A COMPARATIVE STUDY OF THE DYNAMICS OF DIALECT INTELLIGIBILITY AND INTERCOMPREHENSION IN TWO COMMUNITIES IN PLATEAU STATE, NIGERIA

By

GOMWALK, PHILEMON VICTOR
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DEPARTMENT OF ENGLISH AND LITERARY STUDIES,
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DECLARATION

I hereby declare that this dissertation entitled "**A COMPARATIVE STUDY OF THE DYNAMICS OF DIALECT INTELLIGIBILITY AND INTERCOMPREHENSION IN TWO COMMUNITIES IN PLATEAU STATE, NIGERIA"** was written by me in the **Department of English and Literary Studies, Faculty of Arts, Ahmadu Bello University, Zaria.**

The information derived from all quoted literature has been duly acknowledged in the text and a list of relevant references provided accordingly. No part of this work has been presented for another degree or diploma at any other institution before.

_____	_____	_____
Name of Student	**Signature**	**Date**

CERTIFICATION

This dissertation entitled, "**A COMPARATIVE STUDY OF THE DYNAMICS OF DIALECT INTELLIGIBILITY AND INTERCOMPREHENSION IN TWO COMMUNITIES IN PLATEAU STATE, NIGERIA"** meets the Regulations governing the Award of the degree of **Doctor of Philosophy (PhD) in English Language, Department of English and Literary Studies, Faculty of Arts,** of the **Ahmadu Bello University, Zaria** and is approved for its contribution to knowledge and literary presentation.

PROFESSOR A. A. JOSHUA _____
(Chairman, Supervisory Committee) Signature & Date

PROFESSOR (Mrs.) T. O. GANI-IKILAMA _____
(Member, Supervisory Committee) Signature & Date

DR. S. A. ABAYA _____
(Member, Supervisory Committee) Signature & Date

DR. A. A. LIMAN _____
(Head of Department) Signature & Date

_____ _____
(Dean, School of Postgraduate Studies) Signature & Date

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ABSTRACT

This work documents the results and findings obtained from a series of sociolinguistic investigations conducted in the speech communities of *Bache* and *Pan*, located respectively in Bassa and Quan-Pan Local Government Areas of Plateau State, Nigeria. In broad outline, it was aimed at highlighting some salient features of the dialectological ecology in these two language communities. In specific terms, it sought to determine and to assess the degree of *mutual intelligibility* and *intercomprehension* existing between a numbers of dialectal variants previously reported within these two communities. Utilizing such key research instruments as Lexicostatistical Wordlists (LW), Recorded Text Testing (RTT) materials and equipment, written sociolinguistic questionnaires and verbal interview checklists, the study collected data concerning reported and tested levels of dialect intercomprehension, language use in both public and private domains, language attitudes toward both written and oral speech forms of Bache and Pan, reported levels of bilingualism in various languages, as well as education and literacy levels. Considerable amounts of sociolinguistic data were generated and results subsequently collated for each of the above-mentioned categories, with emphasis on approximate levels of dialect intelligibility and intercomprehension as well as associated level of community attitudes and interest in overall literacy and language development. Through careful scrutiny and statistical computations of percentages of lexical similarity and empirical testing and assessment of dialect intercomprehension amongst sampled field respondents, the study data and results showed that the four variants of Bache investigated sufficiently met conventional lexicostatistical and dialect intelligibility criteria to be considered as viable members of a single consolidated language entity. The findings from the four dialectal variants of Pan investigated also revealed that they were, to varying degrees, mutually intelligible to one another. The study results also do not reveal any far-reaching evidence of language shift towards other languages within the immediate sociocultural environments. Finally, attitudes toward the future developmental prospects of both Bache and Pan were also generally observed to be relatively strong and positive, in spite of the natural advent of modern cultural values and practices within many ethno-linguistic communities in Plateau State in particular and Nigeria in general.

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CHAPTER 1

INTRODUCTION

1.1. Background to the Study

It is difficult to say, with any degree of accuracy, how many Nigerian languages there really are in the multi-lingual and multi-ethnic polity that Nigeria is today. The numbers documented so far in the sociolinguistic literature of Nigeria range from 250(Coleman, 1958) to 450(Gital, 1998).

This lack of certainty in figures has been attributed to many social variables, including very difficult geographical terrains in many parts of Nigeria. These include the Niger-Delta region, the Lower Cross River basin, the Lower Niger-Benue basins, and the Central Jos-Plateau highlands and its escarpment areas - all of which are notable zones of extreme linguistic complexity. This situation is further complicated by such other factors as widespread language shift, language attrition and eventual language death among many ethno linguistic communities in different parts of the country.

The widespread impacts of these sociolinguistic phenomena have been well sampled and documented in many past studies, including the seminal collection, Emenanjo and Bleambo (1999). The uncertainty about a definitive total number for Nigerian languages is, no doubt, related to the lingering controversies and lack of unanimity among linguistic researchers in Nigeria in clearly defining and consistently applying the twin concepts of *language* and *dialect*. Part of the sociolinguistic challenges inherent in a study such as the current one include investigating and, subsequently, reporting on why such controversies still manage to persist, in spite of numerous past attempts by language scholars to resolve them**.**

The topic specifically investigated in the present study relates generally to the *differentiation, description* and *analysis* of the diverse dialectal varieties found throughout the length and breadth of Nigeria. By the least conservative estimates currently available in linguistic circles, Nigeria has no less than three hundred and fifty (350) languages. The exact number, of course, still remains elusive, possibly because 'supposed new' languages are regularly being recorded for the first time, while others are disappearing (Blench,2003,). Such a statement inevitably begs the question of the definition of a language. It is often casually said that these languages must be 'dialects'; but this is often either false or, at best, misleading.

The term, *dialect* (at least within the Nigerian socio-cultural setting), is routinely used in a pejorative sense, suggesting it is merely a local variant of a 'central' language. In linguistic terms, however, we are all aware that dialect is merely a regional, social or occupational variant of another speech-form, with no presupposition as to its importance or otherwise. However, it has also been widely noted that the language diversity which characterizes Nigeria is very unevenly distributed, showing zones of extremely high diversity surrounded by vast regions where a few languages of wider communication, with several millions of speakers, are found.

Plateau State, the broad geographical sub-region within which all our research sites are located, is easily identifiable as one of Nigeria's notable zones of linguistic complexity. In fact, a pioneer linguistic commentary on the Nigerian language landscape, Greenberg (1963:15) has aptly characterized the Jos Plateau and its immediate surrounding escarpment areas as being a geographical region with, arguably, "one of the highest mathematical coefficient of linguistic diversity in the whole world".

1.2. Statement of the Research Problem

The exact number of existing languages often quoted for the Jos Plateau area varies from 25-35, depending on differing criteria used by past analysts. An even larger number of dialects has also being claimed for the area. From a cursory consideration of many of these languages and dialects, they would appear to share many formal similarities and hence mutually intelligible to varying degrees. Speakers of such speech varieties are, in some documented cases, able to satisfactorily communicate with one another, speaking their own respective varieties. Haugen (1966:13) has proposed the label, 'semi-communication' for such kinds of cross-variety exchange. Other terms used to describe the same sociolinguistic phenomenon are 'receptive multilingualism', 'semi-bilingualism', 'asymmetric bilingual discourse' and 'non-convergent intelligibility'.

Mainly on grounds of promoting inquiry into various facets of sociolinguistics in Nigeria in general and Plateau State in particular, it will be both beneficial and intriguing to find out and document the degree to which a speaker of one variety understands the speech of another closely related variety, especially with the ultimate aims of understanding and, possibly, addressing issues related to language contact, second language learning and language policy/planning. Unbiased data about distances between language varieties, as well as detailed knowledge about intelligibility, can also be critical for sociolinguistic studies.

Varieties that have strong social stigmas attached to them could wrongly be deemed hard to understand (Wolff 1959; Giles & Niedzielski 1998). Although the relationship between attitudes and intelligibility is usually not a straight forward one; however, advances in the field of linguistic distances and intelligibility testing can, undoubtedly, provide sociolinguists with objective data to understand and, possibly,

tackle conflicts that arise concerning varieties on a "Standard-Nonstandard" continuum. Knowledge about mutual intelligibility is also needed for standardization and development of new orthographies in communities where no standardized orthography exists. In order to empirically investigate intelligibility, at least one simple, field-tested methodology, and its accompanying set of procedures and test instruments has been developed that makes it possible to express degrees of intelligibility in a single number.

The study being reported in this paper was conducted within two selected areas of Plateau State, (namely, the Bache and the Pan language-speaking environments) with the broad intention of *testing, evaluating* and, possibly, *validating* this extraordinary remark. It is often expediently assumed that the number of dialects and languages spoken and used in Nigeria in general, and in Plateau State in particular, are sufficiently established and documented because they had been intermittently researched upon from colonial times to date. However, this assumption is somewhat misleading, given the inherent reality that potentially viable 'new' dialects and languages are regularly being recorded for the first time. This situation causes the overall language estimates for the country as well as for Plateau State to continuously fluctuate, reflecting political ideology, new research and methods of counting.

The 1952 Census, which first recorded estimates of ethnicity, listed just 51 ethnic groups. Similarly, the first national estimates for languages appeared in 1958, which gave a figure of 248 languages. The most optimistic national figure produced so far in Nigeria, derived from the *Ethnologue (2000),* is 515 - a figure possibly obtained by 'splitting' many languages that consist of dialect chains into individual languages. A more conservative method of counting has produced an estimate of between 350-466 languages, with several new languages being reported each year.

Arguably, a significant reason why new languages are still being recorded is an increasing sense of *self-awareness* being exhibited of linguistic minorities in contemporary times. Peoples formerly content to be recorded under the name of a larger and more prestigious ethno-linguistic group now wish for their own separate identity to be recognized. Similarly, many peoples previously known by their Hausa names have now switched to their own authochonous names. Thus, the *Sura* group from Mangu LGA of Plateau State now prefers to be known as *Mwaghavul***,** or the *Rukuba* group from Bassa LGA of Plateau State now wishes to be called *Bache*. Such rising ethno-linguistic consciousness obviously has important implications, not only for the distribution of social development resources, but may also serve to escalate the potential for conflict between neighboring groups when land becomes short. The ethno linguistic plurality of Plateau state and, by extension, its complex dialectological make-up has been widely acknowledged and commented upon. There is credible evidence that the situation even today has still not been radically altered since colonial times. The modernizing trends of the twentieth century have seen the assimilation of many minority groups within the Jos Plateau area- a process that can be expected to slowly continue for some time into the future. However, there has also been a steady demographic expansion of many very small ethnolinguistic groups into substantial populations with the passage of time.

From 1914 to 1958, the British colonial authorities in many parts of Northern Nigeria actively promoted the compilation and documentation of basic ethnographic information on the numerous minority groups found within the region, an exercise geared towards aiding the efficient administration of the various Native Authorities created among such groups. Colonial policy in such cases was very much influenced by established practices in India, where officials compiled extensive catalogues of tribes and castes. From the 1950s onwards this was accompanied by programmes to

extend literacy in various parts of Northern Nigeria, especially those with substantial 'minority-language' populations. One unintended effect of this was the evolution of 'Ethnic Unions', which were institutionalized bodies that promoted the interests of particular ethnic groups. These began as early as 1916 and grew in size and importance until Independence in 1960.

With the benefit of hindsight, such a policy of cataloguing ethnic divisions may rightly be perceived as running quite contrary to the intrinsic ideology of an ' independent Nigerian' nation-state. It is possibly for this reason that further sponsorship of ethnic and linguistic surveys were de-emphasized and discontinued by the state and not encouraged in the emergent universities in the immediate post-independent era. Indeed, even present-day governmental policies towards sponsorship of ethnic and linguistic surveys has remained largely ambivalent; the rise of a notion of 'indigenousness', effectively recognizing ethnic differentiations, is sharply juxtaposed against governmental policies which seek to promote 'national consciousness and unity'. Ethnicity is thus tacit in accounts of political divisions; although it is well known which ethnic bloc politicians represent, this is rarely openly discussed in the media. Although ethnicity and language represent very primary cleavages, they remained strongly linked to the adoption of specific world religions and therefore had significant potentials and implications for bringing about the occurrence of culture and linguistic changes in ethno linguistic communities in different parts of Nigeria, including Plateau State, where this research was carried out.

1.3. Major Research Questions

1. What are the major "theoretical" and "methodological" issues involved in assessing dialectal intercomprehension and intelligibility within the two communities selected for case study?
2. What are the "previously reported" levels of dialectal intelligibility and intelligibility within the two communities selected for case study in Plateau State?
3. What are the correlations (statistical and sociolinguistic) between previously reported levels of *dialectal intelligibility* and currently verifiable levels of dialectal intelligibility in the targeted dialectal varieties?
4. To what extent would the results/findings obtained from *lexicostatistical*, *intelligibility testing* and *sociolinguistic questionnaire* administration and analyses either confirm or negate previous reports about the nature of dialect intercomprehension within our study areas?

1.4. Aims and Objectives of the Study

The broad aim of the study is to explore some of the major theoretical and methodological issues which are central for understanding the complex nature of *dialectal differentiations* in contemporary Nigeria in general and within the two communities selected as case studies in particular.

The study has the following specific research objectives, related to the two communities selected as case studies in Plateau State:

1. To identify and examine the major issues which are involved in assessing *dialectal intercomprehension* and *intelligibility* within the two communities selected as case studies

2. To identify and report on previously "reported "levels of dialectal intelligibility and sociolinguistic variations within the two communities selected as case studies

3. To identify and report on the possible correlations (both statistical and sociolinguistic) between subjectively reported levels of similarities and intelligibility and empirically verified levels of similarities and intelligibility in the dialectal varieties found in the two case study areas.

4. To identify and report on the extent to which the results/findings obtained from lexicostatistical, intelligibility testing and sociolinguistic questionnaire administration and analyses either confirmed or negated previous claims made about the nature of dialect intercomprehension within our study areas.

1.5. JUSTIFICATION FOR THE STUDY

The study being reported upon in this presentation is justified on the basis of two main reasons;

1. the general need to offer critical comments as well as insights in furtherance of the continuing theoretical discourse on linguistic differentiations in Nigeria.

2. the more specific need to investigate and, subsequently, report on various aspects of existing dialectal differentiations within ethno-linguistic communities of Plateau State, Nigeria.

In doing so, the study seeks to verify the nature and scope of the dialectal speech forms found in these communities in the light of contemporary sociolinguistic realities, as well as their respective levels of judged and functional intelligibility. Furthermore, the study is justified by the need to appraise the degree to which people within the selected study sites use different dialectal varieties vis-à-vis any other prevalent language(s) of wider communication. It has been widely accepted that such languages of wider communication, wherever they occur, often serve as valuable communication bridges across dialectal/linguistic boundaries. Therefore, we felt that it was necessary to include such languages of wider communication within the scope of our overall study of language use within the communities in question.

It is no doubt true that the process of determining the dialectal topography and the speech dynamics in any particular geographical environment necessarily involves not only the elicitation, collation and analysis of intrinsic linguistic data (i.e. shared lexical/grammar-related percentages and other certified measures of intelligibility between speech forms), but also an assortment of pragmatic and sociolinguistic data. Such information, of course, includes how people routinely utilize and subjectively evaluate different speech forms (i.e. language use and attitudes). With respect to such issues as levels of multilingualism and language standardization, data which was ultimately gathered in the course of the study provided valuable insights into the viability of the speech forms as well as the various sociolinguistic domains in which different varieties are habitually utilized.

1.6. Theoretical Significance of the Study

The study is of theoretical significance and value for scholars carrying out sociolinguistic survey, description and documentation of the myriad of dialects and languages within the Nigerian milieu for a number of reasons. For instance, from the pedagogical perspective , there is a pressing need to reappraise issues relating to contemporary linguistic differentiations in different parts of Nigeria, including how the concept of 'intelligibility' is widely used as a basis for differentiating between dialects and languages in available sociolinguistic literature. Although intelligibility does commonly provide useful grounds for establishing differences between dialects and languages, there is enough justification to posit that *intelligibility represents much more than one-to-one correspondences of phonemes, morphemes, grammar structures and their meanings between two speakers of a single dialect or language.* Thus, there is good reason to see intelligibility as the end-product of an intricate combination of various factors of *pragmatics*, *emotional empathy*, and a certain measure of *suspension of cultural disbelief*, all superimposed on, and inter-woven with, the regular core-linguistic elements and features of a particular language. And since the transmission of pragmatic and cultural meanings forms a major cornerstone of human communication in general, when people use language in everyday speech situations, they are normally more intent upon understanding *what is said* rather than focusing attention on the *grammatical manner* in which it is rendered. Therefore, it is not surprising that there is often an underlying collective effort among speakers of a language (even if they speak different dialects) to give up the 'deep idiosyncratic' features and elements of their respective varieties, in favor of more widely accepted ones, in order to enhance better social interaction. Such efforts at mutual co-operation by speakers are often most evident at the phonetic and phonemic levels,

even though this may sometimes also extend to other corresponding levels of language usage.

The study of intelligibility of Bache and Pan dialects, for instance, is of theoretical significance because it is an attempt to revisit the type of sociolinguistic research endeavor which has received, at best, marginal scholarly attention in Nigeria in recent times, but has however continued to attract considerable attention elsewhere in the world.

The focus on various dimensions of *dialect and linguistic intelligibility testing* was first ignited when scholars such as Voegelin, Harris, Hickerson (1951), Turner and Hickerson (1954) pioneered the development of research methods, techniques and instruments for testing and evaluating intelligibility in field studies, using *functional* and *judgment* approaches.

Outside the specific domain of sociolinguistic fieldwork, dialect and linguistic intelligibility testing is also of considerable research application in the disciplines of audiology, speech technology and in foreign language testing. For example, in audiology, intelligibility testing measures has been assimilated and remodeled to provide ways of highlighting and gauging intelligibility as function of the patient's hearing loss at the level of individual sounds, of words and of sentences. More recently from the late 1990s up till date, similar techniques have been adopted and are still being actively applied to the intelligibility testing of dialectal speech forms in different parts of the world today.

1.7. Scope and Delimitation of the Study

The study is primarily restricted to the issue of dialect intelligibility in two ethno-linguistic communities in Plateau State. These are

1. the **Bache** community(also called *Rukuba*, found in Bassa LGA)

2. the **Pan** community(also called *Kofyar*, found in Quan-Pan LGA)

The choice of these communities, in preference to others, was predicated on at least three basic considerations. Firstly, the speech varieties spoken within each community have been reported in available literature on these communities to share many formal linguistic and sociolinguistic features in common. However, the varieties in question have been classified by comparative linguists into different language family groupings. For example, studies covering **Bache** include Gerhardt 1969, 1973/74a, 1989, 1994; Shimizu 1975 and Blench 1998, 2000a while those covering **Pan** include Gerhardt 1983c, 1987; Gerhardt & Jockers 1981). Secondly, speakers in each community lay claims to common traditions of origins and report similarities in patterns of population dispersal from a common ancestral home. Thirdly, each community exhibits many intra-cultural similarities, especially with respect to political, social and religious values and observances.

1.8. Background Information on the Case study Areas

Figure 1.1: Geographical Locations of Study Zones within Plateau state

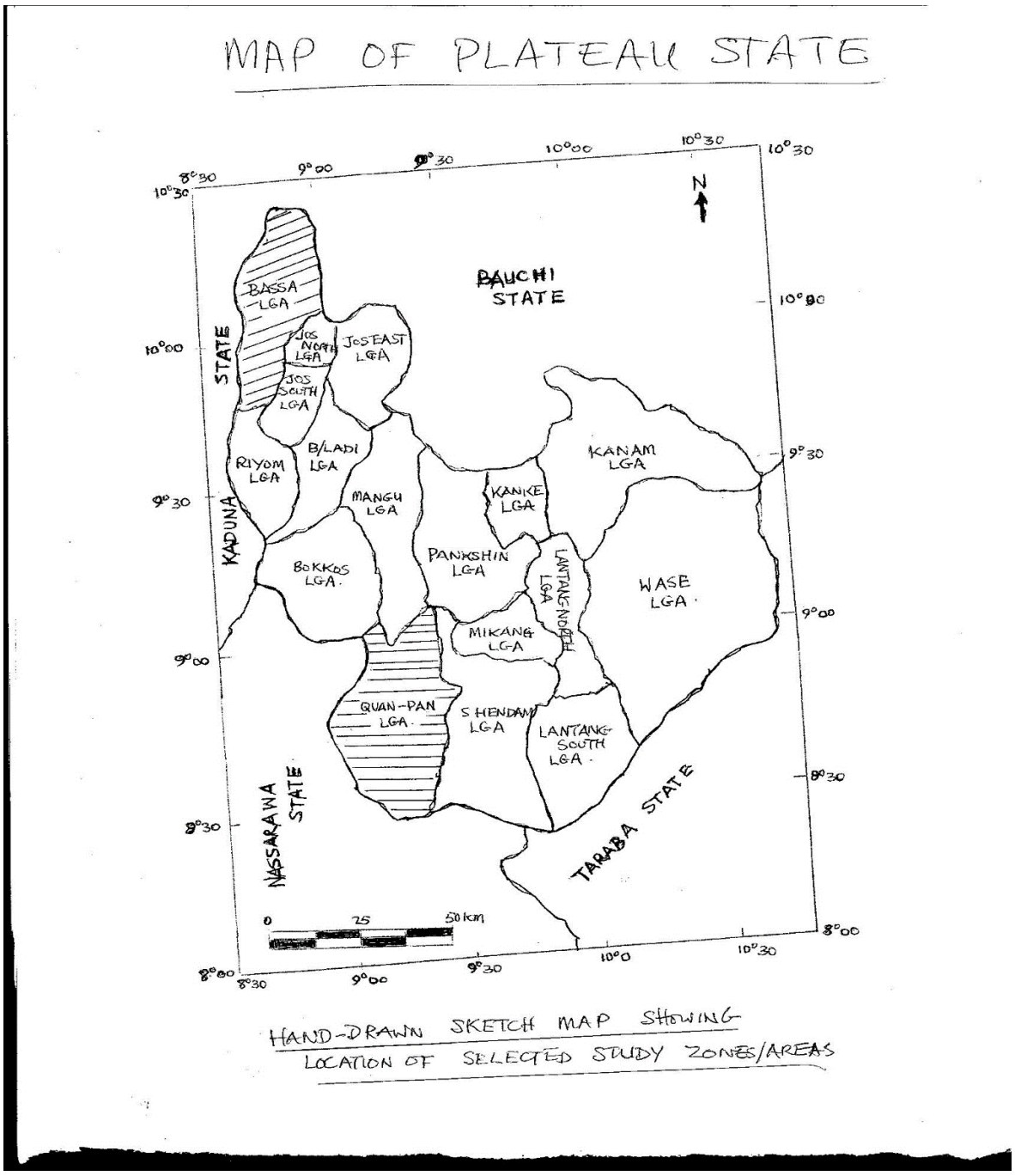
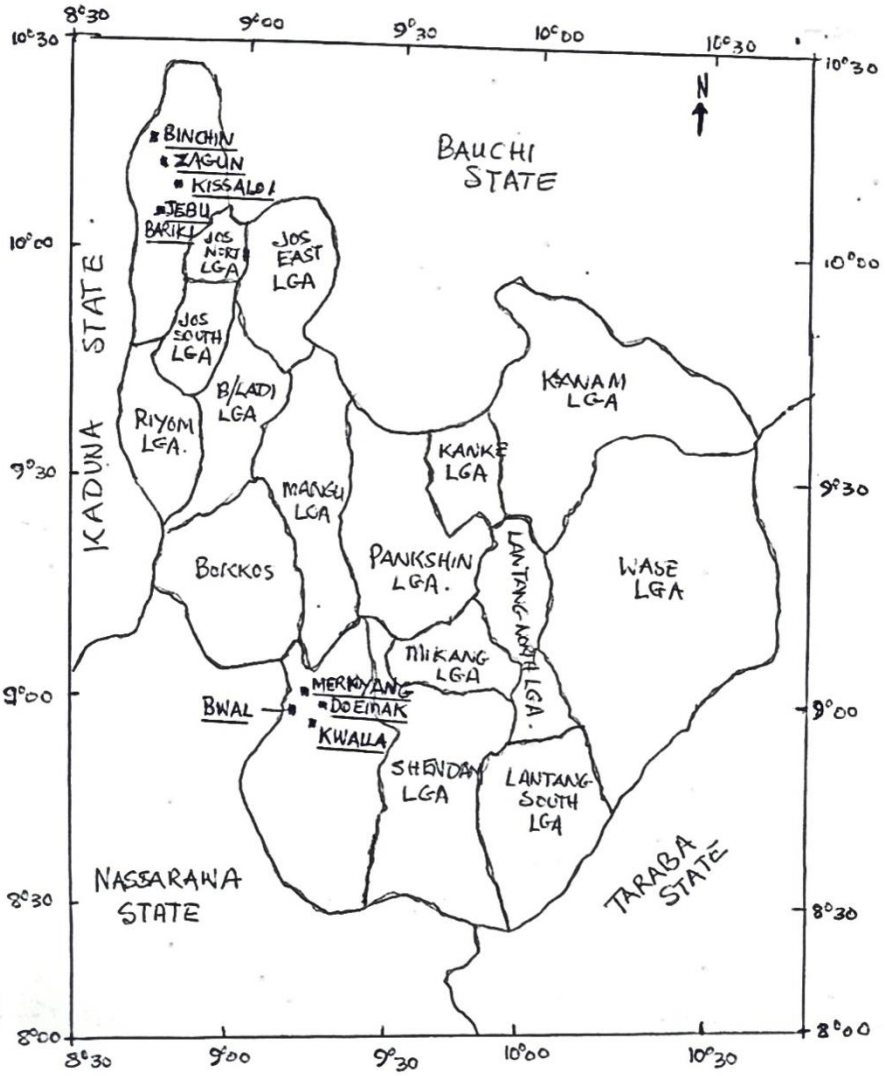


Figure 1.2: Approximate Locations of Research sites within study zones



HAND-DRAWN SKETCH MAP SHOWING APPROXIMATE LOCATIONS OF EIGHT STUDY SITES

1.8.1. Bache Language Area

An authoritative document on Nigerian languages, *An Index of Nigerian Languages* (Crozier and Blench, 1992) lists the following name variants for the Bache language:

Rukuba, Bache, Kuche and Che. The information provided in this work about name variants was verified by interviewing the paramount chief of the Bache community and his Council of Elders. The veracity of the information was indeed confirmed, with the additional information that the name," Rukuba", by which the ethnolinguistic group is widely known, was a Hausa-derived label given to the group during the turbulent years of the Sokoto 'jihadist' incursions into the north-eastern parts of the Jos Plateau area 1806-1906. According to the opinion leaders, their people prefer to call their language, *Bache,* and to refer to their ethnic grouping as, *Kiche.*

Additional information provided by other community leaders in Kissaloi also revealed that even though each Bache village variety is known to have its own unique traditional name and identity, they cannot be regarded as separate dialects since they are very close and, in most instances, indistinguishable. In their collective opinion, Bache speech varieties can be grouped according to geographical and environmental location, roughly corresponding to our four research locations: (1) Jebu-Bariki (2) Kissaloi (3) Zagun and (4) Binchin. Each of these currently belongs to separate traditional administrative districts within present-day Bassa Local Government Area of Plateau State.

1.8.2. Pan Language Area

The traditional division of the Pan (Kofyar) has, until quite recently, been into "hill" and "lowland" subgroups. The various indigenes living in Pan-land themselves "do not seem to recognize this largely 'topography-induced' division. Instead, those whom we interviewed during the course of our field research gave a list of, at least, seven subgroups which they classify as 'authentic' Pan-speaking (or *Kofyar*) descendants. Each of these subgroups is generally associated with an area where the

subgroup traditionally lived, though the subgroup populations have now dispersed and intermingled to varying degrees. The seven Pan subgroups that our interviewees identified are: Doemak, Mernyang, Kwalla, Kwang, Bwal, Njak, and Namu (Jepjan) Our sociolinguistic questionnaire respondents made the following pertinent comments about the relationships and levels of understanding among these subgroups.

(1) Many members of the Bwal, as well as a few neighboring village communities, see themselves as speakers of language varieties which are different from those of other neighboring Pan subgroups.

(2) Many members of the Namu and a few of the Kwalla communities expressed close socio-cultural affinity with the *Goemai,* which is the dominant ethno linguistic neighbor to the Pan/Kofyar group. These Namu and Kwalla indigenes vigorously identify themselves asGoemai,rather Panspeakers. The main difficulty in verifying whether their assertion is true or not lies in the fact that many Pan speakers also regularly use Goemai as a second language.

(3) Kwalla, Doemak, and Mernyangare the three largest Pan subgroups in terms of current population estimates. By virtue of this fact, any of the dialectal variety from these subgroups may be easily selected as a candidate for possible development as the written standard for the Pan language.

(4) Many interview respondents across our four research sites generally claim that there is a ‘’high’’ level of dialect intercomprehension between the Pan variants found in Doemak, Mernyang and Kwalla, though they experience varying measures of difficulty in understanding the dialect of theBwal community, and vice versa.

(5) The Njak, as well as the Teng (another small Pan-related subgroup), are seen as somewhat fringe, though still bona fide Pan people. These speech variants are considered difficult to understand by those from the other larger Pan subgroups. The small dialect variants are mostly found in remote hilly environments traditionally reputed to be ancient refugee-settlements form any present-day subgroups of Pan.

1.9. Definitions of Key Concepts Related to *Dialect Intelligibility* Research and Testing

Asymmetrical (Non-Reciprocal) Intelligibility

Asymmetric intelligibility is a term used by linguists to describe two languages that are considered mutually intelligible, but where one group of speakers would have more difficulty understanding the other language. There can be various reasons for this. When one language is related to another but has simplified the grammar, the speakers of the original language may understand the simplified language, but not vice versa. Thus, intelligibility between languages can be asymmetric, when speakers of a Language A have an understanding of Language B than speakers of B understand A. It exists in differing degrees among many related or geographically proximate languages of the world, often in the context of a dialect continuum.

In other cases, two languages may have very similar written forms, but be pronounced significantly differently. If the spoken form of one of the languages is more similar than the common written form, speakers of the other language may understand this language more than vice versa (e.g. Portuguese and Spanish).However, perhaps the most common reason for apparent asymmetric intelligibility is the situation where speakers of one variety have more exposure to the other than vice versa.

Dialect

A *dialect* is a variety of a language that is spoken by a group in a particular area or of a social group or class. It can have a different accent and pronunciation, vocabulary and use different grammatical structures.

Dialect Intelligibility

"High dialect intelligibility" is used to refer to a situation where a respondent reports complete understanding of the dialect variant used in an RTT text. "Moderate dialect intelligibility" is used to characterize an above-average understanding of the speech variant used in a text. On the other hand, "Low dialect intelligibility" is used to define a minimal understanding of the RTT text.

Dialect Intercomprehension

"High dialect intercomprehension" is defined in terms of an overall RTT test average of "over 90%" by either all (or a segment) of the study respondents. " Mixed dialect intercomprehension" is defined by a situation in which "none of the respondents scored below 80%, but some scored below 90%."On the other hand, "Low dialect intercomprehension" is defined in terms of an "overall average below 70% recorded by the respondents.

Intelligibility

Intelligibility can best be understood in terms of the percentage of speech units identified and correctly comprehended by a listener in a communications system. Such speech units (or elements) are customarily used for conveying regular messages where the context aids the listener, in distinction to articulation. Intelligibility among languages can vary between individuals or groups within a language population, according to their knowledge of various registers and vocabulary in their own language, their interest in or familiarity with other cultures, the domain of discussion, psycho-cognitive traits, the mode of language used (written vs. oral), and other factors. In order to achieve moderate proficiency or understanding in a language

other than their mother tongue, individuals often have to spend considerable time and exert much effort on formal study and practical application. However, for many genetically related languages which display many similarities to each other in grammar, vocabulary, pronunciation, or other features, speakers of one language usually find it relatively easy to achieve some degree of understanding in the related language(s).

Intelligibility Testing

Intelligibility testing is an empirically-designed mode of measuring how well individuals from one speech environment are able to understand the speech form used by others within a neighboring environment.

Language:

Language is defined and understood as a system of communication which is deeply entrenched in human culture. Apart from being used to communicate and share information, it also has social and cultural uses, such as signifying group identity, stratification and for social grooming and entertainment. The word "language" can also be used to describe the set of rules that makes this possible, or the set of utterances that can be produced from those rules. Languages are also known to evolve and diversify over time and space. Languages live, die, polymorph, move from place to place, and change with time. Any language that ceases to change or develop is categorized as a *dead* language. Conversely, any language that is in a continuous state of change is known as a *living* language or modern language

Lexical Similarity

Lexical similarity offers a common fieldwork technique for measuring the degree of relationship among speech varieties through a systematic comparison of aspects of their vocabularies. Speech communities that have more vocabulary cognates in

common (thus a higher percentage of lexical similarity) are more likely to understand one another than speech communities that have fewer cognates in common. Since only elicited vocabulary cognates (or words) are analyzed by this method, lexical similarity comparisons alone cannot indicate how well certain speech communities understand one other. It can, however, assist in obtaining a broad perspective of the relationships among speech varieties and give support for results using more sophisticated methods, such as comprehension testing. Lexical similarities are usually expressed in terms of *percentage* and *variance* statistics. The percentage figures reports the number of shared apparent cognates as a percentage of the basic vocabulary, while the variance matrix shows the range of error for each count.

Lexicostatistics

Lexicostatistics is an approximation of the percentage of cognates shared by two or more speech varieties. Lexicostatistics does not provide an absolute measure of the relationship between speech varieties, but rather, a relative measure of the lexical relationship between varieties.

Lexicostatistical Significance

Lexicostatistical significance is routinely expressed by contrasting the sum of strong lexical similarities against corresponding figures of lexical variations observed between two or more speech varieties under study.

Linguistic Differentiation

Linguistic Differentiation refers to one of the fundamental processes characterizing the development of cognate languages. Although the process is conditioned by social rather than linguistic factors (its rate slows with increased consolidation of society), it leads to the material and structural divergence of languages through a gradual loss of common elements and an acquisition of specific traits. The process of linguistic differentiation affects all aspects of language structure. Systematic tendencies of

divergence, which are manifested in the presence of regular sound correspondences in material common to the cognate languages, make possible the ascertainment of the very fact of linguistic differentiation. The general course of linguistic differentiation within the limits of the language family is modeled on the scheme of the so-called genealogical tree, whose initial point designates the parent language and whose terminal points designate the sum total of the cognate languages.

Linguistic Distance

Linguistic distance is a term used to describe how different one language or dialect is from another. Although there is no uniform approach to quantifying linguistic distance between languages, the concept is used in a variety of linguistic situations, such as in historical linguistics, language-based conflicts and the effects of language differences on trade. In geo-linguistics, the degree of contrast exhibited between two dialects, as measured in terms of the percentage of items which differ from a fixed set.

The proposed measures used for linguistic distance reflect varying understandings of the term itself. One approach is based on mutual intelligibility, i.e. the ability of speakers of one language to understand the other language. With this, the higher the linguistic distance, the lower is the level of mutual intelligibility. Since cognate play an important role in mutual intelligibility between languages, these figure prominently in such analyses. The higher the percentage of cognate (as opposed to non-cognate) words in two languages with respect to one another, the lower is their linguistic distance. Also, the greater the degree of grammatical relatedness (i.e. the cognates mean roughly similar things) and lexical relatedness (i.e. the cognates are easily discernible as related words), the lower is the linguistic distance. Using a statistical approach called *lexicostatistics*, distances can be calculated between

languages by comparing various aspects of their vocabulary stock. Besides cognates, other aspects that are often measured are similarities of syntax and written forms.

Levenshtein Distance

Levenshtein distance may be defined as a technically sophisticated method for measuring the amount of difference between two sequences. It is also understood as being the metric distance (or minimum number of edits) needed to transform one language-related string into the other, with the allowable edit operations being insertion, deletion, or substitution of a single character between the two strings.

Levels of (Statistical) Significance

Before an investigator makes a judgment of significance or non-significance, some point must be designated along the probability scale, which will serve to separate these two judgment categories. Accordingly, a test of significance is usually conducted by comparing the value of a statistic computed from a sample with values predicted by the sampling distribution, under the assumption that a null hypothesis is true.

Investigators have traditionally adopted a number of statistical standards dubbed 'levels of significance', of which the .05 and .01 levels are the most commonly used. Whether a difference is to be taken as statistically significant or not depends largely on the probability that the given difference could have arisen 'by chance'. Usually, a difference is considered to be 'significant' when the gap between two mean scores points to a real difference between the parameters of the populations from which these scores were initially derived or obtained. Generally speaking, the level of significance which an investigator will accept is set by him before he sets out to collect his data. It is usually not advisable to shift from a higher to a lower level of confidence after the data has been collected, since the .01 level of significance is more tasking than the .05 level.

Mean Score

The mean score represents the average score of the group and can be used as an indication of the group's general level of performance of a given task. In addition to knowing the group's average, it is important to know how the scores differ from this group average. A measurement of the average spread from the actual scores to the group's average is referred to as the *standard deviation.*

Mutual (Reciprocal) Intelligibility

Mutual intelligibility is recognized as a relationship between languages or dialects in which speakers of different but related languages can readily understand each other without intentional study or extraordinary effort. It is when intelligibility is relatively symmetrical (or reciprocal) that it is characterized as 'mutual'. Although there is no formal definition of what distinguishes two distinct languages from two varieties of a single language, linguists use mutual intelligibility as one of the primary factors in deciding between the two cases. In fact, linguists often claim that mutual intelligibility is, ideally at least, the primary criterion separating languages from dialects. In practice, however, many other criteria are also taken into account.

Percentage Distribution

Percentage distribution refers to the statistical spread or pattern that exists within a series of scores obtained in the course of a testing procedure. It helps us to visualize group behavior in terms of both *Central Tendency* and *Dispersion*. While central tendency relates to the common element of a group (or the point of convergence in a series of scores), dispersion shows how individual scores disperse or are spread out around the point of convergence (or central tendency). Central tendency is usually estimated through such statistical indicators as *mean, median* and *mode*, while dispersion is estimated by *range* and *standard deviation*.

Recorded Text Testing

RTT is an investigative fieldwork technique used for assessing the level of intelligibility between a pair of the closely related speech varieties. RTT is not concerned about bilingual testing since it is not designed to assess or measure how well speakers from one speech variety are able to speak a second variety. Rather, it is used to provide an indication of the level of comprehension that exists between two or more supposedly related speech varieties.

Sociolinguistic Attitudes

Sociolinguistic attitudes are the sociocultural judgments which language speakers commonly make about the intrinsic value their own speech variety, in relation to other neighboring speech varieties. Such judgments values are important as they assist language researchers in determining either positive or negative potentials for language development within a community under study.

Standard Deviation

Standard deviation represents the overall distribution of test scores or how spread out they are from each other. In a typical study on linguistic intelligibility, SD is often interpreted as an indicator of either *acquired* or *inherent* intelligibility. If the mean is high but the standard deviation is greater than 15 percent, this is an indication of the presence of bilingualism within a speech community. However, if SD is between 12 percent and 15 percent, then intelligibility is presumed to be either acquired or inherent. When the test scores show a wide distribution (and thus, higher SD), variation may have arisen as a result of such external factors as different levels of exposure and opportunity to learn the language. On the other hand, if scores between individuals are more consistent (shown by a lower SD), this points towards linguistic similarity and it is to be presumed that two language varieties are closely related.

Significance

The term, significance (sign.), when used without qualification in language-related research, refers largely to socially determined rather than *stringent* statistical significance. Whenever a difference is described as significant without qualification, above 90% statistical significance is usually meant. "Marginally significant" refers to a statistical significance between 80% and 89%. A difference described as "not significant" refers to statistical significance of below 80%.

Social Group

A social group is a subsample defined by gender and age category, i.e. one of younger men, older men, younger women or older women.

CHAPTER 2

REVIEW OF LITERATURE

2.1. Issues Related to the Phonological Characteristics of Speech Intelligibility on a Global Scale

2.1.1. The Nature of Human Speech

Speech refers to the expressive utterance used by human beings to communicate their ideas. Speech is transmitted by a set of sounds that are produced by varying the strictures along the path of the air flowing from the lungs. Such sounds formed by the human voice have an effective role and permits it to bear a message by variations in timbre (Lafon 1966). There is thus a technical differentiation between *speech* and *language*. As voice, speech has characteristics that may imply certain messages. For example, it is possible to identify a person by his/her voice as either sharp, low or loud, etc., whilst other elements, such as the sequences of phonemes that are used to differentiate between the words in the lexicon, are qualities of language. Thus, a language is a system of conventional signals used for communication in a society. Such a pattern of conventions consists of distinctive sound units such as phonemes, a vocabulary system and the association of meaning with words. When a person performs a speech task in interactions, all these linguistic elements are involved in the achievement of verbal communication.

Speech is composed of small units known as phonemes or segments. However, there are differences between these sound units. A phoneme is the smallest contrastive linguistic unit of sound that distinguishes meaning. For example, it is possible to account for a phoneme by means of commutation; i.e., the use of minimal pairs to identify that some words differ only in respect of a single sound (Carr 1999, Cruttenden 2008, Massaro 1975). Segments, on the other hand, serve as linear units

anchored in a short stretch of speech by a set of phonetic features. If phonemes serve the contrastive aspect of a language sound on syllable and word level, segments do the same job but in the wider context of a stretch of speech (see Lass,1996;Laver,2002). Therefore, segments and phonemes show a close integral relationship in the sense that segments are most commonly represented in different phonemic environments. Several adjacent sounds in connected speech may carry information on the same phoneme, and there is an overlapping in so far as one and the same sound segment carries information on several adjacent segments (see Fant 1973, Gilbers 1992).

2.1.2. The Nature of Speech Perception and Production

Linguistically, speech perception and production mutually support each other: i.e., the occurrence of the first relates to the occurrence of the second (Gilbert 1995). Perception represents the power supply of speech production. Kuhl (1994) has defined speech perception as a process that involves the employment of cognitive, motor and sensory skills to hear and understand speech. Kuhl explains that a child perceives speech by forming mental conceptual maps of the speech it hears in its environment. Such conceptual maps are stored in the brain, which constitute, later, the specifics of speech perception and serve as blueprint guidelines that a child uses to produce speech.

Therefore, the process of speech perception is not immediate, but an output of long-term operations that accumulate over time. It is a series of organized events that involve the establishment and storage of information over time. During subsequent stages, information is developed, transformed, reduced, elaborated, stored, recovered and used to make different types of decisions. Speech production, on the other hand, is a process that requires the brain to transmit a message to the speech organs, and

these in turn produce the patterns of speech sounds on demand (Cruttenden 2008, Crystal 1999). The production of speech sounds involves several elements such as the place, or manner of articulation and the difference in the air pressure and its direction. The latter mechanism explains why some sounds are classified as ingressive or egressive. It also draws attention to the cross-linguistic differences of the articulation of the speech sounds of languages (Gussenhoven and Jacobs 1998).

More importantly, there is a kind of interdependency between speech perception and production. The learning of L2 sounds is often influenced by the articulatory properties of the L1 (see Canepari, 2005; Cruttenden, 2008; Derrick, 2005;Flege 1995; Groenen, Maassen and Crul, 1996; Johnson and Elissa, 1989). This suggests the possibility that speech perception and production are interdependent abilities that correspond to each other. It also means that the articulatory errors of the speech sounds have perceptual bases (negative transfer), a process that largely depends on how accurate stored cognitive knowledge is. That is, any phonetic realization involving the perception and production of L2 phonemes correlates to the internal phonological system and its phonetic realization in the L1 (see Flege 1995). In this way, a perceived difference may lead to a produced difference. This assumption provokes the question as to whether the relation between speech perception and production can contribute to speech intelligibility or not. For example, findings from Arslan and Hansen (1996) have established that Arabic-speaking students of English have pronunciation problems due to the interference of the perceptual and productive strategies of their mother tongue. Problems such as these often increase when the L1 and L2 phonemic inventories involved show no equivalents of speech sounds. The findings also revealed that there is a strong relationship between the segmental errors made by Arabic-speaking students of English and the degree of intelligibility of their speech to other users of English. Researchers refer to the relationship between the

perception and production of speech sounds as an important issue because they bring them to an understanding of the mental processes involved in the learning of L2 speech sounds. It also provides them with insight into the types and the nature of speech perception and production problems that ESL/EFL speakers face.

2.1.3. The Nature of Accent

In linguistics, accent basically refers to the way of pronunciation that distinguishes a speaker as belonging to a particular language environment. An accent forms a distinctive feature of non-native speakers of a language, who acquire such language at a later age (usually above 13 or 14 years of age). This is because when learning a second language, speakers carry the perceptual and productive traits of their L1. An accent level usually varies from person to person and this depends on three key factors: age, exposure and the L1 articulation system. Age is a significant determinant of the degree of a foreign accent. That is, a second language can be spoken without an accent but only if this language has been acquired before a critical age limit, which varies between 6 to 12 years old (see Long, 1990). Next, the native language background of the speaker, the quality of the teacher of the new language and the amount of exposure to and interaction with native speakers combined, develop the learner's mastery of speech and so reduce the amount of accent (see Arslan and Hansen, 1996; Van den Doel, 2006; Wang 2007).

Lastly, the involvement of the L1 articulation system also affects the perception and production of speech. Furthermore, there are two types of accent. First, a foreign accent refers to speech produced by non-native speakers of a language in which these speakers involve their L1 perceptual and productive phonemic strategies in the learning of L2. For example, if a person has difficulty pronouncing some of the sounds of a second language he is learning, he may substitute similar sounds that

occur in his L1. The speech sound such a learner produces sounds wrong or ‘foreign’ to native speakers of the target language.

The other kind of accent is simply the way a group of people speak their native language. This is determined by who they are, where they live and to what social groups they belong. People who live in close contact grow to share an accent, which will differ from the way other groups in other places speak. For example, someone who lives in the United States will have a native accent that is different from that of a British English speaker.

2.1.4. The Empirical Assessment of Speech Intelligibility

Speech intelligibility is often defined and described as the collection of properties that permit a native listener of any particular language (e.g. English) to correctly identify linguistic units such as phonemes, syllables, morphemes and words, in the order they were produced by the speaker of the utterance. The more intelligible a speaker or a spoken utterance is, the higher the percentage of units (words) that are correctly recognized, the smaller the number of transpositions in the reported serial order among the units and the faster the native listener performs the recognition task. In this sense, there is a difference between intelligibility and comprehensibility. Comprehensibility determines the comprehension of the spoken message. Listeners comprehend a spoken utterance if they get the meaning (or gist) of the spoken utterance; it is the result of the process that is also termed ‘speech understanding’ (Van Bezooijen and Van Heuven, 1997; Van Heuven, 2008).

Certain failures of communication, ranging from frustrations among speech participants in a casual chat to serious misunderstandings in business meetings and aircraft accidents are seen as consequences of poor speech intelligibility. Moreover, linguists think that the concept of intelligibility often exceeds its elementary

definition as the recognition of word and utterances or the extent to which a speaker's utterance is actually understood and emphasized. The notion of intelligibility to them requires the consideration of global elements such as context, inter-cultural backgrounds of the interlocutors of English as Lingua Franca/International Language. Patil (2006) and Nair-Venugopal (2003) explain that this new status is not without support from the reality of English in the outer circle where English is spoken as a second language and the expanding circles where English is spoken as a foreign language. There is a need to understand each other in contexts where participants communicate for a business purpose, or general interaction, etc. Fraser (2005) claims that most of the impediments to speech intelligibility are attributable to segmental factors and that more than 50% of speech intelligibility is accounted for on the basis of sound (rather than morphological or syntactic deviations).

Similarly, Jenkins (2000) has established that while the syntactic level plays a salient role in comprehensibility in EFL interactions, pronunciation forms the most prominent single element of intelligible speech. Furthermore, the measurement of speech intelligibility based on linguistic elements necessitates the use of native speakers of the target language as a standard reference/model.

2.1.5. The Nature of Phonotactic Constraints across Languages (Illustrations from ESL/EFL Studies)

Linguists believe that the sound sequences of languages are controlled by phonotactic constraints that are encoded in the processing system of such languages. This principle gives each language its own sound sequences, describing which sounds should take up (for instance) the initial position in a syllable and which ones occupy final positions. The exact nature of the mechanism for encoding phonological constraints in any given language remains an important area of debate in second-

language studies. For example, according to established phonological rules in English, a phonemic segment like /ŋ/ is not permitted to appear in all positions. So, one possibility for / ŋ / is to appear in a syllable final position but there it cannot be preceded by long vowels or diphthongs (Goldrick, 2004).

Similar sound sequences also apply to English cluster consonants, which determine the sound sequences that can appear in a syllable and the positions in the syllable where particular sounds can occur (onset or coda). Thus, sequencing constraints govern which sound classes should appear adjacent to each other and they aid the identification of word boundaries. Differences of L2 phonotactic constraints often motivate perceptual and phonological problems among L2 speakers, as previous studies show. Seo (2003) has also reported that segment positional restrictions motivate phonological alternations on similar consonant clusters, which result in poor speech perception. An account of speech perception of some cross-linguistic patterning provides correct predictions that homorganic C + liquid sequences are more likely to undergo phonological change than heterorganic C + liquid sequences in a given language. Findings from Seo (2003) also suggest that nasal + liquid, obstruent + liquid clusters (or sonorant + sonorant and obstruent + sonorant sequences) of homorganic sequences like /nt,lt / and are more vulnerable to phonological change than those of heterorganic sequences /pr-, br-, pl-, kr-/ (onsets) and /-lp, -rk/ (codas).

Compared with heterorganic consonants, homorganic consonants have an additional shared acoustic property, e.g., vowel formant transitions for the same place of articulation, assuming that they are adjacent to a vowel. Thus, the two sounds in a homorganic C+liquid sequence can be considered as being phonetically more similar to each other than those in a heterorganic C+liquid sequence are.

According to Kawasaki (1982) and Ohala (1992, 1993), if two sounds in a sequence are acoustically and auditorily similar, the degree of distinctiveness of the two sounds would be diminished and thus they would be subject to modification. Vowel epenthesis is one of repair strategies that occur due to phonotactic differences between L1 and L2. Tajeldin-Ali (2011) has cited and extensively discussed examples of this phenomenon in relation to the use of consonant clusters among Iraqi and Egyptian speakers of English. Both Iraqi and Egyptian dialects of Arabic (i.e. the respective L1s of respondents in the Tajeldin-Ali study quoted above) have syllable structure conditions that disallow consonant clusters in word-initial position.

Tajeldin-Ali (2011) explained the 'vowel epenthesis' phenomenon earlier highlighted by pointing to fact that Iraqi and Egyptian speakers tend to modify English words with initial consonant clusters in a different manner. Egyptian speakers will pronounce /fləu/ *flow* as [fɪləu] whereas Iraqi speakers will pronounce it as [ɪfɪləu]. Both pronunciations can be attributed to rules of epenthesis in their respective native languages (i.e. Iraqi and Egyptian dialects of Arabic) which bring underlying syllable structures into conformity with surface structure restrictions. In a word such as *flow*, the first consonant is extra-syllabic (unassociated with a nucleus) and a vowel must be inserted to which the consonant is resyllabified according to convention before it reaches the surface structure. The Egyptian *rule of anaptyxis* inserts a vowel to the right of the extra-syllabic consonant to which it resyllabifies, forming a CV syllable. In contrast, the Iraqi *rule of prothesis* inserts a vowel to the left of the extra-syllabic consonant to which it resyllabifies, forming a VC syllable.

2.1.6. The Nature of Sonority Sequencing Across Languages (Illustrations from ESL/EFL Studies)

One principle that has recently been established to treat consonant cluster sequencing more adequately is the sonority principle theory (see Ladefoged 1993).

Phoneticians postulate various phonetic features to characterize sonority. One feature is that the position of a segment in a syllable is determined by its sonority. The most sonorous segments form the peak/nucleus of the syllable, whereas the others are arranged around the syllable nucleus according to their degree of sonority. In other words, there is a downward cline towards the syllable margins, which starts from the peak of sonority. (see Clements, 1990; Gierut, 1999; Gierut and Champion, 2001). Thus, vowels are the most sonorous sounds, followed in decreasing order by liquids, nasals, fricatives and stops as in the following words: *trip, drip, ripe, come* and *please*. Sonority plays a prominent role in accounting for phonotactic patterns across languages. However, this does not mean it can account for every phonotactic matter or pattern since many constraints have very little to do with syllable structure and lie, in this way, totally outside the domain of sonority theory. For instance, there is a common constraint which requires that obstruent clusters agree in voicing, and it operates not only within syllables but also across syllable boundaries in many languages (e.g., French, Russian, Catalan) showing its entire independence of syllabification. One constraint, which often overrides the syllable contact principle, is the prohibition of a complex syllable onset. If a cluster is composed of a sonorant plus obstruent or ends in one of a small set of obstruent clusters, it is well-formed and requires no epenthetic vowel. In other cases, an epenthetic vowel appears between its two cluster members (Clements 1990).

2.1.7. The Effects of Explicit Knowledge on Intelligibility Assessment (Illustrations from ESL/EFL Studies)

Explicit knowledge refers to language rules and vocabulary items that second/foreign language learners acquire through instruction (teaching). The learners will be able to reflect this knowledge directly in their actual use of the target language (see Krashen, 1985; Ellis, 1994). Thus, the concept of explicit knowledge implies two

considerations involving second/foreign language learning. Firstly,learners' explicit knowledge develops due to the learning experiences in which they acquire explanations of the ways the target language functions. Secondly, compared to implicit knowledge, explicit knowledge is an essential element for language acquisition, particularly for adult learners, when the task of acquisition demands paying attention (see Schmidt 1992). Most probably, these considerations represent part of the reasons why linguists focused on explicit knowledge designing the pedagogical materials for second/foreign-language teaching.

In designing these materials, some linguists focused on 'form', which can include grammar points, vocabulary items, a language function or pronunciation (see Ellis, 1994).

According to Venkatagiri and Levis (2007), explicit explanations of structural properties of the target language pay off in all of these aspects but are highest in the area of pronunciation. Explicit knowledge of phonology should therefore play an important role in improving the pronunciation accuracy of learners. In other words, conscious knowledge of L2 speech sounds can help learners to achieve correct perception and production of a second language.

Most EFL learners do not understand the relationship between allophones and phonemes of English and what distinguishes them from those in their native language. This is because each language has its own set of phonemes that are recognizable either on the articulatory level, by the presence of a set of relevant organic features, or on the acoustic level, by the presence of a set of distinctive sound features. Thus, phonemic features give a language its identity and form a basis upon which this language is built, but at the same time, trigger learning problem for L2 learners.

Related studies describe attempts at teaching explicit knowledge of (aspects of) the sound structure of the target language to foreign language learners. Sufficient evidence of the importance of the explicit knowledge to ESL/EFL learners is manifest in different learning situations. There are some difficulties in learning the phonemes, e.g., the difference between /p/ and /b/ in English is a subtle one, but it makes a significant difference in meaning (see Dahlquist, 2002; David, Shirley and Dickson, 1999). Along the same line, mastering explicit phonemic knowledge, the learners will be able to judge or differentiate between acceptable phonemic sequences and unacceptable ones. In a wider context, the variation of phonemes from word to word and from speaker to speaker makes the learning of phonemes more complicated. However, if L2 learners have background knowledge of this variation, they will achieve intelligible speech. According to Carr (1999) the acquisition of native-like English pronunciation is a difficult task that requires much effort, especially for learners past the age of puberty, but is a very important element to avoid frustration among the speech participants. This means the learners need to explicitly know more about the phonemes.

2.1.8. The Nature of Mutual Intelligibility and Comprehension beyond Sentence Boundaries

The exchange of ideas between speaker and listener is often described in terms of a series of processes which together make up the so-called speech chain. When the stream of sounds impinges on the listener's eardrum, the listener will recognize linguistic units in the stream of sounds, viz. words, which appear in a particular order. A stretch is perfectly intelligible if all the words in the utterance are correctly recognized in the correct order. This is not the same as speech understanding or comprehension. Although the recognition of the words and their linear order is a

precondition, comprehension is obtained if the listener correctly reconstructs the speaker's intentions, i.e. if the listener understands what the utterance means.

As a consequence of this, we distinguish between the processing modules for word recognition (in sentential context) and higher-order integration of the word meaning into multi-sentence understanding (comprehension). Separate tests are required to test intelligibility and comprehension.

Typically, intelligibility tests aim to determine the number of correctly reproduced linguistic units (sounds, words) without seeking to find out if the listener understood the meaning of the utterance. Comprehension tests, on the other hand, attempt to check whether the listener has understood the meaning of utterances (e.g. by asking the listener to choose whether the sentence is true, unlikely or nonsense (sentence verification). However, it is never an explicit concern for a comprehension test to check whether the listener has recognized all the words.

A second distinction that needs to be pointed out is that between *functional* testing and *opinion* testing. Whether we are dealing with the testing of intelligibility or of comprehension, two types of test methodology are possible. Opinion tests essentially ask the listener to subjectively rate a stretch of speech along one or many rating scales. For instance, an opinion test of intelligibility might ask the listener to assign a score to a foreign-accented utterance between 1 and 7 along a scale of intelligibility, where '1' would mean 'I think it is impossible to even recognize a single word' and '7' might mean 'I think it would be very easy to recognize all the words in this utterance perfectly'. Intermediate values would represent intermediate degrees of difficulty (i.e. intelligibility).

Past intelligibility-related studies have shown that native listeners have excellent and reliable intuitions on the relative intelligibility of (foreign-accented) speech utterances, with high within and between-rater agreement (see Wang & Van Heuven

(2003); Wang & Van Heuven (2004); Wang (2007). Such a procedure may allow us to rank order foreign-accented utterances or speakers, but it will not tell us what the percentage of correctly recognized words will actually be. This is why there is the additional need to fall back on the use of functional tests. Functional tests require the listener to recognize words (if testing for intelligibility) or to actually grasp the meaning of the sentence(s) (when targeting comprehension).

Functional testing can also be differentiated in terms of *on-line* versus *off-line* procedures. On-line procedures often require the testee to respond when he is still processing the auditory stimulus, i.e. the process is tapped while it is still in full swing. Off-line procedures, on the other hand, allow the testee some opportunity to reflect before providing a response.

In the intelligibility tests used in the course of carrying the present study, we only used off-line measures. This was not a principled choice but merely one based on convenience, since a large part of the testing was done under difficult field-conditions where we had no easy access to laboratories with possibilities to run on-line tests efficiently. Priority was accorded to the use of off-line test procedures which were easily administrable to small groups of respondents in parallel, without the need of sophisticated equipment.

2.1.9. Functional Tests of Speech Understanding (Comprehension Tests)

Listeners are regarded as have understood (or: comprehended) a sentence or longer stretch of speech if they have grasped the meaning of such a stretch of text or passage. There are several functional tests that have been employed in past research studies to test the quality of the listener's understanding or comprehension. Broadly, these methods can be of four types: (i) having listeners answer questions on the contents of the passage, (ii) verifying the truth of sentences, (iii) verifying on-line

descriptions of still pictures or video footage, and (iv) carrying out spoken instructions (see Smith & Bisazza (1982); Van den Doel (2006);Wang & Van Heuven (2007).

Comprehension questions: Either before or after the stimulus speech passage is presented, listeners are given a specific question that can be correctly answered only if they understood the contents of the passage. Asking the question before presenting the passage diminishes memory load and tests intentional listening. Asking the question post hoc makes heavier demands on memory and may therefore be less desirable. The comprehension questions can be of the open or closed type.

Open questions ask listeners to formulate and write down their answers from scratch, closed questions present the listeners with two, three or four alternative answers from which they have to choose the correct one. Answering comprehension questions are off-line tests. Listeners have ample time to think or recall the speech and give the answer.

Sentence verification tests: Here listeners are asked to judge whether asentence they hear, expresses a truth, is unlikely, or nonsense, by pressing one of two keys marked 'true' or 'false' immediately after they hear a sentence. For instance, a stimulus *People wear their hats on their feet* should be responded to by pressing 'false'. In this kind of test, listeners can make the right choice only if they understood the sentence correctly. Sentence verification can be used as an on-line comprehension testing technique. In order to do so, subjects should be asked to press the response key as fast as they can manage, if possible even before the end of the speech utterance has been reached.

Descriptive language. One way to test comprehension of speech is to ask a listener to indicate whether a spoken description does or does not match a visually presented scene, by pressing one of two keys marked 'correct' or 'wrong'. The visual

presentation can be a in the form a still picture or it can be a scene from a movie. By aligning the spoken description with the development of the scene (only possible in video footage) on-line comprehension can be tapped.

Carrying out instructions: A last test we want to mention here relies oncarrying out spoken instructions. The listener is asked to carry out certain actions following spoken instructions recorded on tape. Obviously, listeners can only carry out the instructions if they understood them (see Atechi, (2006). Van Heuven (1986) has described a similar technique used to determine differences in comprehensibility of several types of deviant (foreign-accented) Dutch speech, and shows that the technique is very sensitive. More recent versions of the technique no longer require the physical manipulation of objects in space but instruct the listeners to manipulating objects on a screen by moving a joystick or computer mouse, which also affords easy measurement of response time. The instruction tests can be conceived of as on-line tests. Comprehensibility and intelligibility have been found to be related with global foreign accent scores, but since the present study aims at testing intelligibility rather than comprehension, we will not further discuss comprehension tests.

2.2.The Issue of Determining and Measuring Linguistic Distance Empirically

2.2.1. Distinguishing between Resemblances and Differences

The process of determining the resemblances or differences between speech varieties is a matter of measuring linguistic distance. There are a number of key means through which o the linguistic distance between language varieties can be measured. Language varieties are generally known to differ from each other not in just one dimension but in a great many respects: in their lexicon, in phonetics, in phonology, in morphology, in syntax, and so on. And at each of these linguistic levels, the ways

in which language varieties may vary are further subdivided along many different parameters. For example, phonologically, they may differ in their sound inventories, in the details of the sounds in the inventory, as well as in their stress, tone and intonation systems. Therefore, in order to properly express the distance between two speech varieties, one would have to come up with a *weighted average* of the component distances along each of the dimensions identified (and probably many more). So, measuring linguistic distance must be viewed as a multidimensional problem and we have no *a priori* way of weighing the dimensions. Ideally, however, we would want to express the linguistic distance between speech varieties in a single number on a one-dimensional scale rather than as a distance between points in some multi-dimensional space.

A possibly logical way out of the problem of deciding on distance between different speech forms, and thus determines their degree of intelligibility would be to use *lexical* and *structural* elements as basic criteria for measuring intelligibility. In this respect, intelligibility can be interpreted as either effective 'voice communication', or as 'the capability of being understood – the quality of language that makes it comprehensible.' Here, the measuring index for intelligibility would be considered as the overall degree of accuracy to which speech can be understood. With specific reference to the speech communication system, intelligibility would thus denote the extent to which language listeners can identify words or phrases that are produced by speakers and transmitted to listeners via the communication system.

On the whole, Intelligibility Testing, as used in such past studies as Voegelin & Harris (1951); Biggs (1957); (Crawford 1967); (Casad 1969); (Kirk 1970); Delsing & Lundin-Åkesson (2005); Gooskens, Van Heuven & Van Bezooijen (2008), is a helpful approach to integrate various linguistic distance measures. Intelligibility/comprehension can be tested at several levels of the linguistic

hierarchy, e.g. at the level of meaningless units (sounds or phonemes), at the level of meaningful units such as morphemes and words, or at the level of continuous sequences of sentences and spoken texts. Typically, intelligibility tests are composed of a test battery that addresses sounds, words and sentences separately.

According to Gooskens, Van Heuven & Van Bezooijen (2008), speech intelligibility tests are largely used for assessing the overall measure of comprehension and communication possible between speaker and hearer of related speech varieties, rather than determining the exact level of intelligibility of individual sounds. In other words, the testing procedure mainly focuses on the percentage of words/phrases that respondents are able to *recognize*, *interpret* and *reproduce* in answer to specific target test items. The implication is that the measure of intelligibility is the percentage of correctly recognized words/phrases. The degree of intelligibility is thus best viewed as a scalar variable that expresses how well listener A understands speaker B, for instance on a scale from 0 (no understanding at all) to 100 (perfect comprehension).In summary, intelligibility testing measures how well a listener of variety B understands or comprehends a speaker of variety A. The testing result can be expressed as a single number.

Voegelin & Harris (1951) had been identified with the initial formulation of two field testing techniques designed to assess dialect intelligibility. The first, called *asking the informant* procedure, sought to find out about a listener's own subjective perception of dialect similarity/dissimilarity, while the second, called *testing the informant* procedure, tried to assess respondents' comprehension' of the dialects in question based on the proportion of correctly translated words in the dialects at issue.

In order to test–run the potential effectiveness of these techniques after formulation, Hickerson ,Turner & Hickerson (1952) successfully applied the 'testing-the-informants'- procedure in order to determine the relationship between seven Iroquois

dialects. A subsequent study, using a similar technique, was also carried out by Biggs (1957) for Yuman languages.

From the results of these early studies on intelligibility testing, linguists were able to find out that intelligibility between dialects is not always reciprocal in all situations. The intelligibility between two speech forms/language varieties may turn out to be *asymmetrical* (non-reciprocal) rather than *symmetrical* (reciprocal) when the percentage of correctly recognized linguistic units by the listeners of language variety B is not equal to that by the listeners of language variety A.

In the course of time and after several subsequent studies between 1964 and 1987, several major refinements were made to intelligibility testing methods, procedures and resource materials, In particular, the late 1960s, witnessed several groundbreaking studies on intelligibility testing of dialects, carried out mainly by researchers from the Summer Institute of Linguistics (SIL) on many American Indian languages/dialects in Central America (see, for example, studies on Mixe (Crawford 1967);on Mixtec (Bradley 1967), on Tzotzil (Stoltzfus 1967), on Choapan (Casad 1969), and on Mazatec (Kirk 1970).

All of these dialectal studies were notable forerunners of latter-day studies which continued to employ modified techniques for intelligibility testing of multiple language varieties in different parts of the world from the late 1980s to date. Later studies also came to investigate and confirm the asymmetrical nature of intelligibility existing between several more pairs of (related) language varieties, including Western languages. For example, (Jensen 1989) has been able to show that Portuguese listeners understand Spanish better than Spanish listeners understand Portuguese. Similarly, Delsing & Lundin-Åkesson (2005) and Gooskens, Van Heuven & Van Bezooijen (2008) have also shown that Danes understand Swedes quite well but not vice versa.

2.2.2. Comparing *Functional* and *Opinion* Intelligibility Testing Procedures

Even outside the domain of linguistic fieldwork, intelligibility testing has been a topic of considerable importance, particularly in such language-related areas as foreign language testing, audiology and in speech technology. In the currently available literature on quality assessment of speech synthesis, for example, a distinction is often drawn between functional and judgment/opinion intelligibility testing. Similarly, in the practice of audiology, intelligibility tests have been developed and are being used to measure intelligibility as a function of a patient's hearing loss at the level of individual sounds, of words and of sentences (see, for instance, Kalikow, Stevens & Elliott 1977). Even of recent, similar techniques have also been adopted and fruitfully applied to testing the intelligibility levels of 'foreign-accented' English speech in parts of the USA (e.g. Wang & Van Heuven 2007, Wang 2007). Although the basic methods for intelligibility testing have been used in several key linguistic studies, (stretching from the early 1950s up till date), efforts so far made to devise and to apply relevant testing procedures for 'mutual (reciprocal) intelligibility' among genetically unrelated language varieties have not yet yielded significant results.

The early attempts made by American scholars at functional intelligibility testing were mostly geared towards establishing mutual intelligibility among related languages based on listeners' comprehension of the material tested. Their methods and procedures have, in time, become generally accepted and are still being widely used in the context of literacy programs. The functional intelligibility testing method works well as long as the number of language varieties targeted is small. For instance, Van Bezooijen & Van den Berg (1999) studied the intelligibility of four Dutch and one Frisian varieties, in relation to Standard Dutch listeners. Gooskens

(2007), on the other hand, sought to determine mutual intelligibility among three West-Germanic languages (Frisian, Dutch, and Afrikaans).

Arguably, the major drawback of the intelligibility testing method is that it is very difficult, if not impossible; to come up with speech samples and questions of equal difficulty in each of a set of language varieties, so that reproducibility of the results is compromised. Although a few notable attempts have been made to determine mutual intelligibility for small sets of related languages, they have mostly come up with unsatisfactory results, mainly due to the fact that unsuitable materials or tasks were employed. As a case in point, one study (Delsing & Lundin-Åkesson 2005) tried to determine mutual intelligibility among Scandinavian languages Danish, Norwegian and Swedish, using a *comprehension* test with just five open questions. The results/findings of this particular study were largely compromised by infelicitous choice of tasks and materials as well as by procedural problems. Procedural and practical problems are bound to occur and to become prohibitive when mutual intelligibility has to be established for, say, all pairs of varieties in a set of, say, 15 dialects (yielding 225 pairs of language varieties).

An alternative solution to this problem is to use judgment or opinion testing to ask listeners how much the speech in language B differs from their own language A. This is what Preston (1987: 4) has called 'the perception of degrees of difference between a local variety and surrounding varieties'. Under this form of testing, subjects are required to listen to a recorded speech sample of a variety B and are asked to judge how different the variety is from their own variety A on some continuous rating scale. The assumption is that listeners would be able to judge the (dis)similarity of the sample dialect in relation to their own dialect, based on the intelligibility testing. This is actually the measure of 'perceived linguistic distance' or 'estimated linguistic distance'.

The first study that used this methodology was done in the Netherlands by Van Hout & Münstermann (1981) which required listeners to rate the distance between recorded samples of nine different regional varieties of Dutch from the standard language on a 7-point scale. Gooskens & Heeringa (2004) has also adopted the same approach, whereby speech samples in 15 Norwegian dialects were presented to groups of listeners from the same 15 dialect areas. The listeners were then asked to judge how much the samples differed from their own dialect. Listeners appear to have reliable (i.e. reproducible) ideas about how much language B differs from their own, even if they may have only known the stimulus language from past exposure, and even if the quality of the recorded speech samples may differ substantially.

2.3. Issues Related to the Definitions and Characterization of Language and Dialect Varieties On a Global Scale

2.3.1. Defining the Notions of *Language* and *Dialect*

Virtually anyone with sustained experience in the study of language phenomenon must have, at some time or the other in the past, had to deal with such thorny and elemental questions as: What really is a Language? What is a dialect?In short, such analysts must have attempted to establish, at least conceptually, the main differentiations between these seemingly commonplace notions.

Most analysts, through close observation and study, have come to readily subscribe to the underlying consciousness that the greater the observable and documented differences between adjoining speech forms, the stronger the assumption that they constitute different languages. And, by the same token, the fewer the differences between adjoining speech forms, (e.g. the so-called different ‘languages’ in Germany and Denmark, also in Europe), the stronger the belief that they should be treated as different dialects of the same language-complex. The layman’s typical understanding

of the *language-dialect* matrix seems to assume that languages are socially and culturally superior, in hierarchical order, to dialects.

However, this kind of perception has no place in a strictly normative study of languages and dialects because, a typical language-form is valued as being no better than a corresponding dialect-form. This understanding forms one of the important cornerstones in the empirical study of dialectology since its inception.

It is common for textbooks in general linguistics and sociolinguistics—if they address the issue at all—to maintain that the twin concepts of *language* and *dialect* are not exclusively linguistic notions, but also involve social and political factors. That is, the distinction between what should be called a language or a dialect cannot be made on linguistic criteria alone, particularly on the basis of the common-sense criterion, *mutual intelligibility*. For example, Fromkin, Rodman and Hymans (2003:446) readily admit the inherent difficulty in the definitions and possible interpretations of the twin concepts of language and dialect:

> *Because neither mutual intelligibility nor the existence of political boundaries is decisive, it is not surprising that a clear-cut distinction between language and dialects has evaded linguistic scholars.*

Similarly, Trudgill (1995:4) has this to say on the subject:

> *The criterion of 'mutual intelligibility', like other purely linguistic criteria, is, therefore, of less importance in the use of the terms, language and dialect, than are political and social and cultural factors …*

Nevertheless, regardless of how evasive or of lesser importance linguistic criteria are, much of the available literature in linguistics leaves the distinct impression, either implicitly or explicitly, that linguistic criteria are crucial. In other words, ultimately the decision about what is a language and what is a dialect cannot be made without the expertise of linguists.

The crucial issue is whether or not one thinks it is possible that languages can be natural objects that can be discovered by the methods of the natural sciences. If one

thinks there is no such possibility because everything is ultimately a social construct, then the point being made is too self-evident to be argued about. The central point of contention is that languages are often conceived of in modern linguistic epistemology as scientifically-discoverable natural objects but, in point of social reality or fact, they are not.

Ulrich Ammon (1989:31ff.) explicitly rejects this conclusion. Ammon points out that a political scientist would not accept a political system as a democracy just because its population calls it that, nor would a biologist consider an eel a snake because people consider it one. The difference is that political scientists and biologists can give criteria by which democracies can be distinguished from other kinds of political systems and biologists can tell you how to define snakes so as to exclude eels.

Linguists have, so far, failed to provide consistent criteria by which languages can be distinguished from dialects or other kinds of linguistic systems. In many existing studies dealing with linguistic differentiation, the notion of mutual intelligibility has been conveniently advanced as a key factor for distinguishing between a typical language-form and corresponding dialect-forms, and between one language-form and another discrete adjoining form.

Based on this notion, a language is defined as encapsulating at least two or more linguistically intelligible dialect-forms. In other words, the notion of *language* is an abstract and inclusive term, referring to a collection of different speech varieties. For instance, American English and British English are two widely accepted, but spatially differentiated, dialectal varieties of the English language.

2.3.2. Defining and Characterizing *Ausbau* and *Abstand* Speech Varieties

The problem of social-political versus linguistic influences on assigning language or dialect status has been substantially handled in Kloss (1967). Kloss distinguished between what he called *Ausbau* and *Abstand* languages. Abstand language, a

"language by distance", is a language that is so different from other related grammars that "a linguist would have to call a language even if not a single word had ever been written in it" (Kloss, 1967:29). He was convinced that Abstand language is "predominantly" a linguistic concept and "assume[s] that linguists are in a position to apply final, reliable and uniform criteria" on establishing status as languages for Abstand languages (Kloss, 1967:30).

In the course of our succeeding discourse, we would try to argue that no such criteria exist or are likely to be discovered. In practice, then, Kloss's view is taken to mean that an Abstand language is so distant in linguistic properties from any language with it might be associated, such that it would be obvious to any linguist that we have an autonomous language and not merely a dialectal variant.

Kloss's notion of Ausbau language—"a language by expansion"—on the other hand, is primarily sociopolitical. That is, Ausbau languages have been deliberately reshaped so as to allow a wide range of literary expression. Our own understanding of this matter is that elaboration for purposes of literary expression and the like is too strong a criterion. A language is a language if it has been so *socially constructed*. If there is a social group that believes and acts as if a linguistic system is a language, then it is one. This is, no doubt, much farther than Kloss would have been willing to go. The number of 'Ausbau languages'- languages that are related closely enough to be dialects if they were not expanded- are numerous and some are well-known (e.g. Norwegian, Swedish and maybe Danish; Serbian, Croatian and Bosnian; Moldovan and Romanian; the Mayan languages of Mexico and Guatemala and the Nguni languages of South Africa. These cases show that languages can be made out of what would otherwise be dialects. But are there 'Abstand dialects'—distant varieties of which a single language is made?

The Chinese language is an often cited case, where language systems that are so different from each other as to make them virtually mutually unintelligible are treated as dialects of one single monolithic language variety. In this case, though, the "dialects" are clearly related to each other, historically and in general structure. Presumably, the Chinese dialects fall short of what Kloss would have regarded as pure Abstand languages, such that they could never be considered co-dialects, no matter what ideology is to be served by doing so. The crucial problem with a puritanical interpretation of the notion of Abstandis that it has remained so difficult to fully capture and elucidate in real sociolinguistic terms.

2.3.3. The Historical, Social, Political and Religious Dimensions of Language Differentiation

In many existing studies dealing with linguistic differentiation, the notion of intelligibility is implicitly accepted as a key factor for distinguishing between one language-variety and another discrete adjoining language-variety. In adopting intelligibility as a basic criterion for determining linguistic differentiation, a language can be defined and understood as encapsulating at least two(or more) *linguistically* intelligible dialect-forms. In other words, the notion of language is an abstract and inclusive term, referring to a collection of different speech varieties. The 'cumulative' effect of the linguistic differences in a relatively large geographical area is such that the dialects on the outer edges of the geographical area may not be mutually intelligible, but they will be linked by a chain of mutual intelligibility. From all indications, the widely accepted, but obviously simplistic interpretation of mutual intelligibility often cited in linguistic discourse, viz, "*Two speech forms that are mutually intelligible are dialects of the same language"* is intrinsically laden with problems. Some of these may be summarized as follows (see Crystal, 2000; Wardhaugh, 2000):

- Sometimes speakers of variety A claim to understand variety B, yet speakers of B deny that they understand A. (e.g. *Polish speakers deny understanding Russian, but Russian speakers claim to understand Polish*. *Is there any objective validity to this denial?*)

- Speech forms which one has never heard of are often treated as `dialects', lingos, patois or jargons, through the weight of continuous *popular definition***.** While most varieties defined and treated as 'discrete languages' tend to carry social prestige; other varieties that carry the label of 'dialects' often lack similar status.

- Where there is a *speech continuum***,** there may be a corresponding *dialect continuum* **(**or chain of mutually intelligible 'lects'), without any clear-cut fracture in mutual intelligibility, and where speakers of dialects at one end do not understand speakers of lects at the other end (e.g. Calcutta to Bombay in India).

- The availability of a*re cognized body of literature* may unify some speech communities who are educated to read those works (e.g. the Chinese in both China and in the Diaspora).But, elsewhere, lack of such literature often tend to divide communities that can, otherwise, understand each other orally (e.g. Hindi and Urdu in India).

- *Education/Literacy* in one's mother tongue often serves to increase the chances that one will understand more lects of one's language.
- Since the Chinese writing system is not phonetic, many speakers of mutually unintelligible lects are able to understand written Chinese, and who legitimately consider themselves to be Chinese speakers, not just dialect

speakers. However, this is the opposite case with, for example, Serbian and Croatian in Eastern Europe.

- For various political/social/historical reasons, people may loathe their neighbors and do not wish to admit they have any connection with them, and do not wish to try to understand each other. But in Scandinavia, the opposite is the case, where there is an appreciable measure of mutual intelligibility, especially between Danes and Swedes, thus, the emerging usage of the term, *Nordisk-sprakrad* in the Scandinavian region in recent times.

- The use of a particular *lect* of a language for religious purposes often serves to gives it special status. For instance, Panjabi for Sikhs, Urdu for Muslims, and Hindi for Hindus.

- Political boundaries may allow closely-related dialects to become *standardized*, used for religion, schools, etc, even though there are often appreciable levels of mutual intelligibility among same. For example, the well –documented case of Danish and Swedish in Scandinavia. Similarly, the past colonial policies of 'divide and conquer' in the defunct USSR served to divide the Central Asian Turkic speech communities into separate 'languages'.

- People may speak a language that is severely *diglossic*, (i.e. the written form is very different from the spoken). Many spoken dialects of a language may be mutually unintelligible, but a single, dominant *literary* dialect may often serve to unite them, thus speakers of seemingly different dialects are coerced by for varying reasons to learn it as the 'official language' of education. For instance, Arabic is one *literary* language, but has many spoken dialectal variants in different geographical regions of the Arab world. A similar

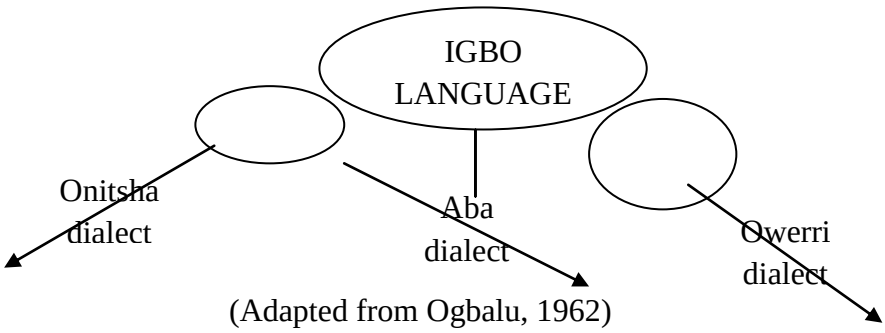
situation also currently exists within Germany and its immediate geographical vicinity, where there is widespread sociolinguistic fuzziness in differentiating between discrete, language forms and subordinate dialectal varieties.

2.4. Issues Related to Determining Linguistic Intelligibility in Nigeria

2.4.1. The Example of the Igbo Language

A cursory look at the Igbo language in Nigeria surely presents a rather complex picture of dialectal intelligibility. Earlier lexicographic studies on Igbo, notably (Swift et a1 1962**;** Ogbalu 1962: Armstrong 1967; Williamson1972**)** reveal, directly or indirectly, this complexity in determining the nature and extent of dialectal intelligibility. Within the Igbo language, we do not just have a situation of a language and its dialects as seen in Figure 2.1.below**:**

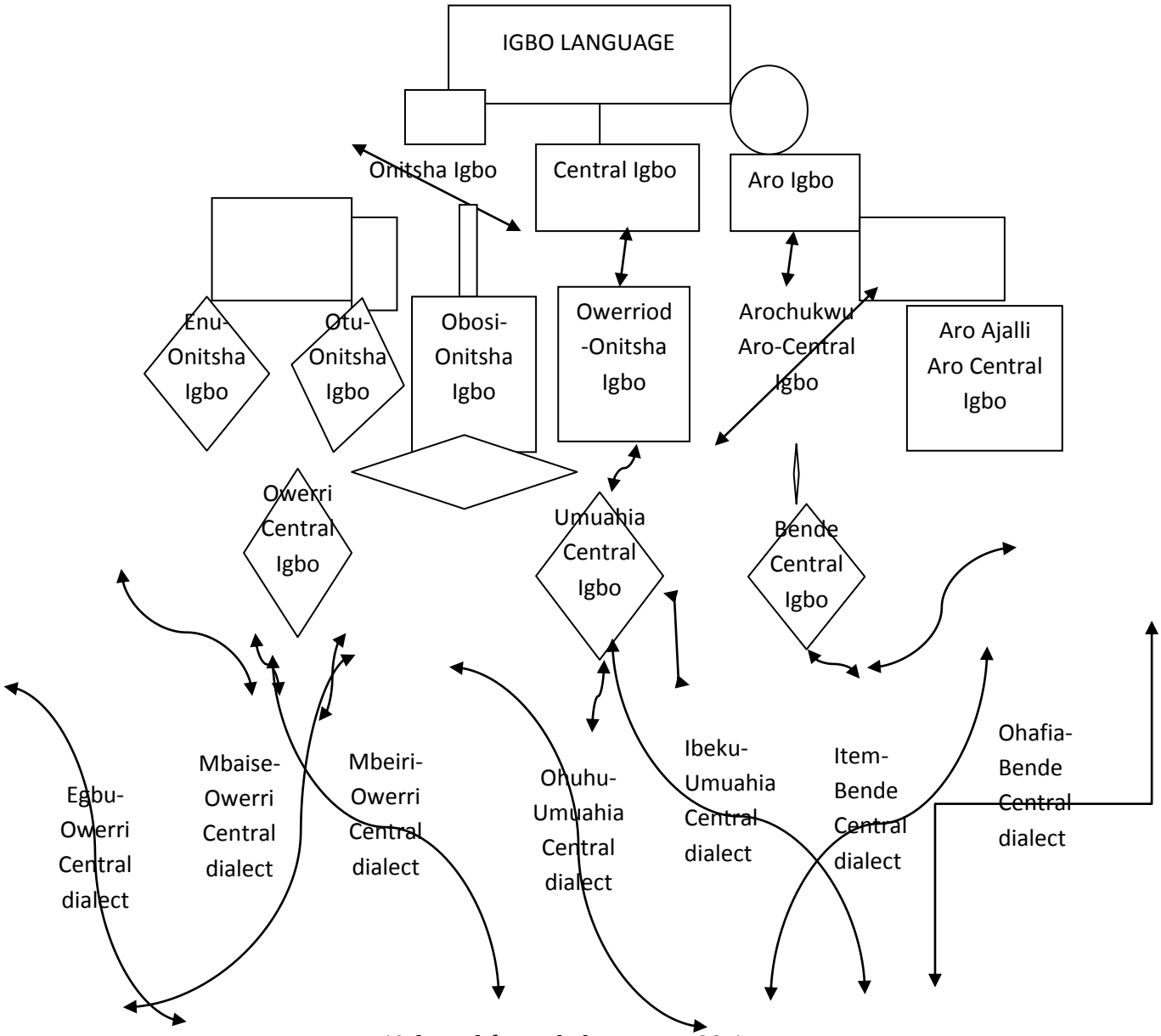
FIGURE 2.1: Igbo and its principal dialects



(Adapted from Ogbalu, 1962)

Far from being the case, within each dialect in Igbo there exist sub-dialects, or what may be termed "satellite dialects". The dialect scenery of the Igbo language has been comprehensively discussed and illustrated in Ikekeonwu (1985). A diagrammatic picture of the complex nature of dialectal similarities and mutual intelligibility within Igbo-land is provided in Figure 2.2.below:

FIGURE 2.2: List of contemporary Igbo sub-dialects



(Adapted from Ikekeonwu, 1985)

An earlier dialectological study of Igbo, Williamson (1972) had also tried to capture the subtle dialectal differentiation and mutual intelligibility to be encountered in the Igbo language, particularly as it related to the controversies surrounding language standardization and orthography design efforts beginning from the late 18th century to the turn of the 20th century. With specific reference to the production of the first standardized, modern dictionary of Igbo, Williamson (1972: 18) had reported as follows:

The dialect of the present form of the dictionary may be described as a generalized form of Onitsha.

The question that a curious sociolinguist may still want to ask is, "Which Igbo dialectal variety should be identified and treated as the *standard, 'primary'* variety, from amongst what is obviously a myriad of dialects?

Onitsha Igbo, which has often been favorably treated by scholars of Igbo dialectology as the somewhat natural *standard dialectal variety* in Igbo-land, is the 'generalized speech form' associated with the Onitsha metropolitan area but with a few differences. It is the form of Onitsha lgbo spoken within the town of Onitsha, largely by non-indigenes of Onitsha. It is also important to point out that most scholars of Igbo dialectology strive to distinguish between the Onitsha dialect spoken mainly by Onitsha indigenes (i.e. the predominant inhabitants of the place called "Onitsha Inland" area) and that spoken predominantly by the non-indigenes **(**i.e. the predominant inhabitants of the "Onitsha Waterside Area").

The former is what Ikekeonwu (1985) has referred to as the *Enu-Onitsha* dialect (EOD)and the latter as *Otu-Onitsha* dialect (OOD). The designation, *Otu-Onitsha* is based on the heterogeneity that is implicit in it. Otu is the name of the main Onitsha market which accommodates people from various other dialect areas of Igbo. Similarly, the dialect of Central Igbo, which has also remained a key subject of scholarly research in Igbo dialectology, is that spoken predominantly within Aba town, again mostly by non-indigenes of Aba. In the absence of a more precise label, it is frequently called *Enyimba Central Igbo* (ECI).

These two dialects of Igbo are considered to be of key significance in Igbo dialectology because of their perceived socio-linguistic neutrality. The speakers of these forms of Igbo, to a large extent, subdue the regional or local 'linguistic peculiarities, presumably in an attempt to communicate effectively with their neighbors, peers or business associates. These two trading centers, Onitsha and Aba,

therefore, form melting pots for Igbo dialectal variants from two main dialects of Igbo. OOD and ECI are, therefore, what could be regarded as heterogeneous Igbo dialects.

2.5. Theoretical Framework for Conduct of Intelligibility Testing in Selected Sites in Plateau State

In order to investigate and empirically validate the nature of intelligibility within dialectal variants of the Bache and Pan language communities, the present study adapted relevant aspects of the "Lexicostatistical" and "Dialect Intelligibility Testing" theoretical and analytical frameworks, as first outlined in Casad (1974) and further remodeled in Bergman (1991) and Stalder (1996a & 1996b). These basically involved establishing and comparing lexical cognates as well as estimating the overall levels of similarity and verbal comprehension between assumed dialectal varieties within a pre-determined study area.

2.5.1. The Empirical Basis of *Dialect Intelligibility Testing*

The Dialect Intelligibility Testing method(and its associated set of research procedures) is essentially a 'field-oriented' approach that has been put to productive use in different parts of the world to gather valid and reliable qualitative data through the development of close and continuing social contact with those being studied. The method often requires an investigator to develop and maintain a close relationship with representatives of the population that will host a research study. All of those sampled and eventually selected to serve as informants and research assistants invariably provide direct and substantial support in grounding the investigator's conceptual and substantive expectations and discoveries; ensuring that his research data is as objective as possible; and that what he reports on is what his informants assure him to be grounded in actual experiences.

2.4.2. The Role of Sampling in Intelligibility Testing Research

The kind of sampling that many Social Science scholars are most familiar with is perhaps *statistical*, probabilistic sampling, which is primarily designed and used to ensure that a researcher does not make too many mistakes in finding and selecting representative respondents from a usually large population. In thismode of sampling, human communities are treated as not being too different from other natural orders. The assumptions and research aims in such types of research are strikingly different from those used in language-related studies, where sampling is based on the basic premise that the people whose society is to be studied are the very best source of information on how to put together an empirically grounded, representative sample of that society. It also assumes that most human communities have peculiar socio-cultural characteristics that are the products of its members' interaction; that the features of social organization that are significant in community life are known to its members and discoverable by the investigator; and that, if those definitions of the community vary in important ways between different groupings and interests within it, articulate informants can and will identify them.

Thus, purposive sociolinguistic sampling, as embodied within the framework of the Dialect Intelligibility Testing methodology, is designed for research endeavors that aim to discover how people in within a particular study area classify or label each other, how they find meaning in activities they care about in life, and how they engage in processes in which they individually and collectively define the antecedents and consequences of their situations. The process of sampling in the course of ‘Intelligibility Testing’ permits informants to participate in the actual sampling through telling the researcher how to locate and interview persons whose social roles, relationships, situations, desires, needs, and the like are representative instances of the particular human behavior that the researcher is interested in investigating.

For example, informant participation permits the researcher to determine quickly and inexpensively what the several social groups of a study area's residents are like from the standpoint of each group's members and from that of neighbors, friends, relatives, and community officials who know them, and so on. Thus, the type of sampling provided for, within the framework of Intelligibility Testing, focuses attention on discovering social categories and patterns in society as well as illuminating interrelationships between such categories and patterns. This mode of sampling is oriented towards generating the observations, experiences, and reflections of research respondents in a community, with a view to obtaining a better understanding of the research problem being investigated. The main objective of such purposive sampling therefore is twofold-

1. To generate empirically sound accounts of how people perceive, experience, and make sense out of a particular research topic/problem.

2. To provide a reasonable theoretical framework for questioning the results/findings of previous studies related the identified topic/problem.

An investigator may choose to begin his study of a community by selecting as initial informants a relatively small number of persons who are likely to give him good overviews of the community (e.g. pastors, newspaper reporters, courthouse employees, school administrators, etc.). These persons may, in turn, be asked to identify others who are generally thought to be representative of the various social categories and points of view of interest to the research at hand. While following-up on possible suggestions concerning additional informants, an investigator may sometimes also be obliged to continually review previous data provided by his informants for signs of misrepresentations, faulty perceptions, and other erroneous factors. The reason for such a review is not necessarily to prove the informants

wrong but, rather to quickly and efficiently assess the limits of their knowledge of the types, lifestyles, needs, hopes, fears, commitments, etc, of people who live in their vicinity, or elsewhere in the study area.

3.1.3. The Process of Grounding and Validation of Data in Intelligibility Testing Research

Deeply integrated into the framework of Intelligibility Testing research is the requirement that an investigator is obliged to simultaneously generate information, empirically ground such information and continually validate same through the very process by which he or she interacts with his selected informants within a given study area. In order to learn what the less articulate informants in the community know about what is happening around them, the investigator is often required to return to this group so that he can revalidate whatever information he may have obtained earlier on from interviewing other more articulate respondents.

This process of checking and cross checking with informants is expected to continue until the investigator is able to establish some reasonable measure of consensus regarding whatever he or she is inquiring about, or until the discovery that he has perhaps misunderstood or misrepresented the value of some information provided by one group of informants or the other. Using such validation and self-correction procedures, the investigator continually tries to observe and understand the empirical realities of the informants as they attempt to capture and to depict their social world as faithfully as possible.

As much as possible, the field-researcher uses *face-to-face interactions* with informants as the principal means of demonstrating to them that he is there to learn about their lives without passing judgment on them; that he is an absolutely trustworthy recipient of the candid accounts of their life experiences and reflections. In these ways, the field-worker continually negotiates with informants what is

mutually acceptable as proper, right, and safe to talk about at given stages in their interactional relationship. In addition to continually validating data by checking out findings as noted above, an ethnographic scholar often relies on a multiplicity of fieldwork techniques to systematically cross-check emergent descriptions and analyses. He may thus make use of one or more of the following research instruments:

- conduct open-ended interviews,
- carry out personal observations;
- set up and regularly consult a local research advisory committee;
- hold small-and large-group discussions;
- analyze secondary sources of information;
- use documented research findings to generate questionnaire topics and items and to interpret and validate questionnaire tabulations;
- compare information gathered from different sets of informants in an on-going study with what has already been found in previous studies.
- In addition, drafts of progress reports and final reports may also be reviewed with a cross section of the investigator' informants as part of the checking and validation procedure.

In making eclectic and judicious use of these research tools, the typical ethnographic investigator strives to attain multiple assurances that the data he generates is authentic, valid and, in the words of Glaser and Strauss (1967), ‘’data saturation” has been attained.

2.4.4. The Role of Documentation in Intelligibility Testing Research

Any presentation of the results/findings of Intelligibility Testing research would not complete without proper documentation; a process that is concerned with how the

investigator reports his observations, analyses and interpretations and conclusions on the research topic he has chosen to study. In most scholarly circles, there are established 'discipline-related' conventions for reporting research results/findings, such that the reader can check them out to determine their authenticity and credibility or, perhaps, to obtain more complete information from original documentary sources.

In reporting most research studies conducted on human behavior, documentation is built into the tabular presentations of data. Here, the investigator shows how many respondents of given categories replied in specified ways to particular questions. It is understood by all concerned that in this kind of research, much effort is devoted to pre-structuring the information-gathering activity, usually in the form of questionnaires that is administered by either one or more interviewer(s) or, by one or more research assistant(s). It is further understood that every effort is made to neutralize or, at the very least, standardize the influence of the person administering the questionnaire (to control for 'interviewer effect') and, consequently to be reasonably certain that the responses will (as much as possible) remain a function of the stimuli provided by the written questions.

CHAPTER 3

RESEARCH METHODOLOGY

3.1. Methodological Framework of the Study

The various sections that follow highlight the essential features of the "Dialect Intelligibility Testing" methodology, procedures and instruments, all of which guided the implementation of the study. The methodology provides a simple, pragmatic basis for studying and assessing the varied dimensions of speech intelligibility in society. It can also be rightly claimed that this methodology has been used successfully in similar research investigations (in the recent past) to provide useful theoretical as well as descriptive contributions to the advancement of sociolinguistic researches in many parts of the modern world today.

3.1.1. Outline of Research Instrumentation and Procedures Adopted

- **Wordlists**:

The study was implemented through the use of wordlists of 120 items for each survey site, and the data generated from each wordlist was subsequently analyzed synchronically. A statistical-analysis software program, WORDSURV, was used to tabulate the results. This allowed for a tentative grouping of the sites of speech forms with lexical similarity of over 70 per cent.

- **Recorded Text Testing (RTT) Materials**:

At each site, two stories - one about one minute in length and the other about two and a half minutes - were recorded. They were autobiographical incidents of the storyteller, not folklore tales. The shorter story had five questions about the story's content interspersed throughout it, while the longer story had ten such questions. At each site, selected respondents (ages 18–45) first listened to the one-minute narrative

story recorded in their own local village dialect. Thereafter, they listened to the longer story recorded in another dialect (specifically pre-selected as a *reference* dialect). Collectively, at each site, the average number of correct responses given to the ten questions accompanying the longer narrative story (i.e. that recorded in the reference dialect) were collated and documented. The standard deviation figures deriving from these scores are then used for 'measuring' the degree of intelligibility existing between the various dialectal forms encountered at the sites. RTT only effectively measures inherent intelligibility, that is, the intelligibility that exists between the speech forms due to linguistic similarity, not due to the subjects' exposure to other speech forms, which would be acquired intelligibility.

Stalder (1996a:26) has re-evaluated the 'performance scoring system' originally provided in Casad (1974) into three levels for the RTT testing procedure, which was incorporated into the study we undertook:

> Level 1: No comprehension. The respondent is not able to respond even to the general story lines.
>
> Level 2: Partial comprehension. The respondent is able to respond only partially, recasting or adding different portions of the narrative story. If asked, he is not able to provide detailed answers.
>
> Level 3: Good comprehension**.** That is, the respondent is able to retell the story accurately and he is able to give details.

- **Sociolinguistic Questionnaires**:

The study also utilized a selected number of respondents to answer general sociolinguistic questions about their language use and their opinions about language development. Of these individuals, ten were 25–35 years old and another ten were 40 years or older. This sampling procedure provide a reasonable basis for comparing responses from two distinct age categories, such that it would

be possible to determine if age were a factor on the respondents' answers. Additionally, in each age category, five males and five females were questioned, in order to ascertain if a person's sex conditioned his/her response. The complete sociolinguistic questionnaire is found in the Appendices section of the study.

3.1.2. Interpreting Individual and Group-RTT Results

Individual and group performance RTT scores(called the *mean)* and the *Average Individual Variance* from that group mean, (called the *standard deviation*) were the two primary statistical indices used for interpreting RTT results. The group performance percentage was obtained after totaling the individual scores, then dividing by the number of individuals tested. The sum of these individual scores, when divided by the number of participants, converts into the percentage of the group's comprehension of the text. This percentage is indicative of a group's overall understanding of the language of the recorded text. On the question of how best to interpret intelligibility scores, (Grimes 1995:22) provides the following basic guidelines, which were applied to the study:

- At threshold levels high enough to guarantee good communication from the central dialect to its periphery (usually 85% or above), it is reasonable to speak of the dialect cluster as a single language from the linguistic point of view.
- Speech varieties that come together at only 70% or below are too distinct to qualify as the same language.
- In between, 70% to 85% is an area of *Marginal* intelligibility where some communication is satisfactory and some is not. The threshold depends on the risk associated with not communicating well; the final criteria are not purely linguistic.

- Another indicator of group understanding of a text is the variation of individual scores in relation to that overall group average/mean.
- The distribution of the individual scores for a given group of tests is known as standard deviation.
- If the standard deviation of RTT scores for one community is greater than percent, this probably indicates bilingualism

Put another way, a general distribution of scores is likely attributed to the variation from one individual to another in one's exposure and opportunity to learn the language, a phenomenon called *acquired intelligibility*. When one speech variety is highly similar to another, comprehension scores are usually more consistent from one individual to another and the standard deviation is therefore lower, indicating *inherent intelligibility*.

A high percentage of comprehension and a low standard deviation (below 15 percent) are often indicative of potentials for membership of a single language grouping, provided group attitudes are also positive. When the percentage of comprehension falls within the critical range, then standard deviation and sociological factors become important considerations for determining a language's potential for being grouped with the language of the RTT. The Group-RTT scores, even though not expressed in terms of mean and standard deviation, also give a picture of the level of comprehension of the group being tested.

3.1.3. Documentation and Processing of Research Data

After the generation and collection of final WL, RTT and ISQ data from different sites, it was necessary to properly *document, tabulate, analyze* and*interpret* them intelligently, so that the results and findings that subsequently emerge from these can be utilized as a reasonable basis for future research- or language-related pursuits. The

data archiving process, as a rule, incorporates the documentation of all recorded and written materials used in the process of field testing, which includes original recordings of all test materials, introductory tapes, HT tapes, RP tapes, etc. Written materials include transcripts of test narratives used in different sites as well as translations of these texts into languages of wider communication. Other related materials are transcriptions of wordlists, sociolinguistic questionnaires, copies of individual score sheets and preliminary ethno linguistic reports.

All relevant bio data obtained on respondents were also carefully noted and documented, including responses to WL entries on pre-designed record sheets and forms. In addition, all transcriptions and translations of texts, questions and introductions, used alongside the main RTT, HT and RP test materials, were similarly organized and carefully typed in interlinear format. Individual score sheets were also secured and stored in separate folders for each research site visited. Similarly, all of the score sheets used for each site were arranged sequentially for all respondents tested. Such organization essentially serves to facilitate the easy location of score sheets whenever they are needed.

3.1.4. Processing and Displaying of data in Tables, Matrices and Figures

The intelligbility scores generated during the entire duration of both *pilot* and *final* phases of the study weresystematically collated and displayed through the means of three types of Tables and other supporting forms of graphic representations:

1. The First table-type was used to present the *raw scores* recorded for each respondent at particular test sites from the RTT tapes. In this table, the respective respondent were listed down towards the Left hand margin of the record sheet, while the relevant RTT test tapes used were listed along the Top margin by means of appropriate abbreviations, each corresponding to

particular reference points. Thus, while Test-respondents correspond to rows, Test-tapes correspond to columns. The score received by each respondent were entered in the appropriate cell of the column corresponding to a particular RTT test tape

2. The Second table-type was used to summarize the *sample mean*s scores obtained from the table of individual scores in the first table type referred to above. The scores in the cells of each column in table-type1 were *summed up* and then *divided* by the *number of the subjects* in a sample. The resultant quotients were then *multiplied by ten* to yield a *point estimate*of the level at which the sample of respondent understood a particular test tape.
3. The Third table-type also had the same format with the second table-type above (i.e. the Summary table) of sample mean scores; the only difference between the tables was that the *sample mean* **scores** had been adjusted by means of a proportion. The adjustment was made by normalizing all HT test scores to 100 (i.e. perfect intelligibility), which was statistically assumed to hold among all native speakers of a dialect. The scores for all RP tests were then proportionally adjusted to this base of 100 by the following formula...

$$AS = RS + (100 - HS)$$

(Where AS stands for Adjusted Score, RS stands for the raw Reference-point test Score and HS for raw Home-Town test Score).

The overall rationale for making the above-mentioned adjustment was to preserve the relative magnitudes of intelligibility between a set of test tapes by one sample of respondent. The adjustments made above were done on the basis of an *additive* factor, rather than a *multiplicative* one. Hence, each raw HT score was subtracted from 100, and the resultant difference was added to each of the raw sample scores on the RP tapes. Thus, the same absolute value was assumed to have been added to all RP test scores.

However, the absolute value associated with a particular test tape was largely determined by the raw scores obtained on the HT test tape and the raw intelligibility score for a RP test tape. In general, the lower the raw score recorded for a particular Reference Point tape, the smaller the value that would be added to that raw score by the proportion.

Generally speaking, the interpretation of the *mean scores*, on either raw HT test scores or RP test scores, may differ, depending on whether it is based on *Raw Scores* or on *Adjusted Scores***.** Similarly, when adjustment is to be made, it is usually done on the level of the *Sample Mean* score rather than the *Individual Mean* score. This is usually because a Sample Mean score is more reliable than an individual mean score. In addition, there is often a temptation to significantly alter or reject a highly anomalous individual score on a particular test tape.

3.1.5. Procedures for Pre-study Construction and Validation of Research Instruments.

The wordlist instrument used in our study was a 210-item wordlist, representing an updated and modified version of the classical Swadesh 100 and 200 words, with additional words that were considered to be of local relevance and would elicit valuable sociolinguistic information about the target communities. Similarly, the Phrase list instrument consisted of a 25-item list, made up of simple prepositional, verbal and adjectival phrase types. The responses to items on the word- and phrase-lists were recorded, using a mini-disk recorder and subsequently transcribed, using the International Phonetic Alphabet (IPA) by members of the research team, assisted by at least <u>two</u> competent speakers from the target communities.

Typically, these sessions took place in convenient field locations, with the research team members interacting with a group of speakers. These word- and phrase-lists were transcribed and simultaneously recorded using a mini-disk recorder. Although

there was one 'speaker-cum-research assistant' designated to elicit and record these lists, it was routine to have a group of speakers nearby who would confer and correct, if necessary, some items being elicited. This procedure helped to ensure that all of the items being elicited were reasonably representative of the peculiar speech forms (or dialectal variety) of the immediate environment. Most of these elicitation and recording sessions took between *two* to *three* hours to complete in most locations, where logistical necessities and other bad weather conditions allow.

Once the elicitation and recording sessions had been successfully completed in any specific location, efforts were also made to assemble and record relevant sociolinguistic data, with the aid of at least two other research assistants. Such data was generated through the use of a written questionnaire instrument. Responses to the various items on the sociolinguistic questionnaire were elicited and translated orally into English by research assistants and subsequently recorded on the questionnaire by members of the research team.

On the whole, in the course of administering the questionnaire instrument, the team attempted to target groups of research respondents who were, to some extent, stratified demographically. These included middle-aged men/women, known opinion leaders/ traditional elites, and moderately educated young men/women. However, the process of selection of respondents was relatively fluid, largely reflecting a commonsense approach, rather than a systematic sampling method. Much of the qualitative data obtained on the subject matter of intelligibility (or intercomprehensibility) between dialectal variants as well as various aspects of the sociolinguistic life found in our two study areas were gathered through the administration of the written questionnaire instrument.

Supplementary qualitative data, pertaining to other relevant historical, political and socio-cultural information on the study areas, were also obtained through informal

conversational interactions with some of the respondents, who had earlier consented to providing answers for our written sociolinguistic questionnaire. Such informal interactions were, of course, facilitated through the agency of local language translators.

Village	District	LGA
1.Doemak	Doemak	Quan-Pan
2.Mernyang	Mernyang	Quan-Pan
3.Kwalla	Kwalla	Quan-Pan
4.Bwal	Bwal	Quan-Pan

3.2. Locations of Research Sites, Procedures for Selection of Respondents and Methods of Data Processing

3.2.1. Location of Research Sites

A total of *eight* research sites were visited in the course our investigations. Out of this number, *four* sites were located within our first study area-Bassa LGA, where Bache (Rukuba) speakers lived. The remaining four sites were situated in our second study area-Quan-Pan LGA, where Pan (Kofyar) speakers lived.

Tables 3.1 and 3.2 below state the eight research sites within our two study areas, where our wordlist and written sociolinguistic questionnaire instruments were administered and, where our informal interview sessions were conducted.

Table3.1: List of Research sites (Bache)

Village	District	LGA
1.Jebu-Bariki	Bassa	Bassa
2.Kissaloi	Kissaloi	Bassa
3.Zagun	Zagun	Bassa
4.Binchin	Binchin	Bassa

Table 3. 2: List of Research sites (Pan)

Before the commencement of actual field research activities, some preliminary survey work was carried out to select potentially suitable research sites by two members of the research team, approximately two clear months to the start of field interviews and recordings. During the course of the preliminary survey and site selection, efforts were also made to establish contacts with local community leaders, in order to secure the necessary official authorization for the subsequent take-off of full field research activities.

3.2.2. Procedures for selection of Respondents

On the whole, the selection of suitable research sites as well as research assistants were made based on information obtained from officials and opinion leaders of the immediate environment. However, such preliminary research arrangements and plans were appropriately readjusted (on a number of occasions during fieldwork) based on new information from the villages visited, in an effort to ensure the successful outcome of our study. The field investigation was conducted in four locations. At each location, word and phrase lists were elicited individual, as well as group, elicitation sessions were conducted, using the instrument of *Recorded Text Testing* (RTT) of simple narratives from informants

Before the commencement of work at each location, the members of the research team visited the traditional chiefs of all the village locations to inform and obtain official permission for the work before entering the language area. Throughout the course of the investigation, reported, tested, elicited, and observed data were gathered. The data collection methods utilized in the course of the field work are described in detail in the following sections.

3.2.3. Interviews with Community Leaders

The purpose of the interviews with community leaders was to obtain the views of native speakers as to the geographical boundaries of the Bache/Pan languages, intercomprehension between their dialectal varieties, population patterns, the extent of use of Bache/Pan and other neighboring languages in various domains, the extent of language attitudes and community literacy programs. At every village location, interview sessions were carried out with the village chiefs and their elders, who gave answers after discussion and reaching a consensus. Usually, the chief's secretary served as interpreter between the researchers and each chief and his elders. Such interviews with community leaders were conducted in the following villages:
Jebu-Bariki, Kissaloi, Zagun and Binchin, located in Bassa LGA, and inDoemak, Mernyang, Kwalla and Bwal, located in Quan-Pan LGA.

3.2.4. Group Elicitation of Word and Phrase Lists

Word and phrase lists were elicited in geographically distributed village locations in order to determine, based on shared lexical items, the degree of linguistic similarity among these communities. The purpose of wordlist elicitation was two-fold. First, to establish whether previously reported varieties of our selected study languages (i.e. Bache and Pan) are, from a sociolinguistic point of view, independent languages or mere dialectal variants of the same language in each respective case. Second, to verify whether or not the previously reported 'reference' variety of the Bache language, (i.e. the *Zagun* dialect) and that of the Pan language (i.e. the *Doemak* dialect) –both of which were already being utilized for production of literacy materials -were indeed linguistically close enough to the other varieties to serve as viable reference varieties in their respective areas of coverage.

3.2.5. Word and Phrase List Elicitation Sites

Word and phrase lists were elicited in a total of *eight* village sites; four were located within the Bache language area, while the other four were in located in the Pan language area.

Bassa LGA: Jebu-Bariki, Kissaloi, Zagun, Binchin.

Quan-Pan LGA: Doemak, Mernyang, Kwalla, Bwal.

3.2.6. Word and Phrase List Elicitation Procedure

In each village, the lists were elicited from groups of long-term, mother-tongue resident speakers. The elicitation in a group allowed for the discussion of variants, near-synonyms, and synonyms. In this manner, group decisions were made about which form to include in the wordlist. Once the initial wordlist had been elicited, it was possible to double-check the succeeding lists in order to determine whether differences were actual lexical differences or merely misunderstandings. A few words elicited on the first list were also double-checked after all the wordlists were completed in order to assure proper elicitation and understanding

3.2.7. Individual (RTT) and SociolinguisticQuestionnaire Administration and Interview Procedures

Two different types of individual interviews were conducted in the village sites:

1. Recorded Test Testing (RTT), with accompanying RTT questionnaires.
2. Individual Sociolinguistic Questionnaires.

The purpose of the RTT was to assess comprehension levels of Bache/Pan language narratives. The RTT is an indirect measure of comprehension which has been adapted from dialect intelligibility tests.

After careful evaluation of each research informant's answers to comprehension questions which had been inserted into the RTT narrative, two inferences can be drawn about two key factors relating to dialectal comprehension: namely,

i. the informant's general comprehension of the whole text.

ii. the informant's general comprehension of the tested speech form.

The individual sociolinguistic questionnaire (IDV-QST) was used to gather reported data in order to determine: intercomprehension between various Bache dialectal varieties; speech forms used with various interlocutors in different social situations; prevalent attitudes towards Bache and other neighboring languages in the area with regard to both oral and written forms; and the extent of literacy programs in the Bache language. Some questions were also asked concerning L2 proficiency and language contact patterns. The questionnaire was administered to each of the informant by a member of the survey team, with the aid of an interpreter. Some of the questions were omitted, if during the course of the interview they were deemed not to be applicable to a particular subject. This will account for some of the results being based on numbers less than the total number of subjects

3.2.8. Pretesting and Administration of Final RTT Texts

A short narrative, 2–3 minutes in length, was tape-recorded in the respective reference varieties found in our two study areas (i.e. *Kissaloi* variety of Bache and Doemak variety of Pan) by two pre-selected L1 speakers from the two areas. The initial text preparation was carried out by the story narrators alongside members of the study team. In doing this, word-for-word transcriptions were made, followed by back translations of the narratives into Hausa, a common language of wider communication within both Bache and Pan language environments. Based on these translations, *six* comprehension questions were formulated, in each case-study area, covering a wide range of semantic areas. These questions were translated into both Bache and Pan languages by two other groups of Bache and Pan L1 speakers and then recorded. The questions were designed to be interpolated directly into the

narratives in the course of field administration of the RTT tools. Each question was designed to be followed by a pause to allow subjects to respond to the question.

Before its actual field administration, each narrative texts was pre-tested on three sets of Bache and Pan speakers in order to ensure that the test tools were properly designed. The subjects were asked to answer the inserted questions in their own Bache and Pan dialect varieties. These answers were translated into Hausa by interpreters and subsequently into English and written down by members of the study team. After the pre-testing, the answers were evaluated and, of the original six questions, three were subsequently chosen for the final test tapes. In addition, common base-line scoring systems were then devised for future scoring for Bache and Pan languages respectively. Tapes containing introductory statements for Bache and Pan languages respectively were prepared and subsequently administered to selected informants in the course of the actual RTT testing procedures in the field.

3.2.9. Final Scoring Procedure for RTT Responses

Based on the compilation of the responses given by both Bache and Pan L1 speakers during the pretesting of the narratives, base-line scoring systems were devised for future scoring. Each response was first compared to the original narrative, and then compared to the other responses to determine the level of exactness which could be expected from a test informant. These model answers then served as the standards to which all future responses of subjects were to be compared. Each correct response was worth one point.

All answers given during the actual RTT testing were compared to the final baseline answers. Each response that was exactly like the baseline answer was immediately marked with full credit. Any variation from the baseline was written down, evaluated separately in comparison to answers by other subjects, and marked with either a fraction of the correct score or 0. For the final scoring for each subject, each script

was re-checked and verified by other members of the study team for 'scoring reliability'.

3.3. Distribution of Study Respondents

Table 3.3: Actual test informants by village and social group (Bassa)

	MY	ME	FY	FE	Total
1. Jebu-Bariki	3	4	2	3	12
2. Kissaloi	3	4	2	3	12
3. Zagun	3	4	2	3	12
4. Binchin	3	4	2	3	12
TOTAL	12	16	8	12	48

Table 3.4: Actual test informants by village and social group (Quan-Pan)

	MY	ME	FY	FE	Total
1. Doemak	3	4	2	3	12
2. Mernyang	3	4	2	3	12
3. Kwalla	3	4	2	3	12
4. Bwal	3	4	2	3	12
TOTAL	12	16	8	12	48

Total sample: 96

Key

MY = male, young ME=male, elderly
FY = female, young FE=female, elderly

3.4. Selection and Orientation of Interpreters

Since none of the members of the study team was proficient in any dialect of either Bache or Pan languages, it was necessary to enlist willing members of the both Bache and Pan communities to act as interpreters. Fortunately, six of those who were willing to serve as interpreters, were also reasonably proficient in Hausa (a common language of wider communication within both Bache and Pan language areas) as well as in English. They proved to be very useful as interpreters and translators during the course of administration of individual interviews in the surveyed village.

Before the actual administration of RTTs and individual sociolinguistic questionnaires commenced in the field, the interpreters /translators were trained for the comprehension tests, which entailed translating Bache/Pan responses into Hausa as well as translating back the probe questions asked by the researchers into Bache/Pan. The training process was a simulation of a typical RTT test situation. Each interpreter took his turn in acting as the informant, listening to the pre-recorded Bache/Pan narratives and responding appropriately in Bache/Pan languages, while another re-translated the answers into Hausa and, subsequently, into English. They were required to translate exactly what the subjects reported.

CHAPTER 4

DATA PRESENTATION AND DISCUSSION
(The Bache Language community)

4.1. Lexicostatistical Results from Wordlist Administration

The results provided in Figures 4. 1 and 4.2 below show relevant *Percentage* and *Variance* matrixes obtained from the wordlist comparisons carried in our four research sites. They were computed by the computer program WORDSURV (Version 2b.5d – Wimbish 1989; JAARS 1994). The program does not apply a linguistic comparative method to the data, and thus does not determine cognates based on historical analysis. Instead, WORDSURV performs a count of the similarity decisions previously made and presents this count in a percentage similarity matrices

Figure 4.1: Percentages Matrix among Bache Dialects.

Kissaloi			
88	Jebu-Bariki		
85	82	Zagun	
68	73	63	Binchin

Figure 4.2: Variance Matrix among Bache Dialects.

Kissaloi			
3.8	Jebu-Bariki		
4.2	4.5	Zagun	
5.5	5.3	5.7	Binchin

In order to put the interpretation of these results in proper context, we must take into consideration the following basic guidelines on "Language Assessment Criteria", as formulated by the International Language Assessment Conference (1990:2):

> *When the analysis of wordlists] indicate a lexical similarity between two speech forms of less than about 70% (at the upper confidence limit of the calculation), this generally indicates that these are different languages ... If*

the similarity is more than 70%, dialect intelligibility testing is needed to determine how well people can understand the other speech form.

The per cent matrix reports the number of shared apparent cognates as a percentage of the basic vocabulary, while the variance matrix shows the range of error for each count. Comparing the Bache spoken in Kissaloi with the other varieties,

- the results show lexical similarities of 91.8% (88+3.8%) between Kissaloi and Jebu-Bariki,
- 89.2% (85+4.2%) between Kissaloi and Zagun, and
- 73.5% (68+5.5%) between Kissaloi and Binchin at the upper confidence limit.

The results of the wordlist analysis show that the degree of linguistic similarity between any of the four varieties is at least 70% at the upper confidence limit of the calculations, except for Binchin with 68.7%.

The degree of linguistic similarity is

- <85% at the upper confidence limit for the calculations between Kissaloi, Jebu-Bariki, and Zagun;
- it is <80% between Binchin and any of these three varieties,
- <75% between Jebu-Bariki, Zagun and Binchin; and
- <78% between Jebu-Bariki, Kissaloi, and Zagun.

However, it must also be pointed out that additional dialect intelligibility testing would be needed in order to adequately estimate how well speakers from the other three villages are able to understand Kissaloi, which appears to be the central reference variety in the Bache language area.

Based on the results obtained from the wordlist elicitations, matrices shown in Figures 1 and 2 as well as our interpretations, it would appear that Kissaloi is lexically similar enough to all other varieties to be called the "central" variety, this may further indicate that it could serve as the reference dialect for the entire Bache language group.

4.2. RTT Results from Dialect Inter-Comprehension Testing

In order to evaluate dialect intercomprehension testing carried out, results are discussed from tested, reported, and observed data.

4.2. 1. RTT Results and Discussion

The following section refers to the comprehension results as well as relevant answers to the accompanying questionnaire. Comprehension testing of a Bache narrative recorded from Kissaloi was done in order to ascertain the level of dialect intercomprehension between the four varieties. The results in Tables 4.1 and 4.2 below show the overall percentages of correct answers to the comprehension questions, organized by village and social groups.

Table 4.1: Averages of Test Results by Social Groupings

Village Sites	Jebu-Bariki	Binchin	Zagun	Kissaloi	Cumulative Averages		
SOGRP/N	%	%	%	%	Group Average (%)	Group Σ – %	Percentage Range (%)
MY/12	98	66	89	96	87	1.86-15%	66-98
ME/12	94	85	94	95	92	0.98- 8%	85-95
FY/12	86	82	86	97	88	1.25-10%	82-97
FE/12	94	91	100	95	95	0.48- 4%	91-100
Y:						1.53-13%	66-98
E:						0.76-6%	94-100
M:						1.52-13%	66-98

F:	0.86- 7%	82-100

*Abbreviation keys
M=Male Y=Young MY=Male Young FY=Female Young
F=Female E=Elder ME=Male Elder FE=Female Elder

The score average for the respective groups ranged from a low of 66%, as recorded by the MY group in Binchin, to a high of 100%, as recorded by the FE group in Zagun. Similarly, the standard deviation figures for the groups, represented as percentages, ranged from a low of 0.48 (or 4%), as recorded by the FE group, to a high of 1.86 (or 15%) as recorded by the MY group.

Table 4.2: Averages of Test Results by Village Sites

Village Sites	Jebu-Bariki	Binchin	Zagun	Kissaloi	Cumulative Averages (Σ - %)
Score Average (%)	96	81	92	96	91 (all sites)
Σ - %	0.39-3%	1.51-13%	0.83-7%	0.98-8%	0.93-8% (all sites)
Percentage Range (%)	95-92	66-91	86-100	86-98	66-100 (all sites)

Similarly, the cumulative score average for the groups in all four research sites, as shown in Table 4.2, was 91%.

- Thirty-one out of 48 subjects, 31 /48 (64.6%) scored at least 90%,
- 8/48 (16.7%) scored between 81% and 90%,
- 5/48 (10.4%) had scores between 70% and 80%, and
- 4/48 (8.3%) scored less than 70%.

In a comparison by location,

- the villages of Kissaloi, Jebu-Bariki, and Zagun show similar score averages of 96%, 96% and 92% respectively.

- Similarly, standard deviation figures of 0.98 (8%), 0.39 (3%), and 0.83 (7%) respectively were recorded for the three sites. The village of Binchin remains the village with the lowest average (81%) and the highest standard deviation of 1.51 (or 13%).

This would appear to confirm local reports prior to the conduct of our research study that Binchin is the Bache dialect variety which is most linguistically different.

Table 4.3: Standard Deviations and Percentages for Social Age groups

Social Groups	Standard Deviation -∑	Percentage - %
YR	1.53	13
ER	0.76	6
MR	1.62	14
FR	0.86	7

Abbreviations

YR = Younger respondents
ER = Elderly respondents
MR = Male respondents
FR = Female respondents

The table above shows the following points that are worthy of note:

- The overall standard deviation / percentage figures recorded for older respondents were significantly lower than that for the younger respondents;0.76(6%) versus 1.53(13%) respectively.

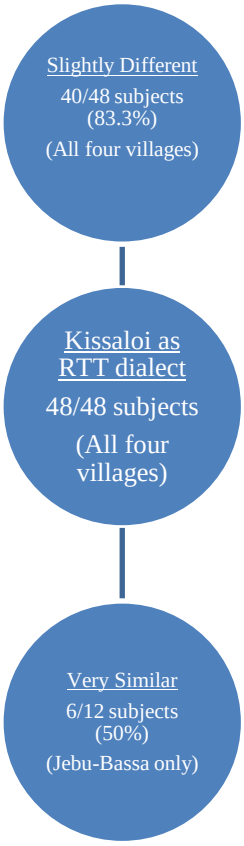
- Similarly, female respondents recorded a much lower standard deviation/percentage figures than their male counterparts; 0.86(7%) versus 1.62 (14%) respectively.

Following RTT administration at each village site, respondents were requested to evaluate the dialectal inflection (or speaking manner) of the text narrator as far as what village they thought he was from, and how different his speech was from their own variety.

- 48/48respondents, (representing 100%) correctly identified the narrator as a speaker of Kissaloi. When asked whether his manner of speaking was "the same", "slightly different" or "very different" from their own, 40/48 respondents (83.3%) reported that it was "slightly different. Specifically, in Jebu-Bariki, 6/12 respondents (representing 50%) reported that the narrator's speaking manner was "very similar" to their own.

  (See Figure 4.3 below for a graphic representation of this fact).

Figure 4.3: Evaluation of dialectal inflection of RTT narrator



- When asked if others in their village would understand the story, almost all respondents anticipated reasonable comprehension of the narrative across age and gender.

Compared by location, Kissaloi is the only village in which all subjects anticipated complete comprehension of the narrative by other villagers, regardless of age and gender. Apart from stating that there is a relatively adequate level of comprehension of the tested narrative, it is difficult to draw further conclusions from test results, especially if one wants to address the question of inherent or acquired intelligibility.

In an ideal, fully controlled, and regulated testing situation, one might be able to interpret a high average score combined with a low standard deviation as an indicator of inherent intelligibility and a high average combined with a high standard deviation as an indicator of acquired intelligibility. To make this distinction however, the

primary question that need to be answered is degree of contact the respondents may have had with the tested speech variety prior to the test administration.

RTT respondents were also asked if they regularly travel to other locations outside their villages of birth.

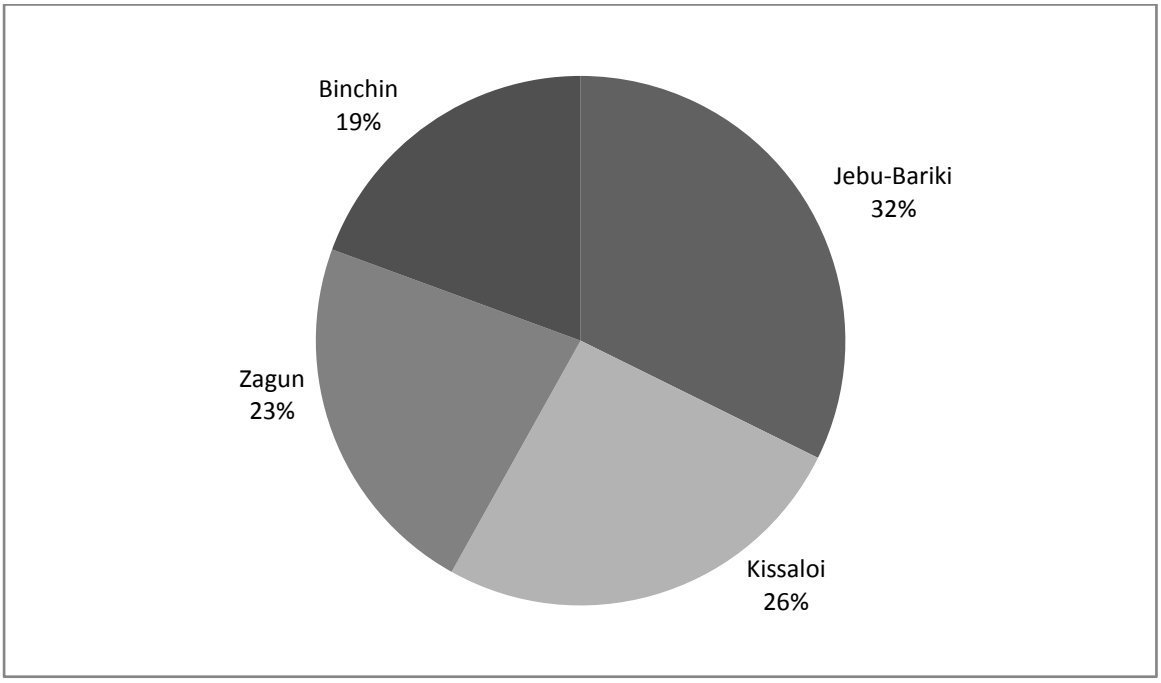
- In response, 31/48 (64.6%) of them responded positively and 17/48 respondents (representing35.4%) responded negatively. Compared by location, a breakdown of positive responses shows the following: Jebu-Bariki = 10/31respondents (representing 32.3%), Kissaloi = 8/31respondents (representing 25.8%),

  Zagun = 7/31 respondents (representing 22.5%), Binchin = 6/31(representing 19.4%).

- In addition to personal travel, 48/48respondents (representing 100%) reported that people from other villages also visited their own respective their villages, especially on market or festival days.

(See Figure 4.4 below for a graphic representation of this fact).

Figure 4.4: Percentages of regular travel to other locations in the Bache community



4.2.2. Reported Results From Individual Questionnaires

A much larger number of respondents , apart from those who participated in our Wordlist and RTT elicitations, were also asked to respond to individual questionnaires (IDV-QST) on other broader sociolinguistic issues relating to the Bache language. They were, for example, asked whether or not they adequately comprehend the Kissaloi variety of the Bache language.

- Out of a total number of 96 respondents who were administered the questionnaires, 82/96 of them (representing 85.4%) responded positively.

In addition to general abilities, IDV-QST respondents were also asked about higher-level functions in comprehension such as understanding jokes and radio programmes transmitted in Bache.

- The ability to always understand jokes rendered in Bache were reported by 75/96 respondents (representing 78.1%).

- Of those respondents who reported listening to radio broadcasts in Bache, 92/96 (representing 95.8%) stated that they understand everything.

In a comparison of higher-level comprehension functions by village, the distinctions are more evident by looking at the 14 respondents who responded in the negative.

- Out of these respondents, 7/14 (representing 50.0%) in Binchin, reported that they do not always understand the Bache jokes rendered in the Kissaloi dialect.

- 4/14 respondents (representing 28.6%) in Zagun reported that they do not fully understand radio broadcasts rendered in the Kissaloi dialect.

- In the village of Jebu-Bariki, 3/14 respondents (representing 21.4%) reported that they do not understand jokes rendered in the Kissaloi dialect.

Respondents were asked if they are able to speak the Bache variety spoken in Kissaloi. In a sharp contrast to the high percentage earlier observed for reported comprehension,

- 25/96 respondents (representing 26%) reported the ability to adequately speak the Kissaloi dialect.

In addition, respondents were asked what Bache language variety they use when speaking to someone from Kissaloi.

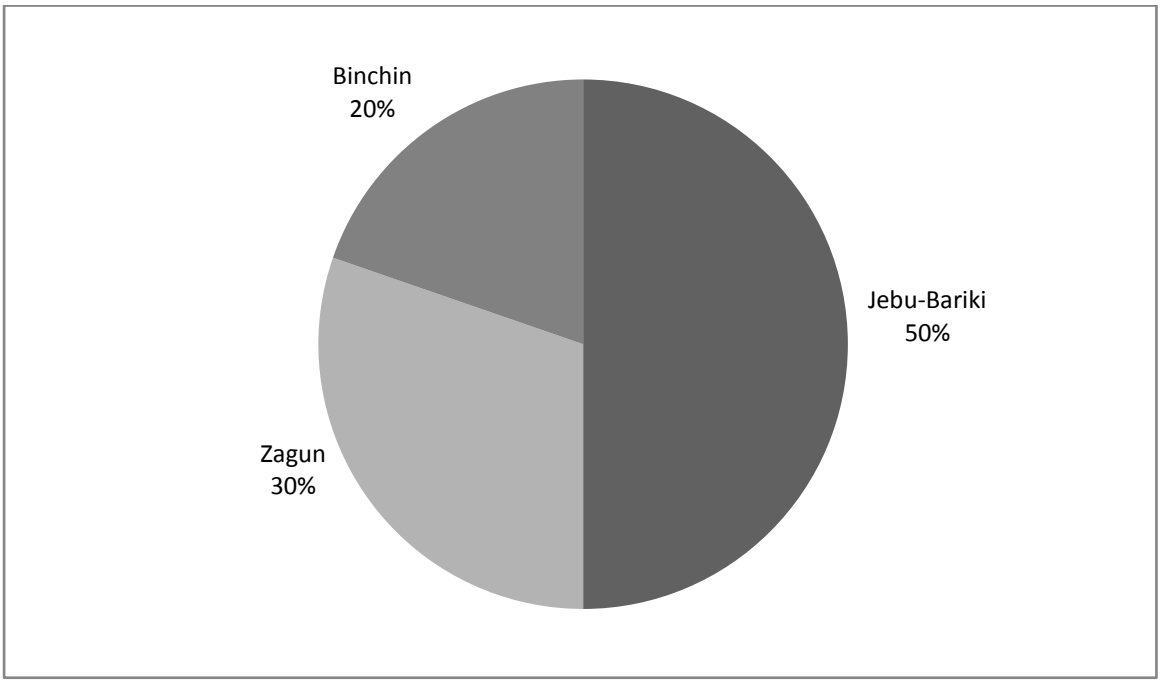
- 85/96 respondents (representing 88.5%) responded that they use the variety spoken in their own village. Only 10/96 (10.4%) said they will speak the Kissaloi variety.

Finally, respondents with children were asked whether or not their children are able to understand the Kissaloi dialect.

- A large percentage of respondents 66/96 respondents (representing 68.8%) gave positive answers. In a comparison of positive responses by location, the results show: Jebu-Bariki-33/66 respondents (representing 50.0%), Zagun-20/66 respondents (representing 30.3%), and Binchin 13/66 respondents (19.7%).

(See Figure 4.5 below for a graphic representation of this fact).

Figure 4.5: Level of understanding of the Kissaloi dialect (used for RTT administration)



4.2. 3. Observed Results from Individual Questionnaires

After the administration of individual sociolinguistic questionnaires at each research site, our Bache-speaking interpreters (who had been present throughout the questionnaire administration exercise) were asked to offer provisional assessment of the dialectal variety spoken by respondents.

- On the whole, our interpreters reported having no major difficulty with understanding the dialectal peculiarities exhibited by respondents they had to interact with in the course of Wordlist elicitations and RTT administration.

At each interview site, at least two respondents were also asked to evaluate the dialectal variety used by our interpreters.

- In Jebu-Bariki and Kissaloi, for instance, those selected to do the evaluation reported having very little difficulty in comprehending the speech of our interpreters.

However, in Zagun and Binchin, those who were asked to evaluate the Bache variety spoken by the interpreters expressed varying degrees of difficulty in comprehending them. In Binchin, example, one of the evaluators reported experiencing considerable difficulty in comprehending the interpreters.

- The average score for the RTT narrative was 90% which indicates that the general level of comprehension of the Kissaloi variety of Bache is relatively high.

  The standard deviation of (0.98-8%), as earlier captured in Table 4.2 for Kissaloi, indicates a relatively acceptable margin of variation between Kissaloi and other village sites investigated.

- When compared by age and gender, the notable difference in comprehension scores is for a few younger female subjects in Binchin who scored below 80%. Otherwise, there is no considerable difference across age and gender.

- From Table 4.2, it is shown that the respondents in Binchin had a lower cumulative score average and higher standard deviation than those in the

other three villages, thus giving credence to reports that Binchin is the Bache variety that is linguistically most different.

- With regards to reported dialect intercomprehension, a large percentage of our respondents reported the ability to comprehend the Bache variety as spoken in Kissaloi, including higher level language functions such as understanding both jokes and broadcast information in the Bache language.

- The village with the least reported comprehension is Binchin. In contrast to understanding abilities, few respondents reported the ability to speak the Kissaloi dialect, with the majority of respondents reporting that they will speak the variety of Bache spoken in their village when speaking to someone from Kissaloi. Finally, over half of the subjects with children reported that their children are able to understand Kissaloi variety of the Bache language.

4.2. 4. Summary of Results

The results for the elicited wordlists show a lexical similarity of <70%, at the upper confidence limit, between Kissaloi and the other varieties. This seems to indicate that the speech varieties spoken in Kissaloi, Jebu-Bariki, Zagun, and Binchin are not different languages. In addition, it is indicated that the Bache speech variety, as spoken in Kissaloi, may be regarded as the central, reference dialect; however, it was necessary to verify this result through further comprehension testing.

Concerning comprehension, the overall average test score was 90%, which indicates a high level of comprehension. There was no considerable difference when compared by age and gender.

As for reported data,

- 92% of respondents reported the ability to understand the Kissaloi variety of Bache.

- Reported data also coincided with tested data across villages with Jebu-Bariki showing the highest levels of comprehension and Binchin the lowest. Even though the speech variety in each village location seems to possess a unique identity of its own, this does not necessarily identify a separate dialect.

Rather, dialect differentiation seems to be made by our study respondents on the basis of the geographical and environmental location within which that particular variety is spoken.

4.3. Level of Contemporary Language Viability

In the following sections, reported and observed language uses in various domains are examined.

4.3.1. Language Use for Community Activities

According to village elders, the Bache language is used in all public domains. This includes community events, such as announcements, traditional rites, funerals, marriage ceremonies, singing traditional songs, telling stories, ceremonies for naming children, and family and village judgments.

- For many of the religious events, such as church services and weddings, and during some funeral ceremonies conducted by elitist members of the Bache community, either English or Hausa languages may be used.

- Some elders in both Kissaloi and Zagun reported the increasingly common use of Hausa for traditional singing, especially among the younger members of the communities.

- For traditional council meetings and other gatherings involving elders, the speech forms used in all surveyed sites is reported to be varying dialects of the Bache language.

- A combination of Bache, Hausa and English is also reported to be used at public gatherings, community meetings and political rallies, depending largely on the nature of the subject being discussed as well as the composition of the audience.

4.3.2. Language Use in Private Domains

As part of the individual sociolinguistic questionnaire, respondents were asked which language(s) they use in various domains and for various purposes.

- 96/96 respondents (representing 100%) reported the use of Bache in the home. As a follow-up question, respondents were also asked if they also use a second language in the home.

- 25/96 respondents (26.0%) reported that they use an L2 in the home; it was not specified with whom or on what occasions.

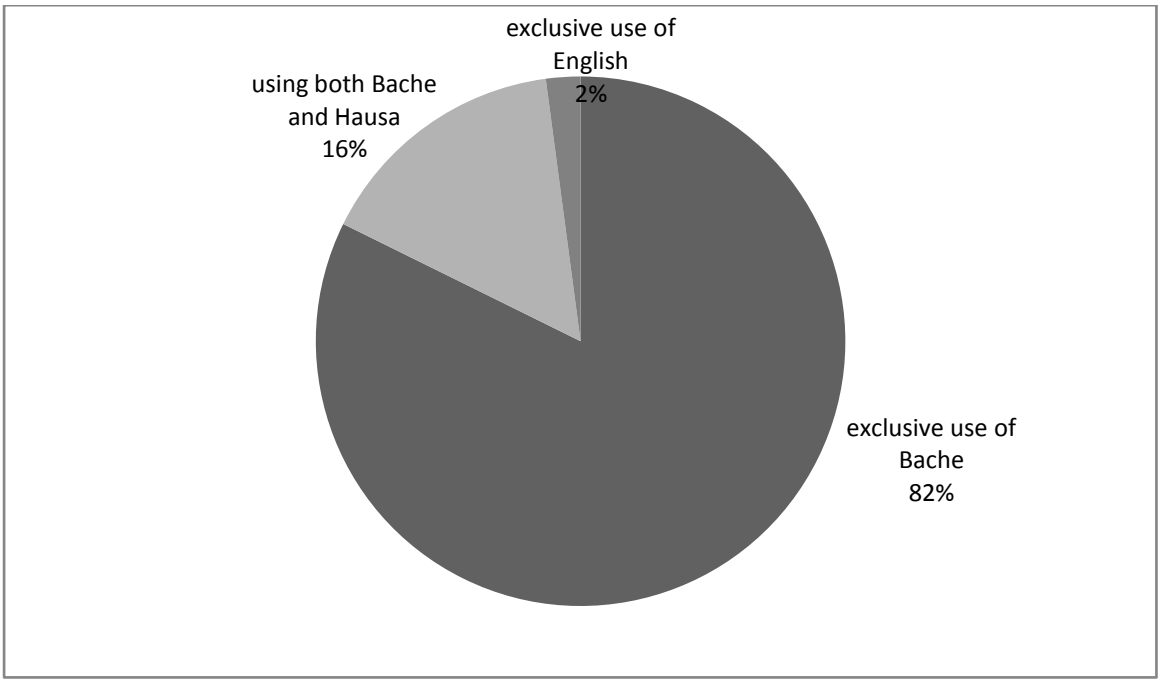
In order to determine language use patterns with various interlocutors, subjects were asked which language they use with parents, spouse, their own children, friends, neighbors, and elders.

- All respondents (for whom these contexts applied) reported the use of Bache in these domains. In cases where a second language is also used, 66/96 respondents (68.8%) reported the additional use of Hausa, 20/96 respondents

(20.8%) reported the alternating use of Hausa and English, while the balance figure of 10/96 respondents (10.4%) reported the additional use of English.

(See Figure 4.6 below for a graphic representation of this fact).

Figure 4.6: Language use patterns with various interlocutors (for private interactions)

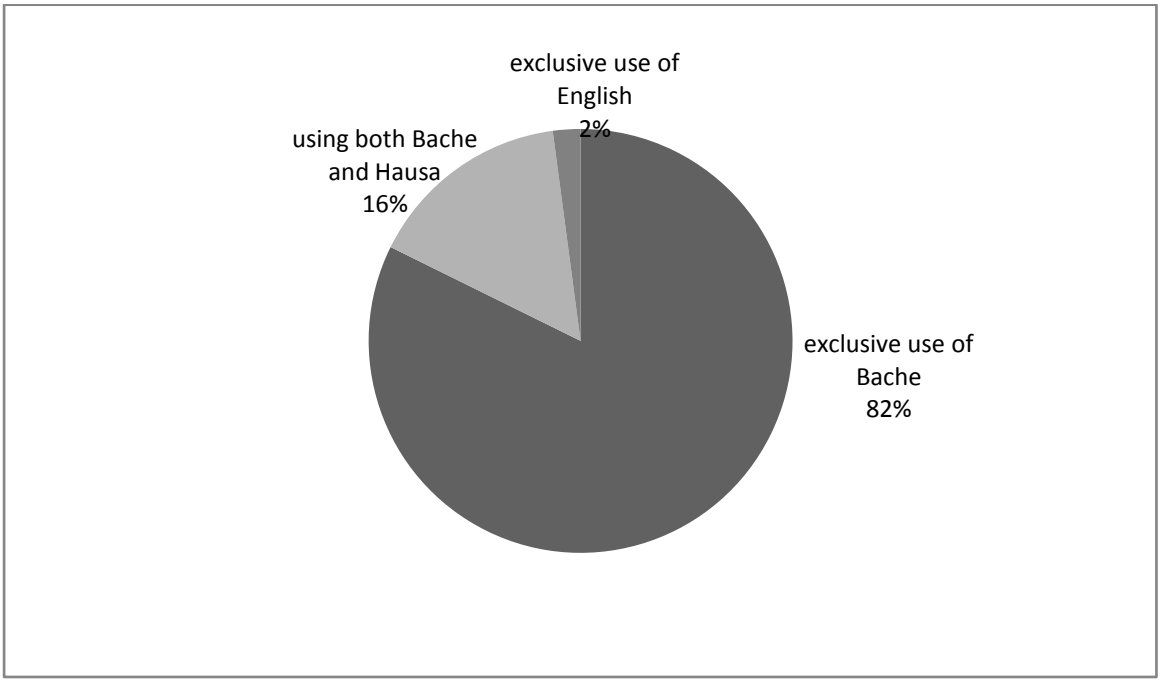


In the work domain,

- 79/96 respondents (representing 82.3%) reported exclusive use of Bache; 15/96 respondents (representing 15.6%) reported using both Bache and Hausa, while 2/96 respondents (representing 2.1%) reported the exclusive use of English.

(See Figure 4.7 below for a graphic representation of this fact).

Figure 4.7: Percentages of Bache, Hausa & English usage within formal 'work' domains

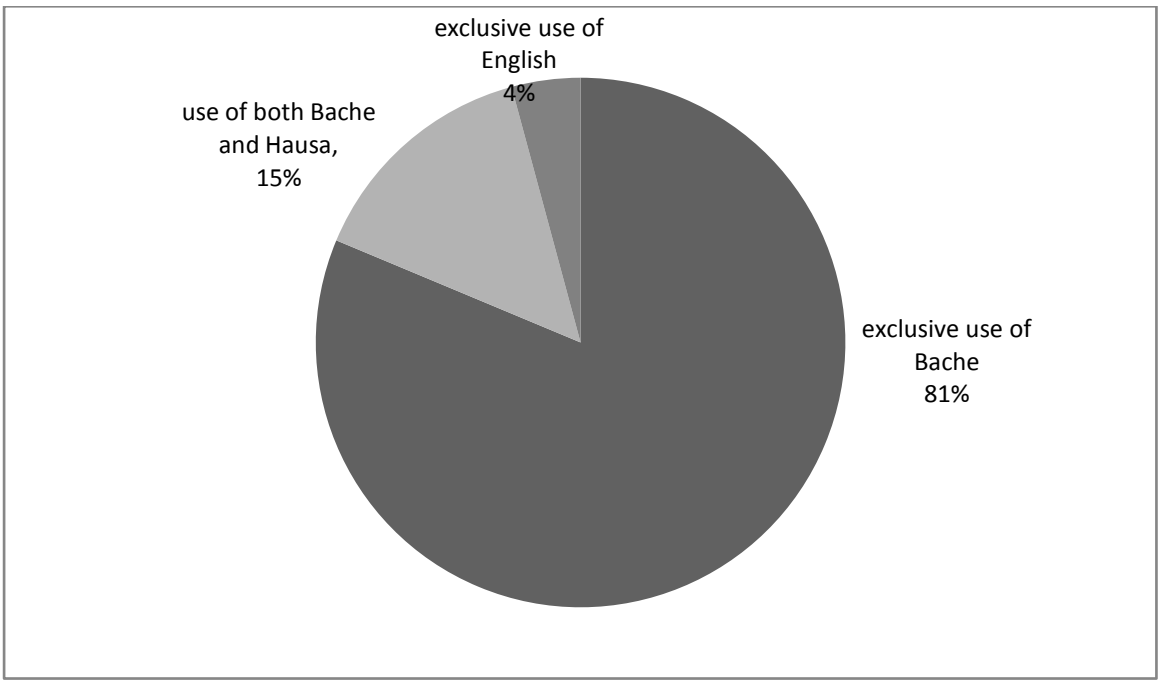


For local commercial/petty trading purposes and for counting money,

- 78/96 respondents (81.3%) reported the exclusive use of Bache. Of the remaining 18 subjects, 14/96 respondents (representing14.5%) reported the use of both Bache and Hausa, while the balance figure of 4/96 respondents (representing 4.2%) reported the exclusive use of English for counting money.

(See Figure 4.8 below for a graphic representation of this fact).

Figure 4.8: Percentages of Bache, Hausa & English usage for commercial/petty trading purposes



In a comparison by age groups,

- 40/48 older respondents (representing 83.3%) reported exclusive use of Bache, leaving a balance of 8/48 respondents (representing16.7%) who reported using both Bache and Hausa. Similarly, 30/48 younger subjects (representing 62.5%) also reported the exclusive use of Bache for counting money, leaving a balance of 18/48 (representing 37.5%) who reported using both Bache and Hausa.

- All respondents, 96/96 reported that their own children use the Bache language when playing with other children within their local neighborhoods.

When playing with children from other ethno linguistic backgrounds,

- 77/96 subjects (80.2%) reported that their children use the Bache language regularly, while a balance of 19/96 respondents (representing19.8%) reported the use of both Bache and Hausa.

4.3.3. Language Use with Non-Bache Speakers

- Many of the respondents reported speaking Hausa as a local L2. However, there is still a sizeable number-roughly about one-quarter- who would prefer to use Bache, even when speaking to non-Bache speakers.

In more precise terms, even though sizeable proportion of the larger population of the Bache-speaking people can adequately comprehend and satisfactorily speak Hausa as a language of wider communication,

- 22/96 respondents ((representing 22.9%) reported that they prefer to use the Bache language anytime they talk to non-Bache persons, irrespective of where they come from.

4.3.4. Language Use in Religious Domains

There are numerous churches within the Bache language area, regularly patronized by both Bache and non-Bache speakers.

Thus,

- both the Bache and Hausa languages are commonly used during the religious worship services.

Since there is a church building in most sizeable Bache villages, some questions were asked during interviews with community leaders and respondents concerning language use at churches.

- Naturally, since Hausa and, to a limited extent, English are fairly common languages in local churches; the two languages were reported to be the predominant languages for conducting many church-related activities.

For purposes of carrying out church preaching and evangelization,

- all community leaders and respondents in Jebu-Bariki, Kissaloi, Zagun, and Binchin reported that sermons were rendered simultaneously into Bache and

Hausa, in order to meet the combined language needs of Bache and non-Bache speakers alike.

- The same pattern holds true for the reading and interpretation of the Bible during all other church-organized social ceremonies such as weddings, child-dedications and funerals.

- However, in virtually all activities connected to traditional religious worship, the community leaders reported that these were exclusively carried out through the medium of the Bache language.

4.3.5. Summary of Results

In public domains, Bache is the language most often used in all research sites, for community events ranging from local announcements and marriage ceremonies to community discussion meetings. For many religious events, including church services and other related activities, there is also the reported use of either Hausa or English, or a combination of both in different proportions.

- In private domains, respondents reported the almost exclusive use of Bache in the following contexts: for interactions in the home with immediate family members, with friends and elders, at work, for traditional singing, and for counting money.

- The widespread use of Bache is also reported among children. Very few respondents reported the use of an L2 in the home. Given the fact that Christianity is a fast spreading religion in the Bache language area, it is reported that there are increasingly wider uses of both Hausa and English as key media for its propagation.

- However, in most domains connected to traditional religious worship, the Bache language remained the dominant medium used.

4.4. Nature of Language Attitudes

Several questions were asked, during both the community and individual interviews, to explore attitudes toward spoken and written forms of both Bache and various L2s in the area.

4.4. 1. Attitudes towards Bache

When asked whether or not the young people in the village speak Bache well,

- 91/96 respondents (representing 94.8%) gave positive replies. Those who gave negative replies were asked why they felt as they did. Some of the reasons given were: “They are changing the language,” “It is the old people who speak well”, and “They do not pronounce words like our parents do.”

Respondents were also asked what language they think their grandchildren will use in their home.

- 93/96 respondents (representing 96.9%), feel that Bache will still be used.

When asked to give a reason why they think this way, respondents gave reasons such as:

“We are Bache,” “Bache is our mother tongue,” and “We don’t want to lose Bache”

4.4. 2. Attitudes toward the Literary Development of Bache

- All respondents, 96/96, as well as the chiefs and elders in all villages visited, think it would be good for the Bache people if they could read and write Bache.

Respondents in all sites visited were also asked if they would enroll in a Bache literacy class if one were established in their village;

- 82/96 respondents (representing 85.4%) provided positive answers.

In addition, elders in the villages of Zagun and Binchin were asked if they thought the people of their village would enroll for Bache literacy classes if they were introduced.

- Both groups of elders responded positively, further stating that they would be very happy to see their children being able read and write letters in Bache.

As a final question, respondents were asked if they thought their community would provide financial support for the printing of books written in Bache. In response to this question,

- 80/96 respondents (representing 83.3%) gave positive answers, with many stating that the money could be raised through voluntary individual contributions, community –based labor activities, or special commodity sales.

4.4. 3. Attitudes toward Spoken/Written Hausa and English

Respondents were given a hypothetical situation in which one of their own children or wards preferred speaking an L2 (either Hausa or English) at home, rather than Bache. They were asked whether or not they would approve of this.

- 90/96 (representing 93.8%) said that they, as parents, would not approve of such behavior. Their principal reason for disapproving was that Bache is their ancestral language and it must be preserved at all costs.

4.4.4. Summary of Results

Almost all of the respondents thought that their own children and wards speak Bache well, and that Bache will continue to be spoken by their grandchildren. All respondents and village elders were positive about the future development of the Bache language. They also stated that they would be happy to see the introduction of Bache literacy classes, adding that they thought the community would financially support literacy development in Bache. Finally, almost all respondents affirmed that, as parents, they would be unhappy if their children preferred using an L2 in the home domain.

4.5. Level of Multilingualism

In the sections below, the reported level of multilingualism in Hausa and English as languages of wider communications is examined. Questions concerning multilingualism were only asked in our individual sociolinguistic questionnaires; therefore, the following results are from respondents as well as from data gathered during interviews with community leaders.

4.5. 1. Hausa Proficiency Levels

In general, respondents were asked if they speak and understand Hausa and, more specifically, about higher-level language functions given a certain language situation.

- At all four research sites, 81/96 respondents (representing 84.4%) reported the ability to comprehend Hausa, leaving a balance of 15/96respondents (representing 15.6%) who reported inability to comprehend Hausa.
- Out of those respondents who reported comprehension of Hausa, 62/81(representing 76.5%) reportedly always understand jokes rendered in Hausa.

In addition, subjects were asked if they listen to Hausa programs on the radio and, if so, whether or not they understand everything they hear. In answer to this question,

- 60/74 respondents (81%) reported listening to Hausa programmes.

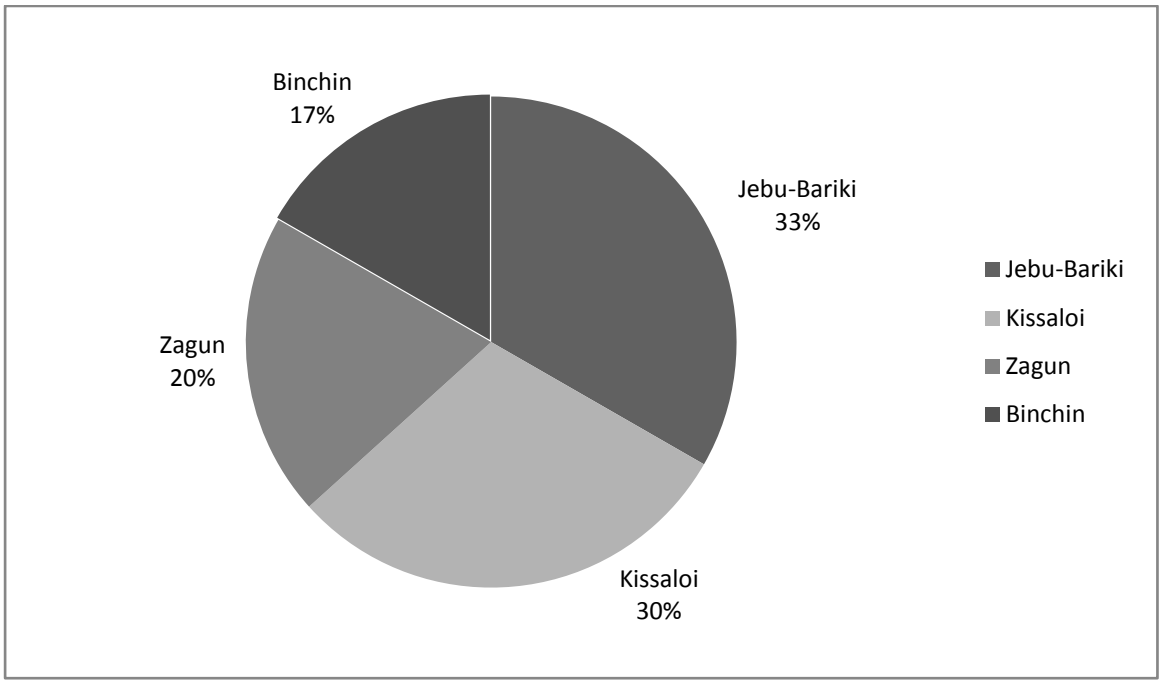
When compared across research sites,

- Jebu-Bariki and Kissaloi show the highest percentages for reported speaking abilities in Hausa: 20/60 respondents (representing 33.3%) and 18/60 respondents (representing 30.0%) respectively.

- In comparison, Zagun and Binchin show lower percentages for reported speaking abilities in Hausa: 12/60respondents (representing 20.0%) and 10/60respondents (representing 16.7%) respectively.

(See Figure 4.9 below for a graphic representation of this fact).

Figure 4.9: Percentages of those with speaking abilities in Hausa (all four sites)



In order to further evaluate reported Hausa proficiency levels, respondents were asked to imagine a situation in which they needed to defend themselves at a judgment. Given this situation,

- 56/96 respondents (representing 58.3%) reported the ability to adequately express themselves in Hausa.

Subjects were also asked if they could have a dispute in Hausa.

- Once again, the many respondents, 60/96 (62.5%), responded positively, leaving a balance of 36/96respondents (representing 37.5%) who responded negatively to the question.

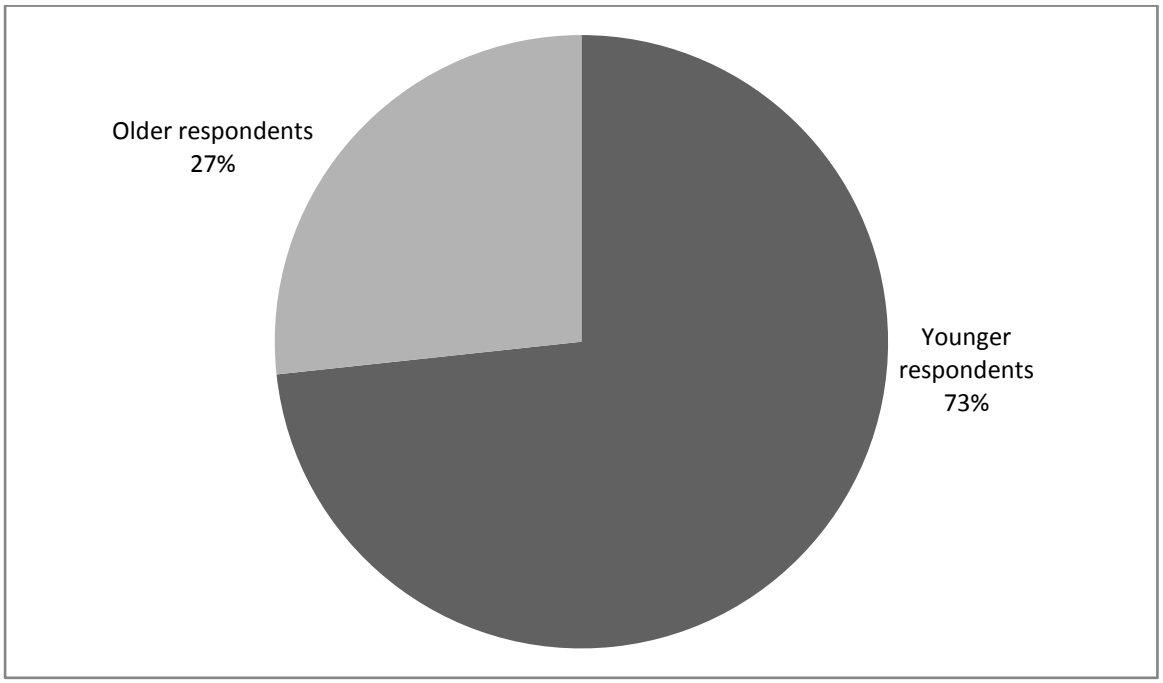
In a comparison by age, at all the sites visited, those who responded positively to the question on being able to conduct a dispute in Hausa, the younger respondentsrecorded higher percentages than the older respondents for reported language abilities.

- Younger respondents: 44/60 (representing 73.3%)

- Older respondents: 16/60(representing 26.7%)

(See Figure 4.10 below for a graphic representation of this fact).

Figure 4.10: Use of Hausa in conducting disputes (as determined by age)



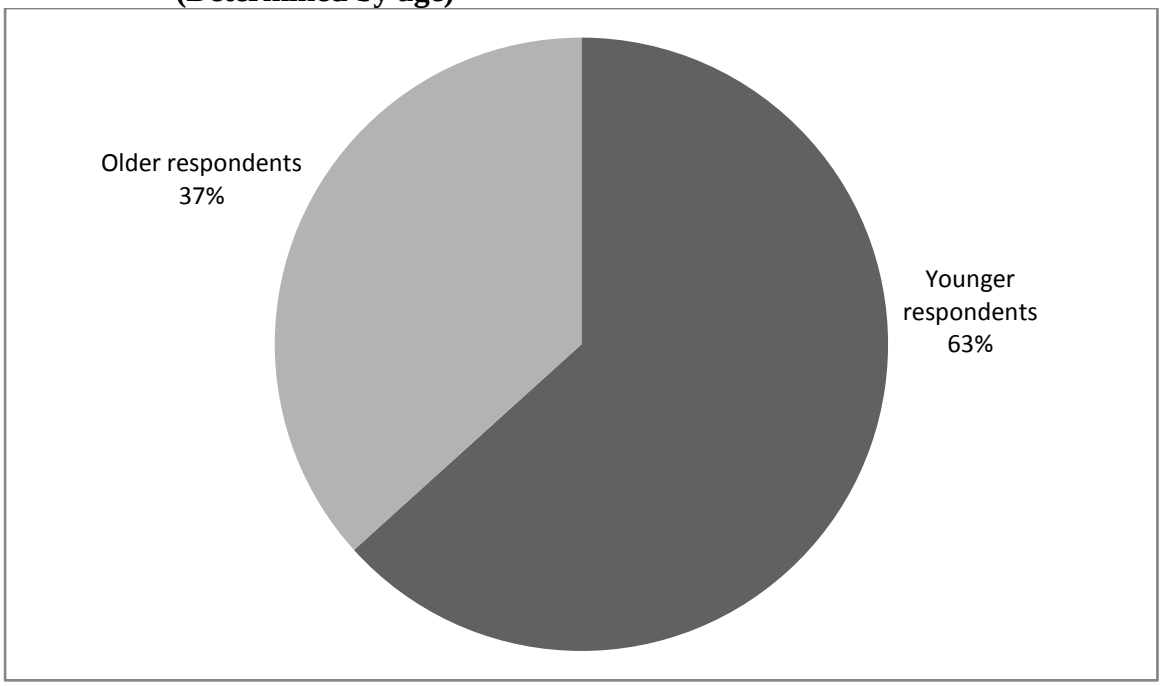
The younger subjects also recorded higher percentages when it comes to reported language proficiency in understanding humor and jokes rendered in Hausa.

- Younger respondents: 38/60 respondents (representing 63.3%)

- Older respondents: 22/60 respondents (representing 36.7%)

(See Figure 4.11 below for a graphic representation of this fact).

Figure 4.11: Reported understanding of humor and jokes rendered in Hausa (Determined by age)



Respondents with children were also asked about the L2 abilities of their children. Of this category of respondents,

- 58/96 respondents (60.4%) stated that their children are able to speak Hausa.

During interviews with community leaders in both Jebu-Bariki and Kissaloi,

- they confirmed the general assumption that younger men and children tend to comprehend and speak Hausa better than older men and women.

4.5. 2. English Proficiency Levels

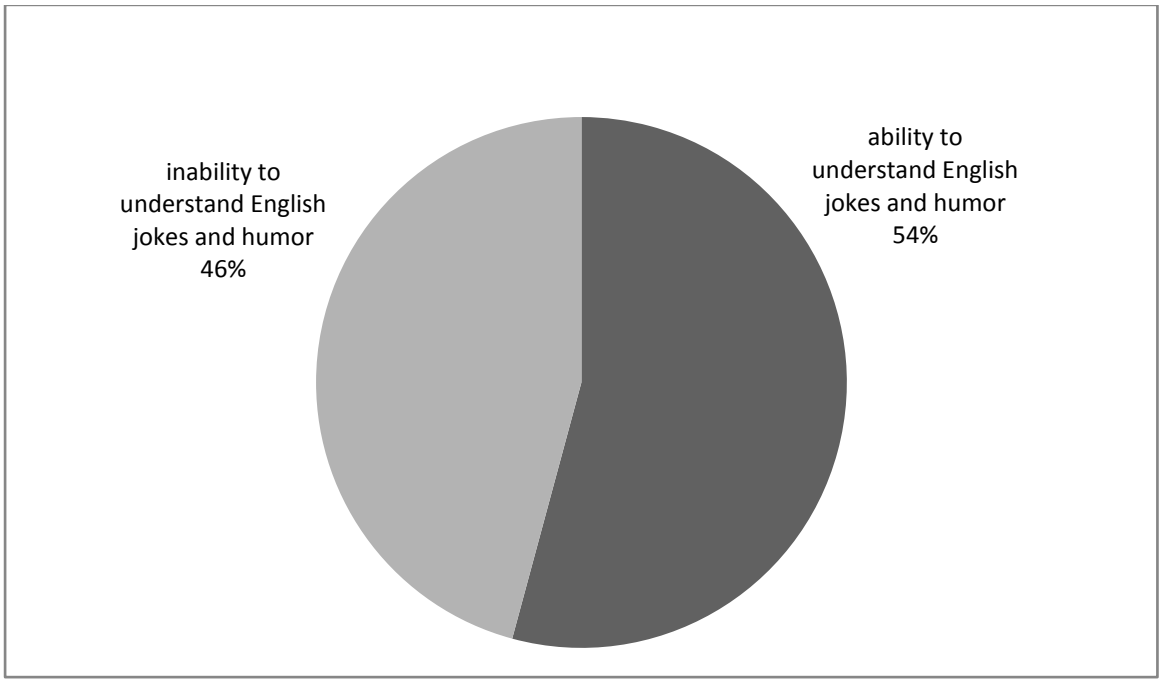
In general, respondents were asked if they understand and speak English and, more specifically, about the higher-level language functions in the language.

- An average percentage of respondents (52/96 – 54.2%) reported the ability to understand English, leaving a balance of 44/96 respondents (representing 45.8%) who do not understand English. Of the respondents who understand English, 28/52 (representing 53.8%) reportedly always understand jokes in

English leaving a balance of 24/52 respondents (representing 46.2%) who do not understand humor and jokes in English.

(See Figures 4.12 below for graphic representation of this fact).

Figure 4.12: Percentages of Comprehension of Higher level functions of English



In addition, respondents were asked if they listen to English programs on the radio and, if so, whether or not they understand everything they hear. To this question,

- 38/52 respondents (73.1%), who reported listening to English programs, reported understanding everything, leaving a balance of 14/52 respondents (representing 26.9%).

At all the research sites visited, the ability to speak English was reported by only 34/96 respondents (representing 35. 4%), leaving a balance of 62/96 respondents (representing 64.6%) who are not able to speak English.

When asked to imagine a situation in which they needed to defend themselves at a judgment, using English,

- 12/34 respondents (representing 35.3%) reported the ability to adequately express themselves in English, leaving a balance of 22/34 respondents (representing 64.7%) who are unable to defend themselves in English.

Subjects were also asked if they could argue and settle a land dispute in English. Given this hypothetical situation, only 2/12 respondents (representing 16.7%) affirmed their ability to do so. In a comparison by gender,

- only about a dozen and half female respondents reported the ability to speak and understand English:

Speaking ability of female respondents

- 13/34 (representing 38.2%)

Speaking ability of male respondents

- 21/34 (representing61.8%);

Comprehension ability of female respondents

- 9/34 (representing 26.5%)

Comprehension ability of male respondents

- 25/34 (representing 73.5%).

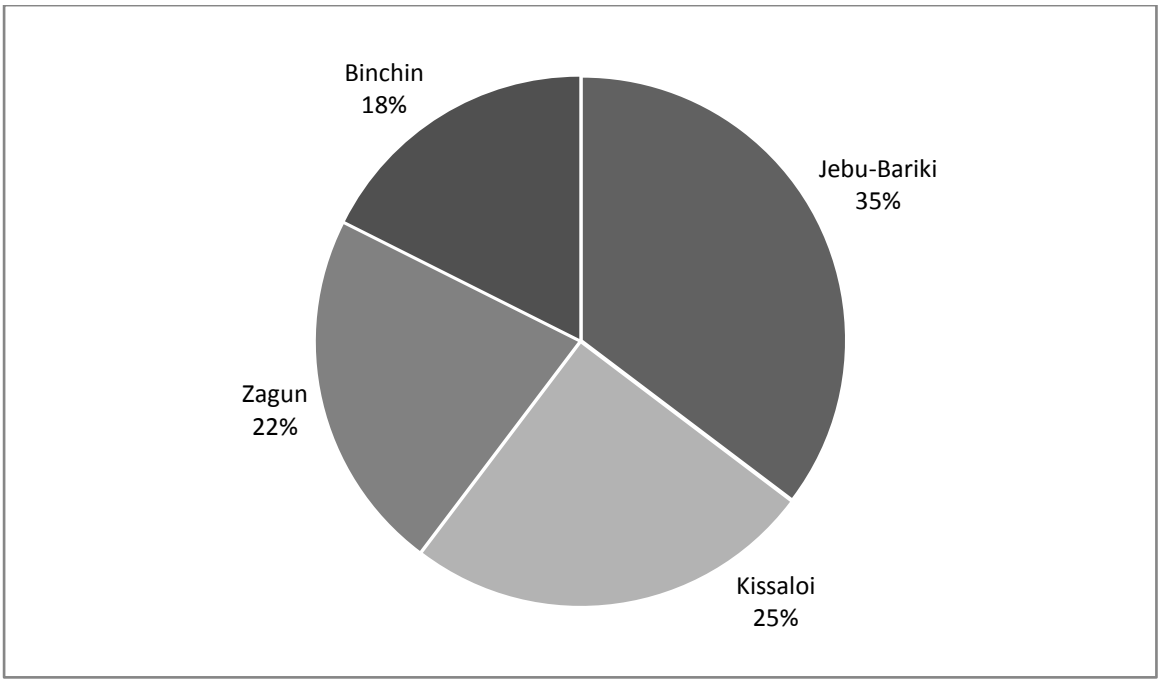
With regards to the English speaking abilities of their children,

- 68/96 respondents (70.8%) who said that they had children, reported that their children were able to speak English, leaving a balance of 28/96 respondents (representing 29.2%) whose children are not able to speak English. Out of the respondents with English-literate children, 24/68 (representing 35.3%) are from Jebu-Bariki, 17/68 (representing 25.0%) are

from Kissaloi, 15/68 (representing 22.1%) from Zagun, and 12/68 (representing 17.6%) from Binchin.

(See Figure 4.13 below for a graphic representation of this fact).

Figure 4.13: English speaking abilities of children of study respondents



4.5. 3. Summary of Results

The most common L2 among respondents appears to be Hausa, with 81/96 respondents (representing 84.4%) reporting the ability to comprehend Hausa. Similarly, 38/52 respondents (representing 73.1%), reported listening to English programs, and gaining adequate understanding of everything said. There are notable differences in respondents' L2 abilities, when compared by age and gender. The abilities of female respondents in both speaking and understanding English ranged from 26.5% to 38.2, while those of male respondents ranged from 61.8% to 73.5%. Finally, the percentages of respondents whose children have speaking and comprehension abilities in English progressively descend in the following order: Jebu-Bariki, with 35.3%; Kissaloi, with25.0%; Zagun, with 22.1% and Binchin, with 17.6%.

4.6. Prospects for Language Development

Based on reported data from community leaders as well as survey subjects, it is deduced that Bache would continue to be used in almost all public and private domains across social groupings and there are no indications of imminent language shift toward any local L2s.

To reiterate the final conclusions, the results from all three factors considered in regard to dialect intercomprehension appear to indicate that the various dialectal varieties of Bache surveyed; namely Jebu-Bariki, Kissaloi, Zagun, and Binchin are, to varying degrees, intercomprehendible. However, two of them – the Jebu-Bariki and Kissaloi varieties -appear to be *closely genetically related* and more comprehendible to non-locals (or outsiders) than the other two varieties surveyed.

It is further evident that the variety of Bache as spoken in Kissaloi may, from the weight of the results obtained so far from our field investigations, be viewed as a satisfactory *reference dialect* for the Bache language.

The Bache language is highly viable as it remains a strong L1 across social groups in various domains. There also appears to be a positive attitude held by most Bache speakers toward both the contemporary situation of the language and its future developmental prospects.

CHAPTER 5

DATA PRESENTATION AND DISCUSSION
(The Pan Language Community)

5.1. Lexicostatistical Results from Wordlist Administration

The results provided in Figures 5.1 and 5.2 below show relevant *Percentage* and *Variance* matrices obtained from the wordlist comparisons carried in our four research sites.They were computed by the computer program WORDSURV (Version 2b.5d – Wimbish 1989; JAARS 1994),as explained for the computations done in Chapter 4 of this work(see p. 86). WORDSURV performs a count of the similarity decisions previously made and presents this count in a percentage similarity matrices

Figure 5.1: Percentages Matrix among Pan Dialects.

Doemak			
95	Mernyang		
90	91	Kwalla	
66	67	62	Bwal

Figure 5.2: Variance Matrix among Pan Dialects

Doemak			
2.5	Mernyang		
4.9	2.7	Kwalla	
7.2	5.0	4.6	Bwal

The percent matrix reports the number of shared apparent cognates as a percentage of the basic vocabulary, while the variance matrix shows the range of error for each count. For these results to be properly interpreted and contextualized, we must take into account the basic guideline on “Language Assessment Criteria”, as cited in this work (see p.87 above).

Comparing the Pan variety spoken in Doemak with the other varieties,

- the results show lexical similarities of 97.5% (95+2.5%) between Doemak and Mernyang;
- 94.9% (90+4.9%) between Doemak and Kwalla, and
- 73.9% (66+7.9%) between Doemak and Bwal at the upper confidence limit.

The results of the wordlist analysis show that the degree of linguistic similarity between two of the four varieties is

- above 97% at the upper confidence limit of the calculations for Doemak and Mernyang,
- above 94% for Doemak and Kwalla,
- just above 70% between Doemak and Bwal.

Based on the results obtained from the wordlist elicitations in our sites in Pan-land, as summarized Figures 5.1 and 5.2 above, as well as our interpretations, it would appear that Doemak is lexically similar enough, in varying degrees, to at least two other dialect variants to be called the *reference dialect* for the entire Pan language group.

Our hypothesis that items on the various word lists administered in our four research sites would have lexical similarity of at least 80% or more is only partially confirmed by the numbers in Figures 5.1 and 5.2 above.

- It would appear that Doemak and Mernyang are the most similar Pan dialects at +97%.
- It is also evident that Bwal, on the other hand, is a very distant variant from the other three large Pan dialects, sharing only about 70% of its words with each of them.

Based on both the Percentage and Variance matrices in Figures 5.1 and 5.2, it may be concluded that

- Bwal is a distinct language variety from Doemak, Mernyang, and Kwalla, although it is somewhat closer in lexical affinity to Kwalla than any other Pan variety.

- The relationship of Kwalla to Doemak is moderately high, with lexical similarity figures of above 85% (plus or minus four percent).

According to Bergman (1990:9.5.2), speech forms should be considered distinct languages when their lexical similarity (at the upper confidence limit) is below 70%. By this criterion (with an upper confidence limit of well over 70%), we can tentatively say that Kwalla is a marginally distant dialectal variant of the Pan language (i.e. from Doemak and Mernyang). The fact that it is generally perceived to be a Pan dialect would argue for its inclusion as a marginally distant member in a 'dialect-cluster' arrangement, alongside Bwal, in relation to the other members of the Pan group.

5. 2. RTT Results From Dialect Intercomprehension Testing

In order to evaluate dialect intercomprehension testing carried out, results are discussed from tested, reported, and observed data.

5.2.1. RTT Results and Discussion

Comprehension testing of a *reference* narrative story, recorded from the Doema**k** dialect of Pan, was done in order to ascertain the level of dialect intercomprehension between the four varieties. The following section refers to the comprehension results as well as relevant analyses carried out on answers given to the accompanying questionnaire. The results in Tables 5.1 and 5.2 below show details of the score

averages obtained from statistical analyses of *correct* answers given to the comprehension questions associated with the RTT administration.

Table 5.1: Averages of RTT Results by Social Groupings

Village Sites	Doemak	Mernyang	Kwalla	Bwal	Cumulative Averages		
Social Group/n	%	%	%	%	Group Average (%)	Group Σ – %	Percentage Range (%)
MY/6	96	90	89	68	86	1.42-9%	68-96
ME/3	98	93	88	75	89	0.54- 5%	75-98
FY/3	90	89	86	65	83	1.65-12%	65-90
FE/6	95	92	88	73	87	0.48- 4%	73-95
Y:						1.53-13%	65-96
E:						0.76-6%	73-98
M:						1.52-13%	68-98
F:						0.86- 7%	65-95

*Abbreviation keys

MY=Male Young FY=Female Young

ME=Male Elder FE=Female Elder

Table 5.2: Averages of RTT Results by Village Sites

Village Sites	Doemak	Mernyang	Kwalla	Bwal	Cumulative Averages
Score Average (%)	95	91	88	70	86
Σ – %	0.39-3%	0.63-6%	0.83-%	1.51-13%	0.93-8%
Percentage Range (%)	90-98	89-93	86-89	65-75	65-98

The results displayed in the tables above indicate the following key points:

- The overall score average for all groups in the four research sites was 86%.
- The test scores ranged from a low of 68%, recorded by the MY group in Bwal, to a high of 98%, recorded by the ME group in Doemak, with an overall standard deviation of 3.65.

In a comparison by location, the following key points are observable:

- The villages of Doemak, Mernyang and Kwalla show score averages of 95%, 91% and 88% respectively and standard deviation figures of 2.0; 2.7 and 4.6 respectively.
- The village of Bwal is the village with the lowest score average of 70% and the highest standard deviation of 5.3. (This would appear to confirm the pre-study reports received from local inhabitants that Bwal is the Pan dialectal variety which is most linguistically different).
- 11/18 respondents (representing 66.7%) of those interviewed in the four research sites visited, scored at least 90%,
- 3/18respondents (representing16.7%) scored between 81% and 90%,
- 2/48 respondents(representing11.1%) had scores between 70% and 80%, and
- 2/18respondents (representing11.1%) scored less than 70%.

A comparison of overall group averages by age also shows the following key points:

- Elderly respondents scored slightly higher than the younger ones, (i.e.87-89% versus 83-86% respectively).

- Similarly, male respondents recorded slightly higher scores than their female counterparts (i.e. 86-89% versus 83-87% respectively).

Following RTT administration at each village site, subjects were asked to evaluate the dialectal inflection (or speaking manner) of the text narrator as far as what village they thought he was from, and how different his speech was from their own variety.

- 18/18 respondents (representing100%) correctly identified the narrator as a speaker of Doemak.

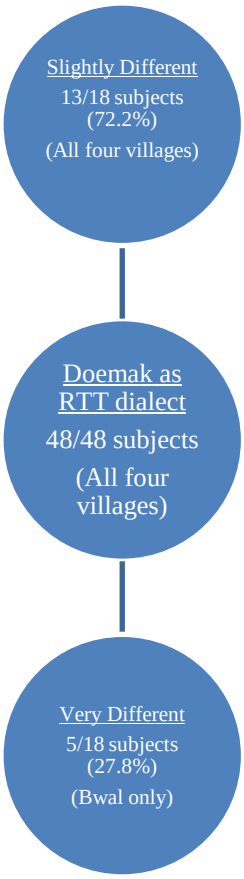
When asked whether his manner of speaking was "the same", "slightly different" or "very different" from their own, the following key results were obtained:

- 13/18 subjects (representing 72.2%) reported that it was "slightly different.

- However, in Bwal, 5/18 respondents (representing 27.8%) specifically reported that the narrator's speaking manner was "very different" from their own dialect.

(See Figure 5.3 below for a graphic representation of this fact).

Figure 5.3: Evaluation ofdialectal inflection of RTT narrator



However, the rather high standard deviations indicate that a few of the subjects either overestimated or underestimated their test performance, and in a few cases, by quite a wide margin.

When asked if others in their village would understand the story, almost all subjects anticipated reasonable comprehension of the narrative across age and gender.

Compared by location, Doemak emerged as the only test site in which almost all respondents predicted *significant* comprehension of the RTT narrative by speakers from other Pan settlements, regardless of age and gender. However, apart from noting the fact that that there is reasonable level of comprehension of the tested narrative many test sites, it is difficult to draw more definitive conclusions from test results, especially with regards to the question of inherent or acquired intelligibility.

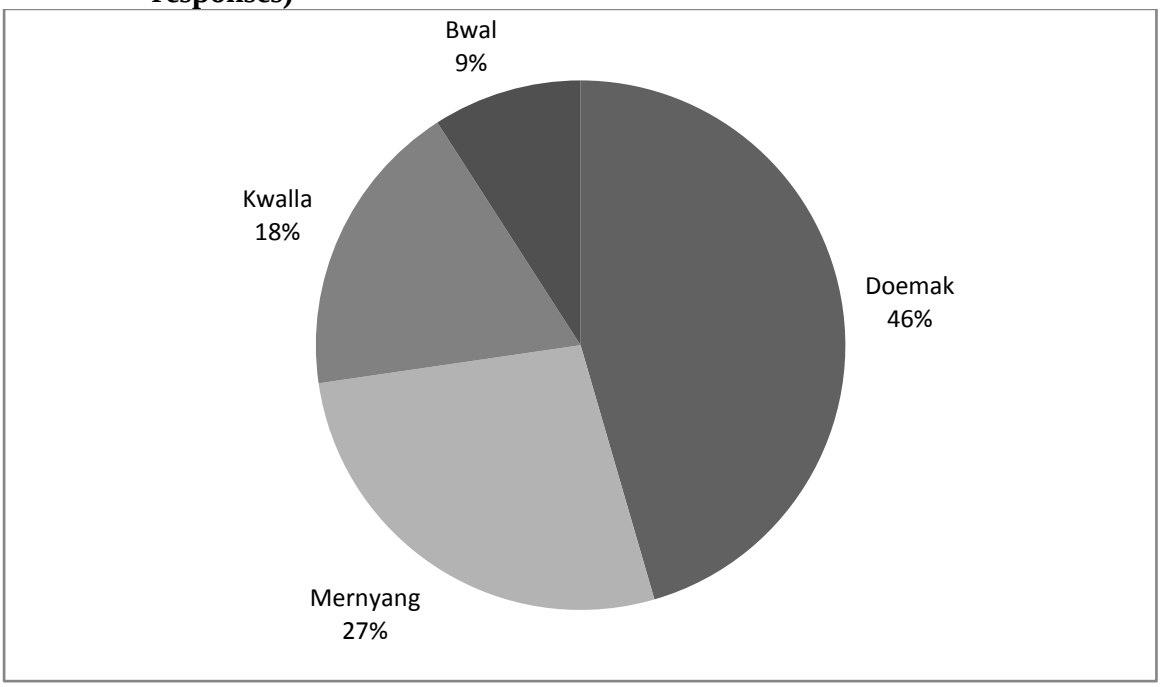
RTT respondents were also asked if they regularly travel to other locations outside their villages of birth. In response, 11/18 respondents (representing 61.1%)

responded positively, leaving a balance of 7/18 respondents representing 38.9%) who gave negative responses. Compared by location, a breakdown of positive responses shows the following key results:

- Doemak = 5/11 respondents (representing 45.5%),
- Mernyang = 3/11 respondents (representing 27.2 %),
- Kwalla = 2/11 respondents (representing 18.2%),
- Bwal = 1/1 respondents (representing 9.1%).

(See Figure 5.4 below for a graphic representation of this fact).

Figure 5.4: Percentages on regularity of travel to other locations (positive responses)



In addition to personal travel,

- (14/18) respondents (representing77.8%) reported that people from other villages also visited their own respective their villages, especially on market or festival days.

5.2.2. Reported Results from Individual Questionnaires

A much larger number of respondents , apart from those who participated in our Wordlist and RTT elicitations, were also asked to respond to individual questionnaires (IDV-QST) on other broader sociolinguistic issues relating to the Pan language.

They were, for example, asked whether or not they adequately comprehend the Doemak variety of the Pan language.

Out of a total number of 48 respondents who were administered the questionnaires,

- 38/48respondents (representing 79.2%) responded positively.

In addition to general abilities, IDV-QST respondents were also asked about higher-level functions in comprehension such as understanding jokes and radio programmes transmitted in Pan.

- The ability to understand riddles and jokes rendered in Pan was reported by 40/48 respondents (representing 83.3%).

Of those who reported listening to radio broadcasts in Pan,

- 45/48respondents (representing 93.8%) stated that they understand everything, leaving a balance of 3/48 respondents (representing 6.3%) who do not listen to radio broadcasts in Pan.

In a comparison of higher-level comprehension functions by village, the distinctions became more evident by looking at those respondents who responded in the negative. Of the respondents sampled in Kwalla and Bwal,8/48respondents (representing 16.7%) reported that they do not understand the jokes rendered in the Doemak dialect of Pan, leaving a balance of 40/48respondents (representing 83.3%) who reported their understanding of jokes rendered in the Doemak dialect.

Respondents were also asked if they are able to speak the Pan variety spoken in Doemak.

- 27/48 respondents (representing56.3%) across all research sites reported the ability to adequately speak the Doemak dialect of Pan.

In addition, respondents were asked what Pan variety they use when speaking to someone from Doemak.

- 38/48respondents (representing79.2%) reported that they understand and use only the Pan variety spoken in their own village.
- Only 10/48 respondents (representing20.8%) revealed that they speak the Doemak variety.

Finally, respondents with children were asked whether or not their children are able to understand the Doemak dialect.

- A significant percentage of respondents-38/48, representing (79.2%) gave positive answers.

In a comparison of positive responses by location, the following results were obtained:

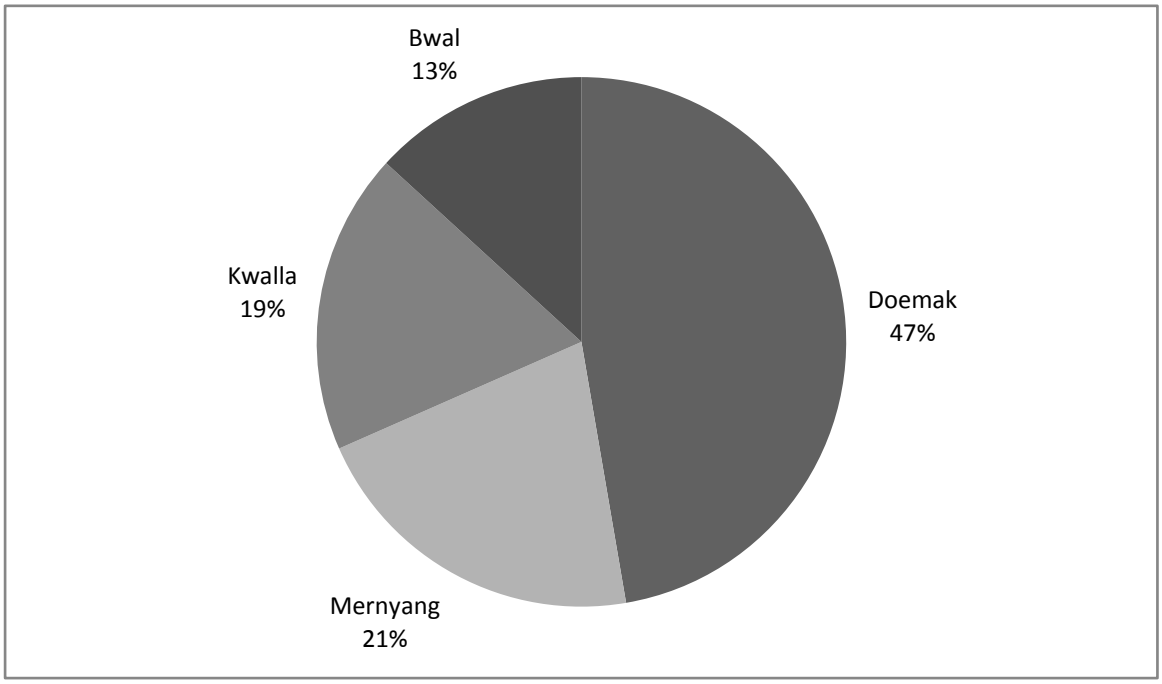
- Doemak-18/38 respondents (representing47.3%),
- Mernyang-8/38 respondents (representing21.1%),

- Kwalla-7/38 respondents (representing18.4 %)

- Bwal-5/38 respondents (representing13.2 %)

(See Figure 5.5 below for a graphic representation of this fact).

Figure 5.5: Level of understanding of the Doemak dialect by children



5.2.3. Observed Results from Individual Questionnaires

After the administration of individual sociolinguistic questionnaires at each research site, our Pan-speaking interpreters (who had been present throughout the questionnaire administration exercise) were asked to offer provisional assessment of the dialectal variety spoken by respondents.

- On the whole, our interpreters reported having no major difficulty with understanding the dialectal peculiarities exhibited by respondents, except those from Bwal.

At each interview site, at least two respondents were also asked to evaluate the dialectal variety used by our interpreters. In Doemak and Mernyang, for instance, those selected to do the evaluation reported having very little difficulty in comprehending the speech of our interpreters.

However, in Kwalla and particularly in Bwal, those who were asked to evaluate the Pan variety spoken by the interpreters expressed varying degrees of difficulty in comprehending them. In Bwal, for instance, one of the evaluators reported experiencing considerable difficulty in comprehending the interpreters.

As revealed from the results earlier displayed in Table 5.2, the cumulative score average for the RTT administration conducted at all research sites can be put at ≥86%, which implies that the general level of comprehension of the Doemak variety of Pan is relatively high. However, the standard deviation of 1.51recorded for the Bwal site also points to a moderate level of variation in test scores.

When compared by age and gender, results displayed in Table 5.1 show the following:

- A notably low comprehension score average of below 70% for the younger female respondents in Bwal. Similarly, in a village-by-village comparison, the following point is also notable:

- The respondents in Bwal displayed a relatively low cumulative percentage score of between 65-75 and higher standard deviation than those in the other three villages, thus apparently reflecting reports that Bwal is the Pan variety that is linguistically most different.

With regards to reported dialect intercomprehension, a large percentage of our respondents reported the ability to comprehend the Pan variety as spoken in Doemak, including higher level language functions such as understanding riddles, jokes and

broadcast information in the Pan language. The village with the least reported comprehension is Bwal.

In contrast to comprehension, fewer respondents reported the ability to speak the Doemak dialect, with the majority of subjects reporting that they will speak the variety of Pan spoken in their village when speaking to someone from Doemak. Finally, a significant majority of the subjects with children reported that their children are able to comprehend the Doemak variety of the Pan language.

5.2.4. Summary of Results

The results for the elicited wordlists (as earlier displayed in Figures 5.1 and 5.2) show high lexical similarity of ≥80%, at the upper confidence limit, between Doemak and the other varieties, except Bwal. This seems to indicate that the speech varieties spoken in Doemak, Mernyang and, to a lesser extent, Kwalla are not different languages. The only variety whose status is suspect is Njak. In addition, it is indicated that the Pan variety, as spoken in Doemak, may provisionally be regarded as the reference dialect for the entire Pan language group; however, it would be necessary to verify this conclusion through further comprehension testing.

As for results relating to reported level of dialect intercomprehension, the following point is notable:

- At least 38/48respondents, (representing 79.2%) reported the ability to understand the Doemak variety of Pan.

Reported data also coincided with tested data across villages, with

- Doemak and Mernyang showing the highest levels of comprehension,
- Kwalla showing intermediate levels of comprehension and
- Bwal the lowest.

Even though the speech variety in each village location may show some measure of unique characteristics of its own, such cannot possibly be taken as conclusive evidence of dialectal autonomy. Rather, our study respondents appear to make dialectal distinctions on the basis of the geographical and environmental location within which a particular variety is spoken.

5.3. Level of Contemporary Language Viability

In the following sections, reported and observed language uses in various domains are examined.

5.3.1. Language Use for Community Activities

According to village elders, the Pan language is used in all public domains. This includes community events, such as announcements, traditional rites, funerals, marriage ceremonies, singing traditional songs, telling stories, ceremonies for naming children, and family and village judgments.

- For many of the religious events, such as church services and weddings, and during some funeral ceremonies conducted by elitist members of the Pan community, English, Hausa or Goemai languages may be used.

- Some elders in both Doemak and Mernyang reported widespread of Hausa for traditional singing, especially among the younger members of the communities.

- However, for traditional council meetings and other gatherings involving elders, the speech form used in all surveyed sites is reported to be various dialects of the Pan language.

- A combination of Pan, Goemai, Hausa and English is also reported to be used at public gatherings, community meetings and political rallies, depending largely on the nature of the subject being discussed as well as the composition of the audience.

5.3.2. Language Use in Private Domains

As part of the individual sociolinguistic questionnaire, respondents were asked which language(s) they use in various domains and for various purposes.

- All respondents- 48/48 respondents, (representing 100%) reported the use of Pan in the home.

As a follow-up question, respondents were also asked if they also use a second language in the home. The following result was obtained:

- 25/48 respondents (representing52.1%) reported that they use an L2 in the home; it was not specified with whom or on what occasions.

In order to determine language use patterns with various interlocutors, respondents were asked which language they use with parents, spouse, their own children, friends, neighbors, and elders.

- All respondents (for whom these contexts applied) reported the use of Pan in these domains.

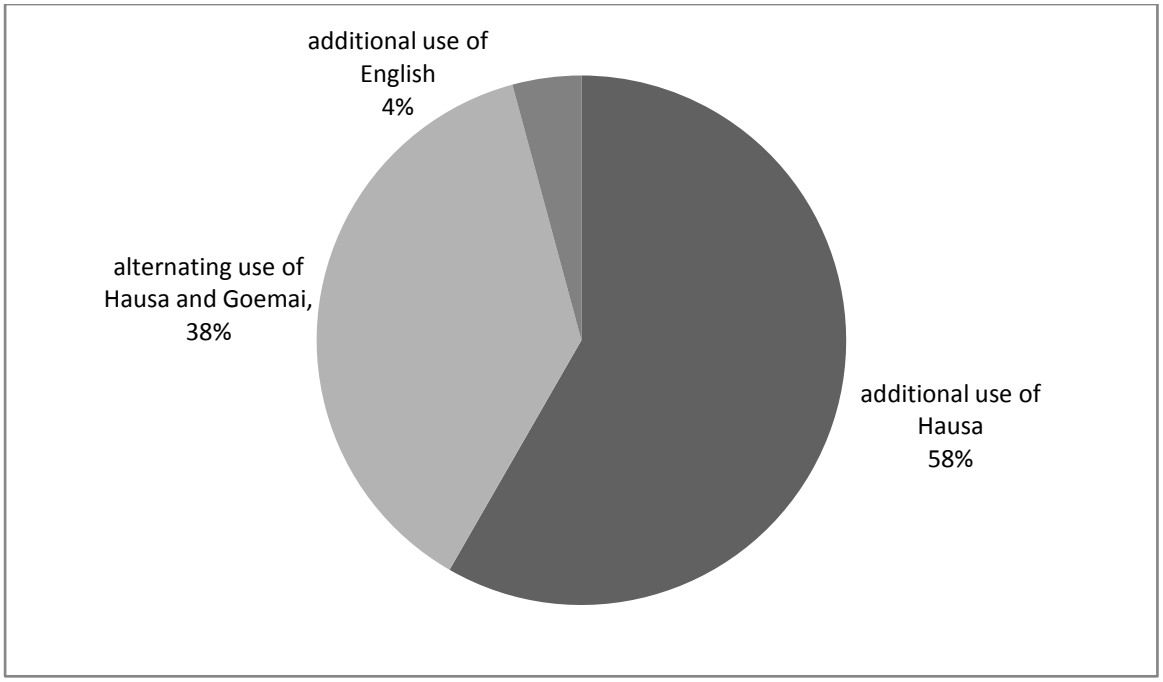
In cases where a second language is also used, the following point is noted:

- 28/48 respondents (representing 58.3%) reported the additional use of Hausa
- 18/48 respondents (representing 37.5%) reported the alternating use of Hausa and Goemai,

- while the balance figure of 2/48 respondents (representing 4.2%) reported the additional use of English.

(See Figure 5.6 below for a graphic representation of this fact).

Figure 5.6: Language use patterns with various interlocutors (for private interactions)

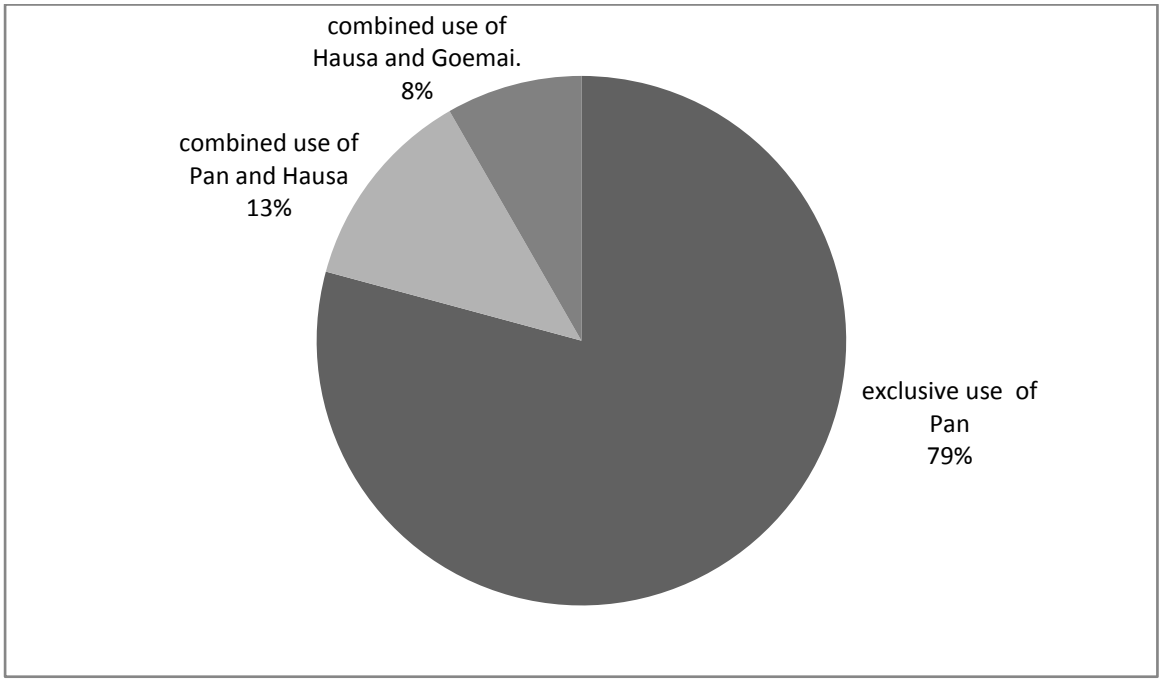


In the work domain,

- 38/48 respondents (representing 79.2%) use Pan exclusively;
- 6/48 respondents (representing 12.5%) use both Pan and Hausa
- 4/48 respondents (representing 8.3%) reported the combined use of Hausa and Goemai.

(See Figure 5.7 below for a graphic representation of this fact).

Figure 5.7: Percentages of Pan, Hausa and Goemai usage within formal 'work' domains

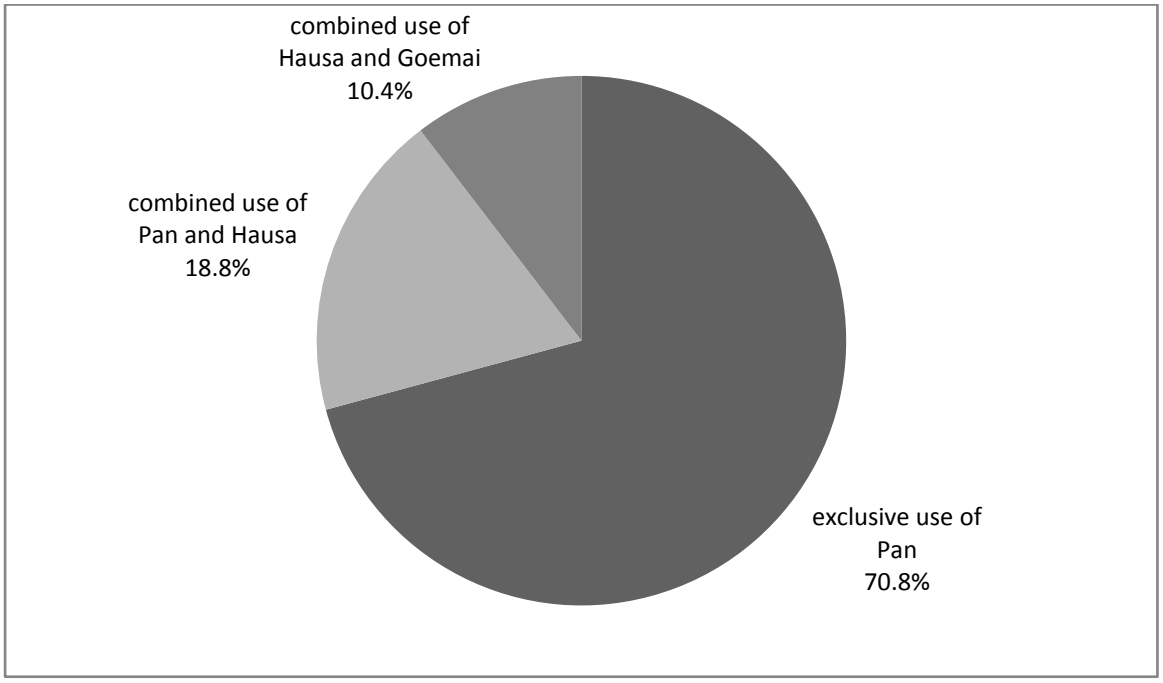


For local commercial/petty trading purposes and for counting money,

- 34/48 respondents (representing 70.8%) reported using only Pan. Of the remaining 14 respondents,
- 9/48 respondents (representing 18.8%) reported the use of both Pan and Hausa, and
- 5/48 respondents (representing 10.4%) reported the combined use of Hausa and Goemai for counting money.

(See Figure 5.8 below for a graphic representation of this fact).

Figure 5.8: Percentages of Pan, Hausa & English usage for commercial/petty trading purposes



Similarly, in a comparison by age groups,

- 32/48 older respondents(representing 66.7%) reported using only Pan, and
- 16/48 younger respondents (representing 33.3%) reported the use of both Pan and Hausa.

All respondents- 48/48 respondents (representing100%) reported that their own children use the Pan language when playing with other Pan-speaking children within their local neighborhoods. When playing with children from other ethno linguistic backgrounds,

- 35/48 respondents (representing 72.9%) reported that their children use the Pan language, and
- 13/48 respondents (representing 27.1%) reported the use of a combination of Pan and Hausa.

5.3.3. Language Use with Non-Pan Speakers

Many of the respondents reported speaking Hausa as a common local L2. However, there is still a sizeable number who prefer to use Pan, even when speaking to non-Pan speakers. In more precise terms, even though sizeable proportions of the larger population of the Pan -speaking people comprehend and satisfactorily speak Hausa as a language of wider communication,

- 20/48 respondents (representing 41.7%) reported that they prefer to use the Pan language anytime they talk to non- Pan persons, irrespective of where they come from.

5.3.4. Language Use in Religious Domains

There are numerous churches within the Pan language area, regularly patronized by both Pan and non- Pan speakers. Thus, both the Pan and Hausa languages are commonly used during the religious worship services. Since there is a church building in most sizeable Pan settlements, some questions were asked during interviews with community leaders and respondents concerning language use at churches. Naturally, since Hausa and, to a limited extent, Goemai are fairly common languages in local churches; the two languages were reported to be common alternative languages for conducting many church-related activities. For purposes of carrying out church preaching and evangelization,

- all community leaders and respondents in Doemak, Mernyang, Kwalla, and Bwal reported that sermons were rendered simultaneously into Pan and Hausa, in order to meet the combined language needs of Pan and non- Pan speakers alike.

- The same pattern holds true for the reading and interpretation of the Bible during all other church-organized social ceremonies such as weddings, child-dedications and funerals.

However, in virtually all activities connected to traditional religious worship,

- the community leaders reported that these were exclusively carried out through the medium of the Pan language.

5.3.5. Summary of Results

In public domains, Pan is the language most often used in all research sites, for community events ranging from local announcements and marriage ceremonies to community discussion meetings. For many religious events, including church services and other related activities, there is also the reported use of either Hausa or English, or a combination of both in different proportions.

In private domains, respondents reported the almost exclusive use of Pan in the following contexts: for interactions in the home with immediate family members, with friends and elders, at work, for traditional singing, and for counting money. The widespread use of Pan is also reported among children. Very few respondents reported the use of an L2 in the home. Given the fact that Christianity is a widespread religion in the Pan language area, it is reported that there are increasingly wider uses of both Hausa and, to limited extent, Goemai and English as key media for its propagation. However, in most domains connected to traditional religious worship, the Pan language remained the dominant medium used.

5.4. Nature of Language Attitudes

Several questions were asked, during both the community and individual interviews, to explore attitudes toward spoken and written forms of both Pan and various L2s in the area.

5.4.1. Attitudes towards Pan

When asked whether or not the young people in the village speak Pan well,

- 41/48 respondents (representing 85.4%) gave positive replies. Those who gave negative replies were asked why they felt as they did. Some of the reasons given were:

- "They are changing the language," "It is the old people who speak well," and "They do not pronounce words like our parents do."

Respondents were also asked what language they think their grandchildren will use in their home.

- Almost all respondents, 43/48respondents (representing 89.6%), feel that Pan will still be used.

When asked to give a reason why they think this way,

- respondents gave reasons such as: "We are Pan," "Pan is our mother tongue," and "We don't want to lose Pan"

5.4.2. Attitudes toward the Literary Development of Pan

All respondents, 48/48respondents, (representing 100%) as well as the chiefs and elders in all villages visited, reported that they would be very happy if future generation of Pan children learn to read and write the Pan language.

Respondents were also asked if they would choose to enroll literacy classes conducted in the Pan language whenever they are introduced;

- 30/48 respondents (representing 62.5%) responded positively.

In addition, elders in the villages of Doemak and Mernyang were asked if they thought the people of their village would enroll for literacy classes in the Pan language if they were introduced.

- Both groups of elders responded positively, indicating that that they would be very happy to see their children being able read and write letters in Pan.

As a final question, respondents were asked if they thought their community would provide financial support for the printing of books written in Pan. In responding to this question,

- 40/48 respondents (representing 83.3%) gave positive answers, with most of them indicating that the people were ready to raise funds through voluntary community–based labor activities.

5.5. Level of Multilingualism

In the sections below, the reported level of multilingualism in Hausa, Goemai and other languages of wider communications is examined.

5.5.1. Hausa Proficiency Levels

In general, respondents were asked if they speak and understand Hausa and, more specifically, about higher-level language functions.

- At all the research sites, 36/48 respondents (75.0 %) reported the ability to satisfactorily comprehend Hausa. Of these subjects,

- 24/48 respondents (representing 50.0%) reportedly understand riddles and jokes in Hausa, leaving a balance of 24/48 respondents, (representing 50%) being unable to understand Hausa riddles and jokes.

In addition, subjects were asked if they listen to Hausa programs on the radio and, if so, whether or not they understand everything they hear. In answer to this question, the following result emerged:

- 36/48 respondents (representing 75%), gave positive replies, leaving a balance of 12/48 respondents, (representing 25.0%) with negative answers.

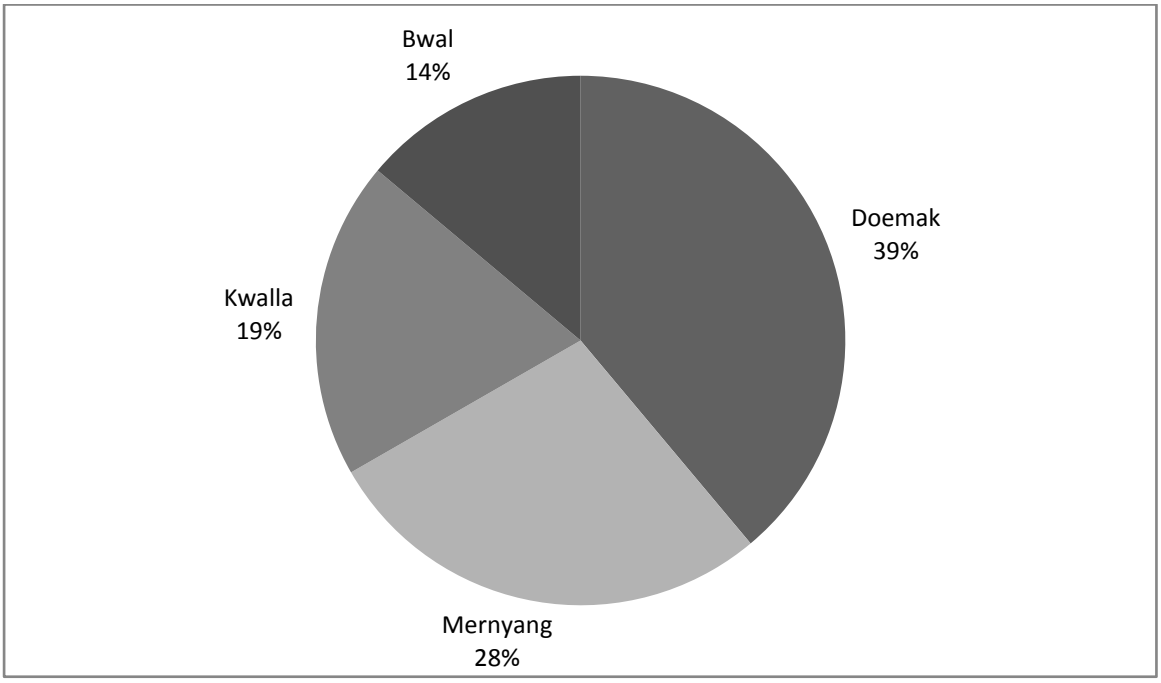
When compared across research sites, the following results emerged:

- In Doemak and Mernyang, 14/36 respondents (representing 38.9%) and 10/36 respondents (representing 27.8%) respectively, reported adequate speaking skills in Hausa, while

- In Kwalla and Bwal, 7/36 respondents, (representing 19.4 %) and 5/36 respondents, (representing 13.9 %) also reported speaking skills in Hausa.

(See Figure 5.9 below for a graphic representation of this fact).

Figure 5.9: Percentages of those with speaking abilities in Hausa (all four sites)



In order to evaluate Hausa proficiency levels at all the research sites, respondents were asked to imagine a situation in which they needed to defend themselves at a judgment. Given this situation,

- 23/48 respondents (47.9%) reported the ability to adequately express themselves in Hausa. Subjects were also asked if they could have a dispute in Hausa.

In a comparison by age, at all the sites visited, the younger subjects recorded higher percentages than the older subjects for reported overall language abilities:

Comprehension levels of younger respondents

- 14/24 respondents, (representing 58.3%)

Comprehension levels of older respondents

- 10/24 respondents, (representing 41.7 %)

Speaking levels of younger respondents

- 16/24 respondents, (representing 66.7 %)

Speaking levels of older subjects

- 8/24 respondents, (representing 33.3%).

(See Figures 5.10and 5.11 below for graphic representations of these facts).

Figure 5.10: Percentages for Comprehension abilities in Hausa (determined by age)

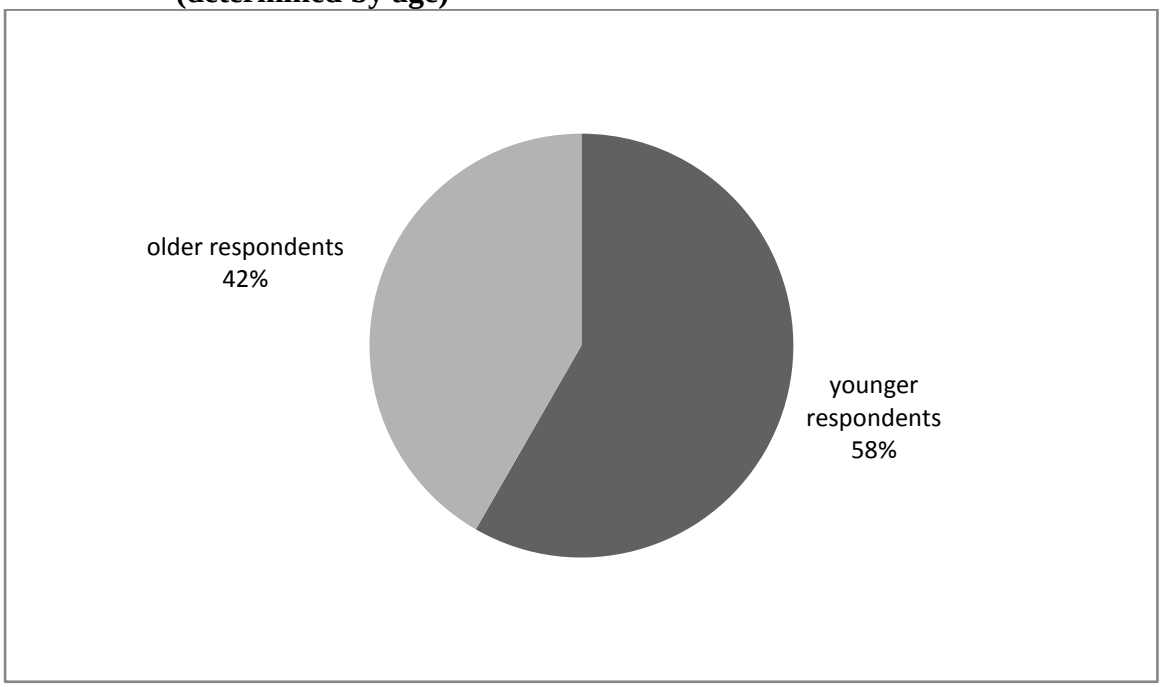
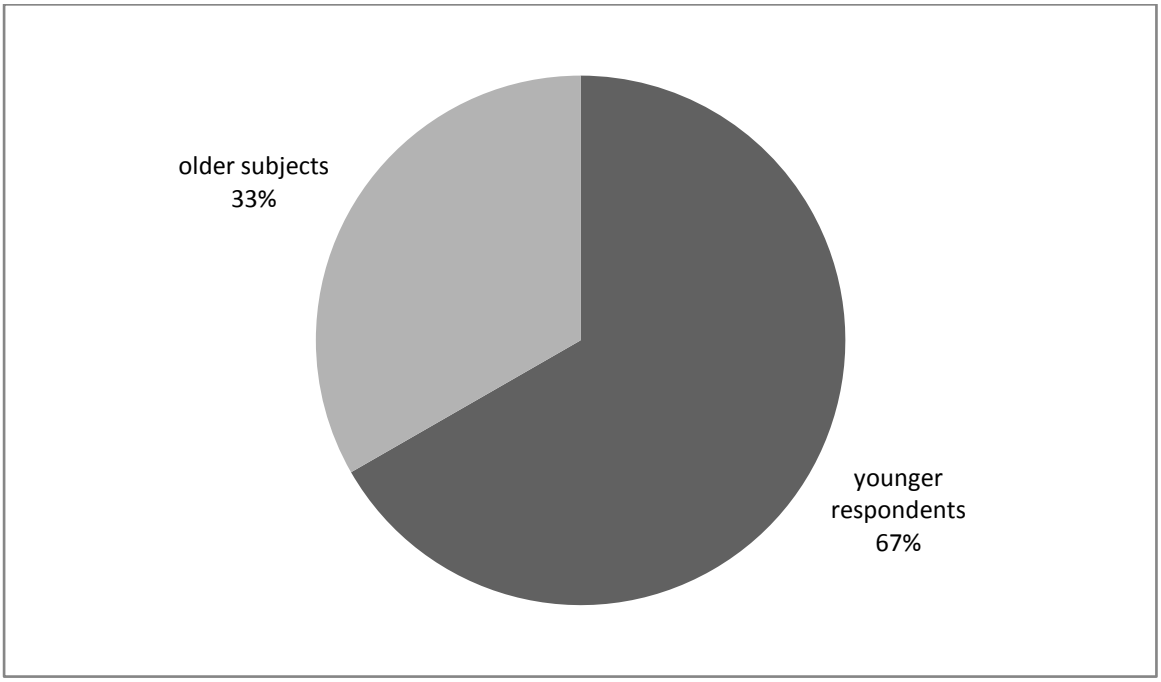


Figure 5.11: Percentages for Speaking abilities in Hausa (determined by age)



Respondents with children were also asked about the L2 abilities of their children. Of this category of respondents,

- 32/48 respondents (representing 66.7%) stated that their children are able to speak Hausa, leaving a balance of 16/48 respondents (representing 33.3%) whose children are unable to speak Hausa.

During interviews with community leaders in both Doemak and Kwalla, they confirmed the general assumption that younger men and children tend to comprehend and speak Hausa better than older men and women.

5.5.2. English Proficiency Levels

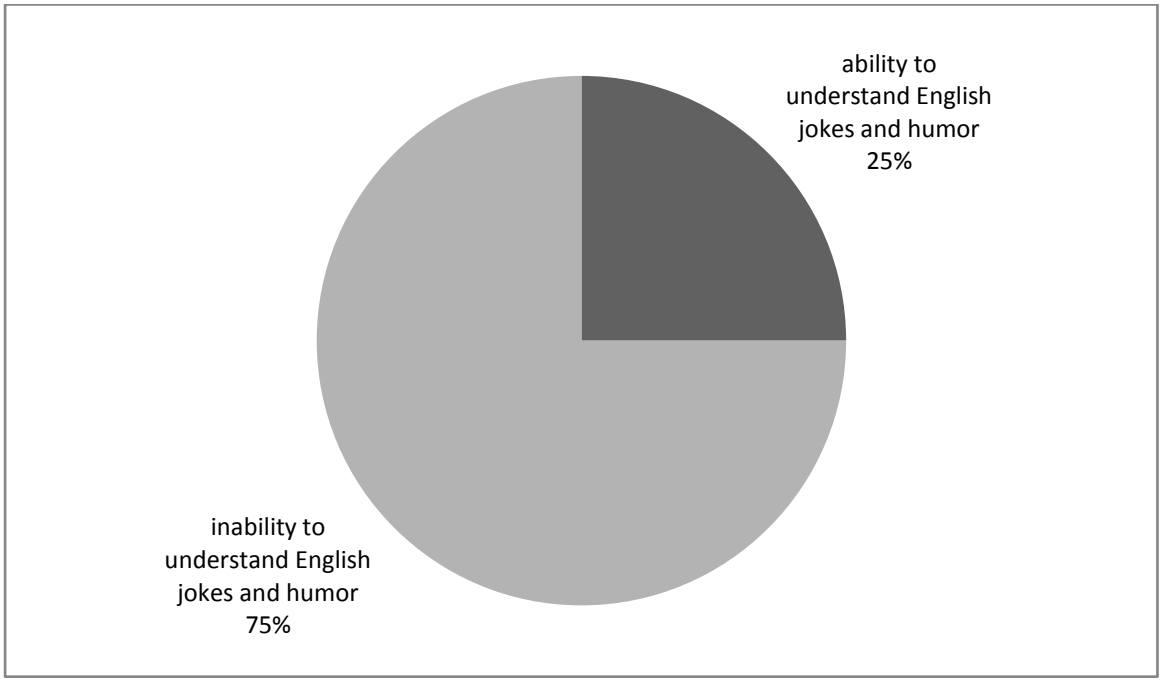
In general, respondents were asked if they understand and speak English and, more specifically, about the higher-level language functions in the language.

- 21/48respondents (representing 43.8%) reported the ability to comprehend a rudimentary form of English. Of these respondents,

- 12/48 respondents (representing 25.0%) reportedly understand a few jokes in English, leaving a balance of 36/48respondents (representing 75.0%) who cannot understand jokes rendered in English.

(See Figure 5.12 below for a graphic representation of this fact).

5.12: Percentages of Comprehension of Higher level functions of English



In addition, respondents were asked if they listen to English programs on the radio and, if so, whether or not they understand what they hear. To this question,

- 14/48 respondents (representing 29.2%) who admitted listening to English programs) reported comprehending much of what was said.

When compared across location,

- 7/48 respondents (representing14.6%) in Doemak reported both passive and productive English language abilities, which is markedly higher than any of the other sites.

At all the research sites visited,

- 21/48 respondents (representing 43.8%) reported the ability to speak English, leaving a balance of 27/48 respondents (representing 56.3%) are unable to speak English.

When asked to imagine a situation in which they needed to defend themselves at a judgment,

- 12/48 respondents (25.0%) reported the ability to adequately express themselves in English.

Subjects were also asked if they could argue and settle a land dispute, for example, in English. Given this hypothetical situation,

- 4/12 respondents (representing33.3%) affirmed their ability to do so.

With specific regards to the English speaking abilities of the children of respondents, the following results emerged

- 20/48 respondents (representing41.7%) (who said that they had children), reported that their children were able to speak English.

- In Doemak, 11/48 respondents (representing 22.9%) reported some measure of proficiency in English.

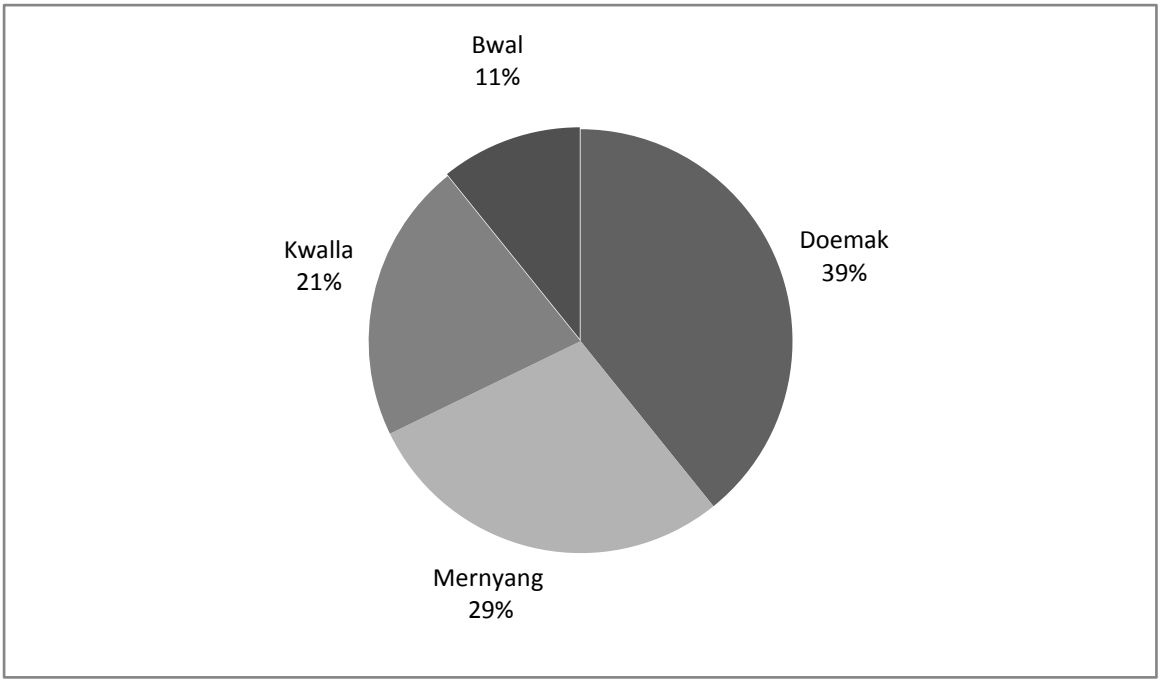
- In Mernyang, 8/48 respondents (representing16.7%) reported some measure of proficiency in English.

- In Kwalla, 6/48respondents (representing12.5%) reported some measure of proficiency in English.

- In Bwal, 3/48 respondents (representing 6.3%) reported some measure of proficiency in English.

(See Figure 5.13 below for a graphic representation of this fact).

Figure 5.13: English speaking abilities of children of study respondents



5.5.3. Summary of Results

The most common L2 among respondents appears to be Hausa, with their general speaking ability put at about 75% in general terms. The overall percentage of respondents who comprehend and speak some passable form of English, on the other hand, may be put at about 44%. Finally, the villages with the highest percentages of children who are reported to possess speaking and comprehension abilities in English are as follows: 11/28 respondents (39.3%) are from Doemak, 8/28respondents

(28.6%) are from Mernyang, 6/28 respondents (21.4%) from Kwalla and 3/28respondents (10.7%) from Bwal.

5.6. Prospects for Language Development

Based on reported data from community leaders as well as survey subjects, it is deduced that the Pan language would continue to be used in almost all public and private domains across social groupings and there are no indications of imminent language shift toward any local L2s.

To reiterate the final conclusions, the results from all three factors considered with regards to dialect intercomprehension appear to indicate that the various dialectal varieties of Pan surveyed; namely Doemak, Mernyang, and Kwalla are, to varying degrees, intercomprehendible. However, one variety-Bwal- appears to be considerably distant from the other three, both from lexical and dialect intercomprehension measures applied in the course of our study.

It is further evident that the variety of Pan spoken in Doemak may, from the weight of the results obtained so far from our field investigations, be viewed as a satisfactory *reference dialect* for the Pan language. The Pan language is highly viable as it remains a reasonably strong L1 across social groups in various domains. There also appears to be a positive attitude held by most Pan speakers toward both the contemporary situation of the language and its future developmental prospects.

CHAPTER 6

FINDINGS, SUMMARYAND CONCLUSIONS

6.1. SUMMARY

The entire discussion, synthesis and analyses undertaken in the preceding five chapters of our study have been geared towards providing a contemporary appraisal of the dialectal landscape in two small-language communities located within Plateau State. These are the Bache community found in Bassa LGA and the Pan community found in Quan-Pan LGA.

The study sought to address the following specific research questions:

1. What are the major theoretical and methodological issues involved in assessing dialectal intercomprehension and intelligibility within the two communities selected for case study?
2. What are the previously reported levels of dialectal intelligibility and intelligibility within the two communities selected for case study in Plateau State?
3. What are the correlations (statistical and sociolinguistic) between previously reported levels of dialectal intelligibility and intelligibility and currently verifiable levels of dialectal intelligibility and intelligibility in the targeted dialectal varieties?
4. To what extent would the results/findings obtained from lexicostatistical, intelligibility test and sociolinguistic questionnaire administration and analyses either confirm or negate previous reports about the nature of dialect intercomprehension within our study areas?

6.1.1. Comparison of 'Reported' Levels of Dialectal Intelligibility and Sociolinguistic Variations

Much of the sociolinguistic information gathered from respondents and other community leaders within the research sites visited indicated that even though the speech variety spoken in each village site is commonly accepted as possessing its own unique characteristics, such varieties cannot be validly classified as separate dialects since they are very close and, in most instances, indistinguishable in terms of both structure and functionality.

For example, in the case of the Bache speech varieties, the collective view amongst respondents was that their language has only four major dialectal variants, defined according to geographical considerations. Our primary research sites within the Bache community - *Jebu-Bariki, Kissaloi, Zagun, and Binchin* - roughly represent these major dialectal variants. Each currently belongs to separate traditional administrative districts within present-day Bassa Local Government Area of Plateau State. In the case of the Pan speech varieties, they expressed varying opinions about the number of dialectal variants in their language. While some gave overall figure ranging between eight and ten different variants, others gave slightly lesser figures. However, many of the community and opinion leaders whose opinions were sought on this matter expressed strong views that the Pan language does not have more than *five* principal dialectal variants. They readily identified these as *Doemak, Mernyang, Kwalla, KwangandBwal*. Our primary research sites within the Pan community are also to be found in four out of five of these dialect areas. As is also the case with the Bache language in Bassa LGA, each dialectal variant of the Pan language is located in separate traditional administrative districts within present-day Quan-Pan Local Government Area of Plateau State.

Respondents reported that the respective variants of the Bache and the Pan languages are regularly used in public domains, especially for carrying out such community events as traditional rites, funerals and marriage ceremonies as well as for traditional

singing, telling stories, naming children, and family and village judgments. In private domains, respondents also reported the almost exclusive use of Bache and Pan dialects for interactions in the home with immediate family members, with friends and elders, at work, for traditional singing, and for counting money.

Essentially, in the course of carrying their daily interactions in both public and private domains, most of the respondents within both Bache and Pan dialect areas also confirmed that they experience minimal difficulties in comprehending the dialectal speech forms of those who do not come from their own respective geographical localities.

6.1.2. Comparison of Lexical Similarities and Dialect Intercomprehension

Because we had received pre-study reports on the dialect topography of Bache community, our study team decided to empirically test the degree to which the four Bache dialect variants can be said to share similarities and to be intelligible to each other. This was done, empirically, by examining lexical cognates and by testing dialect intercomprehension levels.

The contemporary existence and validity of the variants was subsequently subjected to lexicostatistical, dialect intercomprehension testing as well as sociolinguistic questionnaire vetting. The results and findings which emerged from our investigations have proved to be basically consistent with the views which both Bache and Pan language speakers themselves have about their main dialectal varieties. The dialectal variants in which wordlists were gathered and for which intercomprehension tests were conducted show clear evidence of being closely related lexically, with at least three out of four varieties recording very high lexical similarity rates(+90%), well above the minimal threshold of 70%. In the case of the Bache dialects, Binchin was the one that exhibited some measure of discrepancy

with approximately 68% lexical similarity. On the other hand, Bwal emerged as odd member of the Pan dialectal variants, with slightly above 74% lexical similarity.

The overall sociolinguistic reports as well as our close observations of language use in the research sites visited also led us to conclude that most of the speech varieties encountered were moderately high in terms of language vitality. However it was also noted that there may be other sites where these varieties are might be less viable, but they were not visited in the course of our study trips.

6.2.Summary of Findings on Bache Dialects

The analyses of data obtained from Wordlist, RTT Testing and Sociolinguistic Questionnaireadministrations within the Bache language environment clearly confirm the following significant facts:

6.2.1. Lexical Similarities

The lexical similarities between the Kissaloi and Jebu-Bariki dialectal varieties(rated at 91.8%) was comparatively higher than that between Kissaloi and Zagun (89.2%).This is contrasted to the lower margin of similarities established between Kissaloi and Binchin (73.5%). Between any of the four varieties, similarities were confirmed above 70% at the upper confidence limit of the calculations, except for Binchin with 68.7%.Similarly, between Kissaloi, Jebu-Bariki, and Zagun, similarities were confirmed at +85% at the upper confidence limit for the calculations.

Based on the results obtained from the wordlist elicitations, as shown in Figures 4.1 and 4.2 in Chapter 4, it is clear that Kissaloi is lexically similar enough to the other Bache varieties to be called the “central” variety as well as perform the function of being a *reference* dialect for the entire Bache language group

6.2.2. RTT Administration and Dialect Intercomprehension

Preliminary study assumptions to the effect that results generated from RTT administrations in our research sites would show that the variants of the Bache language are similar enough (in terms of both lexicostatistics and dialect intercomprehension) to be considered members of a single homogenous language was *largely confirmed* by the numbers in Tables 4.1 and 4. 2 provided in Chapter 4. The score average (i.e. mean) obtained by respective social groups investigated varied from a low of 66% to a high of 100%.

The overall standard deviation/percentage figures obtained for the same groups, represented as percentages, were observed to range from a low of 0.48 (or 4%) to a high of 1.86 (or 15%). The overall standard deviation/percentage figures obtained for Older subjects were significantly lower than that for the Younger subjects; 0.76(6%) versus 1.53(13%) respectively. Female subjects were observed to have much lower standard deviation/percentage figures than their male counterparts; 0.86(7%) versus 1.53 (13%) respectively

6.2.3. Level of Contemporary Language Viability

According to village elders, the Bache language is regularly used in all public domains, including such community events as announcements, traditional rites, funerals, marriage ceremonies, singing traditional songs, telling stories, ceremonies for naming children, and family and village judgments.

For many religious events, such as church services and weddings, and during some funeral ceremonies conducted by elitist members of the Bache community, either English or Hausa languages may be used. Elders in both Kissaloi and Zagun reported the increasingly common use of Hausa for traditional singing, especially among the younger members of the communities. Varying dialects of the Bache language were

exclusively used for conducting for traditional council meetings and other gatherings involving elders. A combination of Bache, Hausa and English were also observed at public gatherings, community meetings and political rallies, depending on the nature of the subject being discussed as well as the social composition of the audience.

In private domains, respondents reported the almost exclusive use of Bache in the following contexts: for interactions in the home with immediate family members, with friends and elders, at work, for traditional singing, and for counting money.

The widespread use of Bache was also reported among children. Very few respondents reported the use of an L2 in the home. Given the fact that Christianity is a flourishing religion in the Bache language area, it was observed that there is widespread utilization of the Hausa language and, to a limited extent, English as key media for its propagation.

Many of the respondents reported speaking Hausa as a local L2. However, there is still a sizeable number (roughly about one-quarter) who would prefer to use Bache, even when speaking to non-Bache speakers.

However, in most domains connected to traditional religious worship, the Pan language was reported by respondents and subsequently confirmed through observation as the dominant medium used.

6.2.4. Nature of Language Attitudes

Majority of respondents confidently reported that their own children and wards speak Bache well, and that the language will continue to be spoken even by their grandchildren. Almost all respondents affirmed that, as parents, they would be unhappy if their children preferred using an L2 in the home domain Because Bache is currently an unwrittenandunder-documented language, almost all respondents affirmed that they would gladly support the introduction of Bache literacy classes

and other efforts aimed at literacy development in Bache. Respondents as well as village elders were also quite positive about the future developmental prospects of the Bache language.

6.2.5. Level of Multilingualism

The most common L2 among respondents was observed to be Hausa, with the general comprehension/speaking ability of respondents ranging between 62% and 72%. Only a few respondents reported the ability to adequately speak English. The respondents who reported marginal speaking and comprehension abilities in English were distributed as follows: Jebu-Bariki (27.1%); Kissaloi (20.8%), Zagun (35.4%) and Binchin (16.7%).

6.2.6. Prospects for Language Development

Based on reported data from community leaders as well as survey subjects, it was deduced that the Bache language would continue to be used in many public and private language settings/domains across social and age groupings. The Bache language was evaluated as being reasonably viable as it remained a key medium of communication across age and social groupings. Majority of Bache speakers expressed positive attitudes toward the future developmental prospects of their language.

6.3. Summary of Findings on Pan Dialects

The analyses of data obtained from Wordlist, RTT Testing and Sociolinguistic Questionnaire administrations within the PAN language environment clearly confirm the following significant facts:

6.3.1. Lexical Similarities

Lexical similarities between the Doemak and Mernyang dialectal varieties (rated at 97.5%) were confirmed as comparatively higher than that between the Doemak and Kwalla varieties (94.9%)This is contrasted to the lower margin of similarities established between Doemak and Bwal (73.9%).Based on the results obtained from the wordlist elicitations, as summarized Figures 5.1 and 5.2 in Chapter 5, it is clear that Doemak is lexically similar enough, in varying degrees, to at least two other dialect variants to serve as a suitable *reference dialect* for the entire Pan language group.

6.3.2. RTT Administration and Dialect Intercomprehension

Our preliminary study hypothesis to the effect that results generated from RTT administrations in our research sites would show lexical similarity of at least 80% or more is only *partially confirmed* by the numbers in Tables 1 and 2 contained in Chapter 5.Doemakand Mernyang were found to be the most similar Pan dialects at +97%. The relationship of Kwalla to Doemak was however not so close, with lexical similarity figures of slightly above 90% (+/-5 percent).

Using a 70% as main the criterion for determining lexical similarity and dialect inter-comprehension in Pan-land, Kwalla can be classified as a slightly marginal member in a ‘language-cluster’ arrangement, alongside Bwal, in relation to the other members of the Pan group. Also inferring from the Percentage and Variance matrices in Figures 5.1 and 5.2, we can safely conclude, within reasonable analytical limits,

that Bwalis a slightly divergent language variety from Doemak, Mernyang and Kwalla, although it is somewhat closer in lexical affinity to Kwalla than any other Pan variety. The Pan variety, as spoken in Doemak, may provisionally be regarded as the *reference* dialect for the entire Pan language group; however, it would be necessary to verify this conclusion through further comprehension testing.

Concerning oral comprehension, the overall RTT mean score for all subjects in all research sites in Pan-land was 86%, which indicates a *moderate* level of comprehension. There was no considerable difference when compared by age and gender. As for reported data, at least 79% of subjects reported the ability to understand the Doemak variety of Pan. Reported data also coincided with tested data across villages; Doemak and Mernyang were observed to have the highest levels of comprehension, followed by Kwalla, which showed an intermediate level of comprehension and Bwal showed the lowest. Even though the speech variety observed in each village location showed some measure of unique characteristics of its own, such cannot possibly be taken as conclusive evidence of dialectal autonomy. Our study respondents were also observed to make dialectal distinctions on the basis of the geographical and environmental location within which a particular variety is spoken.

6.3.3. Level of Contemporary Language Viability

In public domains, Pan is the language most often used in all research sites, for community events ranging from local announcements and marriage ceremonies to community meetings.

For many religious events, including church services and other related activities, there was also the reported use of either Hausa or English, or a combination of both in different proportions.

In private domains, respondents reported the almost exclusive use of Pan in the following contexts:

- for interactions in the home with immediate family members, with friends and elders, at work,
- for traditional singing, and for counting money.

The widespread use of Pan was also reported among children.

Very few respondents reported the use of an L2 in the home.

Given the fact that Christianity is a widespread religion in the Pan language area, it was reported that there are increasingly wider uses of both Hausa and, to limited extent, Goemai and English as key media for its propagation. However, in most domains connected to traditional religious worship, the Pan language remained the dominant medium used.

6.3.4. Nature of Language Attitudes

Respondents as well as the chiefs and elders reported that they would be very happy if future generation of Pan children learn to read and write the Pan language. Most respondents indicated that the Pan people were ready to mobilize funds through voluntary community–based labor activities to provide financial support for the printing of books written in the Pan language.

6.3.5. Level of Multilingualism

The most common L2 among respondents appears to be Hausa, with their speaking ability put at 75% in general terms.The overall percentage of respondents who comprehend and speak some a rudimentary form of English, on the other hand, may be put at about 44%. The sites with the highest percentages of children who are

reported to possess speaking and comprehension abilities in English were respectively: 39.3% (Doemak); 28.6 %(Mernyang); 21.4% (Kwalla) and 10.7% (Bwal).

6.3.6. Prospects for Language Development

Based on reported data from community leaders as well as survey respondents, it was deduced that the Pan language would continue to be used in almost all public and private domains across social groupings and there are no indications of imminent language shift toward any local L2s.The Pan language is reasonably viable as it remains a resilient L1 across social groups in various domains. Majority of Pan speakers expressed and demonstrated positive attitudes toward both the contemporary situation of the language and its future developmental prospects

6.4. Main Conclusion on Bache Dialects

From the synthesis and analysis of results presented in Chapters 4 of the study as well as the key findings associated these results, there is sufficient empirical evidence to conclude that at least three, out of the four dialectal varieties of Bache investigated at Kissaloi, Jebu-Bariki, Zagun and Binchin are "significantly" intelligible to each other. The marginal and, arguably, exceptional case remains that of Binchin, which showed a few marked divergences. Other key conclusions of the study are recapped in the sub-sections below.

6.5. Main Conclusion on Pan Dialects

From the synthesis and analysis of results presented in Chapters 5 of the study as well as the key findings associated with these results, there is sufficient reason to state that the Pan varieties of Doemak, Mernyang and Kwalla are reasonably

'intelligible' to each other, to varying degrees. The only marginal and, obviously, exceptional case remains that of the Bwal variety, which exhibited a few marked divergences.

6.6. Contributions of the Study to Sociolinguistic Research

1. The study has investigated and documented the approximate *nature* and *extent* of linguistic intelligibility existing between the dialect variants of the Bache and Pan languages; this was conveyed in terms of the percentage of input that was correctly recognized by various research respondents who participated in test administrations in selected research sites. Data was also gathered and synthesized from individual sociolinguistic questionnaire responses, relating to various other aspects of socio-cultural life within the immediate research environments.
2. The study has established a suitable methodological framework for assessing interdialect intelligibility, using a battery of Recorded Text Test (RTT) narrative materials, produced in dialect variants of both Bache and Pan. This framework was first pioneered in the early 1950s to establish the mutual intelligibility of American Indian languages. Several improved versions were later developed and used by members and research associates of the Summer Institute of Linguistics International (SIL).
3. In adopting the "Dialect Intelligibility Testing" procedure, alongside Sociolinguistic Questionnaire instrumentation, as methodological frameworks for carrying out our study, the study was able to demonstrate that various aspects of linguistic and dialect differentiation and usage are intrinsically inter related in one way or the other. These aspects include linguistic similarity, mutual intelligibility, dialect intercomprehension, dialect extendibility, and the respective gradations of bilingualism/multilingualism.

Naturally, this particular choice of methodology also implied the additional demand of fashioning out much more holistic explanations for *how* and *why* linguistic and dialect differentiations arise within most speech communities.

4. The methodological framework adopted in the study recognizes the short-term tasks of 'Dialect Survey, Testing and Evaluation' as a set of stages of successive approximations towards solutions to the long-term goals of adequate *Dialectological Differentiation* and *Language Use Assessment* in the different geographical regions of Nigeria. Thus, the study has drawn attention to the need for future sociolinguistic studies to recognize the phased nature of investigations into Dialect Survey, Testing and Evaluation'.
5. From both the observed and reported results/findings of the study, it is obvious that the social variables which determine dialect intelligibility and intercomprehension are largely different from those which determine dialect similarity. In a nutshell, intelligibility is partly based on linguistic similarity between dialects, not just lexical (or vocabulary) similarity. In addition, intelligibility is partly based on interdialect learning, which may be regarded as an aspect of bilingualism. As such, natural (or inherent) intelligibility can technically be distinguished from 'social' (or contact-induced) intelligibility. All societal attitudes and situations that underlie bilingualism also feed into inherent intelligibility in some oblique ways, but such attitudes probably only feed into social intelligibility due to the influence of learning outside natural language settings. Similarly, the normal time lag between societal contact and its discernible consequences on intelligibility is quite distinct from the time lag associated with the impact of societal phenomena on linguistic similarity.
6. The study results/findings point to the fact that dialectal intelligibility is typically asymmetrical in nature in most dialectal situations investigated. In

addition, dialect intelligibility is distributed normally across the population sample which we had investigated, with regards to such factors as age group, social class background and level of educational attainment.

7. The study also revealed that there are significant ways in which results relating to dialect intelligibility are different from those obtained about bilingualism in the sample population investigated. For example, it was clear that the bilingual/multilingual proficiency levels observed among and reported by study respondents arose largely from societal and environmental factors, including the kinds of interaction undertaken by different individuals and social groups as well as the common attitudes held by speakers within the community. Bilingualism/multilingualism, therefore, was largely determined by age, sex, educational background and the location of primary habitation.

6.7. Recommendations and Areas of Future Research

The study was in-depth in terms of content and analysis. It essentially focused on collating lexicostatistical data, administering Sociolinguistic Questionnaires, as well as gathering field respondents' opinions of general comprehension of Bache and Pan dialectal varieties. In order to accomplish a much broader documentation of other less accessible varieties of both Bache and Pan, some additional sites would still need to be surveyed in the future. Preliminary visits to such alternative sites should be aimed at collecting additional lexicostatistical data and administering a wider range of sociolinguistic questionnaires.

The following specific types of research activities are recommended, in order to build on the data already collected during the course of the study and to further clarify the need for further language development in both Bache and Pan language environments:

1. **Lexicostatistics**: More wordlists need to be collected in new locations in both Bache and Pan language environments, in order to further broaden the empirical base of future studies on Dialect intelligibility in these specific environments.
2. **RTT tools and materials**: Tested comprehension of other marginal speech varieties of both Bache and Pan, using the research procedure and instrumentation of Recorded Text Testing (RTT) as described in Blair (1990). Appropriate additional RTT tools and materials need to be developed for other marginal varieties of both Bache and Pan languages. Such RTT materials need to be subsequently tested in each of these dialects.
3. **Perceptions of Bache and Pan varieties used in RTTs**: A post-RTT questionnaire need to be developed for administration following each RTT, in order to further assess perceived comprehension and attitudes towards the Bache and Pan dialects heard by subjects on the test tapes.
4. **Language use, Attitudes and Vitality**: A questionnaire format more suited for use with individual respondents needs to be developed and administered to a larger and more systematic pool of respondents for both Bache and Pan dialect groups. These questionnaires could be administered in the same sites where RTTs are developed. In particular, data on domains of language use would be useful in trying to help determine whether there may be a situation of language shift or stable bilingualism.

6.8. Concluding Remarks

For various reasons, scholars of sociolinguistics have long been interested in investigating the degree to which a speaker of one variety understands the speech of another closely related variety. Unbiased data about distances between varieties and

detailed knowledge about intelligibility have often proved to be crucial for resolving issues that concern language contact, second language learning, and language planning and policies. Given the gradual research advances attained within the study of linguistic distances and intelligibility testing, there is an increasing quantity of 'objective' data which can now be deployed for addressing conflicts that arise with regards to varieties on a standard-nonstandard continuum. Appreciable research data has also been generated in recent years about mutual intelligibility which is required for purposes of variety standardization and development of new orthographies in communities where no standardized orthography exists.

The work documented in the preceding chapters has attempted to add to the currently available body of knowledge and insights on the subject matter of dialect intercomprehension and intelligibility within the Nigerian sociolinguistic environment. It has done so by reviewing and validating the statistical and sociolinguistic correlations between previously reported and currently verifiable levels of *dialectal intelligibility* and *intercomprehension* in the targeted dialectal varieties within the Bache and Pan language areas of Plateau State.

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APPENDICES

Appendix A
Sample 210-Item Wordlist

Language _____Alternate Names_____

Village _____ District _____LGA _____

Speaker _____Home village _____

Age_____ Gender_____ Date: _____

English Gloss	Hausa Gloss	WL (Research location)	Comments
1. I	ni		
2. you (sg)	kai		
3. he	shi		
4. we	mu		
5. you (plural)	ku		
6. they	su		
7. this	wannan		
8. that	wancan		
9. here	nan		
10. there	can		
11. who	wa (interrog.)		
12. what	me (interrog.)		
13. where	ina (no movement, interrog.)		
14. when	yaushe (interrog.)		
15. how	yaya (interrog.)		
16. not	ba		
17. all	duk		
18. many	da yawa		

19. some	waɗansu		
20. few	kaɗan		
21. other	wancan		
22. one	ɗaya		
23. two	biyu		
24. three	uku		
25. four	huɗu		
26. five	biyar		
27. big	babba		
28. long	dogo		
29. wide	maifaɗi		
30. thick	mai kauri		
31. heavy	mainauyi		
32. small	ƙarami		
33. short	gajere		
34. narrow	maiƙunci		
35. thin	siriri		
36. woman	mace		
37. man (adult male)	mutum		
38. man (human being)	ɗan Adam		
39. child	yaro (boy), yarinya (girl)		
40. wife	mata		
41. husband	miji		
42. mother	uwa		
43. father	uba		
44. animal	dabba		
45. fish	kifi		
46. bird	tsuntsu		

47. dog	kare		
48. louse	kwarkwa		
49. snake	maciji		
50. worm	tsutsa		
51. tree	itace		
52. forest	ƙungurmindaji		
53. stick	sanda		
54. fruit	’ya’yanitace		
55. seed	iri		
56. leaf	ganye		
57. root	saiwa		
58. bark (of a tree)	ɓawonitace		
59. flower	fure		
60. grass	ciyawa		
61. rope	igiya		
62. skin	fata		
63. meat	nama		
64. blood	jini		
65. bone	ƙashi		
66. fat (n)	ƙiba, mai		
67. egg	ƙwai		
68. horn	ƙaho		
69. tail	wutsiya		
70. feather	Gashintsuntsu		
71. hair	suma		
72. head	kai		
73. ear	kunne		
74. eye	ido		
75. nose	hanci		

76. mouth	baki		
77. tooth	haƙ ori		
78. tongue (organ)	harshe		
79. fingernail	farce		
80. foot	ƙ afa		
81. leg	ƙ afa		
82. knee	gwiwa		
83. hand	hannu		
84. wing	fiffike		
85. belly	ciki		
86. guts	hanji		
87. neck	wuya		
88. back	baya		
89. breast	nono, ƙ irji		
90. heart	zuciya		
91. liver	hanta		
92. to drink	sha		
93. to eat	ci		
94. to bite	ciza		
95. to suck	tsotsa		
96. to spit	tofa		
97. to vomit	yiamai		
98. to blow	busa, hura		
99. to laugh	yidariya		
100. to see	gani		
101. to hear	ji		
102. to know	sani		
103. to think	yitsammani		
104. to smell	sansana		

105. to fear	tsoro		
106. to sleep	yibarci		
107. to live	yirai		
108. to die	mutu		
109. to kill	kashe		
110. to fight	yifada		
111. to hunt	yifarauta		
112. to hit	buga		
113. to cut	yanka		
114. to split	raba		
115. to stab	soka		
116. to scratch	karce		
117. to dig	haƙa		
118. to swim	yiiyo		
119. to fly	tashi		
120. to walk	yitafiya a ƙas		
121. to come	zo		
122. to lie (as in a bed)	kwanciya (action)		
123. to sit	zauna (action, state)		
124. to stand	miƙetsaye (action)		
125. to turn (intr)	juya		
126. to fall	faɗi		
127. to give	ba		
128. to hold	riƙe		
129. to squeeze	matsa		
130. to rub	goge		
131. to wash	wanke		
132. to wipe	shafa		

133. to pull	ja		
134. to push	tura		
135. to throw	jefa		
136. to tie	ɗaura		
137. to sew	ɗinka		
138. to count	ƙidaya		
139. to say	ce		
140. to sing	rerawaƙa		
141. to play	yiwasa		
142. to float	tasokanruwa		
143. to flow	gudana		
144. to freeze	daskara		
145. to swell	kumbura		
146. sun	rana		
147. moon	wata		
148. star	tauraro		
149. water	ruwa		
150. rain	ruwansama		
151. river	kogi		
152. lake	tabki		
153. sea	teku		
154. salt	gishiri		
155. stone	dutse		
156. sand	rairayi		
157. dust	Ƙurarƙasa		
158. earth	kasa		
159. cloud	gajimare		
160. fog	hazo		
161. sky	sama		

162. wind	iska		
163. ce	ayis, galas		
164. smoke	hayaƙi		
165. fire	wuta		
166. ash	toka		
167. to burn	ƙone		
168. road	haniya		
169. mountain	Babbandutse		
170. red	ja		
171. green	kore		
172. yellow	rawaya		
173. white	fari		
174. black	baƙi		
175. night	dare		
176. day	rana, yini		
177. year	shekara		
178. warm	maiɗumi		
179. cold	maisanyi		
180. full	cikakke		
181. new	sabo		
182. old	tsoho		
183. good	maikyau		
184. bad	maraskyau		
185. rotten	ruɓaɓe		
186. dirty	Maidauɗa		
187. straight	miƙaƙƙe		
188. round	maida'ira		
189. sharp (as a knife)	maikaifi		

190. dull (as a knife)	maraskaifi		
191. smooth	maisantsi		
192. wet	jiƙ aƙ ƙ e		
193. dry	maraslaima		
194. correct	madaidaici		
195. near	kusa da		
196. far	Mainisa		
197. right	dama		
198. left	hagu		
199. at	a, wurin		
200. in	a, cikin		
201. with	tare da		
202. and	da, kuma		
203. if	in, idan		
204. because	don		
205. name	suna		
206. waist(of human)	kwankwaso, kwabri		
207. bark(of dog)	haushi		
208. shade	inuwa		
209. hair (of human)	suma, gashinjiki		
210. skin (of animal)	Fatandaba		

Appendix B
Sample Pre-RTT Question Checklist

Interview Location..... Interviewer Name.....

Date and Time of Day.....Language of

Elicitation.....

Language of Response.....Interpreter Name (if

needed).....

Comments..... ....

....

Questionnaire Number

What is your name? ..... Gender.....

1. How old are you…....
2. Are you married already or not yet? .....
3. How many children do you have, if married? .....
4. What is your religion? .....
5. What is (was) your work? .....
6. Up to what level of education did you complete? .....
7. When you were born, what village did you live in? .....
8. Where did you grow up? .....
9. Where do you live now? .....
10. Have you lived anywhere else for more than a year? .....
    - Where? .....
    - When? .....
    - How long did you live there? .....
11. What language did you speak first? .....

12. Can you speak any other languages? .....

- (if yes) What languages? .....

13. Of all the languages you speak, which language do you speak best?

.....

- second best? .....
- third best? .....

14. Where was your father born? .....

- What [people group/tribe/clan] is your father from? .....
- What language did your father first speak as a child? .....
- What language did your father usually speak to you when you were a child? .....

15. Where was your mother born? .....

- What [people group/tribe/clan] is your mother from? .....
- What language did your mother first speak as a child? .....
- What language did your mother usually speak to you when you were a child? .....

16. When you were a child, what language did your parents speak to each other?

.....

Appendix C
Sample Post-RTT Question Checklist

1. Does this person speak good …….language?
    - (if yes) Why so?
    - (if no) Why not?
2. Did you understand everything or some things, or nothing at all?
3. Is the way he/she speaks
    - the same,
    - a little different or
    - very different from the way you speak?
    - (If not the same) How is it different?

4.. Where do you think the person who told this story is from?

- What helps you to know they are from that place?
- How would you feel if your child wanted to marry someone from that place?

5. Have you ever visited the village where this person is from?
6. Do people from that area ever come here?

- When you speak with people from there, what language do you use with each other?

Ask the following questions ONLY if you know this person is a Christian.

7. Where do you usually go to church?
8. The Bible that is used at your church, what language is it in?
9. Is it hard or easy to understand that Bible?

- (if not "easy") Why?
-

Interviewer Observation Checklist

1. Were there any distractions or interruptions that interfered with the flow of the interview or seemed to influence some of the responses?
2. Did the subject seem to understand the language of elicitation?
3. Did the subject seem shy or fairly confident about expressing his/her opinions?
4. Were there any questions that seemed easy to answer well?
    - Which questions?
    - Why?
5. Were there any questions that seemed difficult to answer well?
    - Which questions?
    - Why?
6. Other observations about the interview?

Appendix D
Sample Sociolinguistic Questionnaire for Study on Bache and Pan Communities, Plateau State

Informant's Personal Bio data

Name of Interviewee…….

Gender…….

Date…….

Age……

Location…….

Occupation……..

Level of Education…….

1. Language Identity

1. What languages do you speak?
2. What languages do/did your parents speak?
3. What language did you learn to speak first as a child?
4. What do you call your language?
5. What do the people in your village/community call it?
6. What do people from outside your immediate village/community call your language?

2. Villages of Birth and Residence

1. Where were you born (village, district)?
   - How long did you live there?
   - What language(s) do people speak in that village/community?
2. What other village(s) have you ever lived in?
   - For how long?
3. In which village/community did you live in longest?
   - From what age to what age did you live there?
   - What particular dialectal variant do people speak there?
4. In which village/community did you live in longest?
   - From what age to what age did you live there?
   - What particular dialectal variant do people speak there?

3. Demographic Information

5. Does everyone in your village speak your own dialectal variant?
   - If not, what other variant(s) is spoken?
   - Name any other village(s) /community that speaks the same variant as yours
6. What other villages/community speak a different variant from yours, but that you can understand well? (provide names, locations, if possible)
   - What words do they use differently from you?
   - Do they also call themselves Bache/Pan speakers?
7. What other village(s) /community speak Bache/Pan differently from yours, but that you can't understand well? (provide names, locations, if possible)
   - What words do they use differently from you?

- Do they also call themselves Bache/Pan speakers?

4. Language Use

8. What language do the children in your village/community learn first?
9. Do children learn another language before they start school?
    - If yes, which language(s)?
10. What language(s) in your village/community are used in the following situations?

Adult man:

--At home --To wife --To children --At the market

--At a funeral --At the village council ----At a district center

Adult woman:

--At home --To husband --To children

--At the market --At a funeral

Teenager:

--At home --To parents --To grandparents

--To siblings --At the market

--To friends --For courting

--To a teacher --To classmates

Child:

--At home --To parents --To grandparents

--To siblings --At the market

--To friends --To a teacher --To classmates

5. Language Attitudes

(On Language displacement)

11. Do the children in your village/community speak Bache/Pan together when they play?
    - If not, is this good or bad? Why?
12. Are there people in your village/community who have given up speaking Bache/Pan?
    - If yes, is this good or bad? Why?

(On mother-tongue use)

13. Do the young people in your village/community speak Bache/Pan correctly?
    - If not, how do they speak it?
14. Is it important to you that your child marries someone who speaks Bache/Pan?
    - If so, why?
15. When Bache/Pan people are around, are you embarrassed to speak Bache/Pan to your friends?
16. Are you ever embarrassed to speak Bache/Pan?
    - If so, when?
    - If so, why?
17. Would it be good for your children to be able to read and write Bache/Pan?
    - If so, why?
18. What kinds of things would you like to have written in your language?

(On dialects)

19. Are some Bache/Pan dialects more important than others?
    - Which is the most important dialect?
    - Why is it important?
    - Where is it located?

20. Which is the best village location where one can learn to speak your language?

Appendix E
Reference RTT Narrative (BACHE language)

It is about two years since this happened, in the month of dry season, two months after Christmas. My wife, my child, and I went towards Farin Lamba to prepare a farm.

Question 1) Why did he go to Farin Lamba? --- [To prepare a farm.]

On our way, we had a tire puncture. When the puncture happened, I got someone to go and have it repaired. (We started off again) and we had a tire puncture again. I didn't know what to do. I asked my wife to go ahead and I would stay to fix the tire. We took off the tire (removed the leg of the moto) and carried it to a tire repairer.

Question 2) Who removed the leg of the moto? --- [The narrator.]

He (the tire repairer) said he knew how to drive.

Question 3) What did the man who fixed the moto leg say? --- [That he knew how to drive.]

He took the tire that he had earlier repaired and went (to where the car was) to put it on. He put the tire on and asked the boy to get into the car, but the boy refused. He said he would stay there and wait for his father to come and take him.

Question 4) Where did the child say he would stand and wait for his father? --- [There (where the puncture happened.]

The repairer entered the car and since he did not know how to drive, he entered the car and was driving very fast.

Question 5) How did he drive? --- [Very fast.]

And when he was about to go around a bend, he went off the road and fell into a ditch. When he fell into the ditch, he came out and he had bruises/scratches on his face.

Question 6) Where was he scratched? --- [On his face.]

One side of the car was shattered. The window glasses (windshield) were shattered and the eyes of the moto (lights) were also shattered.

Question 7) What happened to the eyes of the moto? --- [They were shattered.]

He left the car in the ditch and ran and came to me. He said to me, “Father, the brakes of the car do not hold.” So I asked, “Where is the car?” He said, “It is lying by the gutter there.” I asked him, “How many people should I bring along in order that we might push the car (out of the ditch).” He said about 3 people.

Question 8) How many people did he say could push the car? --- [About three.]

I took (three) people and we went to get it. We went and went for a long distance and stood. And when I stood and I asked, “Where is the car?” he said, “It is there very far away in a ditch. If you lift up your head, you will see that the ditch is very deep.”

Question – 9) How will he be able to see the car? --- [By lifting up his head.]

I asked, “You said I should bring 3 people to bring a car out from such a ditch?!” He stoodlooking at me, and the people sighed. And they went and looked for many people whileI went to look for the chief of the area.

Question 10) What did the people do? --- [Went and looked for many people.]

Appendix F
Reference RTT Narrative (PAN Language)

One day I got up. That particular day was a country Sunday. I am a tapper and that day I was going to host a traditional elders' meeting]. I had to go to my raffia palm bush. I put on my tapping clothes and I picked up my tapping knife, cutlass, and spear. I sharpened my tapping knife and cutlass.

Question 1) What did the tapper do with the tapping knife and cutlass? ---

[Sharpened

them.]

I left and was going to the bush. When I was halfway gone…

Question 2) How far did he go? ---- [Halfway.]

I saw something lying across the road. I exclaimed and started running back home for I couldn't make out what it was. I thought it was a long bamboo because there was so much grass and dew covering the road.

Question 3) What was covering the road? --- [Grass or dew.]

I came back and looked closely and saw that it was a snake. It was a cobra with a big head.

The cobra raised up its big head and flattened it out.

Question 4) What did the cobra do with its big head? --- [Raised it up or flattened it out.]

(Exclamation!) I did not have a stick so I used my spear to pin the snake to the ground. And then I went to look for a stick. When I had the stick, I used it to kill the snake and then I buried it. I picked up my things and continued on to my bush.

Question 5) Where was he going? --- [To his bush.]

When I got to the entrance of my bush where there is a coco-yam farm, I saw some coco-yam leaves shaking. They were wet and I bent over to see why they were shaking.

Question 6) What was happening with the leaves? --- [They were shaking.]

I saw a rat mole.

Question 7) What did he see? --- [A rat mole.]

When I saw the rat mole, I wondered what he was doing in the coco-yams because I know rat moles do not eat coco-yams. I discovered it had raffia fruit in its mouth. I saw it was digging a hole under the coco-yam to store the raffia fruit. I saw the tail sticking out of the hole.

Question 8) Where was the tail of the rat mole? --- [Sticking out of the hole.]

I pinned the rat mole on its back and then I hit it and killed it. I was happy that it was a good day because I had something to take home and to prepare rat soup on this country Sunday. I put it in my bag.

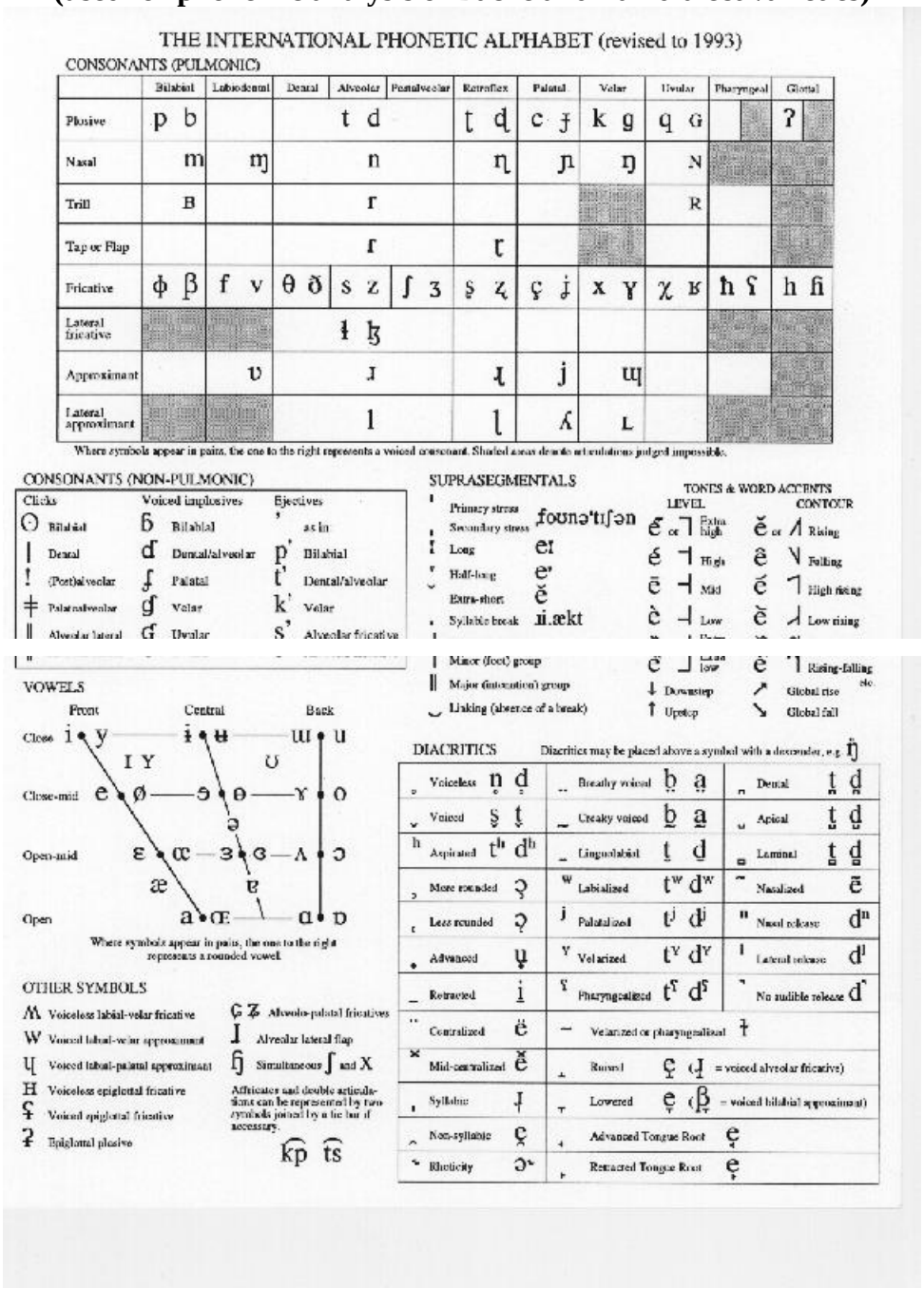
Question 9) Where did he put the rat mole? --- [In his bag.]

Where I picked up the rat mole, I saw some raffia fruit that had fallen out of its mouth. I picked up one and ate it. It was sweet. I picked up another one and put it inside my bag. Then I continued to my bush. I had five raffia palms to tap.

Question 10) How many raffia palms did he have to tap? --- [Five.]

Appendix G

The International Phonetic Alphabet
(used for phonemic analysis of Bache and Pan dialect varieties)



Appendix H

Categories for Lexical Similarity groupings

The criteria for decisions about similarity groupings of lexical items of both Bache and Pan word lists generated in the course of the study are described in the following sections. All lexical items were initially grouped as similar, according to the criteria outlined by Blair (1990:31). In contextualizing these rules, a few modifications were applied.

Categories for Phonemic similarity groupings (according to Blair, 1990)

Phone table (minimum for lexical similarity)

No. of Phones		Category 1	Category 2	Category 3
1	=	1	0	0
2	=	2	0	0
3	=	2	1	0
4	=	2	1	1
5	=	3	1	1
6	=	3	2	1
7	=	4	2	1
8	=	4	2	2

1. Category One
   a. Exact matches (e.g. [b] occurs in the same position in each word.)
   b. Vowels differ by only one phonological feature (e.g. [i] and [e] occur in the same position in each word.)
   c. Phonetically similar segments, which occur consistently in the same position in three or more pairs. For example, the following word-initial [g] ~ [gh] and [p] ~ [ph] correspondences were observed in sample Doemak, Mernyang and Bwal wordlists:

	Doemak wordlist	Mernyang wordlist	Bwal wordlist
fingernail	[goru]	[go:ru]	[ghoru]
axe	[godeli]	[go:del]	[ghoɗ el]
cloth	[guda]	[gu:da]	[ghuɗ a]
boy	[peka]	[pe:kal]	[phekəl]

2. Category Two
   a. Those phonetically similar nonvocalic segments which are not attested in three pairs (cf. the above examples.)
   b. Vowels which differ by two or more phonological features (e.g., [o]and [o:] contrasts under the glosses for ‘axe’ as well as [u] and [u:] for ‘cloth’).
3. Category Three
   a. All corresponding segments which are not phonetically similar.
   b. A segment which corresponds to nothing in the second/third pairs. For example, the [#] / [l]contrasts in the gloss for ‘boy’ in the examples above.

Word length and linguistic similarity

Each pair of corresponding phones in each pair of words is classified according to one of these three categories. The various permissible categories of similar words, depending on their length, are summarized as follows:

Word Length		Cat. One	Cat. Two	Cat. Three
2	=	2	0	0
3	=	2	1	0
4	=	2	1	1
5	=	3	1	1
6	=	3	2	1
7	=	4	2	1
8	=	4	2	2
9	=	5	2	2
10	=	5	3	2
11	=	6	3	2

Applied modifications

a) Vowel length is ignored.

b) Near-closed and close-mid vowels are classified as exact matches.

c) Approximants are in some cases represented as consonants and in others as vowels.

d) Affricates are represented as single consonants.

Appendix I

Phonostatistic Analysis of Comparative Word List Data (Bache Research Sites)

Degrees of Correspondence Matrix

Kissaloi			
869	**Jebu-Bariki**		
840	784	**Zagun**	
661	541	536	**Binchin**

Degrees of Change Matrix

Kissaloi			
274	**Jebu-Bariki**		
254	225	**Zagun**	
224	193	179	**Binchin**

Degrees of Ratio Matrix

Kissaloi			
33	**Jebu-Bariki**		
36	37	**Zagun**	
43	46	45	**Binchin**

Appendix J

Phonostatistic Analysis of Comparative Word List Data (Pan Research Sites)

Degrees of Correspondence Matrix

Doemak			
784	**Mernyang**		
762	684	**Kwalla**	
631	536	506	**Bwal**

Degrees of Change Matrix

Doemak			
254	**Mernyang**		
203	201	**Kwalla**	
160	224	193	**Bwal**

Degrees of Ratio Matrix

Doemak			
29	**Mernyang**		
46	43	**Kwalla**	
50	48	46	**Bwal**

Explanatory Note

The two set of matrices shown respectively in Appendices I and J above provide correlations between *lexical similarity* and *phonological similarity*, and of both with *intelligibility*.

The results contained in these matrices have been generated from our WORDSURV computation of the number of sounds that have changed between cognates in each pair of word lists generated in the course of our lexicostatistical elicitations. They present phonostatistic analyses of the dialectal situations for both Bache and Pan languages, showing the amount of phonological divergence between the dialects represented by the word lists.

The *Degrees of Correspondence Matrices* show the total number of correspondences in all the cognates for each set of word lists generated in the course of our lexicostatistical elicitations for both Bache and Pan languages.

The *Degrees of Change Matrices* report the total number of sounds (i.e., phones) that have changed between cognates for each set of word lists for both Bache and Pan languages. (This is similar to a Degree of Difference matrix, except that it counts the number of phones that have changed between word lists rather than measuring the amount by which the phones have changed.)

Finally, the *Degrees of Ratio Matrices* report the percentage of phones that have changed between possible cognates for each set of word lists for both Bache and Pan languages. (Unlike what obtains in a typical Cognate Percentages matrix, a Ratio matrix indicates that the lower the ratio the closer the similarity between the two wordlists**.)**