘tortoise’
	zú	‘head’
	púgìṅ	‘swim’
/o/:	kó	‘kill’
	tó	‘insult’
	dógó	‘pot’
	bóri	‘sow’
/o/:	sò	‘bath’
	wò	‘want/look for’
	wòṅ	‘hear’
	sòbirì	‘grasshopper’

/ɔ/:	kó	‘cultivate’
	vólí	‘swallow’
	zón	‘flour’
	kósí	‘cough’
/ɑ/:	à	‘the’
	và	‘hit’
	yàlà	‘trouble’
	yàbà	‘younger one’

All the nine vowels occur in the nucleus and /ɑ/ is unique in that, it can occur alone as the definite article “the” and in some few words (numerals and some names).

3.1.3 Vowel Length

Following the pattern documented in many other Western Oti-Volta languages, all of the nine vowels in Safaliba have their contrastive long counterparts. Long vowels are basically described as sounds that are longer in duration than their short counterparts.

Vowel length is phonemic in Safaliba which means that a change in vowel length leads to contrast in meaning. The following are examples of minimal or near-minimal pairs that show the contrastive functions of vowel length. Note: Tone has been generally analysed as independent of vowel length in Western Oti-Volta languages, thus in the examples below the tones may not always be identical in what are otherwise minimal pairs.

Example 3.2

Vowel	Word	Gloss
/i/	dí	‘eat’
/i:/	dí:	‘house/room’
/ɪ/	bí	‘ripe’
/ɪ:/	bí:	‘or’
/e/	bé	‘to be’
/e:/	bě:	‘there’
/ɛ/	pé	‘swear’
/ɛ:/	pé:	‘basket’
/a/	bá	‘stack’
/a:/	bá:	‘well’

/ɔ/	tó	‘beat’
/ɔ:/	tó:	‘bitter’
/o/	pô	‘bath’
/o:/	pó:	‘stomach’
/u/	kúrí	‘tortoise’
/u:/	kú:rí	‘hoe’
/ɔ/	bòrì	‘sow seeds’
/ɔ:/	bó:sí	‘goats’

3.1.4 Nasal Vowels

In the production of nasal vowels, the velum is lowered and so air escapes through both the oral and nasal cavities. With the exception of /e/ and /o/, all vowels in Safaliba have their contrastive nasal counterparts, however these occur less frequently than the oral vowels. The quality of such vowels is independent of the influence of adjacent nasal consonants. Examples of oral-nasal vowels in near minimal pairs are found in example 3.3 below:

Example 3.3

Word	Gloss
ziá	‘red’
zéá	‘a type of millet’
tí:	‘medicine’
tí:bó	‘departure’
dá:	‘alcohol’
dâ:	‘tree’
sâ:	‘spoil/mash’
sâ:	‘father’
dê:	‘to play’
pé:sé	‘a form of divination’
pô:	‘rot’
pô:	‘add’
kâ:	‘oil’
kà:	‘look’
bî:	‘broth’
bí:ru	‘a type of plant’

Table 3.1 below is a chart summarizing the vowel phonemes of Safaliba

Table 3.1 Chart of Vowel Phones

	Front	Central	Back
High [+ATR]	i i: î:		u u: û û:
High [- ATR]	ɪ ɪ: ĩ ĩ:		ʊ ʊ: ũ ũ:
Mid [+ATR]	e e:		o o:
Mid [- ATR]	ɛ ɛ: ẽ ẽ:		ɔ ɔ: õ õ:
Low [- ATR]		ɑ ɑ: ã ã:	

Adopted from Schaefer and Schaefer (2003:5)

3.1.6 Vowel Harmony

Crystal (2008:225) used the term to refer to how the articulation of one phonological unit influences another unit in the same word or phrase. Harmony is comparable to assimilation and the two main processes are consonant harmony and vowel harmony. “Vowel harmony is an assimilatory process that involves not only adjacent but also non-contiguous vowel segments,” and its domain is usually the phonological word that could be the root/stem and its affixes (Akanlig-Pare 1994:86).

In vowel harmony therefore, one vowel influences another to become similar to it in terms of the features high, low, front, back, roundness, unroundness and nasality. Dundaa (2013) states that vowel harmony is a very common feature in African languages especially those that belong to the Niger-

Congo and Nilo-Saharan family and languages with more than three tongue height systems.

The vowel phonemes in Safaliba are divided into two sets based on tongue root harmony as shown in the grouping below:

Table 3.2 Set of Safaliba Vowels

+ATR	i	u	e	o	
-ATR	ɪ	ʊ	ɛ	ɔ	ɑ

The groupings above imply that any phonological word of more than one syllable, has vowels from the same set occurring.

As Schaefer and Schaefer (2003) put it, Safaliba has an active vowel harmony. The [+ATR] set / i, e, u, o/ are described as close while the [-ATR] set /ɪ, ʊ, ɛ, ɔ, ɑ/ are described as open.

Example 3.4

Set 1 [+ATR]		Set 2 [-ATR]	
/kú:rí/	‘hoe’	/vá:rò/	‘leaves’
/tòbìrì/	‘ear’	/mḱ:ró/	‘grasses’
/zóyé	‘tails’	/bú:sí/	‘goats’
/pérétù/	‘bowl’	/pésí/	‘to take notice’
/ʧí:ŋú/	‘guinea fowl’	/bòʔí:là/	‘goat horns’
/wómbú/	‘suffering’	/nógízíà/	‘housefly’

3.2 The Consonant System

Consonant sounds that occur in Safaliba relate to six places of articulation: labial, alveolar, palatal, velar, labio-velar and glottal. According to Schaefer and Schaefer (2003:6), Safaliba has a total of twenty-five (25) consonant phonemes. These are represented below:

Table 3.3 Consonantal Phoneme Inventory

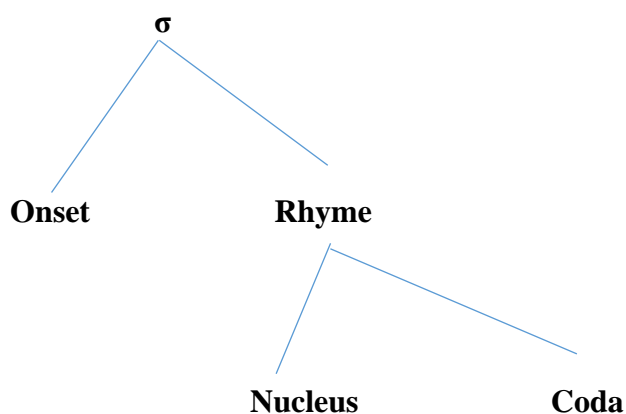
	Labial	Alveolar	Palatal	Velar	Labio-velar	Glottal
Stops	p b	t d		k g	kp gb	ʔ
Fricatives	f v	s z				
Affricates			tʃ dʒ			h
Flap		r				
Lateral		l				
Nasals	m	n	ɲ	ŋ	ŋm	
Glides			j	w		

3.3 The Syllable of Safaliba

This section examines the structural composition of the Safaliba syllable. The syllable inventory of Safaliba is as follows: CV, CVV, CVC and V, with the CV-type being the most common and unmarked syllable type. The V syllable occurs in very few words in the language, primarily the pronouns.

The syllable structure in Safaliba is in line with the generalizations made by Kenstowicz (1994). He posits that, the syllable contains an obligatory nucleus preceded by an optional consonantal onset and followed by an optional consonantal coda. To Kenstowicz, the nucleus which is usually made up of a vowel is the most central part of the syllable because it is the only element that is obligatory in that position. The nucleus also constitutes the domain for the assignment of tone and stress. He sees the syllable as central in the description of any language because it is an essential concept of understanding phonological structure. The internal structure of the syllable is illustrated on figure 3.4.

Figure 3.2 The Structure of the Syllable



According to Schaefer (2009:74) citing Clements (2000:140), syllable structure patterns for Safaliba and most members of its language family have the CV structure being the prototypical syllable structure. Vowel-initial syllables do occur, however these are pronounced with a phonetic glottal stop as the onset. Syllables with complex onsets (CCV) are normally prohibited.

Safaliba seems to prohibit a coda in a syllable which contains a long vowel. Safaliba also has a syllabic nasal which occurs rarely in the lexicon of the language (Schaefer and Schaefer 2003).

3.3.1 The V- and N- Syllables

The V-syllable structure has just a vowel in the syllable or a vowel found in word-initial positions of very few words in Safaliba. Its occurrence is very restricted. It is used mostly to encode grammatical meaning such as definiteness and pronominal reference. The syllabic nasal consonant occurs most commonly as the velar nasal /ŋ/ and is likewise restricted to pronominal reference and focus marking. Example 3.5 are found below.

à **‘the definite article’**

1. á bíè

DEF child

‘The child.’

ò **3rd person singular**

2. ò bíè

3PL child

‘His/her child.’

ì **2nd person singular**

3. ì má:

2PS mother

‘Your mother.’

N: **ŋ 1st person singular pronoun.**

4. ŋ má:

1SG mother

‘My mother.’

3.3.2 The CV-Syllable

The CV-syllable type is the commonest syllable pattern in terms of its occurrence in the Safaliba lexicon. It is also the first syllable children produce in the acquisition of the Safaliba language. This is in line with Crystal (2008:468) who states that the Consonant-vowel (CV) sequence is a pattern who seems to be found in all languages: because the syllable is not ‘closed’ by

another consonant, this type of syllable is often called an open syllable type. This suggests a universal order of syllable acquisition.

All the consonant phonemes can occur in the onset position of this syllable with the nine oral vowels in the nucleus position. The class of words with this syllable pattern are usually verbs and nouns.

Example 3.6

Word	Gloss
tó	‘insult’
zú	‘head’
zí.ní	‘to sit’
wé.rà	‘go’
gà.fè.rà	‘excuse’
kò.bì.rì	‘bone’

3.3.3 The CVC-Syllable

This type of syllable consists of an onset, nucleus and a coda. It is also a very common syllable type after the CV pattern in the Safaliba lexicon. Apart from the glottal stop /ʔ/ only nasal consonants occur in the coda.

According to Schaefer and Schaefer (2003:30), even though Safaliba has the CVC structure, it has a restriction such that a syllable coda must always be a nasal consonant, which if word-medial assimilates to the place of articulation of the following consonant. Non-nasal consonants may occur in the coda position word-medially only in the case where there is assimilation with the onset of the following syllable (Schaefer and Schaefer 2003:30, 36).

Example 3.7

Word	Gloss
wòŋ	‘hear’
zónŋ	‘flour’
gán.nì	‘skin’
kpèn.dè:.rì	‘one’
gbàŋ.dʒè	‘guinea corn’
gèl.lí	‘egg’

3.3.4 The CVV-Syllable

After the CV and CVC syllables, the CVV syllable type is one of the commonest syllable types in Safaliba.

Example 3.8

Word	Gloss
bíè	‘child’
nóá	‘fowl’
síá	‘waist’
sùé	‘knife’
zéá	‘a type of millet’

Table 3.4 Distribution of Safaliba Consonants in the Syllable

Consonant	Onset	Coda
p	pè: ‘basket’	
b	bá: ‘dog’	sáb.tá.sí ‘slippers’
t	tá ‘grow’	
d	dí? ‘house’	
f	fíù ‘moon’	
dʒ	dʒòŋ.kó ‘navel’	
k	ká: ‘watch’	
g	gá.nì ‘skin’	
kp	kpá ‘boil’	
gb	gbà ‘too’	
ʔ	ʔà.sì ‘stand’	kpèʔ ‘enter’

Consonant	Onset	Coda
f	fò:.rá 'roam'	
v	vàʔ 'hit'	
s	sà: 'father'	
z	za.ká 'home'	
h	hé.rí 'slip'	
l	là 'laugh'	gèl.lí 'egg'
m	mǎ: 'mother'	bàm.pé 'leopard'
n	nǎ: 'chief'	kpèn.dɛ̀.rì 'one'
ɲ	ɲí: 'neck'	gbàɲ.dʒè 'cassava'
ŋ	ŋǎ 'this'	pú.ɡìŋ 'swim'
ŋm	ŋmǎ:.ŋǎ 'monkey'	
y	yâ 'grandmother'	
w	wà 'come'	

From table 3.4 above, it is observed that all consonants occur in the onset of the syllable. Also, the coda is restricted to the consonants /ʔ, ɲ, ŋ, m, n, l and b/ in Safaliba.

3.4 Conclusion

The chapter has given the description of the vowel and consonant inventory of Safaliba. It has established that Safaliba has nine oral vowels and an active ATR vowel harmony system, as has been reported for many of the other Gur languages. All nine vowels occur in open and closed syllables. With the exception of /e/ and /o/ all vowels in Safaliba have contrastive nasal counterparts. The twenty five consonants in Safaliba occur in onset position, however the coda is restricted the glottal stop /ʔ/ the labial stop /b/, the lateral /l/ and the nasals /ɲ,ŋ,m,n/.

CHAPTER FOUR

PHONOLOGICAL ACQUISITION

4.0 Introduction

On the basis that there is continuity between the child and the adult's language, and that phonology is the basis to language development, this chapter describes and discusses the patterns and the sound inventory of the three-year-old Safaliba speaker.

The child's vowel and consonant inventory and distribution are examined. Some phonological processes that characterize the child's phonology are also described and explained. A comparison between the child's version of the phonology and that of the target adult version is made, and by discussing any systematic differences and similarities between the actual forms (adult version) and that which is being used by the three-year-old Safaliba child, the study would be able to state what the phonological pattern of the child's language is like.

4.1 Vowel Inventory

As stated earlier in chapter three, Safaliba has 9 vowel phonemes, which have their long and nasal counterparts in adult speech. In analysing the speeches of the six 3 year olds, a number of observations are made. The typical 3 year old is able to produce all nine oral vowels as seen in example 4.1 below.

Examples 4.1

	Adult version	Child's Version	Gloss
/i:/	/líbí:rí/	[líbí:lí]	'money'
	/kpí/	[pí]	'to die'
	/dí/	[dí]	'to eat'
/ɪ:/	/yírí/	[yílí]	'village'
	/zíní/	[tíní/díní]	'to sit'
	/dígí/	[dígí]	'to take'
/e:/	/lé/	[lé]	'to fall'
	/tóbé/	[tóbé]	'ears'
	/sóyé/	[tóyé]	'to bath'
/ɛ:/	/kpé/	[pé]	'to enter'
	/sébí/	[tébí]	'to dance'
	/ɲé/	[ɲé]	'to see'
/a:/	/à/	[à]	'the'
	/yàbà/	[yàbà]	'younger one'

	/l̀à/	[l̀à]	‘laugh’
/u:/	/kùtù/	[kùtù]	‘nail’
	/zù/	[dù/tù]	‘head’
	/ɲù/	[ɲù]	‘to drink’
/ɔ:/	/t́/	[t́]	‘to pound’
	/vólí/	[bólí]	‘to swallow’
	/kósí/	[kótí]	‘to cough’
/o:/	/s̀/	[t̀]	‘to bath’
	/t̀b̀irì/	[t̀b̀ilì]	‘ear’
	/ẁ/	[ẁ]	‘to hear’
/ʊ:/	/b̀rì/	[b̀lì]	‘to sow’
	/d̀g̀/	[d̀g̀]	‘cooking pot’
	/k̀/	[k̀]	‘kill’

Also the 3 year olds are able to distinguish between vowels in terms of their oral-nasal and their length qualities. See example 4.2

Examples 4.2

Adult version	Child's Version	Gloss
a. /kpi/	[pi]	'die'
b. /dí:/	[dí:]	'house/room'
c. /bĩ:/	[bĩ:/pĩ:]	'broth'
d. /ɲé/	[ɲé]	'to see'
e. /bá:/	[bá:]	'dog'
f. /dâ/	[dâ]	'alcohol'

From the data above, it is clear the three year old Safaliba child can distinguish between short and long vowels and between oral and nasal vowels.

With regard to vowel harmony, like the adult version, three year old's vowels were harmonized according to the ATR groups [+ATR] and [-ATR] as seen in examples 4.1 and 4.2. Nasal vowels occurred independent of the influence of nasal consonants similar to the adult version.

The above means that the speech of a three year old Safaliba child includes the same vowel inventory as found in the adult version. This falls in line with O'Grady and Sook (2001) findings that even though there are some differences from child to child with respect to the sequence in which sounds are acquired, vowels are generally acquired before consonants by age three.

4.2 Consonants Inventory

O’Grady and Sook (2001) state that, the relative order in which sounds are acquired reflects their distribution in languages all over the world. The sounds that are acquired early are largely and widely found in most languages in the world while the sounds that are acquired later have a tendency to be less common across languages.

Even though the three-year-old Safaliba speaking child had no problem distinguishing between vowel qualities, they had problems with the consonants.

From the data gathered, it has been found that three year old Safaliba speaking children had no difficulty in the production of the following consonants /p, b, t, d, k, g, ʔ, f, m, n, ŋ, ɲ, h, l, j, y, w/, as seen in the following examples.

Examples 4.3

Sound	Adult version	Child’s Version	Gloss
/p/:	/pì:/	[pì:]	‘sweep’
	/pòyé/	[pòyé]	‘backs’
	/póʔ/	[póʔ]	‘farm’
/b/:	/bá:/	[bá:]	‘dog’
	/bíé/	[bíé]	‘child’
	/bé:/	[bé:]	‘tomorrow’

/t/:	/tóbé/	[tóbé]	‘ears’
	/tébí/	[tébí]	‘to hit’
	/tó/	[tó]	‘to pound’
/d/:	/dí/	[dí]	‘to eat’
	/dígí/	[dígí]	‘to take’
	/dógó/	[dógó]	‘cooking pot’
/k/:	/kútú/	[kútú]	‘nail’
	/kó/	[kó]	‘to farm’
	/kò:/	[kò:]	‘scratch’
	/kó/	[kó]	‘kill’
/g/:	/gánnì/	[gánnì]	‘skin’
	/gè/	[gè]	‘get angry’
	/gílí/	[gílí]	‘go round’
/ʔ/:	/wòʔ/	[wòʔ]	‘look for’
	/ʔùŋ/	[ʔùŋ]	‘bury’
	/diʔ/	[diʔ]	‘eat’

/f/:	/fɛ̀:bi/	[fɛ̀:bi]	‘whip’
	/fɛ́/	[fɛ́]	‘think’
	/fɔ̀bi/	[fɔ̀bi]	‘throw’
/m/:	/mǎ/	[mǎ]	‘mother’
	/mòni/	[mòni]	‘stir’
	/miŋ/	[miŋ]	‘also’
/n/:	/nɛ̂:/	[nɛ̂]	‘grind’
	/nóá/	[nóá]	‘fowl’
	/ná:/	[ná:]	‘chief’
/ŋ/:	/ŋú/	[ŋú]	‘to drink’
	/ŋǎ:/	[ŋǎ:]	‘this’
	/ŋiá/	[ŋiá]	‘nose’
/ɲ/:	/ɲé/	[ɲé]	‘to see’
	/ɲógì/	[ɲógì]	‘cath’
	/ɲí:/	[ɲí:]	‘neck’
/h/:	/hínà/	[hínà]	‘kind’
	/hàŋ/	[hàŋ]	‘if’

/l/:	/léʔ/	[léʔ]	‘to fall’
	/là/	[là]	‘laugh’
	/lí/	[lí]	‘tie’
/y/:	/yàbà/	[yàbà]	‘younger one’
	/yâ:/	[yâ:]	‘grandmother’
	/yò:ní/	[yò:ní]	‘year’
/w/:	/wòŋ/	[wòŋ]	‘to hear’
	/wákó/	[wákó]	‘tall’
	/wónà/	[wónà]	‘why’

Out of the 25 consonants of Safaliba, the data above shows that the child is able to articulate 16. The other 9 consonants are replaced by some of the 16 consonants. The 9 consonants are marked in the sense that, they are structurally more complex than the others. They include the alveolar sounds /s, z, r/, the labial-velar sounds /kp, gb, ŋm/, the labio-dental sound /v/ and the palato-alveolar affricates /tʃ and dʒ/.

Example 4.4

Sound	Adult version	Child’s Version	Gloss
/s/→[t]	/sébí/	[tébí]	‘dance’
	/síá/	[tíá]	‘waist’
	/síkírí/	[tíkírí]	‘sugar’

/z/→[t/d]	/záká/	[táká/dáká]	‘home’
	/zón/	[tón/dón]	‘flour’
	/zè/	[tè/dè]	‘here’
/r/→[l]	/dà:rú/	[dà:lú]	‘sticks’
	/bóri/	[bólí]	‘sow’
	/kú:rí/	[kú:lí]	‘hoe’
/kp/→[p]	/kpá/	[pá]	‘boil’
	/kpèʔ/	[pèʔ]	‘enter’
	/kpi/	[pi]	‘to die’
/gb/→[b]	/gbàgbà/	[bàbà]	‘myself’
	/gbà/	[bà]	‘too’
/ŋm/→[m]	/nâ:ŋmínnì/	[nâ:mínnì]	‘God’
	/ŋmá:ŋá/	[má:ŋá]	‘monkey’
/tʃ/→[t]	/tʃù/	[tù]	‘moon’
	/tʃí:ŋú/	[tí:ŋú]	‘guinea fowl’

/ɖʒ/→[dʒ]	/wòɖʒɛ̀/	[wòdɛ̀ / wòjɛ̀]	‘cloth’
	/ɖʒòŋkó/	[dòŋkó]	‘navel’
/v/→[b]	/vâʔ/	[bâʔ]	‘hit/beat’
	/vá:rò/	[bá:rò]	‘leaves’

By age three a typical Safaliba-speaking child has the inventory of consonant phonemes shown in table 4.1:

Table 4.1 Inventory of Consonant Phonemes by the Three Year Old

	Labial	Alveolar	Palatal	Velar	Labio- velar	Glottal
Stops	p b	t d		k g	- -	ʔ
Fricatives	f -	- -				h
Affricates			- -			
Flap		-				
Lateral		l				
Nasals	m	n	ɲ	ŋ	-	
Glides			j		w	

Out of the twenty-five (25) consonants found in the adult version of Safaliba, the three-year-old Safaliba speaker is able to produce sixteen (16) of them. Missing from the child's consonant inventory are: /kp, gb, ŋm, tʃ, dʒ, s, z, v, r/. Their places on the chart are represented with dashes.

4.3 Early Phonological Processes

Phonological processes are mechanisms used in speech to make pronunciation easy for the speaker. These mechanisms may include omission, insertion and substitution of sounds or syllables in speech to ease difficult pronunciation. In the case of children's language acquisition, phonological processes are mechanisms the child uses to adapt the more difficult adult version due to the fact that they are incapable of producing the exact forms of the adult's.

According to Younis (2008), Ingram (1976), Fikkert (1994), and Hayes (1997), phonological processes are what the child brings to the language in order to simplify and reduce the complexity of adult forms to what they can handle with their limited articulatory abilities. Ingram (1976) as cited in Fikkert (1994) divides phonological processes of children into three types: assimilation; substitution; and syllable structure simplification processes.

One of the most widespread phonological processes in early language acquisition involves substitution, that is, the systematic replacement of one sound by an alternative sound that the child finds easier to articulate. Common substitution processes include stopping, fronting, gliding and denasalization (O'Grady and Sook 2001).

Also, Richtsmeier (2010) reviews research of evidence for describing child errors as substitution. These errors included stopping, word-final devoicing, word-initial devoicing, fronting and gliding. Other phonological processes used by children include word initial voicing among others.

The frequently occurring phonological processes in the speech of the three year old Safaliba child involve predominantly substitution: simplification of complex consonants, lateralization and stopping.

4.3.1 Syllable Structure Simplification (Deletion)

A frequent phonological process observed in the three year old Safaliba child's speech is syllable structure simplification specifically through deletion as seen in example 4.5 a,b and c.

Examples 4.5

a.	sábításí	tátátí	'slippers'
	sá-bí-tá-sí	tá-tá -tí	
	CV.CV.CV.CV	CV.CV.CV	

b.	zìlìnní	dìní~ dìlí	'tongue'
	zì-lìn-ní	dì-ní~dì-lí	
	CV.CVC.CV	CV.CV	

c. yà:ribà	yà:bà	‘grandfather’
yà:.ri.bà	yà:.bà	
CV:.CV.CV	CVV.CV	

As noted in chapter three, the prevalent syllable types in Safaliba are the CV, CVC and the V. It is well known in the literature that the syllable types V and CV are the easiest for children. According to Grijzenhout and Joppen, (2003) in the literature on the early acquisition of English and Dutch (Ingram 1978, Smith 1973, and Fikkert 1994a,b, respectively), it is usually assumed that the first words in child speech consist of a plosive followed by a vowel, thus, the first words that children produce supposedly have a CV-structure.

It is not startling that the CV type was the dominant syllable type used by the three year old. The Safaliba-speaking three year old simplifies syllable structures by deleting medial syllables while retaining initial and final syllables.

In examples 4.5 a,b and c, the medial syllable is deleted while the initial and final ones are retained. Next note that substitution is performed but this is discussed later in 4.3.2. For example in sábitásí in 4.5 a, the onset of the initial and final syllables are changed from fricatives to the stop counterparts. This process is pervasive in the three-year olds phonology and discussed in 4.3.2 under stopping.

4.3.2 Substitution

Substitution is one of the most widespread phonological processes in early language development (O'Grady and Sook 2001). This is the systematic replacement of one sound by another that the child finds easier to produce. They add that, common substitution processes include stopping, fronting, gliding and denasalization.

4.3.2.1 Stopping

Stopping in phonology is simply exchanging a fricative or affricates with a stop. According to Richtsmeier (2010), stopping is very common with voiced fricatives and sometimes both voiceless and word-final fricatives are stopped. However, there is little data to determine the position in words.

Most fricatives and affricates in Safaliba whether in initial, medial or final positions, are always realized as stops in the three year old speaker's production. In the examples 4.5a and b above and on table 4.2 below, fricatives and affricates that were substituted for stops include the following: $s \rightarrow t$, $z \rightarrow d$ or t , $v \rightarrow b$, $\text{ʃ} \rightarrow t$ and $\text{dʒ} \rightarrow d$. The reason for stopping is basically because fricatives and affricates are more difficult to produce than stops (Vihman 1996) and are universally acquired later. For a fricative to be produced, a speaker must position the articulators in a way that air passes through a narrow space or groove, creating turbulence and this is difficult for the child (Richtsmeier 2010). O'Grady and Sook (2001) state that stops are acquired before other consonants universally. As noted by Younis (2008a:54) the alveolar plosives /t/ and /d/, were the easiest for children while fricatives seem difficult to the

children. Fikkert (1994) shows that Dutch children had difficulties with fricatives as compared to stops and so they develop different strategies like omitting fricatives or replacing them with stops which are easier for them to produce.

Two to three-year-old children exhibit pervasive stopping, but it becomes less common as they age. Stopping primarily affects the fricatives /v ð/ (Smit 1993, as cited in Richtsmeier 2010).

a. *Realization of /s/ as [t]*

Example 4.6

Adult form	Child's Form	Gloss
/sǎ:/	[sǎ: /tǎ:]	'father'
/sá:/	[sá: /tá:]	'tuozaŋi (staple food)'
/sábtási/	[tátátí]	'slippers'
/sùé/	[tùé]	'knife'
/sóʔ/	[tóʔ]	'bath'
/sùkù/	[tùkù]	'school'
/síkírí/	[tíkílí]	'sugar'
/là:sí/	[là:tí]	'bowls'

Adult's utterance

1. mǎŋ sòyé nà:
 1p.sg bath.pst FACT
 'I have bathed.'

Child's utterance

2. mǎŋ tòyé nà:
 1p.sg bath.pst FACT
 'I have bathed.'

In the above example, the child substitutes [t] for the adult form /s/ in the word 'soye'. The sound /s/ is realized as [t] in the three year old's speech no matter its position in a word. However, in few words, there is a fluctuation between the use of [s] and [t] by the children. For example /sǎ:/ 'maize or millet porridge staple' are realized alternatively as [sǎ:/tǎ:]. This could be as a result of articulatory slips, or due to the fact that a word like that is used quite frequently at home with siblings, parents or in the community at large.

b. *Realisation of /z/ as [t] or [d]*

From the data below, it is observed that some of the children alternate between [t] and [d] in their production of /z/. Also, critical analysis of the data shows that two of the children use /d/ while four of them use /t/.

Example 4.7

Adult's Form	Child's Form	Gloss
/zìní/	[dìní/tìní]	'sit'
/zù/	[tù/dù]	'head'
/zè/	[dè]	'run'
/zìlíní/	[dìní/dìlì]	'tongue'

c. *Realisation of /v/ as [b]*

Example 4.8

Adult form	Child's Form	Gloss
/vǎʔ/	[bǎʔ]	'hit/beat'
/vǎ:rò/	[bǎ:lò]	'leaves'

Adult's utterance

1. ò vǎʔ mà nà:
 2SG beat 1SG FACT

'He/she beat me.'

Children's utterances

2. ò bǎʔ mà nà:
 2SG beat 1SG FACT

'He/she beat me.'

From the example above, /v/ in the adult version is often realized as /b/ in the three year old's speech.

Various reasons account for their difficulties in the production of some sounds of which include voicing, place and manner of articulation, and difficulty in production due to the fact that the children have limited articulatory abilities. From analysis, it is clear that stops, nasals and semi-vowels are easier for Safaliba three-year-old children to produce than flaps, affricates and fricatives. See examples in Section 4.2.

O'Grady and Sook (2001) state that stops are acquired earlier than fricatives and affricates. However, in terms of places of articulation, labials are acquired first, followed by alveolar, velars, palato-alveolar and inter-dentals are the last to be acquired.

Less frequent is the substitution (labialization) /k/with [b] $k \rightarrow b$. Here a non-labial sounds like /k/ is realized as the labial sound /b/. Also, /f/ was substituted with [b] thus $f \rightarrow b$. This was found in the speech of one of the Safaliba 3-year olds.

Example 4.9

Adult form	Child's Form	Gloss
/Afisah/	[Abita]	'Name of a person'
/gàfèrà/	[gàbèlà]	'excuse'
/tò:fe/	' [tò:bé]	'toofe'
/sìnkàfà/	[tìnbàbà]	'rice'

4.3.3 Simplification of Complex Consonants

a. Simplification of /kp, gb, ŋm/ to [p, b, m]

The labial-velar stops are complex sounds which are produced with two different places of articulation with the same phonation feature and stricture. Their production requires a co-ordination of the movement of the two active articulators involved in their production. Such articulations are therefore difficult to do. Therefore the child replaces them with the simple one-place of articulation stop sound. Of the two places, they drop the more posterior place of articulation, which is the velar place of articulation, but retain the more anterior place of articulation.

Notice that the child in choosing the single stop sound goes for the labial stops and not the velar stops because the former is easier to articulate than the latter. This corroborates why in child language acquisition, labials are acquired before velars. The data in example 4.10 illustrates this simplification process.

Example 4.10 Complex Consonant Simplification

Sound	Adult form	Child's Form	Gloss
/kp/→[p]	/kpɛ̀/	[pɛ̀]	'to enter'
	/kpi/	[pi]	'to die'
	/kpɛ̀ndɛ̀ri/	[pɛ̀ndɛ̀li]	'one'

/gb/→[b]	/gbàŋdʒɛ̀/	[bàŋdè / bàŋjè]	‘guinea corn’
	/gbà/	[bà]	‘too’
	/gbísí/	[bísí]	‘sleep’
	/gbéri/	[béri]	‘thigh’
/ŋm/→[m]	/ŋmá:ŋáʔ/	[má:ŋáʔ]	‘monkey’
	/ŋmá:ʔ/	[má:ʔ]	‘cut’
	/ŋmá/	[má]	‘break’
	/ŋmèʔ/	[mèʔ]	‘hit’
	/ná:ŋmínnì/	[ná:mínnì]	‘God’

In the case of /kp/ and /gb/ being produced as /p and b/ respectively, this could be as a result of acoustic similarities between /kp/ and /p/ and /gb/ and /b/ which subjects substitute. Adjei (2002) states that it seems the labial velars /kp/ and /gb/ are back consonants and that they were acquired late. Also, /kp/ and /p/ and /gb/and /b/ have partial articulatory and spectral acoustic similarity that could have led to the substitution of the latter of each pair for the former. The bilabials /p/ and /b/ she states are front consonants and were acquired earlier.

b. Simplification of /tʃ,dʒ/ to [t,d]

The affricates, just like the labial-velar stops, are complex sounds which are produced by transitioning from a stop to a fricative. They, like the labial-velar

stops are acquired late in child language due to their complexity. In simplifying them, the child chooses the stop part of the affricate over the fricative part because they are more difficult to articulate than the stops. The examples in 4.11 illustrate this.

Example 4.11

Adult form	Child's Form	Gloss
/ʧĩù/	[tĩù]	'moon'
/ʧĩ:ŋú/	[tĩ:ŋú]	'guinea fowl'
/ʧõgì/	[tõgì]	'burn'
/wòdʒè/	[wòdè / wòjè]	'cloth'
/dʒòŋkó/	[dòŋkó / jòŋkó]	'navel'

Interestingly, there are two instances where the voiced palatal affricate /dʒ/ was realised as /j/ by three of the three year olds. Crystal (2008:8-9) states that language acquisition from a phonological point of view asserts that, children introduce a new pronunciation and this spreads to all the words found in adult speech. For example, if /l/ and /j/ are at first both pronounced [j], then this implies that [l] is acquired later. This is therefore transferred to adult words which contain /l/, and not /j/. In this light Safaliba three year olds introduce a new pronunciation thus /j/ which implies that /dʒ/ is acquired later.

c. Simplification of /r/ to [l]

The articulation of the alveolar flap /r/ requires that the blade of the tongue is raised towards the alveolar ridge and allowed to hit the alveolar ridge just once in passing. This is a difficult gesture to make and as a result, the child substitutes the more easy alveolar lateral for it. The lateral and the flap are both called liquids. The alveolar flap /r/ is realised as [l] in the three year old's sounds no matter its position in a word.

Example 4.12

Adult form	Child's Form	Gloss
/dà:rò/	[dà:lò]	'sticks'
/vá:rò/	[bá:lò/vá:lò]	'leaves'
/wérà/	[wélà]	'go'
/dú:rì/	[dú:lì]	'urinate'
/nú:rì/	[nú:lì]	'yam'
/tòbìrì/	[tòbìlì]	'ear'
/nó:rì/	[nó:lì]	'mouth'
/pérétù/	[pélétù]	'bowl'
/bá:rì/	[bálì]	'leg'
/yú:rì/	[yú:lì]	'name'

/nó:ri/	[nó:li]	'mouth'
/dú:ri/	[dú:li]	'urinate'

Table 4.2 Summary of Phonological Processes

Process	Example	Change
Syllable Deletion	/sábítási/ [tátátí] 'slippers' /zilínní/ [dìní~ dílí] 'tongue' /yà:ribà/ [yà:bà] 'grandfather'	CV.CV.CV.CV → CV.CV.CV CV.CVC.CV → CV.CV CV:.CV.CV → CVV.CV
Stopping	/sábtási/ [tátátí] 'slippers' /zilínní/ [dìdìní] 'tongue' /zìní/ [dìní] or [tìní] 'sit' /vá/ [bá] 'hit' /và:ró/ [bà:ló] 'leaves'	s → t z → d z → t v → b v → b
Lateralization	/dà:ró/ [dà:ló] 'sticks' /và:ró/ [bà:ló] 'leaves' /kòbìrì/ [kòbìlì] 'bone' /wérà/ [wélà] 'go' /pòrì/ [pòlì] 'back'	r → l r → l r → l r → l r → l

Process	Example	Change
Simplification of Complex Consonants	/kpi/ [pi] 'die'	kp → p
	/kpɛ̀ndɛ̀ri/ [pɛ̀ndɛ̀li] 'one'	kp → p
	/gbísi/ [bísi] 'sleep'	gb → b
	/gbé̄ri/ [bé̄ri] 'thigh'	gb → b
	/gbàɲɔ́zɛ̀/ [bàɲɔ́ɛ̀] 'guinea corn'	gb → b
	/gbàɲɔ́zɛ̀/ [bàɲjɛ̀] 'guinea corn'	gb → j
	/gbàɲɔ́zɛ̀/ [bàɲɔ́ɛ̀] 'guinea corn'	ɔ́ → d
	/wòɔ́zɛ̀/ [wòɔ́ɛ̀] 'cloth'	ɔ́ → d
	/wòɔ́zɛ̀/ [wòjɛ̀] 'cloth'	ɔ́ → j
	/ɔ́zòɲkó/ [jòɲkó] 'navel'	ɔ́ → j
	/ɲmá:ɲá/ [má:ɲá] 'monkey'	ɲm → m
	/ɲmá: / [má:] 'cut'	ɲm → m
	/ɲmá/ [má] 'break'	ɲm → m
	/ɲmɛ̀ʔ/ [mɛ̀ʔ] 'hit'	ɲm → m
	/nǎ:ɲmínnì/ [nǎ:mínnì] 'God'	ɲm → m
	/ʃí:ɲú/ [tí:ɲú] 'guinea fowl'	ʃ → t
	/ʃíù/ [tíù] 'moon'	ʃ → t
	/ʃògì/ [tògì] 'burn'	ʃ → t

4.4 Conclusion

The chapter examined the phonological inventory of a three year old Safaliba child. It discussed the patterns of substitution and gave phonological explanations to these processes.

The findings indicate that vowels were mastered by age three. Out of the twenty-five consonants in Safaliba, three year olds are able to produce sixteen of them. The voiced palatal affricate /dʒ/ was realised as /j/ a new pronunciation by the three year old as asserted by Crystal (2008).

Frequent phonological processes used by these three year olds are Substitution: stopping, lateralization, syllable structure simplification (deletion) and simplification of complex consonants.

CHAPTER FIVE

SUMMARY AND CONCLUSION

5.0 Introduction

This chapter attempts to draw attention to the issues that are central to the current study. It summarises all that has been discussed in the various chapters. The chapter responds to the research questions posed in the introductory chapter. It concludes with the study's contribution to knowledge and recommendations for future research.

5.1 Summary of Preceding Chapters

Chapter one gave a brief background to the child language acquisition. The chapter also examined the socio-cultural background of the Safaliba people, taking into account their origins and geographical location. It considered their language, history, occupation, culture and the economic background. Other issues addressed include the problem statement, relevance of the study, method used and the organization of the study.

Chapter two reviewed literature on child language and child phonology. It also looked at the phonology of Safaliba and other related languages, bringing out the similarities and differences between the languages. The chapter concludes with a description of the method used and the theoretical framework of the study.

Chapter three focused on the description of the vowel and consonant inventory of Safaliba. It confirms that Safaliba has nine oral vowels and an active ATR vowel harmony system, as has been reported for many of the other Gur languages. All nine vowels occur in open and closed syllables. With the exception of /e/ and /o/ all vowels in Safaliba have contrastive nasal counterparts. All twenty five consonants in Safaliba occur in onset position, however, the coda position is restricted the glottal stop to /ʔ/ the labial stop /b/, the lateral /l/ and the nasals /ɲ,ŋ,m,n/.

Safaliba has an active vowel harmony system. The vowel phonemes in Safaliba are divided into two sets thus: +ATR (i, u, e, o); and –ATR (ɪ, ʊ, ε, ɔ, ɑ). The vowels in the + ATR set /i, e, u, o/ are described as tense or close while /ɪ, ʊ, ε, ɔ, ɑ/ are described as lax and open voiced quality (-ATR). Vowels in Safaliba normally harmonize with only vowels of the same group with the exception of the vowel /ɑ/ which can occur with any vowel from both sets. The syllable structure of Safaliba is predominantly C V, and C V C with the CV type being the most common and unmarked syllable type like most Ghanaian languages. There exist the V syllable type, however, it occurs in very few words in the language.

The discussion in chapter four examined the phonological inventory of a three year old Safaliba child. A comparison between the adult forms and those of the children was done and a discussion of the forms revealed the systematic differences between them. The chapter discussed the patterns of substitution and gave phonological explanations to these processes. The findings indicate that vowels were mastered by age three. Out of the twenty-five consonants in Safaliba, three year olds are able to produce sixteen of them.

The voiced palatal affricate /dʒ/ was realised as /j/ a new pronunciation by the three year old as asserted by Crystal (2008).

Frequent phonological processes used by these three year olds are Substitution: stopping, lateralization, syllable structure simplification (deletion) and simplification of complex consonants.

5.2 Contribution to Knowledge

The study on the phonology of the Safaliba-speaking child is the first of its kind in the language and thus provides a basis for understanding the phonological development of Safaliba-speaking children. Teachers are generally supposed to be interested in phonology and so this would serve as the basic methodology for teaching children. The study would certainly urge other scholars to undertake further studies in Safaliba and other languages.

5.3 Recommendation for Future Research

Though the study has provided insight into the Phonology of the three year old Safaliba child, it is not exhaustive considering the limited time for the study. There are still some aspects of child language acquisition that could be explored. Comparative studies on several languages could be explored to throw more light on the topic. Future research could explore aspects such as tone in Safaliba. Also a quantitative study where more variables like the age at which

one masters phonology could be embarked upon. Additionally, longitudinal studies to examine the sequence of sound acquisition could be explored.

5.4 Conclusion

The ultimate aim of this thesis is to describe the language of the three year old Safaliba-Speaking child from a phonological perspective. The study uses an eclectic approach. Comparative method was used to compare the phonology of the phonology of the three year old Safaliba speaker with that of an adult. Generative phonology was used to explain the nature of the differences of both phonologies. The study gives a detailed description of the phonemic inventory of Safaliba and then goes on to describe the phonemic inventory of the three year old Safaliba-speaker. The study to a large extent coincides with what is reported in the literature and explains universals and unmarked versions in languages all over the world. The study would certainly urge other scholars to undertake further studies on Safaliba and other languages.

APPENDIX 1**TRANSCRIBED DATA**

Adult version	Child's Version	Gloss
1. /à/	[à]	'the'
2. / bá:/	[bá:]	'dog'
3. /bá/	[bá]	'stack'
4. /bà:/	[bá:]	'well'
5. /bári/	[báli]	'leg'
6. / b'é:/	[b'é:]	'tomorrow'
7. /bì/	[bì]	'ripe/ cooked'
8. /bí:/	[bí:]	'or'
9. /bé/	[bé]	'to be'
10. /bì:/	[bì:/pì:]	'broth'
11. /bíé/	[bíé]	'child'
12. /bó:sí/	[bó:tí]	'goats'
13. /bóri/	[bólí]	'to sow'
14. /bòʔí:là/	[bòʔí:là]	'goat horns'
15. /dǎ:/	[dǎ:]	'alcohol'
16. /dǎ:/	[dǎ:]	'tree'
17. /dǎ:/	[dǎ:]	'to play'
18. /dí/	[dí]	'to eat'
19. /dí:/	[dí:]	'house/room'
20. /dà:ró/	[dà:ló]	'sticks'
21. /dʒòŋkó/	[dòŋkó/jòŋkó]	'navel'

22. /díjí/	[díjí]	‘chase’
23. /díjí/	[díjí]	‘to take’
24. /dú:rì/	[dú:lì]	‘urinate’
25. /dógó/	[dógó]	‘cooking pot’
26. /fòbì/	[fòbì]	‘throw’
27. /fé/	[fé]	‘think’
28. /fè:bì/	[fè:bì]	‘whip’
29. /gàfèrà/	[gàbèlà]	‘excuse’
30. /gánnì/	[gánnì]	‘skin’
31. /gbà/	[bà]	‘too’
32. /gbàgbà/	[bàbà]	‘myself’
33. /gbàndzè/	[bàndè / bànjè]	‘guinea corn’
34. /gbèrì/	[bèrì]	‘thigh’
35. /gbísí/	[bítí]	‘sleep’
36. /gè/	[gè]	‘get angry’
37. /gèl.lí/	[gèl.lí]	‘egg’
38. /gílí/	[gílí]	‘go round’
39. /hàṅ/	[hàṅ]	‘if’
40. /hínà/	[hínà]	‘kind’
41. /ísígì/	[ítígì]	‘get up’
42. /kâ:/	[kâ:]	‘oil’
43. /kà:/	[kà:]	‘look’
44. /kó/	[kó]	‘to farm’
45. /kò:/	[kò:]	‘scratch’
46. /kósí/	[kótí]	‘to cough’

47. /kòbìrì/	[kòbìrì]	‘bone’
48. /kpá/	[pá]	‘boil’
49. /kpè/	[pè]	‘to enter’
50. /kpèndèrì/	[pèndè̀lì]	‘one’
51. /kpí/	[pí]	‘to die’
52. /kó/	[kó]	‘kill’
53. /kú:rí/	[kú:lí]	‘hoe’
54. /kúrí/	[kúlí]	‘tortoise’
55. /kútú/	[kútú]	‘nail’
56. /là/	[là]	‘laugh’
57. /là:sí/	[là:tí]	‘bowls’
58. /léʔ/	[léʔ]	‘to fall’
59. /lí/	[lí]	‘tie’
60. /líbí:rí/	[líbí:lí]	‘money’
61. /mǎ/	[mǎ]	‘mother’
62. /mǎ́:ró/	[mǎ́:ló]	‘grasses’
63. /mìŋ/	[mìŋ]	‘also’
64. /mò̀nì/	[mò̀nì]	‘stir’
65. /nà:/	[nà:]	‘chief’
66. /nâ:ŋmínnì/	[nâ:mínnì]	‘God’
67. /nó:rì/	[nó:lì]	‘mouth’
68. /nógì/	[nógì]	‘catch’
69. /nógízíà/	[nógítíà/ nógídíà]	‘housefly’
70. /nè/	[nè]	‘to see’
71. /nè̂:/	[nè̂:]	‘grind’

72. /ní:/	[ní:]	‘neck’
73. /nú:ri/	[nú:li]	‘yam’
74. nóá/	[nóá]	‘fowl’
75. /ŋǎ:/	[ŋǎ:]	‘this’
76. /ŋíá/	[ŋíá]	‘nose’
77. /ŋmá/	[má]	‘break’
78. /ŋmǎ́:/	[mǎ́:]	‘cut’
79. /ŋmǎ́:ŋǎ́/	[mǎ́:ŋǎ́]	‘monkey’
80. /ŋmèʔ/	[mèʔ]	‘hit’
81. /ŋú/	[ŋú]	‘to drink’
82. /pô:/	[pô:]	‘add’
83. /pô̂:/	[pô̂:]	‘rot’
84. /pérétù/	[pélétù]	‘bowl’
85. /pé/	[pé]	‘swear’
86. /pé:/	[pé:]	‘basket’
87. /pé:sé/	[pé:té]	‘a form of divination’
88. /pésí/	[pétí]	‘to take notice’
89. /pì:/	[pì:]	‘sweep’
90. /pó:/	[pó:]	‘stomach’
91. /pòyé/	[pòyé]	‘backs’
92. /póʔ/	[póʔ]	‘farm’
93. /sǎ:/	[sǎ: /tǎ:]	‘father’
94. /sǎ̂:/	[tǎ̂:]	‘spoil/mash’
95. /sá:/	[tá:]	‘tuozaŋí (staple food)’
96. /sábításí/	[tátátí]	‘slippers’

97.	/sébí/	[tébí]	‘to dance’
98.	/síá/	[tíá]	‘waist/síkírí/
99.	/síkírí/	[tíkílí]	‘sugar’
100.	/sìnkàfà/	[tìnbàbà]	‘rice’
101.	/sò/	[tò]	‘to bath’
102.	/sòbìrì/	[tòbìlì]	‘grasshopper’
103.	/sóyé/	[tóyé]	‘to bath’
104.	/sóʔ/	[tóʔ]	‘bath’
105.	/sùé/	[tùé]	‘knife’
106.	/sùkù/	[tùkù]	‘school’
107.	/tó/	[tó]	‘to pound’
108.	/tò:/	[tò:]	‘bitter’
109.	/ʔḡgì/	[tògì]	‘burn’
110.	/tébí/	[tébí]	‘to hit’
111.	/ʔí:ŋú/	[tí:ŋú]	‘guinea fowl’
112.	/ʔíù/	[tíù]	‘moon’
113.	/tĩ:/	[tĩ:]	‘medicine’
114.	/tí:bó/	[tí:bó]	‘departure’
115.	/tò:fé/	[tò:bé]	‘toofe’
116.	/tóbé/	[tóbé]	‘ears’
117.	/tòbìrì/	[tòbìlì]	‘ear’
118.	/tó/	[tó]	‘insult’
119.	/vá:rò/	[bá:lò]	‘leaves’
120.	/vàʔ/	[bàʔ]	‘hit/beat’
121.	/vólí/	[bólí]	‘to swallow’

122.	/wákó/	[wákó]	‘tall’
123.	/wòdʒè/	[wòdè / wòjè]	‘cloth’
124.	/wérà/	[wélà]	‘go’
125.	/wò/	[wò]	‘want/look for’
126.	/wómbú/	[wómbú]	‘suffering’
127.	/wòŋ/	[wòŋ]	‘to hear’
128.	/wòʔ/	[wòʔ]	‘look for’
129.	/wónà/	[wónà]	‘why’
130.	/yâ:/	[yâ:]	‘grandmother’
131.	/yà:ribà/	[yà:bà]	‘grandfather’
132.	/yàbà/	[yàbà]	‘younger one’
133.	/yàlà/	[yàlà]	‘trouble’
134.	/yé/	[yé]	‘say’
135.	/yémmi/	[yémmi]	‘forget’
136.	/yíri/	[yíli]	‘village’
137.	/yò:ní/	[yò:ní]	‘year’
138.	/yú:ri/	[yú:li]	‘name’
139.	/záká/	[táká/dáká]	‘home’
140.	/zón/	[tón/dón]	‘flour’
141.	/zéá/	[téá/déá]	‘a type of millet’
142.	/zè/	[tè/dè]	‘here’
143.	/zǐǎ/	[tǐǎ/dǐǎ]	‘red’
144.	/zíní/	[tíní/díní]	‘to sit’
145.	/zìlíní/	[díní/dili]	‘tongue’
146.	/zín/	[tín/dín]	‘blood’

147.	/zón/	[tón/dón]	‘flour’
148.	/zóyé/	[tóyé/dóyé]	‘tails’
149.	/zú/	[dú/tú]	‘head’
150.	/ʔù/	[ʔù]	‘bury’

APPENDIX 2

QUESTIONNAIRE

DEPARTMENT OF LINGUISTICS

UNIVERSITY OF GHANA

QUESTIONNAIRE

This questionnaire is designed to collect data for a Phonological study as part of the requirement towards the attainment of an M.phil in Linguistics. The information I will collect for this survey will be used only for academic purposes. You were selected for this survey. I would like to ask you questions about your language background. The questions will only take a few minutes. I will record your responses. All of the answers you give will be guarded by absolute confidentiality, neutrality, and the avoidance of third parties' prying eyes on the responses. I seek your informed consent to respond to the questionnaire. You are not obligated to cooperate under this circumstance. You can skip any question you do not wish to answer. Please, feel free to answer the questions as completely as possible. Would you like to participate in the survey?

SECTION A**Background of Parents**

1. Gender (a) Male { } (b) Female { }
2. Where do you come from?
3. What is your First Language [L1]? -----
4. What is your Second Language? -----
5. In which town or community did you grow up? -----
6. What is the predominant language spoken in the community you grew up?
7. What predominant language did you grow up speaking in that community?
8. How long have you stayed in Mandari?
9. What language do the people you interact with most often speak?
10. Where does your spouse come from?
11. What is his or her First Language [L1]? -----
12. What is his or her Second Language? -----
13. In which town or community did he or she grow up? -----
14. What is the predominant language spoken in the community he or she grew up?
15. What predominant language did he or she grow up speaking in that community?
16. How long has he or she stayed in Mandari?
17. What language do the people he or she interacts with most often speak?
18. How many children do you have?
19. What are their ages?

SECTION B

Background of children

20. Sex (a) Male { } (b) Female { }
21. Does your three year old have any impairment? Speech { } Hearing{ }
Physical { }
22. Is your three year old child in school?
23. Does he/ she speak Safaliba?
24. What do you consider his/her first language?
25. What do you consider his/her second language?
26. What other languages does the three year old child speak?
27. Who does he/she interact with often?
28. What languages do they speak in their interaction?

Thank you for your time.

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