UNIVERSITY OF EDUCATION, WINNEBA

INTELLIGIBILITY OF THE ENGLISH SPOKEN IN GHANA: A CASE STUDY OF THE UPPER WEST REGION

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DECLARATION

Candidate's Declaration

I, Vivian Nero, do declare that the thesis presented here is totally based on my individual research, except for the quotations and references from published works that have been recognized and properly acknowledged, this work has not been submitted, neither partially nor fully, for another degree in this University or in any other place.

Signature:……

Date:……

Supervisor's Declaration

I hereby declare that the preparation and presentation of this study were supervised in accordance with the guidelines on supervision of thesis as laid down by the University of Education, Winneba.

Name of Supervisor: Prof. Charlotte Fofo Lomotey

Signature:……

Date:……

DEDICATION

To my parents,

siblings

and son, Lancelot M. Kuryang

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ABSTRACT

The aim of the research was to assess how well English spoken in the Upper West Region of Ghana (UWR) is understood by people from Southern Ghana. In order to do so, a qualitative case study was conducted, which included the analysis of 200 speakers from the Upper West Region, and 200 listeners from Southern Ghana using recordings. Thematic analysis revealed the results, which showed that the Upper West speakers were 93%-100% intelligible to listeners in connected speech, 28%-100% in phoneme contrast, and 49%-100% in nucleus placement of words. This suggests that connected speech is more intelligible than isolated words and sentences. The research also pointed out that, although the English speakers from the Upper West Region exhibit the connected speech processes (CPS), the shifts in nucleus placement in words, and the vowel and consonant alternation, they were still and highly intelligible. However, there were few cases of unintelligibility due to segmental features from the side of the Upper West Region that were detected by Southern listeners. The mostly affected phonetic aspects were vowel length, weak forms, and consonant substitution/alternation in the area of speech intelligibility. Hence, there is an implication of the findings in cross-cultural communication as the speakers will have to be very attentive to each other to achieve intelligibility. In general, the findings imply the need for a reconsideration of the oral assessment of students in Ghana.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Kachru's (1986) Three Concentric Circles model illustrates the worldwide distribution of English, which highlights its varying functions in the different sociolinguistic contexts. The Inner Circle (e.g., UK, USA) is where English is spoken as a native language; the Outer Circle (e.g., Ghana, Nigeria) is where it is a second language allowed and used in public situations amongst multilingual communities; and the Expanding Circle (e.g., China, Germany) is where it is a foreign language taught primarily for international communication. For this reason, the aforementioned framework has facilitated the understanding of the linguistic situation in Ghana, where English which was introduced during the colonial period has become and is still the main language of administration, education, and interethnic communication (Sackey, 1997). Nonetheless, Ghana being part of the Outer Circle raises the question whether the practice of enforcing native-speaker norms in a situation where English is primarily used as a means of communication among non-native speakers is inappropriate or not.

Ghanaian English (GhE) is in a dilemma caused by the past language policies which treated the English of the colonies as the best English. Although there is a lot of presence in the country, the West African Examinations Council (WAEC) still insists on Standard Spoken British English (SSBE) as the benchmark for oral assessments (Okoh, 2019). This means that the WAEC examiners will be particularly concerned with phoneme contrasts (e.g., /ɪ/ vs. /iː/) and the utmost native-like pronunciation. On the other hand, Forson (2004) admits that GhE has developed and is still developing as a different variety influenced by the local language features, mother tongue interference, and effective communication in multilingual settings. The paradox of the situation where in the country, the Ghanaians communicate

mostly in English with each other and at the same time their proficiency in the language is being tested against the very irrelevant native-speaker ideals arises as a result of this misalignment between institutional standards and on-the-ground realities. The study aims to fill this gap in communication by looking into how intelligible the speakers of GhE from the Upper West Region (Gur/Mabia language group) are to the people in Southern Ghana (Kwa language group). Drawing the line not between native-speaker mimicry and functional intelligibility but rather at intelligibility, the work does not only challenge WAEC's anachronistic standards but also advocates for a context-driven approach to English language assessment in Ghana.

1.2 Statement of the problem

In a lot of classrooms in Ghana, teacher-centered approaches are still the most widely used methods, and the students' main activities are listening and note-taking rather than participating actively in tasks that help them with their pronunciation and fluency. (Amoako-Sakyi & Kwarteng; 2024). The English language of ESL learners in the Upper West Region is heavily pronounced under the influence of their mother tongues. Nonetheless, one-size-fits-all teaching methods are still the norm, and the particular phonological problems of the area are not taken into account. For example, sounds that are not part of the local languages may pose a challenge for the students, but the pre-emptive teaching of phonetics might not even be able to sufficiently support the learners through this explicit phonetic training since it may not go far enough. Consequently, the teaching of phonetics may produce students who are still hard to understand even when they communicate only within the immediate linguistic community because they are always losing out on communication due to the lack of intelligibility to outsiders.

Ghana's educational system still regards SSBE as the best model for spoken English, a practice that is a remnant of the colonial period. Academics like Andoh-Kumi (2002) and Okoh (2019) suggest that this inclination is a result of Ghana being a former British colony, where British linguistic norms were spread with the intention of controlling the population politically and culturally through the imposition of norms of the language of the colonizer. The West African Examinations Council (WAEC), which is the main authority responsible for educational evaluation, is very strict in applying this standard. For example, in WAEC oral examinations, students are tested on the extent to which they can imitate SSBE phonemes and intonation patterns, and the aspirational pronunciation of native speakers is often the standard (Government White Paper, 2004). A critical feature of this method is that it takes the closeness to British standards as evidence of the linguistic ability of the person, ignoring the fact that the majority of Ghanaians use English for conversation with non-native speakers in Africa and Asia, which are not necessarily Britons or Americans. The pivotal research by Gogovi (1991) concerning the students of Nigerian and Ghanaian universities has shown this disconnection among the learners who mainly reported that they acquired English for the sake of communicating with the people from the same region rather than with the native speakers. Still, the system of assessment punishes the use of non-SSBE forms, creating a situation where students are trained for those kinds of interactions that very rarely happen while being evaluated based on an irrelevant standard, thus the paradox.

Further complicating the situation is the fact that even the teachers of English in Ghana are commonly battling the problem of SSBE pronunciation. Most of the teachers, who are the products of the same system, speak a kind of English that is influenced by their first languages (L1) such as Akan, Ewe or Ga. According to Adika (2012), the phonology of Ghanaian English (GhE) is affected by L1 interference, the pronunciation of spelling, and the exposure to both British and American media. A case in point is the lack of dental fricatives

in the Dagaare language (/θ/ and /ð/) where the substitution may take place with /t/ or /d/, as in “think” (tink) or “this” (dis), (Osuman & Dansieh, 2020). These characteristics are systematic and governed by rules, yet, very often, they are stigmatized as “errors” in the classrooms, even though they are common in daily communication. The Government White Paper (2004) speaks about the difficulties in acquiring oral skills in this scenario, but, on the other hand, the teaching tools and the training of teachers still rely on SSBE thus creating a loop of linguistic insecurity.

Global change in English language teaching (ELT) paradigms emphasizes even more than before the obsolescence of Ghana's current method. Jenkins (2000, 2006, and 2007) and Kirkpatrick (2006, 2010) among others, assert that English is no longer bound to its native-speaker sources but has become a world language that one can communicate in through speaking. In this regard, the Expanding Circle where English is strictly a foreign language, communicative effectiveness outdoes phonetic accuracy. Being a multilingual country with English as the common language among the speakers of Kwa, Gur/Mabia, and others, the case of Ghana is the most suitable one for this paradigm. Meanwhile, the criteria for assessing by WAEC are still based on phoneme contrasts (e.g., /ɪ/ versus /iː/ in “ship” and “sheep”), which are important in native-speaker contexts but not so much in Ghana's multilingual environments. In this regard, Isaacs (2014) and Jenkins (2006) argue that the assessment of pronunciation should be based on real-world interaction wherein the ability to stress important words in a sentence or cope with connected speech is more important than the imposition of arbitrary native-like accuracy.

The research conducted on Ghanaian English has come a long way in identifying the distinctive phonological and syntactic characteristics of this variety of English. For instance, Forson (2004) and Sackey (1997) report the development of GhE as a stable, nativized variety characterized by localized lexical innovations (e.g. “chop box” for lunchbox) and

syntactic patterns (e.g. “I am coming” to indicate imminent return). Nonetheless, research on intelligibility within Ghana has so far been heavily tilted towards speakers from the Kwa language group, especially the Akan, Ga, and Ewe communities that occupy the Southern Regions and thus dominate the studies (Owusu, 2024). This trend not only overlooks the linguistic realities of northern Ghana, where Gur/Mabia languages like Dagbani and Dagaare are spoken but also deprives researchers of the languages’ contributions in the debate. In fact, Brown (1969) was one of the significant researchers who first recognized the GhE Intelligibility phenomenon. The research later on showed that the local Ghanaian variety of English which was heavily influenced by indigenous languages had separate phonological characteristics that needed to be treated as such. The study used Native English Speakers (generally British, due to the time) as the listeners/judges of intelligibility. This approach is exonormative (judging by an external standard) and irrelevant to the reality of Intra-national communication (GhE speakers communicating with other GhE speakers).

Researchers like Brown (1969) were among the first ones to document that Ghanaian English is a unique variety of English by adducing its peculiar pronunciation features. The study, which was conducted around that time, took data from the urbanized and politically dominant Southern regions, particularly those speaking the main Kwa languages (Akan, Ga, Ewe). It did not take into consideration the different L1 transfer patterns that were to be found in the Northern regions for instance among the Gur/Mabia language groups. Therefore, Brown's (1969) study becomes a significant marker in history that confirms the distinct nature of GhE. The gaps that this study creates are two-fold: firstly, it did not ascertain the degree of mutual intelligibility within Ghana and secondly, it did not cover the Gur/Mabia varieties, thus rendering its findings only partially useful for the current educational and policy decisions.

Studies related to and conducted recently, Lomotey (2016), not only changed the language of the discussion from colonial/native-speaker to the World Englishes/lingua franca point of view but also discussed the issue by considering specific, modern phonetic features of GhE. Lomotey's research points out that some features of GhE (for instance, in lexical stress or the realization of the schwa) are very much a part of the language and at the same time, they do not show up as a problem in terms of intelligibility in World Englishes contexts. This gives more grounds to the argument of discontinuing SSBE. Although Lomotey is no longer depending on native-speaker judges, her study has been concerned with the international intelligibility (how GhE is understood by people from other Expanding Circle countries) or use unspecified or homogenous Ghanaian listeners. The study in general did not conduct systematic testing to ascertain the specific cross-regional divide (Gur/Mabia speaker/arrow Kwa listener).

As a result, her research on intelligibility cannot be applied to the L1 transfer patterns of the Gur/Mabia groups in the Upper West/Northern Regions. Nevertheless, her findings support the argument that not all deviations from SSBE are "errors," thus supporting the idea of a local standard that is adequate for communication. Though Lomotey (2016) is able to make the theoretical argument for GhE as a stable variety, she does not give the empirical data that the policymakers need to reconcile the Kwa-speaking listeners with the unique L1-influenced features of the Gur/Mabia speakers, thus creating a specific empirical deficit concerning inter-ethnic intelligibility between the major language families in Ghana.

Similarly to the studies such as Fiyinfolu's (2019) on the intelligibility of Nigerian English that revealed L1 transfer from the Yoruba speakers could render their English difficult to understand for the Hausa or Igbo listeners, a phenomenon very likely similar in Ghana; still, no systematic studies have examined these cross-cultural intelligibility challenges, thus, leaving educators and policymakers without empirical data to support

inclusive teaching strategies. For example, Gur/Mabia speakers may use vowel harmony or tonal patterns of their L1 when speaking English, which may make it harder for Kwa-speaking listeners to understand.

The lack of research studies of this type leaves a significant gap in the language policy setting of Ghana. On the one hand, at the WAEC level, the examinations of oral language consist of focusing on phoneme contrast in words and sentences as well as other scripted sentence stress, while on the other hand, the reality of communication in Ghana is attached to features like connected speech, code-switching, and suprasegmental ones such as stress and intonation. For instance, one of the features is the pronunciation of "hand" as /han/, which is a common practice among GhE speakers, and this is a result of not only their own language but also the influence of the indigenous languages (Ansah & Owusu, 2023). These characteristics are, indeed, not typical of SSBE but that doesn't mean they create any difficulty in comprehension in local settings. However, they are not empirically supported, so they are considered to be shortcomings rather than analyzed as adaptive functions. Jenkins' (2000) Lingua Franca Core (LFC) gives a practical solution: selecting the pronunciation traits that are very necessary for worldwide intelligibility (e.g. distinctions of vowel length) and downplaying those that are not in case of non-native conversations (e.g., the dark /l/ sound). Using such a model in Ghana could bring together the goals of the teaching profession and the realities of communication. This study is designed to eliminate this void through the investigation of the intelligibility of Upper West Region (Gur/Mabia language group) Ghanaian English speakers to Southern Ghana (Kwa language group) listeners. By looking into the segmental features (e.g. vowel substitutions) and the suprasegmental ones (e.g. word stress) in both the isolated words and the connected speech, the researchers intend to recognize the phonetic traits that either help or obstruct comprehension.

1.3 Research objectives

The research would:

i. assess how much the speakers of English from Upper West are understood by the listeners from Southern Ghana.

ii. look into the aspects that make it easier for the speakers from Upper West to be understood by the listeners from Southern Ghana.

iii. find out the characteristics responsible for the speech of the Upper West speakers being unintelligible to the Southern Ghana listeners.

1.4 Research questions

The research is conducted on the basis of these questions:

i. How well can English speakers from Upper West be understood by listeners from Southern Ghana?

ii. What are the factors that help the Upper West English speakers to be understood by Southern Ghana listeners?

iii. What were the factors that led to the speech being unintelligible between the West speakers and the Southern listeners?

1.5 Purpose of the study

Thus the purpose of this research was to evaluate the comprehensibility of the English spoken by non-native speakers in different situations and to recognize the elements which affect intelligibility.

1.6 Significance of the study

This research is very important and will significantly influence the development of education, linguistics, and language policy. The following are the main areas of impact:

i. Sociolinguistics and *World Englishes* research

The study will add one more Phonetics publication to the list of Phonetics works that have focused on the Varieties of English and will be able to do this by uncovering the phonological characteristics of Ghanaian English (GhE) and also by analyzing the segmental and suprasegmental traits in a systematic way. The paper has the potential not only to be one of the reasons of the current one-third of all English language speakers being in Africa but also to support the call for a new native-speaker norms in linguistics research, thus bringing about a desirable change in the field of English Language teaching to non-native speakers. There are efforts going on all over the world to lessen the dependence on British and American varieties of English as the only ones against which the rest of the *world's Englishes* are judged.

ii. Language policy and educational reform

The research offers direct critique to the WAEC's usage of Standard Spoken British English for oral assessments and thus, it directly influences Ghana's language-in-education policies. The work not only critiques the WAEC's position but also suggests empirical evidence for redefining assessment criteria by revealing how the features of GhE spoken in Ghana either help or block intelligibility of non-native speakers. Taking the example of functional clarity (like word stress in connected speech) being more important than phonemic accuracy, the national curricula could be changed thereby lessening the load on teachers to teach the RP. The reforms would then be in line with the country's language policies and the people's language practices which would lead to an inclusive education for the speakers of the lesser-known languages in Ghana.

iii. Cross-cultural communication studies

The emphasis on intelligibility between the Gur/Mabia and the Kwa language groups highlights a void in the cross-cultural communication research of multilingual societies. The study not only furnishes knowledge about the role of L1 transfer in interethnic comprehension by the discovery of common prosodic patterns or differing phonetic substitutions, but also characterizes this phenomenon. The results have a wider implication, as they are not limited to Ghana but also open up the way for similar inquiries in other areas of language diversity like Nigeria or India, where English is the common language spoken among the indigenous people.

iv. Methodological innovation in applied linguistics

The research presents a new method for measuring the intelligibility of spoken language that is based on the context and gives more importance to the judgments of non-native listeners than to those of native speakers. This new approach goes against the traditional way of doing things in pronunciation studies that mostly rely on good pronunciation according to outside standards. Through the recognition of the local pronunciation characteristics as being functional and not simply "erroneous", the study calls for the adoption of teaching methods that focus on communication skills, which is a change that will affect teacher training and educational resources development globally.

v. Decolonial praxis in language teaching

The research made a significant contribution to the decolonial discourse in applied linguistics through the analysis of the SSBE-centric language policies of Ghana, revealing their colonial roots. The research puts mutual intelligibility on the front of the stage and at the same time it supports the decoupling of English language teaching from its imperial legacy. This has wider consequences for the educational systems in the postcolononial world which are trying to find a way to manage the global needs of communication with the cultural and

linguistic rights of the people. The study goes beyond the individual advantages and provides the academic disciplines, through institutional practices, and even the global discourses on linguistic equity with transformative insights. It eliminates the division between the theory and practice, and thus, it becomes a champion for the policies and pedagogies that reflect the multilingual communities' realities.

1.7 Delimitations

The research spotlights the intelligibility of English spoken in Ghana and in the quest for this, a plethora of Ghanaians were involved in the study, participants from different Indigenous languages in the country being the source of the speaker samples. The speakers were from the upper west region representing the Gur/Mabia language group while the listeners came from the Kwa language group that included Akans, Gas, and Ewes. The researchers also chose senior high school students as the target group because the latter are usually assessed orally by WAEC and the English spoken at this level could also be classified as educated Ghanaian English. Besides, the study was designed in line with the usual practices employed in the intelligibility studies where the speakers were recorded for the listeners to transcribe by writing down what they heard. So to say, there were no direct conversations between the speakers and the listeners that might have provided some non-linguistic cues to hinder or facilitate intelligibility. This meant that all the factors that determine intelligibility were considered as linguistic factors which include familiarity and context.

1.8 Limitations of the study

This research work confidently presents the following limits both in scope and methodology:

i. **Geographic and demographic focal points:** The research was limited to the pupils of high schools in the Upper West Region (the Gur/Mabia language group usage area) and Southern Ghana (the Kwa language group usage area). Despite the fact that these

groups present the main linguistic divisions in Ghana, the study did not take into account the various dialects spoken in the Gur/Mabia and Kwa clusters (for example, the differences between Dagbani and Dagaare in the Upper West region or the differences between Akan and Ewe in the Southern region).

ii. **Provision of linguistic features:** The analysis was restricted from including spontaneous speech and prosodic elements like sentence nucleus placement because of the limited time and resources. The features of natural communication were ignored, hence, they were not in the main data collection and analysis process so it was easier for data collection and analysis to be done.

iii. **Specificity to sample:** The results reflect educated Ghanaian English (GhE) speakers at the senior high school level. The observed pronunciation patterns and intelligibility challenges may vary across adults, informal learners, or speakers with different educational backgrounds.

iv. **Regional limitations:** The research was solely about Ghanaian English and WAEC's assessment practices. It did not look into oral assessment frameworks in other West African countries such as Nigeria and Sierra Leone where linguistic and educational contexts may be different, thus, it did not consider these countries for comparison.

In identifying these limitations, the study is saying that there is a need for further research since those mentioned are only narrow and that more extensive linguistic diversity, spontaneous speech dynamics, and cross-national comparisons in West Africa should all be areas of study.

1.9 Organization of the study

The remaining parts of the study are structured in the following way: Chapter 2 reveals the literature regarding the intelligibility concept, and non-native Englishness attributes, especially emphasizing Lingua franca core of Jenkins. It also reviews the study's framework of factors affecting intelligibility. Chapter 3 also considers the research methodology; research design, data obtaining techniques, population and sampling methods. Chapter 4 is dedicated to the data analysis. It offers a thorough analysis of the data that was gathered in order to assess the intelligibility of speakers of Ghanaian English (GhE) from the Upper West Region (Gur/Mabia language group) to people in Southern Ghana (Kwa language group). The analysis addresses both segmental and suprasegmental features. Chapter 5 reveals the results, wraps up with conclusion, suggestions for future research and the overall summary of the study.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Over the past few decades, the English language "has become ever more a worldwide language" (Nelson, 2011, p. 1). It is a global language as per Mckay's (2002) point of view. In this respect, the language has been termed an international language (IL), a lingua franca (LF), and a global language (Chrystal, 1997, 2003; Jenkins, 2003; Mckay, 2002). What is very exceptional about the use of English all over the world is the aspect of intelligibility in view of that large number of varieties usually termed "new" and "New" Englishes which have emerged and are still emerging every day reflecting changes in linguistic norms and practices. Munro (2011, p. 13) correctly claims that "Intelligibility is the single most important aspect of all communication" particularly in spoken communication. Thus, one may infer that an intelligible utterance leads to understanding or comprehensibility and interpretability in an effective communication environment.

In light of this, it is quite reasonable to ask, intelligibility with whom? Is it intelligibility among native speakers (NSs), between native and non-native speakers (NNSs) or among non- native speakers? The story that NSs are the only judges of English language usage leading to the imposition of native accents on non-native learners of the language has changed in modern times due to the fact that non-native varieties have become independent and are researched on their own right which indirectly raises the question, "who owns English?" Besides this, "the non- native speakers of English now far outnumber its native speakers" (Jenkins, 2015). This implies that the daily communication among non- native speakers is much more than the daily communication between native and non-native speakers. Generally, the NS gets to be a part of the scene only when attention is drawn to the issue. This creates a different perspective for those setting the policy on the use of language

and for teachers who still see native speakers as judges of the language. The current study is on the side spreading that the language should be considered and learned more as a lingua franca where all varieties would be synced up with the understanding of one another's speech by the speakers. In essence, the speakers have to be intelligible to one another. Thus, Kaur (2018) claims that if intelligibility becomes the object of inquiry, the researchers will inevitably be looking for the ways in which the speakers make themselves more intelligible for their communication to be effective and meaningful.

This being the case, Deterding (2013) and Jenkins (2000) in World Englishes, specifically English as a Lingua Franca (ELF) and English as an International Language (EIL) respectively, are of the opinion that mutual or international intelligibility is the main issue which includes NS-NS, NS-NNS and NNS-NNS with much pervasiveness on the latter which have been stated to deviate remarkably from native varieties. Worth mentioning is the fact that the research in World Englishes "treats new varieties of English as independent, named, regional varieties … and it mostly concentrates on aspects of pronunciation, lexis, grammar and discourse that make each variety different from the others" (Deterding, 2013, p. 6) while research in "English as a Lingua Franca is interested in revealing how English is used by speakers of different first language backgrounds in real interaction, and the sorts of practices and processes that are typical of such interactions" (Kaur, 2018, p. 2), however, the two paradigms to some extent mirror each other as they are grounded on the same notion that English is not a homogeneous language. Consequently, these two paradigms serve as the foundation of this study. The subsequent discussions will cover the concept of intelligibility, making the most of the particularities of new Englishes, especially Ghanaian English, as a means to illuminate the concept for more informed and effective educational choices and methods.

2.1 The concept of intelligibility

The concept of intelligibility is hard to apply using a straightforward and unequivocal definition amidst the differences in opinion from different scholars. As early as 1985, Smith and Nelson proposed a tri-concept definition of intelligibility comprising intelligibility, comprehensibility, and interpretability, which is usually "preferred in the fields of world Englishes" (Kaur, 2018, p. 2). In their opinion, intelligibility denotes the listener's capacity to identify separate words or utterances and from the speaker's perspective it is the capacity to pronounce words so that the listeners can decode them without troubles. Intelligibility is differentiated from *comprehensibility* which is the listener's capability to grasp the meaning of the word or utterance within the given context and *interpretability* which is the listener's capability to understand the speaker's motives behind the word or utterance. Nonetheless, the three notions are placed on a continuum of understanding where intelligibility is at the lower end, followed by comprehensibility, and ending with interpretability at the highest end (Smith, 1992). This indicates that intelligibility is the connecting point for the other two notions and if it is not achieved, the interlocutor's capacity to understand and interpret the speaker's utterances will be affected in the same manner, making it difficult. Nonetheless, in face-to-face communication, non-verbal clues might render the concept of intelligibility unimportant, as the conversers would rely heavily on the non-verbal cues to derive meaning, making them even able to guess the words by recognizing them if the speakers' utterances are poor in clarity. Hence, Bamgbose (1998) claims that intelligibility is a "complex matter" (p. 8).

From a wider point of view, Munro and Derwing (1999, p. 289) emphasize that "intelligibility is the degree to which a listener actually understands a speaker's message". This is a major definition and at times equated with the coined terms "intelligibility", "comprehensibility" and "accentedness". Intelligibility hence signifies both the soundness of

a speaker's words and the successful deciphering of a speaker's specific words (the lexical level of intelligibility). The next level of understanding is comprehensibility, which refers to the quantity of effort that the listeners have to put in to get the speaker's message. This is "often measured via a Likert scale, on which 1=extremely easy to understand and 9=impossible to understand" (Munro & Derwing, 1999, p. 291) or through continuous sliding scales on a computer (Crowther et al., 2015). Accentedness indicates how much a person's speech differs from that of a local or reference accent (Munro & Derwing, 1995). Levis (2007) claims that "accent can interfere with intelligibility, but research has shown that speakers can be perfectly intelligible (in that all the words they speak are understood) while being simultaneously judged as having a very strong accent" (p. 17).

Jenkins (2000, 2002) extends the concept of Smith and Nelson (1985) intelligibility. She gives her own definition of intelligibility in relation to interlanguage talk (ILT) in the context of an ELF. Jenkins (2000) takes intelligibility as “the production and recognition of the formal properties of words and utterances and particularly, the ability to produce and receive phonological form but considers the latter as a prerequisite (though not a guarantee) of ILT success at the locutionary and illocutionary level” (p. 78). The definition of Jenkins has its basis in the concept of intelligibility of Smith and Nelson and reaches out to the theorists such as Bansal (1969, 1990) and Ufomata (1990), who talk about the purpose and contexts of use of English in both international and intranational settings.

One among the many differences that separate Jenkins from Smith and Nelson is the area of pronunciation, the latter being a needed factor for the comprehension where the former being a significant factor for the communication. As she sees it (2000), on the one hand, it is the presentation of the words that causes the difficulities in understanding and that is why pronunciation takes the first place. On the other hand, Smith and Nelson (1985) maintain the importance of the comprehensibility level instead. However, this level is,

according to Pickering (2006), "understandably difficult to measure" (p. 220). In this connection, Levis (2007) notes that the interpretability of a spoken text is high if the listener is able to understand the speaker's intentions in uttering the message in a particular context (p. 19). He further indicates that interpretability is "another type of intelligibility, pragmatic intelligibility" (p. 19) with this type of intelligibility being extremely variable.

The contrast between Smith and Nelson (1985) and Jenkins (2000) on intelligibility could be interpreted as a direct consequence of the fundamental different line taken in presupposing the significance of English in communication. To illustrate, Smith tends to look at English in an international perspective and in cross-cultural interactions involving both Natives and Non-natives (among NS-NNS or among NNS-NNS), on the contrary, Jenkins (1995, 2000) regards it solely as a lingua franca among non-native speakers of different first languages, and the participation of the Native Speaker is totally ignored, that is the Native Speaker becomes neither a partner in conversation nor the judge of the norms concerning the usage of the English language.

Thus, it is not surprising that Deterding and Kirkpatrick (2006, p. 392) state that the term is "somewhat elusive"; could it be that the complexity and elusiveness are coming from the different characterizations in different but related fields as some researchers take the term narrowly while others broadly. Levis (2007, p. 16) points out that intelligibility in any case whether it is broadly or narrowly conceived, "does not encompass speech that is irritating (umm) or socially unacceptable (taboos)", even though it might be intelligible and would not cause any understanding problems. A significant mention is Atechi (2004) who claims that the concept of intelligibility by Smith and Nelson (1985) is rather obscure especially when it comes to testing of intelligibility. He admits that the two are on a continuum but the distinctions that are made for each of them are quite hard to access in regard to where one category ends and another one begins. He strengthens his case by indicating that "when we

discuss familiar topics, the role of context and other hints that a listener can employ to decode the speaker's message, makes us deal with matters that go beyond mere word utterance recognition" (Atechi, 2004, p. 44). The current research is in line with the above-mentioned opinion of Jenkins (2000) and agrees with Atechi (2004) who pointed out the vagueness of Smith and Nelson's concept of intelligibility, especially when it comes to its testing. Therefore, the terms intelligibility, comprehensibility, and interpretability are not used as if they are separate and distinct entities with no overlap; rather, they are mixed up.

2.2 Pronunciation, oral communication, and intelligibility

Atechi (2004) points out that all kinds of communication are essential for human interaction. Effective communication helps us to understand people's differences and to accept them, which is necessary for peace to coexist. A person may talk to himself but if the understanding is the goal, then in an ideal situation two parties are involved, and thus the listener(s) and speaker(s) are appointed. A listener in a dialogue may change his role to become a speaker and vice versa depending on the need. In such cases, turn taking comes into play. Still, there is always a mutual exchange that takes place between the parties involved. Gray and Wise (1959, p.10) make the observation that, "if we speak to someone who gives no evidence of having heard, the act of communication has not been completed; we must have knowledge that he has heard and responded in some way." This signifies that for effective communication to have occurred the speaker as well as the listener would have been mutually intelligible.

In discussions about intelligibility, pronunciation has to be taken into account since it is the primary locating point for listeners and a lot of the features that are used in phonetics to describe this are the very ones that listeners are experts in perceiving (Levis, 2007). Usually, pronunciation features are classified into two categories: segmental and suprasegmental. This will eventually lead to a situation where, in case of difficulty in understanding, the listener

could be able to pin-point even the geographical location and sometimes the social status of the speaker. Being specific about British English, we can point out minor variations of vowel and consonant sounds among non-native speakers and even among the native speakers. These variations sometimes result in confusion as far as intelligibility is concerned but, in general, they give rise to certain stereotypes. Referring specifically to non-native speakers, Osuman & Dansieh (2020), talk about the voiceless sibilant /ʃ / being pronounced as /s/ in the word she, by the speakers of English in the Upper West Region of Ghana. Drawing an Indian case for this stereotype, one can say that intelligibility would be affected if context and familiarity were ignored. At the level of NS, "the insertion of /ɹ/ into the word wash so that it is pronounced warsh, /wɑɹʃ/ is immediately noticed by most US speakers and is almost always criticized as sounding uneducated" (Levis, 2007, p. 23). In the same way it is the case that the impairment in intelligibility might happen when context and familiarity are not taken into account.

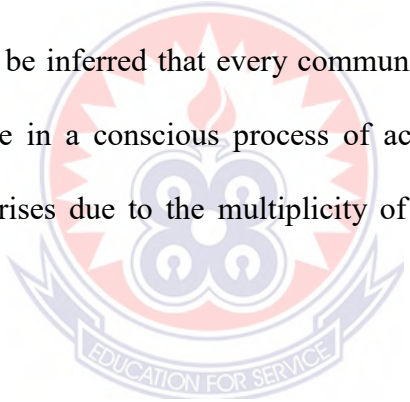
Levis (2007) illuminates the relevance of pronunciation in every communicative event as he points out that,

> *"We pronounce as a byproduct of speaking, and we pronounce within the context of the communicative acts or the speaking task we are involved in. We pronounce if we are fluent, and we pronounce if we are not fluent. We pronounce with our particular lexical and grammatical skills. Likewise, we process the pronunciation features of others' speech, presented to us within the fluency, speed, grammar, and lexis of their speech."* (p. 22)

To put it differently, the speaker would have already pronounced the word, so that the listener would have to recognize the word deafeningly and knowing that he/she/it is actually perceiving what has been pronounced. According to Smith and Nelson, the recognized sound thus would become part of the intelligibility process. Communication is then effective when the word is understood and defined correctly. Hence, pronunciation, intelligibility, and oral communication are indistinctly related. While oral communication necessitates some practice

in terms of pronunciation and intelligibility, the studies that have been conducted based on factors leading to the unintelligibility of nonnative speech have unanimously pointed out that pronunciation is the prime factor, whereas mistakes in grammar and lexis are the minor ones which cause intangibility to a lesser extent (Gallego, 1990; Jenkins, 2000; Munro & Derwing, 1995).

However, it is not true that NSs speech is always clear and easily understood. Pronunciation is also a contributing factor that sometimes makes it unintelligible. Levis (2018, p. 22) states, "NSs speech can sound extremely fast, a kind of rapid fire of foreign and strangely distributed sounds that NNSs can hardly process". Tiffen (1974, p. 48) thus claims that the listener and the speaker have to be "tuned in" to one another for true communication to occur. Consequently, it can be inferred that every communicator, whether local, national, or international, has to engage in a conscious process of accommodating and negotiating intelligibility. This situation arises due to the multiplicity of features and factors affecting intelligibility.



2.3 The lingua franca core

The interactions which are not centered around the native speakers, the non-native speakers with their different English varieties as a lingua franca that sometimes is not understood at all are the only ones remaining. For example, in Ghana, Brown (1986) on intelligibility talks about the intelligibility of Twi and Ewe speakers and listeners of English being 70% to 85%. And although this intelligibility was high, there were a few cases that could not be disregarded. If in one country there is still a default in intelligibility, then it is not too far-fetched to say that intelligibility would be severely impaired in discourses between Ghanaians and other speakers of English from different countries. Eventually, it coincides with Jenkins who affirms mutual intelligibility and, consequently, devising a lingua

franca core (LFC). Through her LFC, Jenkins shows the striking features of NN Englishes and divides them into core and non-core features. The core features are "all consonant sounds except /ð/ and /θ/, initial consonant clusters, final /r/ as in AmE (do not drop /r/ in here, hair as in BrE), vowel length distinctions, the mid-central NURSE vowel, and nuclear stress" (Deterding & Mohamad, 2016, p. 11). Non-core features consist of final consonant stress, consonants /θ/ and /ð/, individual vowel quality (apart from the NURSE), reduced vowel or weak forms, lexical stress, intonational tones, and stress-based rhythm (Deterding & Mohamad, 2016, p. 11).

It is not improper to question whether the characteristics of GhE are limited to being core or non-core features. The contributions of Simo Bobda (2000), Koranteng (2006) and Huber (2008) to GhE have made it very evident that the vowels and consonants in the source language have undergone a lot of reshaping and this change may possibly lead to lack of mutual understanding in the speech of Ghanaians and other English speakers or even Ghanaians among themselves considering the country is multilingual. Research by Fiyinfolu (2019) on the intelligibility of Nigerian pronunciation in intercultural communication has made this claim. In the course of his research, Fiyinfolu presented a list of words to 50 Nigerians (Hausa L1 and Yoruba L1) for transcription. The data showed that there were only a few instances where the use of the vowel [ʌ], [ɜ:] and [ə] caused confusion, and this was most probably due to the fact that the words were not common and the context was not very clear. Moreover, it has been reported that Ghanaians have changed certain vowels when speaking English. For example, the vowel [ɪ] is nearly always pronounced as [i] in GhE, hence [sit] sit [bit] bit. This is a common feature in different varieties of English. When RP [ɪ] is produced through reduction, it is substituted with the vowel that is associated with the underlying strong vowel. The vowel [ɒ] is typically pronounced as [ɔ] with [Λ] being

pronounced in GhE as [ʌ] or [a] and [ɔ] in a few instances as [jɔŋ] rather than [jʌŋ], Adika (2012).

Besides the restructured monophthongs, Ghanaians have also a different approach to RP triphthongs as they take them as two separate syllables with the medial element changing into a glide. Indeed, the CVC syllable structure is the one they use. The usual central vowel sounds [ɪ] and [ʊ] are made like the glides [j] and [w]. Therefore, [aɪə] like *hire* turns out to be [haja] and [aʊə] like hour gets [awa]. The first vowel is expressed as [e, a, ɔ] like in *greyer, hire, employer,* and the second one is [e, a, ɔ] based on the spelling of the words. There are also some consonants' changes in the literature on Ghanaian English. Huber (2008, p. 85) says that /Θ/ and /ð/ are frequently substituted by the dental or alveolar plosives /t̪ t d̪ d/ or completely omitted in final position of the word. This is the case for nearly all the areas in the country.

Following Okyere (2013), it can be concluded that the V+sion words have a [ʃ] sound in GhE instead of the [ʒ] sound of RP, e.g., [divisin or diviʃn, telivisin or teliviʃn] instead of RP [dɪˈvɪʒ.ən, tel.ɪ.vɪʒ.ən]. In the middle of the word, [s] may substitute [z] and at times [z] may replace [s]. For example, [ˈfisikal, president] for RP [ˈfɪzɪkəl, ˈprez.ɪ.dənt]. On the contrary, [diˈzemba, kənˈzjum] for RP [dɪˈsembə, kənˈsju:m], –stion is [-sʃ-] or [-s] or [ʃ]. Moreover, instead of RP [-stʃ-] like in question [ˈkwes.tʃən], it has in GhE [kwesʃin or kweʃin or kwesin].

When analyzing the restructurings, it becomes evident that issues such as full forms for weak forms, vowel length, vowel quality and the like, as well as segmental level consonant substitutions, share the spotlight with some of Jenkins' conclusions on the general features of NN Englishes. Not far from this is the word stress. The latter aspect is very much the same among non-native speakers. Honey (1989, p. 106) states that Indian English has "revolutionised" the stress pattern of English. Bobda (1994, p. 265) agrees and maintains that

Honey's remark is not specifically of Indian English, but rather it is applicable to the whole world of non-native accents.

More specifically, Adjaye (2005) and Koranteng (2006) in the case of Ghana have noticed that Ghanaian people have what they call "Forward Stress Shift" (p. 40) which they apply to the first syllable of certain multi-syllabic words. Thus, the stress can easily be said to fall on a later syllable than it ordinarily would in the corresponding case of the native speaker. This is graphically presented by Adjaye through the use of words like aPPREciate and conSOlidate in British English. She claims that the stress in each word is pushed to the front (or forward) by Ghanaians, hence the forms appreciATE and consoliDATE in Ghanaian English. Lomotey (2018) supports this claim and also points out that the application of the forward stress shift does not always occur. She states that "there are cases where the first syllable of the word is stressed, even though the native speaker may assign stress differently". Moreover, she gives examples like "INfrastructure and PERformance, where the stress is shifted onto the first syllable instead of the second or third as might be expected" (Lomotey, 2018, p. 50).

Lomotey's research can, therefore, infer that the speakers of Ghana have more than one method of stressing the words, as there are different places for stressed syllables, and it does not affect the understanding among them. This is the reason why Jenkins (2000) did not include lexical stress in her Lingua Franca Core (LFC) and is of the opinion that there is a connection between the level of comprehension and the placement of stress. She points out that "intelligibility was rarely impaired by misplacement of lexical stress" and where it happened, it was "because of the following misplacement of nuclear stress" (p. 41).

On the other hand, the LFC has been under fire for many years. When the "vexed question of international intelligibility is raised" (Bamgbose, 1998 as cited in Atechi, 2004, p. 62), it could be taken as biased and incomplete. It is almost impossible to predict when one

would need English for international, national, or local communication, given the world's changing nature. The modern core does not contain some pronunciation features of native speaker varieties that are sometimes difficult in the international context; thus, Walker realizes that the LFC might require some tinkering because of the presence of native speakers among the interlocutors. Levis (2007) argues that the teaching of weak forms and vowel reduction may be considered strictly non-core in terms of production, but mutual intelligibility indicates it is a core feature for perception since NSs will reduce vowels and it is important for ELF listeners to be able to understand such speech. Walker supports and elaborates on how the LFC might apply to speakers of various languages.

After Jenkins, he actually adds in the central, rhotic /ɹ/ in all places, the non-flapped /t/ of British English, and word stress (an accepted gray area in Jenkins, 2000) due to its influence on the main feature of nuclear stress, besides vowel reduction and weak forms for comprehension. Moreover, some mistakes (for instance, final glottal stops) which are typical of certain people speaking English should be corrected as they might lead to the loss of intelligibility by disguising the nature of the final stop consonants (Walker, 2010, p. 44). The core has, however, been through criticism due to various reasons, particularly regarding the lack of word stress (Dauer, 2005; McCrocklin, 2012). In one situation, the application of the LFC as a measure for pronunciation teaching in China was revealed by Deterding (2010), who demonstrated what most experienced teachers are aware of, that pronunciation difficulties are diversified and include both errors of core and non-core features.

Trudgill (2005), speaking from a different angle, argues that LFC only deals with phonology or pronunciation. Besides, he claims that LFC is so vague that it overwhelms with the number of segments and the phonetic information of the vowel system. For example, there is nothing to say about the number of pure vowels, diphthongs, and triphthongs. He also maintains that the core is based on RP and GA which have different vowel systems and a

large number of words pronounced with different vowel phonemes. A redoing of the work of Jenkins (2000) found by Kennedy (2012 cited in Levis, 2007) that vowel and consonant segments, either singly or in combination, were the most common sources of unintelligibility. Among the supra-segmental features, it was just word stress that was implicated in the lack of intelligibility. Prominence or nuclear stress, on the other hand, was not a cause for unintelligibility. Kennedy proposed, moreover, that learners sometimes do not make it obvious that they do not grasp the meaning of a speaker and that researchers and teachers may be unaware that pronunciation is the reason. This issue can be associated with the kinds of interactive tasks that are implemented for data collecting so that both the listeners and the speakers have to show their comprehension.

Dauer (2005) again holds an opposite view to the LFC being a rhotic model based on a non-rhotic accent (e.g. RP). First, Jenkins does not reason the rhoticity of the LFC. If the distinguishing feature to separate /pɒt/ from /pɔ:rt/ is based on the vowel length, then the LFC seems to be overestimating the vowel length importance or at least this point has not been properly argued. Moreover, a word such as fire is pronounced as /fair/ in GA and /faɪə/ in RP. Still, the LFC does not say if such words should be pronounced as /fair/ (with a diphthong) or /faɪə/ (with a triphthong) because of rhoticity.

Dauer then argues against Jenkins (2000) concerning the learnability of word stress. She states that for LFC it is a major contradiction to consider the voicing of /p, t, k/ in the initial position of stressed syllables as being crucial for the intelligibility while at the same time discarding word stress. She maintains that it is impossible to make a correct use of voicelessness without being able to put the stress on the word correctly. As a result, the LFC does not consider the treatment of diphthongs and triphthongs which creates doubt about the segment sequence in the case of the words fire and others such as it which have different sequences in GA and RP.

The recommendations of the LFC, on the other hand, still provoke a lot of debates. Empirical data and evidence are not very strong around it, it treats all non-native speakers (NNS) contexts as being the same, and does not consider the role that stigma around pronouncing words in an understandable way (LeVelle & Levis, 2014) plays in the whole picture of communication that is actually going on between the LFC and the unsuspecting speaker of the native language. The LFC has been very attractive and at the same time the most confusing of all the proposals. It has been unstable, however, at the same time the vocal scholars keep questioning its reliability and demanding scientific proof for its prescription (Szpyra-Kozłowska, 2015, pp. 77-84). In his evaluation of the LFC, Walker sees it being indispensable for the pronunciation teaching process, thus granting the original recommendations a view of the classroom teacher. He also promotes the ELF (English as a lingua franca) priorities and reasons for him to think the LFC is suitable, raising the points of bottom-up vs top-down processing, mutual intelligibility, speaker identity, and teachability among others. According to Walker, one of the LFC advantages is that it acknowledges the fact that the process of bottom-up is used to a larger extent by the ELF speakers in their communication. This is to say that ELF are more of the acoustic signal's details in their communication than are NSs. In contrast, NSs are said to be more involved in top-down processing since they can more readily infer the intended meaning of a spoken message even when the segmentals seem atypical.

One more advantage of the LFC method is its acknowledgement of speaker identity as a characteristic that should be accepted. LFC does not see the point of being able to produce a native-like accent, and it won't even try to erase the speaker's 1st language influence, as long as understanding is not an issue. This is a given not only in communication between non-native speakers (NNS) but between native speakers and non-natives as well. In inner circle nations, particularly in big cities with a diverse immigrant population, a lot of people feel that

a native speaker's (NS) accent is not that important. In the end, Walker (2010, p. 63) confronts the notion of teachability by Jenkins. Walker claims, "many features that are inherent in a typical EFL syllabus are mostly unteachable." This applies to aspects like the use of tone and stress-timing in speech, creating weak forms, and altering speech in certain ways. On the other hand, “most of the items in the LFC are teachable, with classroom teaching leading to learning”. It's unreasonable to teach things that our learners cannot learn, but little evidence is provided regarding teachability. Actually, a lot of the features that are considered unteachable are the ones that Gilbert (2001), who is a strict advocate of teaching only those things that can be learned, provides as priorities for beginner learners: linking, word stress, and distinguishing strong and weak syllables. On the topic of teachable features, Walker (2010) takes this further with an example of nuclear stress placement. He argues that:

> *“Nuclear stress placement is teachable in the sense that the rules are simple enough for learners to master in the classroom, although for some learners there may be a noticeable gap between receptive and productive competence. As a result, our primary aim in the classroom will be to make learners aware of the existence and importance of nuclear stress. This should make them more sensitive to its use by other speakers, and consequently more likely to acquire competence in its use.”* (p. 64)

One can say that teachability is a characteristic of a subject with rules that can be taught and practiced by students, resulting in the acquisition of knowledge. Still, it is not synonymous with the term teachable. Any material can be presented to students. What is important is the degree of conversion of the teaching, or the input, into learning or intake.

2.4 Intelligibility testing

Intelligibility can be tested or measured by different methods. These can be the intelligibility of a spoken language type to certain linguistic groups, or the intelligibility of a specific form of speech to a particular linguistic group. Scholars, in particular, Peterson and Barry (1952), Jenkins (2000), and others, have conducted various testing over the years

where they performed speech intelligibility tests with native speakers, the use of different levels of noise during speech, the intelligibility of speech with and without context, etc. A specific give-and-take method that a researcher uses to test intelligibility will be the one that best suits the purpose of his/her study. For example, one of the methods used in L2 speech studies to assess intelligibility is by means of impressionistic subjective assessment rating scales judgement (as in Derwing & Munro, 1995, 1999). This method allows listeners to make explicit judgments about the speaker's overall speech intelligibility by assigning numerical values to speech samples. While it is relatively fast and easy, the method is also highly subjective and does not provide information on the pronunciation features that may have caused the intelligibility problem (Hardman, 2010; Munro et al., 2006).

Another evaluation that is based on personal judgement is the *buzzer technique of pressing* (Kenworthy, 1987). This method requires hearing a presentation and then hitting a buzzer or an intercom when the audience does not follow a part of it. The vocabulary at which they stop is treated as an indicator of speaker clarity (Kenworthy, 1987). This procedure is quicker than the ones that require writing. Nevertheless, it is still not a perfect approach for two main reasons: firstly, in situations where multiple listeners are hearing the same presentation, the investigator will not be able to determine who has activated the buzzer (Kenworthy, 1987). The second reason is that when a listener has a hard time understanding what the speaker has just said, he/she may not hit the buzzer but rather allow the incomprehensible utterance to *pass on* the (common-sense) assumption that it will be clarified through the clues which the listener can gather as the talk progresses (Kenworthy, 1987, Zoghbor 2010).

The cloze task which was used by Smith and Rafiqzad (1979) is the next method for measuring intelligibility. Through this technique, the audience is required to finish the blanks cloze task and it is done while they are listening to the reading of utterances. Matsuura et al.

(1999) invented a cloze procedure dictation exercise to check the intelligibility of American and Irish English speakers in Japan. The dictation test that was used in their research was a partial dictation (cloze task), whereby there were only ten blanks or words which had to be identified. The amount of words written down using the cloze test was pretty restricted. Such a test would offer the listeners contextual clues, and they might very well get high scores on the cloze test without actually listening to the audio tape. In this way, a more strict enumerating of intelligibility was suggested by the study of Matsuura et al. (1999) to be performed in the future research through the inclusion of a word-by-word dictation exercise.

There are also other methods that might be used in terms of word-by-word dictation exercise, which is a method adopted by Bent & Bradlow, 2003; Derwing & Munro, 1997; Gass & Varonis, 1984; Kashiwagi et al., 2006; Munro & Derwing, 1995; Munro et al., 2006; Osimk, 2009. In this type of testing, the participants listen to spoken test items and they have to write down their transcriptions from which the number of correctly transcribed words is used as a measure of the intelligibility of the speech. For instance Bansal (1969) who examined the intelligibility of Indian English, employed various test materials such as connected speech, reading of passages, sentences, and some words lists which were then reproduced to the listeners. Those listeners were instructed either to repeat what they heard or write it down. Tiffen's (1974) investigation was of a similar nature with connected speech, reading of passages, and some words and sentences being played to the listeners who were to write down what they heard and respond to a reading passage.

The present study made use of the word-by-word dictation method or *write down what you hear* method for the following reasons: To begin with, this method allowed the researcher to explore mismatches between the speaker recordings and the listeners' transcribed text in a more accurate way. That is, the listeners would disclose to the researcher all the words or phrases he had not understood. Secondly, it gives more permanent and easily

verifiable records for further study and analysis (Atechi, 2004; Deterding, 2013; Munro et al., 2006; Tiffen, 1974). On the other hand, the deposition of word-by-word dictation (transcription) method as a tool for measuring intelligibility bears certain restrictions too.

In general, this type of method does not consider the context of the situation (Osmik, 2009). Besides, the different methods used for testing intelligibility and the test materials have very important roles in intelligibility testing, which can be classified into: (1) scripted materials like word lists (applied by Bent & Bradlow, 2003; Irvine, 1977; Suenobo et al., 1992; Tiffen, 1974), sentences (as in Cunningham, 2012; Osimk, 2009), passages (Becker & Kluge, 2014; Kashiwagi & Synder, 2006, 2010; Munro & Derwing (1995); Major et al., 2002; Smith & Bisazza, 1982; Smith & Rafigzad, 1979; Suenobo et al., 1992), and unscripted materials such as spontaneous speech (used in Munro et al., 2006; Tiffen, 1974), interviews (Albrechtsen et al., 1980; Deterding, 2005; Wang, 1987), interactions (Deterding & Kirkpatrick, 2006; Jenkins, 2000; Smith, 1992), and unscripted material from television and radio programmes (van der Walt, 2000).

Kenworthy (1987) on these test materials puts forward the idea that both reading aloud and spontaneous speech are the simplest methods of evaluating intelligibility. Even though she believes that reading aloud is a good thing, she, however, notes that a lot of research has been conducted which indicates that students are likely to make more pronunciation errors when reading aloud as compared to when they are speaking spontaneously, due to the reading form of the words possibly leading people to use spelling pronunciations or to get spelling interference, particularly in the case of words which have cognates in the learners' native language. This leads her to the conclusion that spontaneous speech is the best channel for testing intelligibility because that is the same way people communicate in the real world. However, this is a too quick conclusion because spontaneous speeches are not without their drawbacks, Atechi (2004). Based on the sociolinguistic

knowledge, “the recording technique and the presence of an authority figure (the researcher in most cases) are very likely to encourage “attention paid to speech” (Fiyinfolu, 2019, p. 138) which might cause the subjects to adjust their speech in the direction of greater formality and correctness, and thus affect the very phenomenon under investigation, (Atechi, 2004).

It is significant that any researcher who is trying to examine the concept of intelligibility is faced with the major problem of measurement (Munro & Derwing, 1995; Pickering, 2006). This is in part due to the fact that a range of different methods has been used to assess intelligibility and none seems to be entirely suitable. The above arguments and the objectives and purpose of this study are what led this researcher to choose the word-for-word dictation or *write-down-what-you-hear* method. The test material is also quite appropriate in terms of intelligibility testing. For a careful investigation of this study, connected speech and other subsidiary test materials like reading passage, phonemic contrast elicitation, and nucleus placement in words are included.

Based on the literature review of intelligibility, it can be inferred that the matter is quite intricate so that many areas in particular World Englishes and second language pronunciation (SLP) operationalize it according to their respective targets and goals. Still, the WE researchers slant towards Smith’s (1992) restricted tripartite model of intelligibility giving priority to the three elements; intelligibility, comprehensibility and interpretability, while the SLP studies favor Munro and Derwing’s (1999) wide conception of intelligibility. Some researchers are concerned with the lingua franca and its intelligibility among speakers, considering the daily global interactions. Also, unlike researchers in World Englishes, many scholars in English as a lingua franca do not limit their research only to pronunciation or intelligibility in the narrow sense; they amalgamate the different aspects of understanding identified by Smith and Nelson (1985).

Pronunciation characteristics that touch upon segmental and suprasegmental features of the language are regarded as the main reasons for unintelligibility among speakers of English. A significant point in most of the studies is that the majority of the researchers were influenced by the traditional concept of intelligibility, Jenkins (2000). This sees intelligibility as a one-way problem in which the non-native speakers of English had to struggle to make themselves understood by the native speaker who was the unquestionable judge of what was intelligible. Thus, the main focus of the majority of the surveys is the comprehension of the non-native speech by the native speakers of English as if the NSs are intelligible to NNSs, NNSs to each other and again NNSs learning the language to communicate only with NSs, Jenkins (2000). Nevertheless, it is a fact that mostly interactions do not even consider the NSs and the intelligibility is sometimes impaired. So this study gets rid of the conventional concepts and takes a NN variety of the language and its speakers that is the intelligibility of the English spoken in Ghana as the main concern. The study indicates that Englishes and the speakers would not necessarily be intelligible as such if the speakers just felt at ease and spoke in their own way so that finished, the findings could be subtly contributing to the international franca core with Jenkins' controversial LFC for NNSs as a circular staircase.

In terms of testing intelligibility, Atechi (2004), stated that intelligibility can be gauged through either subjective or objective methods and further disclosed that there were no significant differences between the subjective and objective methods of assessing intelligibility and that we do not need sophisticated methods in intelligibility assessment or testing. Cloze test, connected speech, reading aloud, write down what you hear are some of the methods for testing intelligibility, Fiyinfolu (2019). It is argued that the type of investigation would determine the test materials; this work opts for the *write-down-what-you-hear* method. The work is exclusively a listening test and the *write-down-what-you-hear*

method turned out to be very successful in terms of listening to text. In conclusion, the work intends to evaluate the intelligibility of Ghanaian English taking into account a part of Ghana from the Upper West Region, the reason being that the limited intelligibility studies in the country have not included the Upper West, thus the need for such a study.

2.5 The Ghanaian linguistic context

Ghana's overall linguistic situation can be considered as one of the most intricate and complicated ones on the African continent. As Brato (2019) states: "Ghana is a multilingual country where more than 80 languages are living together peacefully and where the two major language families, the Kwa languages and the Gur languages in the north, are represented" (p. 120). It is worth mentioning that besides the numerous local languages, which of course are the children's languages of Ghana, external languages such as English, French, and Arabic also have their locus. English has been the second language as well as the major official language of Ghana owing to its priviledged position and the function it performs in the country. The population of Ghana speaks more than 80 languages out of which “the most widely spoken languages in the south are Akan (45%), Ewe (14%) and Ga-Dangme (7%); in the north, Dagbani (4%) and Dagaare (4%)” (Michaelis et al., 2013, p. 87). On the other hand, Koranteng (2006) claims that “the process of communication with people of different languages gradually introduces elements of one language into another and the reverse takes place also” (p. 1). This phenomenon concerning the extension of language; for example, English, through space and time has the effect of causing and allowing the emergence and coexistence of very basic differences within the whole (Montgomery, 2006). Thus, it can be stated that all the languages spoken in the country have in some way or the other been English's influencers and vice versa. It is a strategic linguistic positioning where English has been nativized by the various language groups in Ghana, drawing from the viewpoints of both Koranteng (2006) and Montgomery (2006).

It is quite natural that on some occasions, the audience can pinpoint the location of the speaker by the way he/she talks. This does not only suggests that we have the Ewe, Dagaaba, Asante, and other Ghanaian languages varieties of GhE. In this context, this research considers the population of the upper west region also called the Dagaaba and Sisaala people. Dagaare and Sisaali respectively belong to the Gur language family and therefore they could be perceived as languages sharing similar structure and rules. However, Dagaare has become so popular and is spoken widely in the upper west region that it has overshadowed Sisaali in terms of recognition. Thus, the study focuses on Dagaare in this section, since the L1 knowledge of the speakers will be a good indicator of phonological transfer of the speakers' L1 into English as Adika (2012) points out that GhE is marked by L1 features. The understanding of these difficulties in English sound pronunciation by the speakers is also of importance. When reviewing the literature on Dagaare, it is necessary to present a brief description of Ghana and the languages spoken in the country.

2.5.1 Ghana: A brief profile and indigenous languages

Ghana, in the western part of Africa, is estimated to have a population of approximately 28 million people (Ghana Statistical Service, 2016, p.2). The nation is physically situated on the Gulf of Guinea and shares borders with Ivory Coast, Burkina Faso, and Togo. The territory of Ghana is sectioned in sixteen regions, with Greater Accra being the capital city. The southern, coastal, and northern belts are the three main parts of the country from a broader perspective. It is also possible to think of two divisions in the country where both coastal and southern belts would be considered as one i.e.; southern belt and the second northern belt. It is very important to note that the country is a multi-ethnic, multi-cultural, and multilingual society with a variety of ethnic groups and languages. The exact count of indigenous languages spoken in Ghana is partly impossible to establish because adequate data isn't available for many of them. However, various opinions and views have

been expressed on this. For example, Dakubu (1996) claimed that there are 50 indigenous languages in Ghana, Akan, Ewe, Ga, Dagaare, and Dagbani being the most dominant. The latest report by Brato (2019) states that the number of languages in Ghana exceeds 80.

Adding to the complexity of the situation, most of the languages possess distinguishable dialects as well. For instance, Dagaare language consists of four dialects; Central, Northern, Western, and Southern. Moreover, each one of them has sub-varieties. Intelligibility is at times easily achieved and at times it is strategically negotiated. This multilingual situation has rendered the concept of mutual intelligibility with respect to English among Ghanaians an important area of research. It would be very wrong to think that the communication between cultures in English would be a simple affair just because there were so many L1s in those cultures. In Ghana, more than 80 languages are being spoken, out of which only five; Ewe, Akan, Ga-Dangme, Dagbani, and Dagaare are the most common, yet it is claimed that nine major languages are being taught which are Akan, Dagaare, Dagbani, Dangme, Ewe, Ga, Gonja, Kasem, and Nzema. The indigenous language spoken by most people is Akan and the percentage of the speaker is 45%. The other languages, therefore, are in the minority. Having created this context, the research will turn to the phonology of Dagaare in the next part, focusing on the ways in which it diverges from the phonology of Standard British English.

2.5.2 The Dagaare linguistic profile

According to Bodomo (1997), the language Dagaare is a member of the Oti-Volta group of the Gur branch, which is also known as the Mabia subgroup of the Niger-Congo language family, and thus, it is a two-toned language as opposed to English, a West Germanic language in the Indo-European language family. He goes on to say that it is a two-toned language. The idea that the Dagaaba's English bears the stamp of the Dagaare language and is thus influenced by the latter, while at the same time it is being a Western language, is not too

much to say if one considers the fact that these two languages have very different origins. This suggests that in all cases, whether there are similarities or differences among the languages, there is an influence, the former being positive and the latter being negative. In the Upper West Region of Ghana, Dagaare is the predominant language of the Dagaaba. Dagaare is a lingua franca for about a million people (Simons & Fennig, 2017), though this figure may be conservative and is spread over a vast region. Dagaare is a language that covers a continuum of dialects mainly in the Upper West Region of Ghana. Besides, the Savanna Region of Ghana also hosts some varieties of the language. The language also exists in Burkina Faso under the name "Dagara" (Ali et al., 2021, p. 3). The Dagaare Language Committee along with offering the orthographical conventions further divided the dialect into three broad categories: Northern, Central, and Southern Dagaare. Meanwhile, Dakubu posits the existence of a fourth dialect, Western Dagaare.

Even though these dialects can be understood among speakers to a varying extent, there still is a great variation, even from one village to another (Bodomo, 1997, pp. 2-5). In this light, there are some noticeable dialectal peculiarities that the English of the different speakers from Upper West possess, thus leading to both stereotyping and not hindering intelligibility among the Dagaaba educated. A Dagaaba person could be heard saying that typically a Waala (Southern dialect speaker) replaces /ʃ/ with /s/ in words like sugar and shoe, and a typical Nandome (Northern dialect speaker) replaces /d/ with /t/ in words like *good* and *board*, among others. It has been noted that a person whose L1 is Central Dagaare exhibits almost all the features that are present in the spoken English of Northern, Western, and Southern Dagaaba. Yet, the discourse on intelligibility in the spoken English in the Upper West region encompasses all the sub-tribes of the area.

2.5.3 The phonology of Dagaare

Central Dagaare has been the standard dialect for educational purposes in Ghana, church literature, and radio analysis on Dagaare among the dialects of Dagaare, which were mentioned earlier. This includes the early work of Wilson (1962), Kennedy (1966) and Hall (1977). Consequently, the phonology of Central Dagaare would be discussed later on.

2.5.3.1 The vowel system

Dagaare can be analyzed in terms of nine oral vowel phonemes, namely, [i], [ɪ], [u], [ʊ], [o], [e], [ɛ], [ɔ], and [a]. All of these vowels have their long versions, and the contrast between short and long vowels of the same quality results in differences in meaning (Ali et al., 2021) such as /tǒr/ 'self', /tɔ́ɔ́r/ 'far'. One can easily see that central vowels /ə/ and /ʌ/ as well as diphthongs and triphthongs are completely lacking in the Dagaare vowel inventory. Considering the fact that Dagaare does not have English vowels /ʌ/ and /ə/, Osuman and Dansieh (2018) suggest that there are only a few pronunciation difficulties in the speech of Dagaare students, with a lot of substitutions going on. For instance, discussion / dɪ'skʌʃən / */ di'skɛsin /, teacher /ti:ʧə/ */ti:ʧa/, ago /əgəʊ/ */ago:/, and month /mʌnθ / */mɛnf/.

2.5.3.2 The consonants of Dagaare

Dagaare possesses twenty-five consonants and two glides in its basic representation (Ali et al., 2021). per Ali et al. (2021), the voiceless glottal stops of /h/, /l/, and /m/ phonemes are recorded only in the northern dialect of the language (which is mainly spoken in Burkina Faso and referred to as Dagara); such sounds do not occur in the southern and central dialects. Furthermore, the consonants [r] and [ɣ] appear at the surface level, where they are conditioned as allophones of /d/ and /g/ at initial positions and in-between vowels. There are many points in common between the phonetics of Dagaare and English; however, each of the two languages presents with quite distinct sets of sounds. The sounds present in English do not have exact correspondences in Dagaare and thus, the latter's set of consonants comprises

of vowels and fewer sounds, e.g. in the opinion of Bodomo (1997), the sounds /ʃ/, /ʒ/, /θ/, and /ð/ do not occur in Dagaare. Conversely, the sounds /kp/, /gb/, /ɲ/, /ŋm/, /ʔ/, /ɦ/, /'l/ present in Dagaare do not have counterparts in English. The very fact that certain consonants are missing causes the speakers to approximate. This leads to a reorganization and hits differently from Standard Spoken British English (SSBE). For example, the sound /θ/ is produced as /t/, while /ð/ is realized as /d/, /ʃ/ as /s/, and /ʒ/ as /z/.

Dagaare does not use the voiceless labio-dental fricative /v/ at the end of words, for example, /pru:v/. When Dagaale students hear this sound at the end of English words, they convert it to its voiceless counterpart /f/ as in /pru:f/ for prove (Osuman & Dansieh, 2020). They also note that English has /z/ in the initial and final positions as in zoo and prize but Dagaare has /z/ only in the initial position as in /zɪŋ/ – blood. Therefore, Dagaare students encounter English words with /z/ at the end and replace it with its voiceless counterpart /s/ as in */lu:s/ for /lu:z/. It is noteworthy that not all the speakers from the region have these consonant and vowel peculiarities. Some can produce them correctly, which could be due to the influence of teachers and other computer-assisted language-learning (CALL) programs.

2.5.3.3 The tonal system of Dagaare

Bodomo (1997) discusses that the quality of the sound in terms of pitch depends on the speed of the vocal cords' vibrations. So, the higher the speed of the vibrations, the higher the pitch. The sounds of the world's languages are categorized into two main groups, namely, tone and intonation languages that are based on pitch. Anderson et al. (2015) suggest that if pitch is changed on the level of syllable or whole words giving completely distinct meanings, it is tone and if it is done through word combinations (phrases and sentences) to have different types of conversational functions (statements versus questions) then it is called intonation. Thus, a language with a tone system is referred to as a tone language or a tonal language while a language with an intonation system is referred to as an intonational

language. As per Bodomo (1997), Dagaare is a tone language and English is an intonation language with respect to pitch differences in both the languages.

Dagaare, being a tone language, exhibits the major tone types such as register tones, tonal polarity, contour tones, and perturbations (Bodomo, 1997). Tone in Dagaare works in two modes, one being lexically and the other being grammatically. In the lexical aspect, certain words in Dagaare have identical segmental composition but differ in tonal structure. The semantic difference is due to this difference. High or low tones on the same word can result in different meanings. A few examples are /tú/ to dig, /tù/ to follow, /nɔ́ŋ/ to *massage* and /nɔ̀ŋ / to *love* are such cases. At the grammatical level, there are some Dagaare words which are composed of the same elements but show different meanings through different pitches. The examples are O wá wo̩ *He/she has not come*, and O kʊ̀ŋ gáá *He/she will not go*. This study is important because it discloses that the tone in Dagaare can take over both the primary and the secondary syllables of a word. The following are cases of different tones functioning in one Dagaare word that has multiple syllables:

High - High /bíé/ *child*

High - Low /gb ɛ́ ɛ̀/ *legs*

Application of this knowledge combined with ignorance of the fact that English is not a tone language lead some Dagaaba to use such complexes in their pronunciation of certain English words which do not require toning. For instance, */ híə / *is the man*. Here is the man and * I am / híə / to / siə: / *you I am here to see you*.

2.5.4 Summary

There are so many ways in which Ghanaian English varies with British English including phonology and grammar. The first language transfers along with the interference of American English have changed the English spoken in Ghana. In terms of phonology, the vowels and consonants have undergone some changes which include vowel quality, vowel

quantity, vowel reduction, and the interaction between voiced and voiceless consonants. Additionally, stress and intonation have been pointed out as some of the phonological features that are different from the British English. It has been claimed that these changes could make a Ghanaian speaker unintelligible when interacting with speakers of other varieties. Even among Ghanaians, comprehension is not at 100% as illustrated by Brown (1968) due to the fact that the country is multilingual with different native languages and also other factors gradually altering the English language. It should be noted that certain factors related to the speakers and the listeners can actually enhance comprehension if properly utilized. Therefore, the lack of proper handling of such factors would lead to misunderstanding.

2.6 Conceptual framework

The present work deals with the topic of intelligibility, basing its argument on the concept proposed by Smith and Nelson, but it mixes the three concepts because they are a continuum and it is very hard to state where one ends for the other to start. The research intends to reveal the problem of intelligibility with the speakers of a New-Norm variety; thus, the speakers of Ghana English. According to Wang (1987), "even among speakers from the same speech community, geographical and social status differences may affect speech intelligibility" (p. 69). So, it is quite natural that Ward (1929, p. 5) who did an earlier study mentioned that "a Cockney speaker would not be understood by a dialect speaker of Edinburgh or Leeds or Truro, and dialect speakers of much nearer districts than these would have difficulty in understanding each other" in Britain. Wang (1987) lists regional/sociolinguistic, physiological, extralinguistic/nonlinguistic, paralinguistic and linguistic factors as the main ones affecting intelligibility. In the past, Atechi (2004) and Pickering (2006) have classified the phonological features to be either segmental or suprasegmental as the context and familiarity among others as the factors influencing

intelligibility. They have divided the various factors into speaker factors, listener factors and contextual factors. They relate the phonological variables to the speaker, the familiarity variables to the listener and the contextual use of the words to the context.

In his critical review on the factors that influence intelligibility and comprehensibility, Chan (2021) widens the scope to the variables especially and divides them into three equally categories: speaker factors, listener factors, and contextual factors. He claims that all these factors can either enhance or hinder speech intelligibility. The factors' relationship to intelligibility is illustrated in Figure 2.1, which has been taken from Chan (2021). It can be seen from Figure 2.1 that there are many factors that have a direct impact on intelligibility; yet, some of them are linked to the speaker, some to the situation, and the rest to the listener. It could be seen that the contextual factors influence both the listener and the speaker, and the mechanism of this influence is elaborated on later.

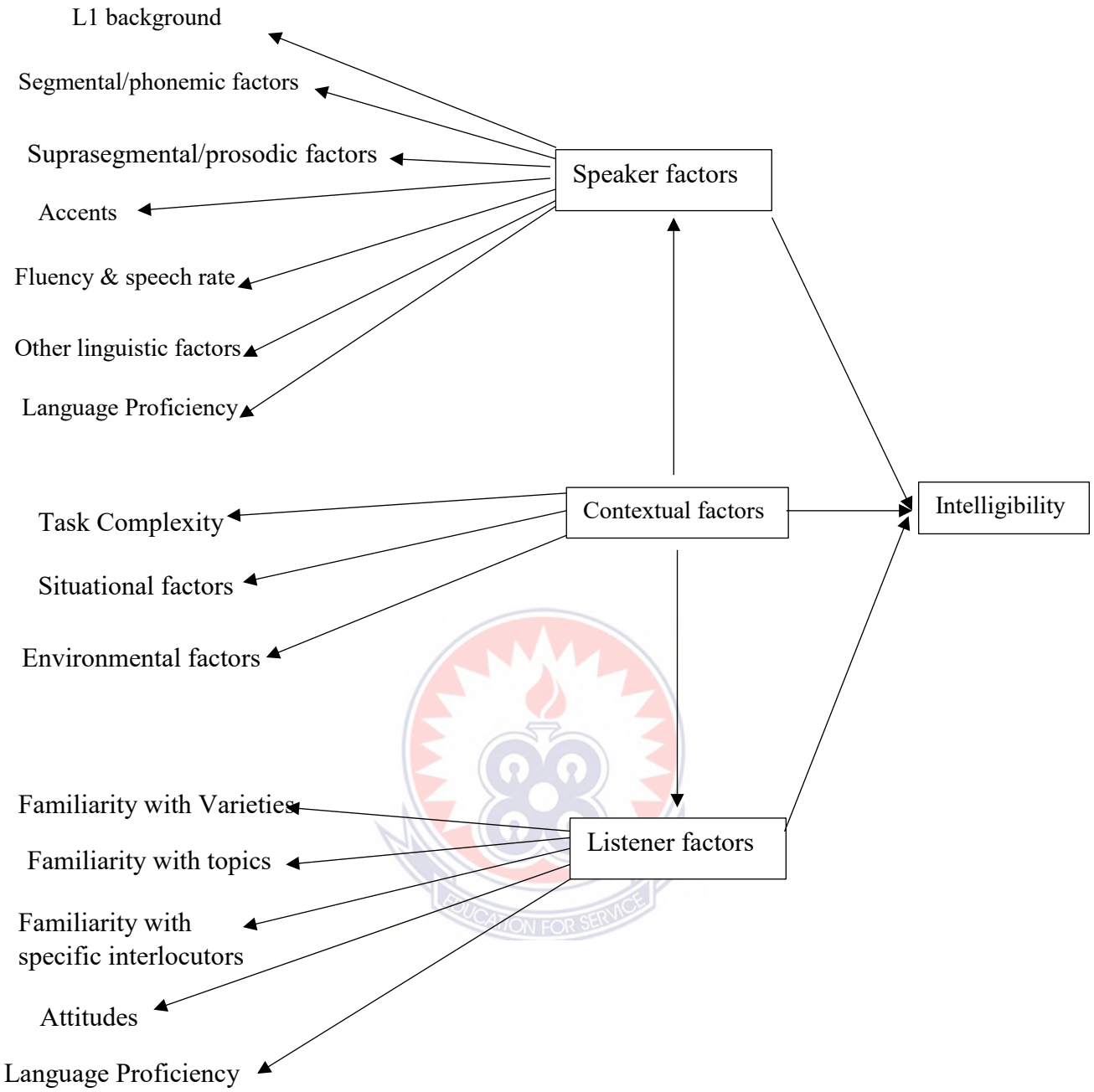


Figure 2.1. Relationship between intelligibility and its factors (adopted from Chan, 2021)

2.6.1 Speaker factors

In all kinds of conversations taking place in different oral communication settings, the turn of speaking is a common practice among the participants depending on the nature of the dialogue. They are expected to be clear enough for their interlocutors to understand them for

effective communication. Atechi (2004) brought the issue of intelligibility among the Cameroonians, Britons, and Americans to light by stating that pronunciation differences among the speakers caused the intelligibility breakdown between these people. A related study by Fiyinfolu (2019) also mentions that certain pronunciations by speakers from Nigeria rendered them unintelligible not only to the British listener but also to some Nigerian listeners. To be able to critique it, one may ask why a speaker would pronounce words in that particular manner. In this context, Chan (2021), Fiyinfolu (2019), and Reithofer (2020) contend that many factors such as the speaker's L1 background and speech rate could affect pronunciation in such a way that the speaker would either be intelligible or unintelligible to the listener. The speaker-related factors are discussed next.

2.6.1.1 L1 Background

The first studies examining L1 influence didn't show L1 as a factor neither for good nor for bad regarding intelligibility and comprehensibility. If we narrow down the studies exclusively to L2 speakers of one L1 group (Winters & O'Brien, 2013) or even group them together as multiple L1s treated as one (Kang et al., 2010), still Crowther et al. (2015) using the former approach forwarded researchers struggled with the issue of L1 through ten English native listeners' comprehensibility assessments of L2 English speech (L1s=Mandarin, Hindi, Farsi [n=15 each]) and thus proposed that linguistic factors affecting comprehensibility depend on the speakers' L1 origin. The Mandarin speakers' results turned out to be significantly less comprehensible than the others, which lent support to Kang et al.'s (2010) finding that and Japanese speakers' inappropriate word emphasis and heavy L2 accents were more frequent than others (e.g., Hindi, Russian, and Arabic).

Though, on the other hand, one can cite Derwing et al.'s (2008) study that lasted for two years where the L1 of the Chinese and Slavic speakers was found to be a factor that only negatively affected Chinese students' speech ratings whilst positively affecting Slavs. It is

also the case with the study by Derwing and Munro (1997) whereby the researchers looked into the interplay of intelligibility, comprehensibility, and accentedness of intermediate ESL learners (L1=Cantonese, Japanese, Spanish, and Polish). It has been shown that while L2 speakers had an accent it did not affect the intelligibility of the L1 listeners and no difference in the intelligibility of speakers was noted based on their L1's linguistic characteristics. The differing results could be explained by the participants' diverse first language (L1) backgrounds, which made it impossible to identify a single linguistic feature that could universally predict intelligibility for speakers with various L1s. In addition, the speakers' exposure to English, as well as the population of English speakers in different contexts, varied differently. L1 raters' various attitudes, exposure to English varieties, and education backgrounds (e.g., the case of undergraduates in Derwing and Munro, 1997 and English teachers in Crowther et al., 2015) could also be factors influencing these inconsistencies.

2.6.1.2 Segmental/phonemic factors

According to Jenkins (2000, 2002), pronunciation problems were the main reason for losing comprehensibility or intelligibility, and the majority of such cases occurred at the segmental level in her study of interlanguage talk (ILT). She makes a very strong case that non-bilingual English speakers (NBES) hear sounds in a bottom-up manner which greatly contributes to the utterance being unintelligible. On the contrary, top-down processing "uses knowledge and expectancies to guess, predict or fill in the perceived event or message" (Pinker, 1994, p. 474). This is associated with most bilingual English speakers (BES) who are able to overcome the language barrier as a result of the process of listening comprehension. Jenkins (2010) once more specifies three categories of segmental deviation types: sound substitution and conflation, consonant deletion, and sound addition that are the characteristics of both NNS speech that is less or more intelligible. She states that speakers of the same L1 would have no problems being heard among the different deviations and that largely due to

the fact that those deviations are the part of their English dialect. This implicitly means that the speakers of different L1s would have to rely on other aspects to achieve intelligibility when such deviations happen. This is mirrored in Ghana where GhE is the major variety and one may quickly assume that all speakers are intelligible due to the same accent. Nevertheless, Brown's (1968) research disclosed that people with the same mother tongue were significantly more intelligible than those speaking different languages in Ghana.

It would not be completely unreasonable to assume that the common features shared by the different ethnic groups facilitate speech intelligibility amongst the speakers of different mother tongues and that the influence of familiarity and other factors cannot be completely ruled out. However, some ethnic characteristics do have a negative impact on comprehension. One example is Quartey's (2009) making it very clear that the Ghanaians of Akan descent usually replace /l/ with /r/ and vice versa. As a result, in a chat with a normal Akan in English without being aware of this pronunciation problem and also failing to use top-down processing or contextual cues, such substitutions are most likely to cause a lot of confusion because, for instance, a target word *pray* may be pronounced as *play*. Though play is not a non-word, it would equal misunderstanding of the intended message. Osuman & Dansieh (2020) also mention the issue of substitution of /ʃ/ with /s/ by the typical GhE speaker from the Upper West Region, thus *she* /ʃi:/ may sound as /si:/ *see/sea* and this could impair intelligibility if context and familiarity are not considered.

Deterding (2005) discovered some phonetic problems based on the transcripts and comments of the undergraduate Singaporean listeners. One of them was, among others, the fronting of the high, back, rounded vowel. He mentioned 'th fronting,' glottalization of medial /t/, which were barriers to understanding. Expanding the scope, Jenkins (2000) scrutinized the conversational and information gap task data she had obtained from L2 mixed language dyads. For instance, in a typical case, (B) a Japanese speaker is talking about a

group of pictures (one of them is a red car that is not for hire) to (A) a Swiss-German speaker. As Jenkins illustrates, even though there was only one picture with cars, which were red, and there was no sign that they were for hire, (A) goes on "adjusting the context and/or co-text to bring them into line with the acoustic information rather than vice versa" (2000, p. 90).

A: I didn't understand the let cars.

What do you mean with this?

B: Let [let] cars? Three red [ed] cars (very slowly)

A: Ah, red.

B: Red.

A: Now I understand. I understood car to hire, To let. Ah, red,

yeah I see. (p. 81)

Definitely, the replacing and merging of /r/ and /d/ with /l/ and /t/ in "red" made the word unclear and that partly due to the bottom-up processing which is mostly used by NNS during conversations. It is very convenient to mention, however, that the bottom-up processing of information narrative is changing in recent times as some NNS at times hold on to several factors like context among others for intelligibility to be achieved. Thus, they are now getting used to the top-down processing as shown by some speakers in the present study. Meanwhile, Jenkins' findings on the conversational and information gap task data resulted in what she calls a lingua franca which would help in intelligibility among NNS, considering the fact that most of their daily interactions are among them.

2.6.1.3 Suprasegmental/prosodic factors

According to researchers, the Jews Embassy in Poland and the New York Museum of Jewish History paid more attention to the prosodic variables than the segmental ones (Anderson-Hsieh et al. 1992; Anderson-Hsieh & Koehler, 1988; Munro & Derwing, 1995). Thus, Derwing and Munro recommended that the increase in the NNS intelligibility (the NS

receivers) "will probably go hand in hand with the increase of grammatical and prosodic proficiency rather than being solely dependent on the correction of phonemic errors" (1997, p. 15). Hahn (2004) emphasized the case of sentence stress, which is a suprasegmental feature, as the cause of misplacement of sentence focus leading to listeners' difficulties in recalling information from a lecture. The research reviewed three circumstances in which a Korean-English bilingual was presenting the same information: correct focus placement, incorrect focus placement, and no focus placement at all. All three situations together used a text that was, technically, perfectly intelligible. Nevertheless, when unexpected words were given special emphasis, or when no emphasis at all was used, listeners did not recall the information with the same degree of success. Moreover, the speaker's likability was judged as more or less depending on the emphasis pattern.

Atechi (2004) in a study done in the same context, says that the nuclear stress caused unintelligibility of speech in Cameroonian, British, and American Englishes and the reason was that the speakers participating in the study were not aware of the positioning of the sentence focus. In general, the sentences were spoken with no focus at all. This implies that if the speakers had placed the sentence stresses correctly, then the chances that intelligibility would be accepted as quite high, especially in the case of the native speakers. In a psycholinguistic experiment, where lexical stress and vowel quality were varied on sets of disyllabic words, Field (2005) measured both NS and NNS listeners' performance. The words were recorded with normal acoustic cues. There existed conditions when stress was moved either left or right, and in some instances, vowel quality was changed. When subjected to an intelligibility measure, it was found that both listener groups were significantly impaired by altered stress patterns, especially when the stress was shifted to the right, yet nonnative listeners still had a greater difficulty in correctly identifying the words in the standard, unmanipulated group when compared to the natives. Field concurs with Jenkins that “the

evidence is emerging that NNLs place greater reliance on interpretations at word level even in the face of contradictory evidence" (Jenkins, 2004, p. 418).

One more suprasegmental feature is rhythm. Levis (2007, p.29) argues that rhythm in English causes pronunciation changes both at the word boundaries and within the words, especially in casual informal speaking. For instance, the word *polite* is more likely to lose its first unstressed syllable and be pronounced as p'lite, which may be misunderstood in the context as plight. Native listeners are supposed to take the additional cue, the length difference for the stressed vowel, but there is no certainty that non-native speakers will consistently pay attention to or produce this cue. Palatalization along with reductions at word boundaries can completely conceal the identity of words, so that sentences like *Did you eat yet?* may sound like *Didja eat yet?* or even *Jeechet?* At the same time, some of these listeners also showed strong listener annoyance with this inner circle variety that was unfamiliar to them. In the examination of ELF interaction, Jenkins additionally noted that NBESs facilitated communication with one another, thereby enhancing intelligibility, by adopting more target-like patterns and lowering L1 transfer characteristics when dealing with these high-risk core areas. Rhythm has the capacity to affect intelligibility, particularly for non-native listeners.

2.6.1.4 Accent

It was possible to infer from Munro and Derwing (1995) that accentedness refers to the quantity of distinction between an utterance and a local or a standard accent. Accentuating the arguments put forward by Ockey et al. (2016), it may be stated that the matter of accentedness should not be overlooked in research for it is the accent that almost always is a character point owing to the supposed tight connection between it and the understandability of speech as well as its possible role in the assessment of spoken language. Levis (2007) acknowledges that accent undoubtedly can be a barrier to comprehension, but

the studies have revealed that one and the same speaker can be rated with a very heavy accent and be perfectly intelligible (in the sense that every word uttered is understood) at the same time. Levis (2007) goes on to say that accentedness is a continuum, since it is possible to talk about the listeners' perceiving the speech as accented to different extents in relation to the reference accent or another accent. Nevertheless, it is not easy to communicate the differences between accents in terms of thick, heavy, or light without some kind of a measurement in place. Accentedness ratings of this nature appear, in fact, to be the most susceptible to influences like stereotypes and other social assessments, perhaps resulting in the stereotypical perceptions of accented people being less honest (Lev-Ari & Keysar, 2010), less clear (Rubin, 1992), or worse teachers (Major et al., 2002).

Among the most significant studies of factors influencing L2 pronunciation in adults, Purcell and Suter (1980) conducted one of the largest ones. Based on Purcell and Suter's earlier study (Suter, 1976), four predictive factors of accented speech were established: native language, oral mimicry aptitude, duration of stay in the L2 environment, and concern for pronunciation accuracy. They reached the conclusion that the role of a language teacher in students' correctness would be minor because the concern for accuracy is the only factor that can be influenced and it has already been identified as the most important predictor. In dealing with the case of Russians speaking English, Thompson (1991) came to the conclusion that the criteria for the judgment of non-natives' phonetic quality by native speakers were primarily dictated by the age of immigration, sex, self-assessment of oral mimicry ability, and overall L2 proficiency.

There are earlier researches on the topics of accent and stress in English (e.g. Low, 2006; Riney, et al., 2005; Scales et al., 2006). Low (2006) points out that the information that is already known is usually de-accented while the new one is mostly accented in the majority of English varieties. Also, Riney et al. (2005) point out that some of the articulatory

characteristics are connected to the NNSs' perceptual judgments of accent in English. They explored NNS listener perceptions of English through the lens of World Englishes. However, Scales et al. (2006) suggest that there are no significant correlations between the ability to recognize accents and the time spent in the USA or studying English. On the contrary, there is a strong correlation between the accent rated as the easiest to understand and the one that the participants liked the most.

2.6.1.5 Fluency and speech rate

Fluency comprises a variety of characteristics and it is quite impossible to give a very accurate definition of it (Riggenbach, 2000 cited in Levis, 2007). Anyway, it encompasses at least speech rate, phrasing, grammatical grouping, and final lengthening, together with timing all mixed up in a soup pot (Levis, 2007). It can happen that even native speaker (NS) speech is judged as disfluent since they might produce too many and wrongly placed filled pauses (e.g., um) or they might suffer from a pathological condition like stuttering. For native listeners, disfluent English speech is a distraction causing interruption during the hoisting up of a message. Overly fast speech, too, without proper pauses and emphasis, is a hard nut to crack for a speaker's message. For nonnative listeners, very fluent speech may seem impossible to process just because of its speed. It is generally agreed that slower speech and less fluent speech are more likely to be processed. Absences of fluency in a speaker's speech usually means that the speech will be full of self-corrections, hesitations, and grammatical restructurings. From Kenworthy (1987) it may be inferred that speakers who hesitate a lot also tend to have poor pronunciation. A step further, Atechi reports that listeners will find such a speaker very difficult to understand which in the long run can make the speech unintelligible. Fluency is found to be correlated with comprehensibility (Thomson, 2015) in which breakdown fluency (Derwing et al., 2004; Kang et al., 2010) and repair fluency (Iwashita et al., 2008) are also associated with the comprehensibility of speech.

From the perspective of speaking, non-native speakers are likely to exhibit fluency along with proficiency and practice. The use of language chunks might promote fluency but mainly it is to a greater speech automaticity which means that the different aspects of language do not need to be thought about equally during communication (Gatbonton & Segalowitz, 1988, 2005). Fluency and speech rate are intimately linked. Although some second language (L2) speakers may produce their speech at an extremely fast rate (Munro & Derwing, 2001), there is an even larger number of others who talk so slowly that the native listeners cannot understand them. It might give North American English listeners, for instance, the impression that some second language speakers (e.g. Indian speakers of English) speak too fast, but what they may be perceiving as a fast speech rate could also be a matter of an unfamiliar rhythmic pattern where more syllables are strongly stressed than expected. One more reason why a speech might be difficult to follow is its being rapid. When a speaker talks too fast, it might lead to misunderstanding. This is what Orikasa (2016) found when he measured how intelligible were Korean, Mandarin, Vietnamese, and American English to 31 Japanese L1 raters. The American female and the Vietnamese male were rated as relatively unintelligible, which was attributed to their rapid speech rate. While the findings corroborate Matsuura et al.'s (2014) work and Anderson-Hsieh and Koehler's (1988) results that speech rate affected comprehensibility, it should be taken into account that the sample size was small since there was only one speaker of each sex per variety. Consequently, the author concludes that speed has "been less of an issue seen" as it may happen that two or more persons or speakers opine with the same speed of speech and one is still more comprehensible than the other (Atechi, 2004, p. 47).

2.6.1.6 Other linguistic factors

Intelligibility greatly depends on the medium of communication. A face-to-face interaction using gestures, facial expressions and possibly, louder voice usually is more easily

understood than a non-verbal interaction. Extralinguistic or non-linguistic factors are the major contributors to intelligibility in a face-to-face interaction. Palmer (2006) alludes to the fact that the non-linguistic factors might bring about verbal behavior that could lead to unintelligible responses by chance. Several researchers assert that pronunciation is the most significant factor that stands between the two parties failing to communicate successfully (Jenkins, 2000) but, at the same time, other linguistic variables also influence intelligibility and comprehensibility. Different authors suggest that lexical variations (use of local vocabulary) may act as a barrier to understanding (Nelson, 1995), whereas others (Meierkord, 2004; Saito & Shintani, 2016) show that syntactic and grammatical factors have less influence on comprehensibility than phonological and temporal aspects. Other pragmatic factors are speaker-listener interactions, communication strategies (e.g., clarification, questioning), and involvement (House, 2002; Seidlhofer, 2001).

2.6.1.7 Language proficiency

The way listeners comprehend speakers has been demonstrated through discourse analysis (e.g., Gunperz, 1982) to be affected by the pronunciation, grammar, and discourse level patterns of the speakers. The latter are directly associated with Munro et al. (1995) and Huensch et al. (2021) who claim that speaker proficiency does indeed factor into the issue of speech being intelligible and comprehensible. Inconnection with this, Schmidgall (2013) points out that pronunciation and grammatical accuracy as well as domain-related expertise are among the chief factors determining a speaker's proficiency in the *target language*. He distinguishes the phrase target language in his claim, which implies that the target variety could also be the case, and thus in the discourse setting where the target variety is SSBE, speakers must show a certain level of accuracy in the various aspects of the language to be regarded as proficient speakers of that variety. Hence, when speakers of that target variety use different accents considering a certain aspect of the target language, the listener who is

accustomed to that target variety will most probably have a hard time understanding due to the impaired intelligibility.

When the talk is about non-native speakers of English, Eger et al. (2017) get to the point that one of the many trials faced by second language learners is to deal with the correct perception and production of words that have difficult second language sounds. To give an example of this, Llompart et al. (2018) mention that German learners of English have a hard time telling the vowels apart in the word pairs such as *pen* and *pan*. Therefore, they are often thought to have a foreign accent. Foreign-accented speech typically strays from the pronunciation patterns of native speakers of the target language and thus is not only still harder for acoustically the same people, but also for listener groups (both native and non-native) (Iman et al., 2003; Van Wijngaarden, 2001). Connecting this with Schimidgall's idea, it signifies that the Germans being different in some of the segmental and suprasegmental characteristics from the natives would be regarded as not being so competent in the native varieties and they could be heard as not understandable by the natives or some non-native speakers who do not share the same characteristics with them.

2.6.2 Contextual factors

The main point of the presented arguments is that context is essential to making speech understandable. The semantic context, which is the surrounding issue during the speaker-listener interaction, together with other situationally-specific factors may help and/or impede the listeners' intelligibility and comprehensibility (Schmid & Yeni-Komshian, 1999). I am of the opinion that the issue of context has an impact on both the speaker and the listener. This is so because the speaker would have to think about that before making an utterance and likewise the listener. Fry (1954, p. 15) claims that the context can increase the intelligibility up to 12 to 14 times. This implies that context plays an extremely important role in making speech understandable. For instance, the English speaker from Upper West Ghana

would say the word shoe like /su:/, and it is clear that the likelihood of even an English native speaker or another NNS in Ghana understanding the word or recognizing the word in isolation will be less than the case of knowing the word by the context, say the sentence, *The student was asked to wear black shoe with white socks to the assembly*. This situation is more so because the other words in the utterance like *students*, *black*, and *white socks* are capable of helping the listener even if s/he did not understand the word upon hearing it at first. To put it another way, if the school in the community has a rule that all students have to wear black shoes, and the listener knows that, then understanding the targeted word is made really easy considering the words surrounding it.

2.6.2.1 Task complexity

Trofimovich et al. (2017) claimed that "the majority of earlier investigations which examined the linguistic correlates of accentedness and comprehensibility have one common methodological feature: the application of a single task (picture narrative) in which L2 speakers narrate a series of ordered images" (p. 549). O'Brien (2014) and Saito et al. (2015) are among those who maintain that the use of a single task yields a direct comparison of results. Nonetheless, Trofimovich et al. (2017) contend that the use of a single task narrows down the view of language teachers regarding the range of L2 speakers' performances that may vary according to the tasks used. This is based on Shekan's (2009) assertion that speakers focus on different linguistic dimensions as per the cognitive load of a speaking task. According to Skehan's (2009) limited capacity model, L2 speakers would perform better in either accuracy or complexity depending on the amount of attention that is needed to process the content of the task. In other related studies, Robinson's (2005) cognition hypothesis claims that different tasks may bring forward different kinds of linguistic output depending on such task features as the provision of planning time or the obligation to talk about abstract topics. The influence of task complexity on comprehensibility, fluency, and accuracy has

been established with higher comprehensibility in conversational tasks as compared to monologic tasks (e.g. Bergeron & Trofimovich, 2017; Ejzenberg, 2000).

2.6.2.2 Situational factors

Different investigators have indicated that situational factors have been fewer in number as the previously studied aspect but are still likely to affect comprehensibility (Derwing et al., 2008; Nelson, 2008; Pickering, 2006). Schmigall (2013) points out that situational factors have been frequently neglected. Inference from Levi-Ari (2010) suggests that situational factors might be very important for listener's evaluations of non-native speakers, as they tend to rely more on top-down processing. Kachru (2008) provides a comprehensive list of situational factors that can affect comprehensibility, such as the people involved, the aim of the communication, and the manners of interaction. To illustrate, Field (2005) mentions the listener's fatigue as one particular circumstance that can render speech unintelligible.

2.6.2.3 Environmental factors

Several studies have shown that noise is one of the environmental factors that can affect speech intelligibility (e.g., Rogers et al., 2004; Van Wijngaarden et al., 2002). The presence of noise along with speech creates a barrier that affects both communication and learning. A notable part of the interference in communication during educational scenarios "is the failure of students to hear words or phrases correctly, hence the decrease in the quality of the cognitive tasks" (Turrero et al., 2001, p. 176). A number of the studies pointed out high-noise chronic exposure as a negative impact source in classroom activities (Woolner et al 2007; Shield and Dockrell, 2008). It is difficult to decipher how exactly noise affects performance and the issue has been a subject of inquiry by many scientists across different eras (cited in Broadbent, 1957, 1981; Jones & Broadbent, 1979; Kryter, 1970, 1994; Santalla

et al., 1999). It has been shown that a normal-hearing listener can be accurately predicted for the audibility of a specific speech sound through the specific noise (Benjamins et al 2015, Moore 2008; Bronkhorst 2000) and the speech interference level (SIL) or the articulation index (AI) (Beranek, 1947) can be applied to forecast the speech-masking ability of a vast selection of noises.

2.6.3 Listener factors

Every intelligibility study considers listeners as a major factor. Pickering (2006) and Chan (2021) are among those who have explicitly stated that some listener variables could impact speech intelligibility, even if the speakers are not influenced by any of the factors that affect it. The ensuing discussion revolves around the listener factors that are considered in terms of intelligibility.

2.6.3.1 Familiarity with varieties

One of the factors working in favor of intelligibility is the familiarity of the listener. Smith's (1992) survey showed familiarity as a major factor allowing the listener to interpret the speaker's message correctly. The extent of intelligibility will depend on the listener's familiarity with or exposure to that particular English variety (Atechi, 2004). Bansal (1966), for example, discovers more intelligibility in Indian English among Indians with the same mother tongue than among those without. In another investigation, Smith and Rafiqzad (1979) realized that the listeners' filling in of the doze-procedure test of their compatriots' text was done with 757 accuracy or higher in every country but Korea.

The likes of Guido (2012) notice that one of the characteristics in the ELF contexts is that the speakers of different languages incorporate the L1 elements into the English language creatively. That is why the intelligibility of the speakers and the listeners being the same L1 speakers has become a topic of discussion and research. For example, would a German

listener of the English language comprehend a German speaker better than a Spanish or an American listener would? In this context, Bent and Bradlow (2003) introduced the matched interlanguage speech intelligibility benefit, a fortuitous circumstance resulting from the mutual knowledge of the interlocutors regarding consonant and vowel categories, stressing patterns, intonation, and the rest. Another aspect of this presumed advantage could be that people with the same L1 usually have the same culture in terms of sharing the same (linguistic) conventions and the likes (Kachru 2008, p. 311) and therefore, in an ELF setting, they understand each other better. This advantage has been confirmed in various studies in the field of ELF and beyond with very different designs (Jenkins, 2000; Smith, 1992; Wang & Van Heuven, 2015).

2.6.3.2 Familiarity with specific interlocutors

Familiarity is established when the listener gets accustomed to the speaker's articulation. This will facilitate the process of understanding. According to Tench (1981), the extent to which a learner's speech is intelligible is dependent on the listener and on his threshold of intelligibility and tolerance. Consequently, those listeners who have had more interactions with the non-natives will usually possess a greater threshold of intelligibility than those who have not. Trask (2001) also asserts that intelligibility is not something that remains constant, rather it is a process that gets better with time as the speakers get used to one another's speech and thus, are able to make the necessary adjustments in their speech. Trask (2001, p. 1) gives a good example of this when reflecting on his own experience:

> *"In my case (I'm American), the first time I met a vernacular speaker from the English city of Newcastle-upon-Tyne, I could not understand a single word he was saying, and I was not even sure, he was speaking English. But after a few days my ears adjusted, I could understand everything he said, apart from the odd unfamiliar words."*

Atechi (2004) considers Trask's case very interesting because Trask speaks English as his mother tongue, and that another so-called native speaker of English could be so hard to understand up to the point that knowing each other was the only solution. Thus, if intelligibility is a bit difficult among native speakers, then non-native speakers will probably have even more difficulties. This indicates that even within non-natives, those from a language pair or the same language group are most likely to be indistinct just like the Koreans in Smith and Kim (2010) case. This kind of reports form the foundation of this research which investigates the Indian English intelligibility.

2.6.3.3 Familiarity with topics

Pickering (2006) suggested that among several factors, one more variable might be the extent of the listener's familiarity with a specific topic that could by a greater or lesser degree affect intelligibility or perceived comprehensibility. This means that the topic of the conversation could either help or hinder the listener's understanding. In other words, every topic has its own levels of difficulty; thus, having knowledge of these levels with respect to a certain topic would assist the listener in recognizing the words, even if the speaker pronounces them differently. To illustrate, if there is a discussion about football and a speaker says /bɔl/ as /bʊl/ (he passed the /bʊl/ to the next player), the listener familiar with the game of football will have no problem understanding the speaker since he knows the topic. On the other hand, a listener who is not familiar with the topic would even listen to the best of pronunciations and might still find the speaker unintelligible.

There is a case of Cameroonian people who found it difficult to understand Britons and Americans when they pronounced the word yacht (RP: /jɒt/, GA: /jɑ:t/) in sentences. One can argue that the context should have assisted them in that process of intelligibility, but that was not the case partly because it was just not enough to help the listener get the target word. The argument that some listeners would still not understand the speech even if sufficient

context is provided is reasonable since the word seems to be an uncommon one among Cameroonians. Fiyinfolu (2019) on pronunciation intelligibility of Nigerians supports this view by stating that uncommon words or unfamiliar lexis led to speech intelligibility between Nigerians and the British.

2.6.3.4 Attitudes

As per Chan (2021), language attitudes are actually in two facets - one is the positive and the other one the negative thus, they can either enhance or impair intelligibility. In this regard, it has been proposed by researchers (e.g. Kang & Rubin, 2009; Lippi-Green, 1997; Rubin, 1992) that the listeners' language and social attitudes, biases, stereotypes, and ethnic and cultural beliefs are the main factors that affect the perceptions of communication and interactional success. On the other hand, Kim (2008) challenges the theory that L2 students' negative attitudes towards the foreign accents of non-native English-speaking teachers were a result of less intelligibility and interpretability. He contends that the accent's perceived degree affected the level of comprehensibility perceived by the students. To some extent the students' negative attitudes could be a result of their mistaken idea that a native accent is the only perfect pronunciation. Similarly, Lindeman (2002) reported that North American interlocutors' negative attitude created a problem regarding the latter's feedback to Korean partners. Therefore, listeners' language attitudes should be regarded as crucial factors when arriving at a conclusion. Accordingly, the listeners may develop a negative perception towards the accent in question leading them to consider it as unintelligible when the actual features do not obstruct intelligibility at all (Lindemann, 2006).

2.6.3.5 Language proficiency

Smith (1992) points out that one of the factors that must be considered when evaluating comprehensibility is the language proficiency of the listener. Schimidgall (2013)

backs this statement up by saying that the listeners' knowledge of the target language can have an effect on the pronunciation quality of the speech. This indicates that the listeners, just like the speakers, must possess a certain degree of proficiency in the target language for them to be attuned to the speakers; otherwise, the communication would be unclear. For example, if GhE is the language specified for the discourse, the most basic requirement for the listener to get the message would be having knowledge of the main issues concerning the variety. Eger et al. (2019) when talking about language proficiency say that often the speech of second language learners is determined by the phonetic patterns of their first languages, which makes their speech difficult to understand; however, sometimes it is less difficult for the listeners of the same first language than for native listeners. Similarly, non-native speakers sometimes have trouble understanding the speech of native speakers. Smith and Nelson (1998), Ludwig and Mora (2017) as well as Saito et al. (2019) have also pointed out that language proficiency has an effect on the intelligibility of speech on the part of the listener.

2.6.4 Summary

Intelligibility studies have revealed a number of factors that affect intelligibility. Among the researchers Atechi (2004), Pickering (2006), and Fiyinfolu (2019), listener, speaker and contextual factors are mentioned as the main variables. Nevertheless, Chan's (2021) wider classification of the variables was preferred for the research. Considering speaker factors, Chan foretells that speakers' L1 background, segmental, suprasegmental factors, accents, speech rate and fluency, and other linguistic factors and language proficiency can be a cause of speech intelligibility. On the other hand, he points out complexity of the task, situational and environmental variables as the main factors that affect speech intelligibility in the context. However, it is clear that contextual factors can influence both the speaker and the listener. A typical case is environmental noise. A noisy surrounding

can cause the speaker to be less audible which in turn makes it difficult for the listener to identify words spoken by the speaker. The last set of factors to take into account is the listener factors which comprise familiarity, attitudes and language proficiency. It should be mentioned that familiarity is a very broad concept and that it includes familiarity with topics, variety and specific interlocutors among others.

2.7 Related studies

Researchers have accumulated an extensive body of subjective evidence to confirm that the problems caused by failures in communication among English speakers worldwide are serious. Bobda (2000) for example, indicates that the writings on intelligibility are overflowing with evidence that is supported by real-life stories of problems with intelligibility involving non-native Englishes, thus implying their unacceptability. Ikonne, as cited by Unoh (1986, p. 29), gives the following narrative:

> *A Nigerian woman went to do her hair in a salon owned by an American lady of Jewish extraction. The Nigerian, an English major from a famous Nigerian university, was of course sure of her English. She confidently articulated her needs in what she considers the Queen's English. Much to her humiliation, however, the only response she drew from the hairdresser was an apology "I'm sorry, but I know no foreign language. I speak only English."*

This account is indeed full of surprises, but still, the most important thing to get is that this girl from Nigeria was most certainly going to be understood by other Nigerian speakers. Thus, it is quite right to say that the question "intelligibility with whom?" raised by the likes of Platt et al. (1984), Kachru (1986), and Taylor (1991) is very much alive. Bobda (1994) explains that intelligibility is a matter of degree; since it depends on the people involved in the speech act, as well as the situation.

Peterson and Barney (1952) looked into the relationship between the vowel sounds the speaker wanted to say and those the listener recognized. The study was based on a list of ten monosyllabic words that started with /h/ and ended with /d/ and differed only in the vowel

phoneme, such as “heed”, “hid”. Their findings indicated that some vowels or sounds are usually better recognized than others. The vowels have been labeled easy to identify as /ɪ/, /ɛ/, /ɑ/, /ɔ/ and /Λ/ (1952, p. 175). Also, it needs to be pointed out that the research has several limitations. Firstly, the test was not administered with very effective material, thus the investigation into the complex idea of intelligibility was not very thorough. The authors only used monosyllabic words in isolation during the study. Experience has proved that isolated words do not necessarily depict intelligibility accurately every time. Secondly, the phonology of the study was limited only to segments. Studies such as Bansal (1969) and Tiffen (1974) have previously shown that suprasegmental characteristics cause more problems of intelligibility while compared to segments. This means the findings might only present a very limited picture of intelligibility.

Despite being one of the West African varieties of English that get a lot of attention as to intelligibility, Ghanaian English is still not fully understood in all its aspects. A review of three studies will be provided in the next paragraphs: Tiffen (1974) discusses two studies of the intelligibility of GhE. The first one is that of Strevens (1965), who presents a quantitative analysis of the intelligibility of speakers with West African accents and RP. The design of the tests involved removing all context. Based on the results Strevens concluded that not only RP speakers but also Ghanaian speakers were able to comprehend Received Pronunciation to a larger extent. This finding is similar to the one in Bansal’s (1969) study about Indian English.

One more research on GhE intelligibility, which is cited by Tiffen (1974), is Brown’s (1968) experiment. Brown targeted Twi, RP and Ewe individuals as the participants. The tests that were a part of the study were conducted on participants who were Ghanaians of Twi and Ewe descent. The test was partitioned into three segments – phoneme discrimination, placement of tonality in sentences, and rhythm and intonation. The study led to the conclusion: It is typical that GhE is slightly better understood by both types of Ghanaian

listeners than RP. The findings appear to be in contrast to what was reported by Strevens in the earlier experiment. Simo Bobda (1994) considers the conclusion of the findings at the broadest level of the English language varieties across the globe. He comments that the outcomes express the idea that the different English dialects around the globe share a lot of things. The most intelligibility scores being well over 50% are a testament to this. The last study done on Ghanaian English is that of Adjaye (1987). She had Ghanaian informants and British speakers for the judgment. The judges had to score each informant between 25% to 100%. That is, based on how well they understood each informant. The outcome revealed that the two RP speakers were given 100% score. The Ghanaian informants were rated between 50% to 80%. The results given are quite convincing as the two judges were British English speakers and normally would understand their fellow British informants perfectly well. The results obtained by the Ghanaian listeners are also not surprising at all. This is also because the Ghanaian listeners are not British and should normally also understand their fellow Ghanaians very well as compared to the British.

Recent studies in intelligibility showcase the work of Atechi (2004) who focused on the intelligibility of native and non-native English speech. He analyzed the intelligibility of the speakers of Cameroon English as compared to that of the native English speakers specifically the Brits and the Americans, and vice versa. The study is pertinent as it is one of the early pieces of work to consider the intelligibility of a native speaker accent to the African non-native speakers. The study seeks to challenge the perception that native speaker accents are inherently intelligible.

The Cameroonians selected for the study were all undergraduate students, whereas the English native speakers comprised both students and non-students. The Cameroonians were aged between 18 and 28, while the native speakers' age range reached up to 60. The measurement of intelligibility thus incorporated five types of tests: connected speech, passage

reading, and sentences with embedded phonemic contrasts, nucleus placement in words, and nucleus placement in sentences. The objective mode of assessment was employed, which consists in awarding points to the items recognized by the listeners. According to this, the result for the American speakers was: 'there is a wide range in the intelligibility of native speakers of English. Intelligibility scores in this column vary from 86.4% to 26.6%, with a mean score of 56.3%' (125); and for the Britons 'the range of intelligibility is fairly wide as the scores vary from 86.4% to 38.4%, with average of 58.7%' (Atechi 2004, P. 127). In general, the following scores were obtained for speakers and listeners from Cameroon, Britain and America. The scores were for the American listeners: 59.7%; the British listeners: 62.9% for the Cameroon speakers; the British speakers for the Cameroon listeners 58.7%; and the American speakers for the Cameroon listeners 53.9%.

By interpreting the data, it appears that non-native accent was easier to understand than native speaker accents. Nonetheless, the study has several limitations that can easily be seen and one of them is the large difference between the ages of the speakers and listeners (18 to 28 for the Cameroonians and 18 to 60 for the Americans and Britons) and the number of listener participants involved in the study. The number of 40 might be considered as low because the literature argues that a relatively large number of listeners are needed for any useful conclusions. Besides the above-mentioned points, there was no information given regarding the specific British or American accent that was used by the native speakers. Nevertheless, the result derived is that the native English speaker is not necessarily the most intelligible English speaker and neither is the native variety the most intelligible.

The research findings were that "the super-segmental level was the hardest area of English speech for the Cameroonian listeners and accounted for the largest number of intelligibility failures (46.5%); meanwhile, the segmental level (40.2%), phonotactic differences (11.8%), and lexical differences (01.5%) were less problematic." As for the

results, they corroborated the previous ones concerning the intelligibility of native speakers of English, however, the number of listeners participating in the research seems to be rather small compared to the usual number of listeners in intelligibility studies, which has been the reason for the suggestion that a relatively large number of listeners is necessary to draw any significant conclusions.

In similar research, Fiyinfolu (2019) examined the specification of Nigerian English where the acoustic intelligibility of Nigerian speakers of English was studied. Particularly, it looks at the degree to which segmental characteristics of phonation (like consonants, vowels, consonant clusters) in the talk of Nigerian speakers of English influence their comprehensibility to speakers from other contexts including Nigerian listeners because of the important role English plays as a language of wider communication among Nigerians of different ethnic groups who themselves have different language backgrounds. A hundred (100) evaluators (international listeners composed of non-Nigerian speakers) were to work on transcribing six speech samples from six audio podcasts in which Nigerian speakers delivered speeches. The transcription of the various speech samples was done for the purpose of assessing the intelligibility corresponding to the pronunciation level (particularly segmental features).

The study's outcomes showed that the application of non-central vowel phonemes, such as [ʌ], [ɜ:], and [ə] and [ɪ], led to comprehension difficulties for the international audience. Vowel quality was not the only factor in the intelligibility loss; vowel length was also an important contributor. The lack of consonant sounds, for instance, the glottal fricative [h], the velar plosive [k], and dark (velarized) [l], or [ɬ], was a notable factor in the incidence of intelligibility breakdown. Besides this, the results point out that the use of consonant phonemes not identical with the voiceless palato-alveolar affricate /tʃ/; voiced palato-alveolar fricative /ʒ/; and voiced alveolar fricatives/z/ led to the presence of problems regarding

intelligibility. In contrast to this, using consonants different from the dental fricatives /θ/, /ð/, velar nasal [ŋ], and postvocalic /l/ substitution like l vocalization did not hamper intelligibility. The same Nigerian speakers' speech samples, presented first to international listeners, were then presented to 50 Nigerian people (with Hausa L1 and Yoruba L1 backgrounds) for transcription. The outcomes indicated that the substitutes of the central vowels [ʌ], [ɜ:], and [ə] had no significance for the Nigerian listeners except for a few instances which might be due to unfamiliar word meanings and context. The duration of vowels and lack of consonants did not impede comprehensibility. The results further pointed out the difference in consonant realizations among the speakers did not lead to the occurrence of intelligibility problems, the exception being the substitution of the alveolar tap [ɾ] for the plosive [t]. Idowu is firm in the necessity of teaching pronunciation considering the local variations so that not only the local but also the international communication is enhanced.

2.8 Conclusion

The term intelligibility is a tricky one as it brings up a variety of scholarly positions such as those of Smith (1992) and Munro and Derwing (1999) to consider. Within the circle of WE, Smith's (1992) limited model of three concepts of intelligibility, namely; intelligibility, comprehensibility, and interpretability has gained wide acceptance. During the present times, intelligibility studies have drifted away from the native speaker being the only ones to judge to the inclusion of non-native speakers as well since the language could be used among non-natives so that there is no native speaker representation. The language today is mostly a lingua franca or an international language encompassing all the varieties under the generic term Englishes. The researchers dealing with English as a lingua franca are not limit their studies to pronunciation or intelligibility in the narrow sense; they merge the separate components of understanding for the reason of Smith and Nelson (1985) proposing.

With regard to the mutual intelligibility of different Englishes, Jenkins develops a lingua franca core which can be seen as a way to help speakers of different non-native English varieties understand one another. The LFC has however been subjected to various criticisms and some even call for its modification. Based on the arguments presented by the likes of Jenkins (2000), the study goes on to find out about a NN variety of the language and its speakers which native speakers are often left out in many interactions. The *"write-down-what-you-hear"* technique that turned out to be very successful in listening to text was adopted in measuring the intelligibility of the Ghanaian speakers of English through both scripted and unscripted test materials.

A vast amount of research on intelligibility has been published (Chan, 2021; Pickering, 2006), and among the factors affecting this phenomenon are the speaker, the context. The present study, in a way, follows Chan's (2021) rooting in the factors influencing speech intelligibility. In examining the literature, it's worth mentioning, though some may disagree, that proficiency, context and familiarity in a broader perspective are the three main factors among the others, that contribute to the speech intelligibility of the factors influencing. This is so, as the language proficiency allows the speakers to select the right registers in a given context and the listeners in that very context are able to make correct guesses even in the case of mispronunciations. On the other hand, mispronunciations, acquaintance with subjects, speakers, and accents, among others, are still important contributing factors to the extent of the intelligibility of the speech.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

The chapter mainly emphasizes the methods used for the collection, transcription, and analysis of spoken data, which are the foundation for the discussion on intelligibility in the English spoken in Ghana. Besides, it includes the details of the data and the participants, as well as the context of the data source for the study.

3.1 Research approach

A study tends to be "more qualitative than quantitative or the other way around" (Creswell & Creswell, 2018, p. 41). Following that, the current study applies the qualitative method in measuring intelligibility. In 2009, Stevens argued that a qualitative method allows a researcher to observe a wide range of human behaviours and their context-related changes. Overall, qualitative researchers try to make sense of the different meanings that people or groups give to a social or human problem (Creswell & Creswell, 2018). They also rely on observation without taking away the quantitative aspect of the study. Qualitative research method, therefore, was beneficial as the research was an observational study to understand the cross-cultural intelligibility situation in Ghana and to identify the characteristics of the Ghanaian English that make it or not intelligible.

3.2 Research design

The research adopts a case study approach since the intelligibility of the English spoken by a specific group of people is put under a microscope. Going by Stake (2010), case studies provide researchers with a chance to go deeper into understanding the problem. In a way, Creswell and Cresswell (2018, p. 51) confirm that case studies permit “an in-depth analysis of a case, frequently a programme, event, activity, process, or one or several

individuals". Coombs (2022) supports that the case study method necessitates a deep probing carried out into a single person, a group, or an event in order to comprehend a real-life situation. It is worth mentioning that the case study method is one of those that have gained enormous popularity and acceptance among qualitative research techniques in the social sciences and humanities, as it can be used to explore complex issues and also to shed light on specific phenomena or situations (Bloomberg & Volpe, 2022; Coombs, 2022).

3.3 Population and sampling

McMillan (1996) stated that in the case of population, it is a group of elements or instances that are individuals, objects, or happenings, and it is a group that meets certain conditions and to which the researcher wants to draw conclusions based on the research done. In a case where a large population is essential for the research data, the first task is to specify the target population. Target population can be defined as the group from which the researcher is going to draw conclusions, and hence the criteria for inclusion needs to be very clear. (Robson, 2011). In the study under consideration, it was quite clearly outlined that the population would be ascribed to the different linguistic and geographical groups in Ghana. The population contained specifically senior high school students: speakers of the Gur Mabia taal group in the Upper West Region of Ghana (Northen Ghana) and listeners of the Kwa taal group located in southern Ghana. Thus, the population for the study was statistically estimated at 10,800, which consists of the Gur Mabia language speaking students from 10 schools in the Upper West of northern Ghana and the Kwa language listening students from 10 schools in southern Ghana.

The purposive sampling technique was used to choose both speakers and listeners. According to Donyei (2007, p. 125), purposive sampling "follows a number of different strategies depending on the topic and setting." Creswell (2014) asserts that purposive sampling is a research method in which the investigator picks the subjects based on their

features or characteristics that are significant for the study. In simpler terms, the technique allows the researcher to choose the most informative cases that will thus give the desired understanding of the phenomenon that is not often studied. Therefore, the selection of speakers for this research involved a few major issues first and foremost the variant of Ghanaian English that was the focus of the study. The contention that Ghanaian English has different geographical features cannot be dismissed because no language is a perfectly uniform block; rather, languages exhibit a great deal of internal variation, as is the case with all the world's languages.

To avoid any misunderstanding and to put the things in the right way, the English that has the characteristics which form the principal tendency of all the Upper West speakers of English was chosen as the Upper West variant of Ghanaian English. The selection was done purposely and very carefully in such a way that all the sub-tribes in the Upper West Region would get into the study, allowing a representation of all the dialects of the Dagaare and Sisaala languages. The work focused on the senior high schools in the region to get this done, and a total of ten (10) schools were selected. The schools were first zoned into five areas keeping in mind the closeness of the schools and the similarity of the indigenous dialects of the communities they are located in. This helped a lot in easily getting students from different dialects. Zone 1 included schools located in the areas of Northern Dagaaba (Lawra Senior High and Ko Senior High), Zone 2 included the areas of Central Dagaaba (Jirapa Senior High, Ullo Senior High), Zone 3 included Southern Dagaaba (Wa Senior High and Kaleo Sec. Tech), Zone 4 included Western Dagaaba (St. Ignatius of Loyola and Birifor Senior High) and Zone 5 included the Sisaala (Kanton Senior High and Lambussie Senior High).

The selection of schools with a high population density in the respective zones was mainly based on the fact that these schools had the greatest number of students who spoke the dialects aimed at in the study. Thus, from each zone, two schools were chosen to represent

that zone and for each school, twenty students (ten boys and ten girls) were picked regardless of the class year. The aim of the study was not to produce results that are indicative of the idiolects by enlisting a few speakers, thus twenty speakers from each school were chosen to reflect the peculiarities of the people (speakers from Upper West) under investigation. The total number of the speakers selected was 200 and they were from the following schools; Lawra Senior High, Ko Senior high, Jirapa Senior High, Ullo Senior High, Wa Senior High, Kaleo Sec Tech, St. Ignatius of Loyola, Birifor Senior High, Kanton Senior High and Lambussie Senior High. Another condition of the selection was where the speaker was raised. This is due to the fact that students from Upper West may be in their area of residence along the southern or coastal parts of Ghana during their basic education, thus having the same dialect whereas those born, raised and schooled in the region may be different. Two hundred (200) students in total were drawn from the 10 schools for the study. This number was sufficient for data precision because it is big enough and at the same time not too small to fail to represent the Upper West variant of Ghanaian English. Furthermore, the speakers were 100 males and 100 females to avoid gender imbalances.

The participants for the current research consisted of speakers of the Kwa language and were selected from 200 senior high school students in Ghana. The Ghanaian language group is primarily composed of Ga, Ewe, and Akan. In addition, the listeners were deliberately chosen for the reason that the indigenous languages spoken in the local areas of the schools were quite similar. Therefore, the schools were divided into five zones: the former Brong Ahafo, the Ashanti and Eastern zone, the Greater Accra zone, the Volta zone, and the former Western and Central zones. All in all, the schools located in the former Brong Ahafo, Ashanti, Eastern, Central, and Western zones were associated with the Akan, the Accra zone was associated with the Ga and the Volta zone was associated with the Ewe. To include both genders, mixed-gender schools were chosen. The specific schools chosen were

Sunyani SHS, KNUST SHS, Kibi SHS, Winneba SHS, Takoradi SHS, Keta SHT, Mawuli school, Achimota SHS, Odorgonor SHS, and Chemu SHS because they are very populated schools and had the possibility of providing the study with a good number of listeners who are fluent in speaking the Kwa language. Moreover, 20 students (10 males and 10 females) from each school were purposely selected to investigate the diverse reasons and factors that either aid or impair the intelligibility of speech.

3.4 Data collection instruments

The dataset that was subject to analysis consisted of students' speech samples which were recorded. There were three different forms of tests created; Test I (Reading Passage), Test II (Phonemic Contrast Elicitation), and Test III (Nucleus Placement in Words)

3.4.1 Test I (Reading passage)

Spontaneous speech is, to the certain extent, the best way of assessing intelligibility, but at the same time, tests in which the researcher decides upon words are also supporting the process of test. Skehan (2014) through his work indicates that prepared reading can uncover some characteristics of fluency and coherence in connected speech. Consequently, the study applied a reading text to facilitate the process. Textual selection for reading was done with utmost care, making sure it was neither too difficult nor too long. Even though the reading passage brings its advantages, the most significant drawbacks are the speaker's focus on the careful pronunciation of the words in the passage and the influence of the spelling of the words. Thus, it is in this context that Fiyinfolu, (2019) claims that the reading passage might produce a kind of speech that would not be like the speaker in normal situations. Still, the participants had to read a particular comprehension text, and the findings from this test confirmed Adika's (2012) claim that spelling pronunciation is one of the characteristics of Ghanaian English.

3.4.2 Test II (Phonemic contrast elicitation)

According to WAEC criteria, senior high school learners should, as a minimum, be able to demonstrate the differences between the English phonemes based on the fact that their oral assessment is covering this area. In that case, a list of words with phonemes in Received Pronunciation that are noticed as typical characteristics of the English accent from Upper West was taken from Atechi (2014) and Osuman and Dansieh (2020) and made use of. The phonemes that were included are; /ð/, /θ/, /Λ/, /ə/, /æ/, /ʒ/, /ʃ/, /v/, /g/, /z/, /d/, /ɜ/, /ɛ/, /ɪ/, /ʊ/, /ɒ/, and /b/ in some medial or final positions of the words. In total, 17 phonemes in RP were checked by the speech of the speakers. The above phonemes were grouped into two forms, the word list and the sentence list. A total of 30 words were found (these, discussion, teacher, ago, man, vision, station, prove, dog, lose, word, sure, shore, the, colonel, short, she, purpose, colonel, leopard, that, give, book, abel, yatch, is, bombing, fuel, finished and leg). Out of the 30 words, 10 were pronounced in isolation and the other 20, through 10 sentences. The reason for this type of a test is that WAEC oral assessment part consists of both words in isolation and words in sentences. Atechi (2004) claims that reading the words in isolation would not be effective since the speaker would be easily sensitive to what is being tested and would therefore give a more careful and artificial pronunciation than he could otherwise do. On the contrary, it is very crucial to acknowledge that no matter how careful a speaker tries to be, his/ her idiosyncrasies would still come out at the long run since he/ she cannot feign them throughout the process.

Atechi (2004) goes on to say that words by themselves are more likely to confuse than words in context which indeed can be the case. This is especially true in the case of homophones where the sound is the same but the meaning is different, and the person talking may be having a particular meaning in mind while the one receiving is considering another meaning, therefore a little confusion results. Besides this, the context makes it so easy for the

listener to identify the speaker's word. Still, "some findings have shown that words in isolation do facilitate intelligibility" (Atechi, 2004, p. 104) and perhaps this is the reason for which WAEC checks students' performance on the basis of words in isolation and context at the same time.

3.4.3 Test III (Nucleus placement in words)

This examination measures the accuracy of the speaker in placing the nuclear accent in the words. For the phoneme contrast test, words were identified that are known to be problematic for GhE speakers, and 10 such words were selected and used in 10 sentences. The target words were not disclosed to the speakers during their reading. The speakers were given the test materials detailed above, and their responses were tape-recorded. The recorded materials were then presented to the listeners, who applied either the word for word dictation or the *write-down-what-you-hear* method to demonstrate how much of the speakers' message they managed to decode.

3.5 Validity

Wiersma and Jurs (2009) posit that "validity of an instrument is the degree of agreement between the instrument and the construct it is supposed to measure" (p. 356). Therefore, the presented study considered an instrument to be valid if it could highlight the separate characteristics of the English spoken in upper west and if it was intelligible or not. The study employed both content and face validity. Wiersma and Jurs (2009) define content validity as the procedure by which the test world supports the similarity of the items in a certain domain of the skills, tasks, knowledge, and other aspects that are being measured (p. 355). Thus, in the content validity, the scope of the task becomes the proof. Basically, a test will be granted content validity if it includes a sample of the language skills, structures and other aspects being tested. The test should contain a proper sample of the structure or content

which is relevant with the goal of the test. Thus, the test was created with reference to the listening and speaking competences of the senior high school syllabus which aims to improve the pronunciation of vowels, consonants and stress to the RP standard. A test that lacks face validity is likely to be rejected by the test takers, teachers, academic, authorities or employers if it does not measure what it claims to be measuring. The clarity of the present study's instructions to the students, who then were test speaking for two minutes, reading a passage, words and sentences, writing down what they heard; were considered from this test to build a good test based on the validity. The duration of the test was from 15 7 to 15 minutes which was not a long time that could have made participants leave because of the reason of waste of time.

3.6 Data collection procedure

Ghanaian English is a summary of the different forms of British English in Ghana, and thus, the authors have given regional level attention to the English spoken in Ghana. It is possible to observe that the regions in Ghana have different traits when they speak English, and this is reflected in the fact that the listeners have often been able to distinguish where a particular speaker is from. Even within the Upper West Region, there are minor differences in their spoken English based on the sub-tribes that make up the region; however, they are still comprehensible. The observation is that the spoken English of the people living around Jirapa is just a mix of all the peculiarities of the sub-tribes concerning phonemes, intonation, etc. It is almost impossible not to spot a typical Jirapa native by their spoken English. The use of Jirapa and its surrounding areas speakers only might still be reasonable, but the study expands the area to include other sub-tribes of the region for a complete representation of the Upper West people. Nevertheless, it must be said that the students from the Kwa language groups in Southern Ghana were asked to listen to the spoken English and transcribe. This was all part of the process aimed at minimizing speaker and variety familiarity. The discussion

section that comes next elaborates on the different methods used for data collection as production and intelligibility tests, respectively.

3.6.1 Production

The headmasters and headmistresses from all the schools involved in the study were asked for their consent before the speakers were chosen. They were informed of the study's intention to involve them. The schools' libraries were made available by the Heads for the recordings as the study required them free of noise. The recording sessions were held after the usual class hours to ensure a peaceful environment and not to interfere with the teaching periods.

The speakers were invited one by one for Test I, to read a specific passage as naturally as they could. They were allowed a few minutes for reading the passage before the actual reading. For Test II, the speakers were given 10 sentences consisting of the target words in them, along with 10 targeted words in isolation, and they were asked to read them all naturally. In Test III recording, the target words were placed in simple sentences, and the speakers were told to read them without knowing the target words. In total, each speaker took around 3 to 7 minutes to complete all three tests.

3.6.2 Intelligibility test

In the same manner that the speakers were chosen, the most crowded schools were selected. Two of these schools were taken from each region. This section of the study was extremely challenging as the researcher was not residing in the South. Yet, language teachers from the different schools were invited to talk with the headmasters and mistresses for approval after being supplied a letter with the background, purpose, and significance of the study in writing by the researcher. After that, the students were encountered to be previewed for the study. Those who fitted the profile were called for a meeting. They were told the

reason for the study and students from the South who had been to the North before were eliminated from the study. This was done to eliminate the impact of familiarity but that was not so possible because in the country, a lot of people move from the North to the South very often searching for better opportunities and education so they might meet each other from time to time. Therefore, students from the south who had not been to the north were chosen as the listeners.

The listening sessions were organized in the library of every school, where the students listened to the recorded tapes. The tapes were played loudly and no earphones were used. Assignment carried out in libraries after the normal class sessions made it possible for the listening sessions to be free from noise that might have affected the procedure. Besides hearing the tapes, they wrote what they heard. Their written responses provided more permanent and easily verifiable records. The texts were divided into tone units so that the listening task would be easier. The listeners were informed about the subject matter of the text before the session began.

In order to make the listening process easier, the reading passage for the listeners was divided into tone units. The listeners were told the subject matter of the passage and also where the passage was taken from. For test II, each listener had to listen and write down 10 words in isolation and 20 words in sentences as read by the speakers. A similar procedure was followed for Test III, which consisted of 10 sentences with target stressed words. The listeners had to listen and write down what they heard. Each listener participated in only one listening session to reduce the risk of becoming too familiar with the speakers. The distribution of listeners to speakers was done randomly. Each session lasted about 30 minutes.

3.7 Data analysis

The analysis of data was executed in accordance with the objectives of the research which could be summarized as the extent of the intelligibility, the features helping, and the features hindering speech intelligibility. To this, the initial, analysis was listening and transcribing all the 200 recordings from the Upper West speakers and then identifying the most outstanding phonetic features of these speakers as indicated by Osuman & Dansieh (2020). Moreover, the labelled features of non-native Englishes by Bobda (2000) were also searched for in the speeches. Phonological processes (CSPs) as connected speech characteristics according to Hieke (1984) were also searched for. Appartaim (2009) states that the most fundamental kind of annotation that transforms a speech collection into a speech corpus is orthographic transcription, i.e., a minute account of what has been said. Overall, at the level of segments, 13 sounds of Standard Spoken British English (/ð/, /θ/, /ʌ/, /ə/, /æ/, /ʒ/, /ʃ/, /d/, /ɜ/, /ɛ/, /ɪ/, /ʊ/, /ɒ/) were found to be the most distinctively pronounced by the speakers of the area. A few others (/z/, /v/, /g/, /b/) were also recognized differently in some cases particularly at the medial and final positions of the word. At the suprasegmental level, the production among the speakers was accompanied by varying nucleus placements, vowel alternation, and stress shifts. The intelligibility issue, therefore, started from this point when the written responses of the listeners were examined test by test.

During the course of the connected speech experiment, the listeners had to decode the speech of one person by writing down whatever they heard. Thus, the connected speech analysis included 200 written scripts. The written speech was split into tone units based on pausing, which helped the interpretation process. Therefore, for the reading passage, all words were marked for intelligibility and the reason for their marking being that they were common and it was essential to record the different realizations of the same word by different speakers and whether or not they are all intelligible. The Connected Speech Processes (CSPs)

which comprised linking, insertion, and deletion were also recognized and monitored closely for their intelligibility or lack thereof. Consequently, the connected speech data regarding the intelligibility level was processed. To arrive at the intelligibility of every sound variation, the number of accurate responses was divided by the total number of speakers or listeners and then multiplied by 100.

The phonemic contrast was script described in the same way as the listeners wrote down the words in isolation and in sentences. The test consisted of 30 items containing in total 10 words in isolation (these, discussion, teacher, ago, man, vision, station, prove, dog, lose) and 10 sentences of 20 target words (word, sure, shore, the, colonel, short, she, purpose, colonel, leopard, that, give, book, abel, yatch, is, bombing, fuel, finished, leg). The scoring was quite simple because there was no need to separate the sounds into pause units for the utterances. The Standard Spoken British English or RP sounds were identified within the various units and contrasted with their intelligibility checked. For each unit's intelligibility estimation, the number of the correct answers was subdivided by the total number of speakers or listeners and multiplied by 100. The fourth and last test was carried out on nucleus placement in words where 10 targeted words buried in sentences were written during the listening of the audios. The stress was under close observation whether it was correctly placed on the target words (record, second, curative, opponent, umbrella, apartheid, petrol, performance, tentative, plantains) and marked for intelligibility or otherwise according to the written texts from the listeners. The factors responsible for speech intelligibility or unintelligibility, in as far as the word stress is concerned, were identified and discussed. In examining the aspects that contribute to the speech (un)intelligibility, the Jenkins' (2000) lingua franca model was subtly tested. Besides that, the results of Atechi (2004) and Fiyinfolu (2019) were compared to the occurrence in GhE.

3.8 Test of reliability

Creswell (2008) states that inter-rater reliability is a concept where observers of the same behavior are two or more people. The idea of inter-rater reliability is if the scoring is done by two or more different scorers or raters. The next step is to figure out the relation between the scores given by different raters and the correlation coefficient is the statistic used for this purpose. The researcher had three experiments in total and had recorded 200 speakers from Upper West; they were reading a passage (connected speech), and doing phoneme contrast elicitation, and nucleus placement in words. As a part of the reliability test, the researcher selected 20 recordings, and he/she/they listened to them very carefully to identify the similarities or differences in the pronunciation between the Upper West English speaker and SSBE. The processes of connected speech and some of the phonetic features in Jenkins' LFC were vowels, consonants, and nucleus placement, which were the main topics for the discussion. A total of seventeen (17) vowels and the following consonant sounds (/ð/, /θ/, /Λ/, /ə/, /æ/, /ʒ/, /ʃ/, /d/, /ɜ/, /ɛ/, /ɪ/, /ʊ/, /ɒ/, /z/, /v/, /g/, /b/) were tested. The speakers were scored with marks between 1 and 10. The maximum score for each test was 10 marks (which means the speaker produced all expected sounds in all the targeted words within a two-minute time limit) for all the speakers, respectively, in the prescribed text. The same audios were provided to a phonetician at a college of education who was asked to listen and score using the same scoring procedures. The scores of the two raters on the different tests are shown in Table 3.7.1.

Table 3.7.1. Results for reliability test

Speakers	Rater 1			Total	Rater 2			Total
	T1	T2	T3	Rater 1	T2.	T3.	T4	Rater 2
1	3	4	2	9	3	4	2	9
2	3	3	2	8	3	3	2	8
3	3	5	4	12	3	4	4	11
4	4	4	4	12	4	4	4	12
5	6	5	5	16	5	5	5	15
6	2	4	4	10	2	4	4	10
7	3	4	3	10	3	7	3	13
8	1	2	3	6	1	2	3	6
9	3	3	3	9	3	3	3	9
10	3	2	2	7	3	2	2	7
11	4	4	3	11	3	4	3	10
12	3	4	2	9	3	4	2	9
13	4	4	2	10	4	4	2	10
14	3	2	2	7	3	2	2	7
15	5	6	4	15	5	6	4	15
16	8	7	5	20	8	7	5	20
17	4	4	2	10	4	4	2	10
18	7	6	4	17	7	6	3	16
19	2	3	3	8	2	3	3	8
20	3	4	2	9	3	4	2	9
Total	74	80	61	215	72	82	60	214

The correlation coefficient was calculated using the formula, 2(r)/1+r where r represented Pearson's r.

$$r = \frac{\sum[(x - \bar{x})(y - \bar{y}]}{\sqrt{\sum(x - \bar{x})\text{^}2 \times \sum((y - \bar{y})^2}}$$

Where x=data from rater 1

y=data from rater 2

$\sum = summation$

$\bar{x} = mean\ of\ rater$ 1= summation of x divided by sample size

$\bar{y} = mean\ of\ rater$ 2= summation of y divided by sample size

Table 3.7.2 gives a summary of the calculation of the individual constituents of the equation (Pearson's r) which can be easily summed up and fixed into the equation for onward calculation.

Table 3.7.2. Figures to be summed to determine Pearsons r for each of the test

$(x-\bar{x})$			$(y-\bar{y})$			$(x-\bar{x})^2$			$(y-\bar{y})^2$			$(x-\bar{x})(y-\bar{y})$		
TI	TII	TIII	TI	TII	TIII	TI	TII	TIII	TI	TII	TIII	TI	TII	TIII
-07	0	-1.05	-0.6	-0.1	-1	0.4	0	1.10	0.3	0.01	1	0.4	0	1.05
-0.7	-1	-1.05	-0.6	-1.1	-1	0.4	1	1.10	0.3	1.21	1	0.4	-1.1	1.05
-0.7	1	0.95	-0.6	-0.1	1	0.4	1	0.90	0.3	0.01	1	0.4	-0.1	0.95
0.3	0	0.95	0.4	-0.1	1	0.09	0	0.90	0.1	0.01	1	0.1	0	0.95
2.3	1	1.95	1.4	0.9	2	5.2	1	3.80	1.9	0.81	4	3.2	0.9	3.9
-1.7	0	0.95	-1.6	-0.1	1	2.8	0	0.90	2.5	0.01	1	2.7	0	0.95
-0.7	0	-0.05	-0.6	2.9	0	0.4	0	0.002	0.3	8.41	0	0.4	0	0
-2.7	-2	-0.05	-2.6	-2.1	0	7.2	4	0.002	6.7	4.41	0	0.4	4.2	0
-0.7	-1	-0.05	-0.6	-1.1	0	0.4	1	0.002	0.3	1.21	0	-0.1	1.1	0
-2.7	-2	-1.05	-0.6	-2.1	-1	0.4	4	0.002	0.3	4.41	1	0.4	4.2	1.05
-0.7	0	-0.05	-0.6	-0.1	0	0.09	0	1.10	0.3	0.01	0	-0.1	0	0
-0.7	0	-1.05	-0.6	-0.1	-1	0.4	0	0.00	0.3	0.01	1	0.4	0	1.05
0.3	0	-1.05	0.4	-0.1	-1	0.09	0	1.10	0.1	0.01	1	0.1	0	1.05
-0.7	-2	-1.05	-0.6	-2.1	-1	0.4	4	1.10	0.3	4.41	1	0.4	4.2	1.05
1.3	2	-0.95	1.4	1.9	1	1.69	4	0.90	1.9	3.61	1	1.8	3.8	0.95
4.3	3	1.95	4.4	2.9	2	18.4	9	3.80	19.3	8.4	4	18.9	8.7	3.9
0.3	0	-1.05	0.4	-0.1	-1	0.09	0	1.10	0.1	0.01	1	0.1	0	1.05
3.3	2	0.95	3.4	1.9	0	10.8	4	0.90	11.5	3.6	0	11.2	3.8	0
-1.7	-1	-0.05	-1.6	-1.1	0	2.89	1	0.00	2.5	1.2	0	2.7	1.1	0
-0.7	0	-1.05	-0.6	-0.1	-1	0.49	0	1.10	0.3	0.01	1	0.4	0	1.05

Following the formulae, the inter-rater test result for test I was 0.98; test II was 0.93; and test III was 0.98. Based on the results, it can be inferred that the results are reliable. It was in the level of *very high* (Suharto, 2006).

3.9 Ethical considerations

In the upper west, 10 senior high schools were used for the spoken English while 10 southern Ghana schools were used for the listeners in the study. The researcher got the permission from the headmasters and headmistresses of those schools by having one-on-one meetings with them at their schools and also by sending formal letters stating clearly the background, purpose, and significance of the study. The students were then met at their morning assemblies to inform them about the exercise. Those students who matched the descriptions were called for a meeting. The researcher built a good relationship with the students and talked to them about the background of the study, its purpose, and its significance. During the discussion, those who had particular oddities were spotted and taken away.

It was communicated that the speaking and listening sessions would take about 30 and 15 minutes respectively. Participants were guaranteed confidentiality and were informed that their personal information needed for the research would be encrypted. Participants received a reference number as soon as possible, and the data was saved against this number code instead of their names. They were also informed that the collected data would only be for academic purposes. Each participant was made aware of their right to leave the research without any repercussions. As soon as the participants showed that they understood what the research involved and agreed to take part, the places for the recording and transcription were provided to them, and the actual tests took place on the following days at the chosen sites.

3.10 Conclusion

The present study followed a qualitative methodology to investigate how understandable the upper west people speaking English were. Its focus was on the population of senior high school students in Upper West, Ashanti, Western, Volta, and Greater Accra regions. For this purpose, a purposive sampling method was applied to select the participants

who satisfied the criteria necessary to address the study's main point. Consequently, 400 students were selected for the research; 200 talkers from the Upper West area and 200 audients from the rest of the southern Ghana regions. The data collection instruments were a test: reading passage, phoneme contrast, and nucleus placement in words. The performances were caught on tape from the talkers and the listeners wrote down what they heard. To check the reliability of the data a reliability test was done.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 Introduction

This particular chapter narrates the outcome of the study concerning the extent of comprehensibility of Ghana's English accent and the speakers from the Upper West Region, Wa, being the main focus. The collection of the data was achieved through a series of tests that involved the recording and transcription of 200 Senior High School (SHS) students in the Upper West Region, Wa, and 200 SHS students in the southern part of Ghana. The study aims to determine the levels of intelligibility of the Upper West speakers to the listeners from southern Ghana, to investigate the features supporting speech intelligibility, and finally, to look at the features that hinder speech intelligibility. In fact, the chapter is divided into three main parts: the first part measures the intelligibility level through three test items, connected speech, phoneme contrast in words and sentences, and nucleus placement in words. It was established in these tests that the intelligibility level was 93-100% in connected speech. Three CSPs (linking, deletion and insertion) were randomly observed in the production skill of less than 10 speakers. Even in those few cases where CSPs occurred, speech was comprehensible and it could have been claimed that connected speech was 100% intelligible but since some sound alternation impaired speech in this test, it was necessary to calculate the level of intelligibility by involving the segmental features and clarifying to highlight the differences. It could be asserted that connected speech was 93-100% intelligible with the unintelligible features being phonemic errors and not the connected speech processes which were found in the utterances. In the case of the phoneme contrast experiments, the 28-100% intelligibility results were obtained for the words and sentences in which Ghanaian or Upper West realizations of the following phonemes /ð/, /θ/, /Λ/, /ə/,/æ/,/ʒ/,/ʃ/, /d/,/ɜ/,/ɛ/,/ɪ/,/ʊ/,/ɒ/,/z/,/v/,/g/,and /b/ were attempted the highest 49% to 100% was for nucleus

placement in words and phonemic errors were the cause of speech unintelligibility. The corresponding intelligibility from the Gur Mabia language group to the Kwa language group through connected speech as the medium of all the tests in this research was even at the top level of 93%-100%. The second section worked on features helping the speech intelligibility focusing on the nucleus placement, RP phonemes, and their realizations by the Ghanaian speakers which were also noted in the mentioned tests. It was appropriate to root the phoneme description in Jenkin's (2000) Lingua Franca Core as the study concentrated on the features of the intelligibility study. So, it was established that the characteristics of the speech which contained errors in the areas of the nucleus placement, full forms for weak forms, sound addition and sound deletion were common to all eras of speech intelligibility not once did speak unintelligibility occur. Individual vowel quality, vowel length distinction, the final consonant devoicing, and the interdental fricatives were also considered as features pointing out speech intelligibility; the reason being the intelligibility in most cases. The third section covering the area of features impairing speech intelligibility was discussed. Only a few cases in which the speech was rendered difficult were related to vowel length distinction, individual vowel quality, weak form and final consonant /d/ devoicing plus other consonant substitutions. In general, the researchers concluded that the support of context and matched speech intelligibility enhanced speech intelligibility while the use of unfamiliar words and listener's proficiency levels resulted in speech unintelligibility.

4.1 Level of intelligibility in Ghanaian English

The present part of the study intends to analyze how much the English speakers from Upper West Region are understood by the Southern Ghana listeners. This is based on the speech being particular with the Upper West Region people as mentioned by Osuman & Dansieh (2020). Previous studies done about cross-cultural intelligibility between Ghanaians, particularly those living in Southern Ghana, have shown that the situation of intelligibility is

not completely 100% throughout the country (e.g. Adjaye, 1987; Brown, 1968; Strevens, 1965). Notwithstanding, the level of intelligibility is more than 50% as indicated by their research and could be termed as high. These results are quite alike with Fiyinfolu (2019) regarding Nigerian English pronunciation intelligibility, where she disclosed a small number of cases where Nigerian speakers were not understood by some Nigerian (Yoruba and Hausa) listeners. These unintelligible forms of speech happened partly because the speakers had different first language backgrounds which in turn supported Jenkins (2010) who posits that people of one L1 always find each other intelligible even in the case of deviation because such deviancies have already become part of their English variety. This part of the research uses three tests; reading passage, phoneme contrast and vowel stress.

4.1.1 Connected speech

The pronunciation of words may vary in different contexts, and this includes the variations of linked sounds like, for example, linking consonants and vowels or different combinations of these three types of changes in pronunciation (deletion, addition, and sound change) being carried out on a word in context. Tench (1996) indicates that the way we syntactically and semantically organize our thoughts gives us a clue as to where in the stream of speech we can cut it into units. Different prosodic cues can indicate the presence of tone units. Du Bois et al. (1992) enumerate a) coherent contour, b) [pitch] reset, c) pause (normally between two units), d) anacrusis, and e) [syllable] lengthening as some prosodic cues that indicate tone units. To derive a consistent tone unit, besides to help with the delimitations, the durations of pauses were noted for all tone units. The researchers' analysis of the speakers' utterances involved looking up connected speech processes (CSPs) which could support recognizing the reasons for intelligibility or non-intelligibility of speech. Table 4.1.1 shows connected speech intelligibility results.

Table 4.1.1. Results of intelligibility scores for connected speech

Tone Unit	No. of CSPs found	Connected Speech Processes	Intelligibility (100%)
No mouth,	0		100
earplugs,	0		100
and ***dark glasses***	1	Linking	100
Those are the characteristics	0		100
The youth in our discussion	0		100
Decided would make for perfect parents	0		100
It was kind of them,	0		100
I thought to decide on earplugs and dark glasses.	0		100
They ***could have*** declared that parents ***should have*** neither hearing nor vision	1	Linking	100
When I asked why they wanted parents to have dark glasses,	1	Insertion	100
the youth said that they didn't ***mind*** so much what parents saw;	1	Deletion	100
they just didn't ***want to*** have to look parents in the ***eyes!"***	2	Insertion and Assimilation	100
Bright kids," I thought myself.	0		100
Although all this conversation was part of the bright remark prelude,	0		93
Which frequently precedes a serious conversation among youth	0		100
It still revealed something	0		99

It should be emphasized that the main criterion for this test was the speakers' employment of CSPs. The researchers did not view the use of CSPs as a requisite, nonetheless, in the event they were utilized, the research still aimed at determining speech intelligibility or lack thereof. Thus, the analysis unit was the application of connected speech processes along with their intelligibility levels. The data analysis revealed that connected

speech processes were hardly used at all, which could be linked to the nature of the text being scripted and the speakers' desire to read it very carefully. This might be the reason Hieke (1984) alludes to in reading speech when he states that speakers in casual spontaneous speech are less likely to pay attention to making their words completely clear, thus not very characteristic features of sounds are connected. This is supported by Anderson-Hsieh et al. (1994) who in their research found that both l and NNSs did more linking in spontaneous speech tasks, compared to that involving sentence reading. Still, despite all this awareness, it is important to mention that intelligibility was between 93-100%.

It was nevertheless observed that, the emergence of phonemes causing unintelligible speech was not the result of a CSP being used or not used. It was the phonemic errors that made the speech difficult to understand. For instance, Speaker 10 was going to present the unit // although all the conversations were part of the bright remark prelude // as // albeit all the discourse was included in the vibrant-comment prelute//. The speaker's phonetic confusion of the voiced alveolar fricative /d/ with the voiceless counterpart /t/ in the word "prelude" led to unintelligibility of the speech, and it had nothing to do with the phonetic processes used in the connected speech. Likewise, the unit // it still revealed something // was read with a long //I// that made still sound like steal. This consequently rendered the speech unintelligible to some listeners who could be regarded as less proficient since they were not able to discern the words from the context. One could assert that connected speech processes are hardly ever present in reading passages and even in cases when they are present, they do not affect the speech quality as depicted in Table 4.1.1. The following are the processes that were applied in the test:

4.1.1.1 Linking

Linking typically consists of the final segment of a word and the initial segment of the word that comes next. One of the functions of linking in connected speech is to pronounce

two words as if they were one without altering the segmental identity. Linking can sometimes lead to a new division of the segments with no changes made to them or in making the segments involved longer in situations where both of them are the same (Alameen et al., 2015). During the test, nine speakers made use of linking in order to get a smooth flow of speech. The linking appeared only in verb phrases, as illustrated below:

Speaker 01: // they *couldhave* declared that parents *shouldhave* neither hearing nor vision//

Speaker 05: // They could have declared that parents should have neither hearing nor vision//

The listeners could understand the speakers in all these cases and it was not astonishing that the speech was clear because the words were pronounced like they were one word each. The listeners were language experts and that is the reason they did not write it down as one word but rather as separate words.

4.1.1.2 Assimilation

Assimilation occurs when a sound adopts the characteristics of neighboring sounds. This process is frequently observed in quick conversations. Generally, assimilation can be classified into several categories such as historical and contextual assimilation, coalescence, and ordinary assimilation, progressive and regressive assimilation, and contact and distant assimilation. In the example of the statement *they just didn't want to have to look parents in the eyes*, assimilation occurred in the pronunciation of *want to*. In this connection, the word *want to* was pronounced as *wanna* which was marked in the spoken text of only 3 speakers in the test. An example of the phenomenon is given below.

SP 13: // they just didn't want to [wanna] have to look parents in the eyes //

When it comes to SP 13, who read // they just didn't wanna have to look parents in the eyes //, the word final voiceless alveolar plosive /t/ in *want* is expressed through the same sound as

the initial sound in the word *to*, thus they merge. The nasal /n/ is the first consonant to be produced in the whole word *want*, and then comes the voiceless alveolar plosive /t/. The tongue reaches the /n/ position first and dominates thus the /t/ is replaced. In other words, the voiced alveolar nasal /n/ assimilates the voiceless alveolar plosive /t/ and /t/ sounds as /n/. The voicing is the only difference between the two sounds, so this is why their coarticulation is facilitated, i.e. the tangue placement is the same. When /t/ follows /n/, the tongue is already in contact with the alveolar ridge for /n/. Therefore, it requires minimal adjustment to produce /t/ as they are both alveolar sounds. The speaker may opt not to fully release the /t/ but instead, the airflow is continued through the nasal cavity making /t/ sound like /n/ effectively. Moreover, the nasality of /n/ creates the oral closure necessary for /t/, thus, /t/ transitions into the nasal airflow of /n/ smoothly, avoiding complete closure and release of /t/. The vowel sound /u:/ in the word to, which is a function word, is also reduced to /ə/ and this is anticipated since function words are generally reduced in connected speech. In a way to say wannə, the /n/ of *want* merges with the reduced *to* /tə/, resulting in *wanna*. While two speakers read faster leading to such assimilation, a slow reading was done by one speaker and the assimilation was still noticeable. This thus supports Shockey's (2003) point that many connected speech processes occur in both fast and slow speech.

4.1.1.3 Deletion

Deletion is recognized as a process characterized by the changes in the loss of certain sounds. Jenkins (2000) during her interlanguage talk mentioned sound deletion as one of the non-native varieties features. Following the line of reasoning of Atechi (2004), one could conclude that on the other hand elision is a very frequent practice among the native speakers who tend to use the weak forms in their speech very often. Deletions are typical for connected speech mainly due to the fast speech and close relationship with the listener. In the texts, the majority of the speakers, while reading the passage, did not use this at all partly

because they were being very careful with their production. A few of them during the spontaneous speech removed the sounds of the second vowel in phrases, medial consonant sounds, and some contractions. About 20 speakers were undergoing deletion in this test and here are some examples:

Speaker 100: //the youth said that they didn't ***mind*** so much what parents saw //

Speaker 112: // they ***just*** didn't want to have to look parents in the eyes!" //

During the two sentences, the final sounds of the voiced and voiceless alveolar fricatives *mind* and *just*, respectively, were deleted. Each of the speakers was heard and understood by the listeners to a certain extent as the severities of the deletions were already below the confusion level. Besides, the words were rightly used in context and also helped the listeners to get them right.

4.1.1.4 Insertion

There are some alterations to add phonemes. Examples are glides used to combine two vowels across word boundaries:

Speaker 12: // When I yasked why they wanted parents to have dark glasses //

Speaker 5: // they just didn't want to have to look parents in the yeyes!" //

Listeners, however, did not find the speech unintelligible because of the glide insertion, as they relied on the context to comprehend. In general, context plays a very significant role in connected speech since it allows the listeners to access other words that usually go together to recognize the target ones.

4.1.2 Phoneme contrast

The research involved presenting a list of words and sentences to the speakers in such a way that the intelligibility of discrete sounds would be measured. The study is similar to that of Fiyinfolu (2019) who claimed that "speech samples elicited by reading phonemic

word lists and sentences may serve as a perfect test for intelligibility measurement of discrete sounds in words" (p. 135). Meanwhile, there are several researchers (Bent & Bradlow, 2003; Cunningham, 2012; Osimk, 2009) who have resorted to similar methods in phonemic intelligibility testing. The results obtained from this test are presented in Table 4.1.2.

Table 4.1.2. Results of intelligibility scores for phoneme contrast

Unit	Sounds in contrast	Number of right responses	Level of intelligibility
These	/ð/and /d/, /z/ and /s/	200	100
Discussion	/ʌ/ and /ɛ/, /ʃ/ and /s/	198	99
Teacher	/ə/ and /a/	200	100
Ago	/ə/ and /a/	200	100
Man	/æ/ and /a/	200	100
Vision	/ʒ/, /ʃ/ and /s/	195	97.5
Station	/ʃ/ and /s/	199	99.5
Prove	/v/ and /f/	197	98.5
Dog	/g/ and /k/	200	100
Lose	/z/ and /s/	140	70
The word is sure not shore	/d/ and /t/, /ʃ/ and /s/	190	95
The colonel is in the house	/ɜ/ and /ɔ/, /ə/ and /ɛ/, /ia/	186	93
She was short for the purpose	/ʃ/ and /s/, /ə/ and /ɔ/	191	95.5
The leopard is dirty	/ɛ/ and /eʊ/, /ə/ and /a/	188	94
That is what I thought today	/θ/ and /t/	176	88
Give this book to abel	/ɪ/ and /i:/, /ʊ/ and /u/	197	98
The yatch is too small	/ɒ/ and /a/, /t/ and /ʧ/	57	28.5
There was a lot of bombing yesterday	/m/ and /b/	196	98
The fuel is finished	/ə/ and /ɛ/	200	100
The leg is small	/g/ and /k/	200	100

4.1.2.1 Production of *These*

In SSBE, the word these is pronounced as /ði:z/. The attention is on the first sound and the last sound of this word; the voiced interdental fricative /ð/ and the voiced alveolar fricative /z/ respectively. However, the Upper West Region speakers treated the voiced sounds with the voiced alveolar stop /d/ and the voiceless alveolar fricative /s/, therefore, /ði:z/ became /di:s/. This is supported by Osuman & Dansieh (2020) who claim that the Upper West speakers replace the interdental fricatives with the alveolar stops /t/ and /d/ and then, at the word's end, substitute /z/ with /s/, due to the non-occurrence of /z/ in Dagaare word final position as in English. The last replacement involving sibilants could be interpreted as merging /z/ and /s/ into /s/. The word these with its peculiar articulation was perfectly understood by the hearers which can be mainly due to the fact that the interdental fricatives are common across the different ethnic groups in Ghana (Adika, 2012). The problem of interdental fricative substitution is not only a Ghanaian issue but among the majority of NNSs, as pointed out by Jenkins (2000) and Atechi (2004). The consonant conflation at the word's end might result in unintelligible speech if the vowel length in the medial position is inappropriately pronounced as the short lax /ɪ/ but the proper lengthening still made the conflation intelligible to the speakers.

4.1.2.2 The production of *Discussion*

The British pronunciation of the word *discussion* is /dɪskʌʃən/. The vowel /ʌ/ and the consonant /ʃ/ are put under the spotlight in the study. The weak form, however, did not get much consideration because previous studies showed that non-native speakers usually pronounce it as a strong form in words. When the word was presented to the speakers of Upper West, 60 speakers representing 30% pronounced it as /diskʌʃin/. By doing so, they realized these targeted sounds very close to RP. A hundred and twenty (120) speakers, which is 60%, pronounced the word as /diskɛʃin/, replacing the vowel sound /ʌ/ with /ɛ/, and 20

speakers, or 10%, pronounced it as /diskɛsin/, again replacing /ʌ/ with /ɛ/ and /ʃ/ with /s/. The word *discussion* with its various pronunciations was 99% intelligible. The 1% deviation was on the realization of *discussion* as /diskɛsin/. This led to the occurrence of homophony which was regarded as unintelligible since the speakers were quite sure that they were articulating the target word correctly. For instance, Speaker 10 rendered *discussion* as *discussing*.

It was apparent that there was a substitution of /ʃ/ and /s/ in such a way that /dɪskΛʃn/ sounded like /diskɛsin/. Thus, the listener wrote *discussing*. It is reasonable to say that the listener wrote the continuous form of the word because the word was out of context; however, one could equally argue that the listener should have become accustomed to the speaker while listening to the reading passage that contained the same word unless he did not take the context in which the word was used in the passage into account. Very good reason for 99% intelligibility could be the familiarity of the interlocutors. This is because, the listeners were exposed to the speakers' connected speech which prepared them to the peculiarities; thus, it was quite easy for them to identify the words in this third test by listening to them.

4.1.2.3 The production of *Teacher* and *Ago*

The schwa vowel /ə/ is the main point of interest in the above-mentioned scenario. The canonical pronunciation by native speakers of the word *teacher* would be /ti:ʧər/. The Upper West various speakers made a substitution and gave *teacher* a full form by replacing the sound /ə/ with /a/, so that *teacher* became /ti:ʧa/ and ago /əgəʊ/ became /agou/ and /ɛgou/. It was also noted that the SSBE diphthong /əʊ/ was heard as /ou/ universally, but the communication was still effective. There was crystal-clear understanding of the distinct pronunciation; the words were respectively 100% intelligible to the listeners even there was no context. One possible explanation is that the listeners equally produced these two as such considering the several assertions by researchers like Atechi (2004) that NNSs do not realize

the weak forms. An explanation for the intelligibility of these words could be the matched speech intelligibility benefit (Bent & Bradlow, 2003).

4.1.2.4 The production of *Man*

In British Standard English, the pronunciation for the word *man* is given as /mæn/. According to Osuman and Dansieh (2018), the vowel sound /æ/ does not exist in Dagaare's phonemic inventory, resulting in speakers using the sound /a/. Consequently, *man* was articulated as /*man*/ by the Upper West speakers. The listeners perceived this completely as 100% intelligible. This, besides being a feature of Ghana's linguistic atmosphere, could also be interpreted as a common feature since many different works have pointed out that it is one of the sounds that NN speakers have difficulties realizing.

4.1.2.5 The production of *Vision*

The word *vision* is pronounced by native speakers as /vɪʒən/. If we compare this with the Upper West production of this sound, we observe a change in the last vowel of the word optic from /ə/ to /i/, while the consonant /ʒ/ is changed by either /ʃ/ or /s/. This results in and hence the word sounding to some as /viʃin/ or /visin/. The word *vision* with the different pronunciation was understood by 195 listeners, thus, it was 97.5% intelligible. It should also be pointed out that 190 speakers, which is 95%, pronounced the word as /viʃin/ and the listeners got the spelling right. 10 (ten) speakers or 5% pronounced the word /visin/. Five (5) listeners got the target word correctly and the remaining 5 left blank spaces. The reason why the listeners got it right even when pronounced as /visin/ is that the listeners know the interlocutors and the variety. This familiarity is due to the fact that they have already listened to these speakers in the connected speech test and had taken their cues from there. For example, in the connected speech, the speaker number 10 said *shoe* as /su:/ and *she* was /si:/. The listener of such speakers got accustomed to these pronunciations and hence the word

vision with its abnormality was still intelligible. The other 5 who found such pronunciation unintelligible might have thought so because there was no context to the use of the word. It is also worth mentioning that no speaker realized *vision* with the SSBE /ʒ/. The majority of the speakers rendered it with /ʃ/ and that could be due to the spelling. This finding supports Okyere (2018) who points out the substitution of /ʒ/ with /ʃ/ by Ghanaians in vision. Since it seems to be a widespread pronunciation among Ghanaians, it naturally led to the intelligibility of speakers with such production.

4.1.2.6 The production of *Station*

The pronunciation of the word *station* varies among the speakers of Upper West in such a way that they go through the word and replace the sound /ʃ/ with /s/ in station making the pronunciation of *station* sound like /steɪsin/. The pronunciation of the word station was correct in 186 cases corresponding to 93% while it was incorrect in 14 cases where the speakers replaced /ʃ/ with /s/, i.e. 7%. The word was recognized by all the listeners of these 14 speakers except for one listener who left a blank space. The 13 listeners recognized it due to their familiarity with the variety and the interlocutors, arguing that they were listening to the speakers in connected speech during the earlier moments. Hence, the intelligibility reached 99.5%.

4.1.2.7 Production of the word *Prove*

Native speakers pronounce the word *prove* as /pru:v/. According to Osuman and Dansieh (2020), English has /v/ in both the beginning and the end of words, as in 'village' and 'leave' respectively whereas Dagaare has /v/ only in the beginning as in the case of 'vɔl' – 'swallow'. They suggest that a majority of Dagaare pupils find it hard to articulate words with /v/ at the end and thus they use the voiceless counterpart /f/ as a substitute. The pronunciation of the word *prove* by the speakers supports Osuman and Dansieh (2020) in that

95% of the speakers produced this sound substituting the sound /v/ with /f/ at the word final position. Only 5% pronounced it the British way.

Among the 95% listeners who confused the sounds /v/ and /f/ as /f/, thirty per cent (30%) wrote '*proof*' and the rest (i.e. 65%) wrote '*prove'*. These utterances were treated as intelligible because the listeners wrote what they thought they heard and the speakers were sure that they had made the correct pronunciation. If the context had been given, probably these debates would not have arisen at all. However, on the other hand, when the word was presented in isolation, it was 99% intelligible. The listener's 1% error occurred when the speaker produced the word perfectly and the listener wrote an unheard word. This speech peculiarity might be common among the Ghanaians or perhaps it is the Southern people who know it best. Quite apart from that, the deviation would have been very large because although more than half of the speakers alternated the voiced labio-dental with the voiceless one, the listeners got it right with the exception of three representing 1%.

4.1.2.8 Production of the word *Dog*

The pronunciation of the word *dog* in the case of the native speaker is /dɒg/. The speakers despite being of Upper West origin heard this word and pronounced it with the consonant sound at the end of the word not voiced. Simo Bobda (1994, p. 24) lists the final consonant devoicing as one of "the most salient characteristics of non-native Englishes". With the final consonant devoiced, the SSBE *dog* was producing /dɔk/. The two allophones [g] and [k] at the end of the word are velar stops with only voicing as their distinction, hence, they form a minimal pair. It is, therefore, possible to maintain that the speakers regard these two sounds as being the same and so they are in free variation. Nevertheless, the listeners managed to get the word right based on the fact that the initial sounds in the word were intact thus presupposing that the word is *dog*. Furthermore, it could be rephrased that the phenomenon of sound devoicing is equally happening in the listeners' spoken words

considering the argument raised by Atechi (1994) that the devoicing of consonant sounds is a characteristic feature of non-native Englishes.

4.1.2.9 Production of the word *Lose*

The British pronunciation of the word *lose* is /lu:z/. On the other hand, some Upper West speakers did not differentiate between the voiced and voiceless alveolar fricatives /z/ and /s/ and they pronounced lose /lu:z/ as though it was *loose* /lu:s/. The word lose nonetheless was understood by 70% of the listeners which meant there was a 30% shortfall in understanding. Typical instances are Speakers 1, 3, 5, 8, and 11 among others. Some of the listeners wrote loose /lu:s/ as it was pronounced. The pronunciation was considered intelligible and others also wrote *lose* /lu:z/, though the speaker used /lu:s/. Such cases were also counted as intelligible utterances due to the speaker's intention and because the word was also in isolation. Unintelligible utterances were those where the speaker produced /lu:z/ and the listener wrote /lu:s/. Looking at the realizations with the word *lose* it would not be incorrect to state that Ghanaians do not distinguish /z/ and /s/ as /s/ and the context would have been a great help to the speaker and the listeners perhaps. One of the reasons for such matters is why the present study calls for a rethink in the oral assessment of English in Ghana especially in words in isolation and sentences where the context might not be enough for speech intelligibility.

4.1.2.10 Production of the statement *The word is sure not shore*

Native speakers could interpret the mentioned utterance as /ðiː wɜːd ɪz ʃɔːr nɒt ʃɔːr/. The residents of Upper West were in the same boat with their pronunciation and even the best among them could not master that of the native speaker. Each word in the statement was replaced with another word but the most pronounced diversities were in three words: *word*, *sure* and *shore*. The first word *word* had its sound changed at the last part of the word. The

voiced alveolar stop /d/ was changed to the voiceless one leading to the pronunciation of the word as wort /wɜ:t/. However, this was still clear to all the listeners as they understood the word. The reason was that the initial sounds had been pronounced correctly and from that point the listeners used their skill and the context to reach the target word.

The words *sure* and *shore* caused a lot of discussion. One hundred and ninety (190) speakers, who stood for 95%, were extremely close to SSBE pronunciation, while the rest of the 10 students, who stood for 5%, pronounced them in other ways. In both cases, they were pronouncing the / ʃ/ at the beginning of the word as /s/, so that *sure* was sounding /suɔ:/ and *shore* sounding /sɔ:/. These pronunciations could be attributed to Speakers 10, 15, and 100. The other fifteen speakers came up with producing the two words saw for sure and sore, saw and sored for shore. Five listeners, found all these realizations unintelligible as listeners 30 and 35 left blank spaces while the rest of the listeners e.g. Listeners 10, 15, and 100 were producing the unnecessary homophones according to what they heard. All these were counted as unintelligible utterances because the speaker was quite sure he was producing the target words and if he was asked to mark, he would have probably marked them wrong. By and large, this statement was 95% intelligible because of the deviant pronunciation of the words *sure* and *shore*. One may argue that the words were kept in context as such listeners should have found them intelligible but it is important to note that the context was not enough to have suggested what they meant by those deviant pronunciations and indeed, if context was enough the level of intelligibility would have been a little higher.

4.1.2.11 Production of The Colonel is in the house

The word that caused the speech unintelligibility in the above statement was *colonel*. The Upper West speakers had several sound changes with the word when they first heard it. Spelling was the main cause in that none of the speakers pronounced it in the SSBE way. A total of 186 students, which represented 93%, pronounced it the way it is written and they

were understandable to the listeners. The 7% deviation is where the speakers created a vowel alternant that was different from the one that was common among the 186 speakers at the end of the word. The word colonel /kɜnəl/ was mostly pronounced by the speakers as /kɔlonɛl/. At the same time, when it was pronounced as /kɔlonial/ by replacing the common /ɛ/ with /ia/, the listeners did not understand and left blank spaces. The context of use regarding the word *colonel* was not enough to give these listeners a clue and that also contributed to the unintelligibility.

4.1.2.12 Production of *She was short for the purpose*

The keywords in this assertion are *she* and *short*. Among the ten (10) speakers, who represented 5%, there were *she* swapping /ʃ/ with /s/, but the listeners considered it to be intelligible. This could be linked to the situation since the listeners have met such pronunciation during their listening period right from the beginning up to now. The difference that caused the speech to be unintelligible was in the word *short*; it was heard as shot by about 190 speakers and sort by 10 speakers. Nevertheless, the statement was 96% intelligible. The 4% deviation was due to a few listeners who wrote shot and sort for the word *short*. That happened because the context was not very clear for the listeners to extract meaning. In other words, the context was not adequate and that resulted in the 4% deviation. It should also be mentioned that the majority of the listeners went a step further in understanding the meaning of the statement, and that helped them to find it intelligible.

4.1.2.13 Production of *The leopard is dirty*

An additional observation worth mentioning is the term *leopard*. This term was the one that made the phrase the *leopard is dirty* unintelligible during the hearing test. It is here that spelling pronunciation came to the aid of listeners, as it was 94% intelligible from the speakers who pronounced it the way it is spelt. The main reason for the unintelligibility of

6% was when some speakers, notably Speaker 200, attempted giving it the SSBE pronunciation of /lɛpəd/, which is the standard for the examination body for senior high schools in Ghana. The same listeners also spelt it in such a way that /lɛpəd/ becomes /lɛpad/. This supports the view of researchers like Atechi (2004), Jenkins (2000), and Fiyinfolu (2019) who suggest that even native speakers may sometimes be unintelligible to non-native speakers (NNS).

Considering the 6% of speakers who pronounced the word almost as in SSBE, one may wish to evaluate how they managed to make such pronunciations when they are also from the Upper West region and should therefore be showing the characteristics of the others. A possible explanation for this could be that they received some teaching regarding the pronunciation of the word and also would have become accustomed to that pronunciation because we live in a technological world where students learn the language through movies and videos. This then implies that the listeners were not able to get it right because they were not familiar with the accent when it came to this word. It can also be said that the context was just not enough for the listeners to cling to in order to recognize the word.

4.1.2.14 Production of *That is what I thought today*

The interdental fricative /θ/ at the initial position of words is an interesting controversy that has been the subject of much debate. One example is Jenkins (2000) who has completely eliminated interdental fricatives from her core features, but her study has encountered a case where all speakers used /t/ which resulted in a 12% unintelligibility. According to the statement, *this is what I thought today* the speaker pronounced /t/ for the voiceless interdental /θ/ and it caused 24 listeners who were writing *taught* instead of *thought*. It should also be mentioned that the context here is insufficient and this is what led to the ambiguity since in some other similar words the alternations brought about no mishearing due to the presence of a lot of contextual clues. In other cases, although the context was

inadequate, the isolated word, even if pronounced wrongly with any deviation, still did not cause any confusion. Such a few instances could imply that there might be a change in the LFC to incorporate interdental fricatives in the core features. Furthermore, it is suggested that the West African Examination Council might revisit the oral assessment, particularly in the case of SSBE, due to the sound conflations and other alternations in the NN Englishes.

4.1.2.15 Production of *Give this book to Abel*

The above statement would be read by native speakers as /gɪv ðɪs bʊk tu: eɪbəl/. The Upper West speakers had a lot of vowel changes in their pronunciation and the statement came out as //gif dis buk tu eibul//. The alternations of the different words did not result in listeners misunderstanding the speech, apart from the last word *Abel* which got the listeners writing *able*. The vowel sound that was decreased in the last word was replaced by a full form resulting in a new word which caused lack of understanding in speech. Out of a total of 198 speakers, 196 were able to pronounce the word correctly while only 2 could not. Generally, the word was 98% understood by the listeners. The two speakers were also dependents on top-down processing and thus, did not use the contextual hints to recognize the word. Their getting the other words right indicates that they should have been able to think of a name that is very close to the pronunciation and write it down rather than ending up with a verb. This raises doubts about the proficiency of the listeners because according to the nature of the statement, a noun is to be coming in to the preposition and nothing else to complete it.

4.1.2.16 Production of *There was a lot of bombing yesterday*

The native speakers did not read the statement in the same way as the statement but the word of interest was the word *bombing*. All the other words in the sentence except for bombing were pronounced clearly. The native speakers pronounce *bombing* as /bɒmɪŋ/ but the Upper West speakers produce this word as /bɔmbiŋ/. There is a clear sound addition and

that is the sound /b/. This pronunciation was produced by 196 speakers and their intelligibility to the listeners was partly due to the fact that GhE is heavily influenced by spelling pronunciation. This led to 98% intelligibility. The 2% loss was because the speakers changed the sound /ɒ/ to /u/ so that SSBE *bombing* became /bumbiŋ/. This is a non-word which caused the listeners to leave blank spaces. The context was not enough either to help the listeners decipher the meaning.

4.1.2.17 Production of *The Yacht is too small*

The statement that *the yacht is too small* was given the least intelligibility rating, and thus, only 28.5% of the speakers' responses that were correct was below 50%. The majority of the speakers failed to pronounce the word *yacht* correctly, and thus, the listeners' reactions to the statement in question were affected negatively. For example, Speaker 10 read // *the [yaʧet] is too small*//. This caused confusion for the listener, who then chose not to respond at all. It is, therefore, important to mention that the context provided was too limited for the listener to derive any meaning and identify the word. The same problem occurred with a few speakers like Speakers 11 and 2, who pronounced it correctly, but the listeners still could not get the right spelling. This was partly because GhE is associated with spelling pronunciation, and so some listeners just wrote the word as it was pronounced, thus, *yort* and *yart*. It may be said that both the speakers and the listeners failed to understand this word correctly because it was either unfamiliar or it was a rare word in the Ghanaian context. On this basis, it could be concluded that unfamiliar or rare words could result in unintelligibility and this supports the claims made by Atechi (2004) and Fiyinfolu (2019).

4.1.2.18 Production of The Fuel is Finished and The Leg is Small

Native speakers produce the phrase *the fuel is finished* as /*ðiː fjuːəl ɪz fɪnɪʃt*/. The speakers from Upper West, when they met this, made exact sound how the native speakers

did but with a lot of changes in sounds. The voiced inter-dental fricative /ð/ in the first word was replaced by /d/ but the word was still understandable, then the reduced form in the word *fuel* got a full form while there was a sound deletion /j/, therefore the SSBE *fuel* sound was /*fu:el*/. This was equally understood by the listeners. The word *finished* also had a consonant substitution so that /*fɪnɪʃt*/ sounded like /*finist*/ by 10 speakers. Even though this word was produced totally dissimilar to the 190 speakers, the listeners still found them intelligible. This was because the listeners relied on the context and their fluency in the language to create meaning. They thought of the preceding words, and guessed the last word, taking hints from the first syllable of the word *finished*. Thus, the statement was 100% intelligible. The statement, the *leg is small* was also 100% intelligible even though it was not produced like the native speaker. For example, the inter-dental fricative in the word *the* was substituted with /d/; in the word, *leg*, the voiced velar stop /g/ was made voiceless so that /*leg*/ sounded as /*lek*/. The voiced sound /z/ was also made voiceless to /s/ in the word is.

The last word of the statement, *small*, was pronounced by a native speaker. In all the cases of substitution by the speakers, it is safe to say that the words *leg* and *is* were pronounced according to their respective spelling. Regarding the word *the*, it can be inferred that the loss of the inter-dental fricative /ð/ caused the substitution with /d/, as pointed out by Osuman and Dansieh (2020). In general, the reason why this statement was 100% intelligible was that the listeners had already been accustomed to the accent of the speakers from Upper West Region, Wa. The first test provided the words *the* and *is*, which were also present in the passage, and the speakers articulated them in the same manner as in this test. In the same way, the speakers sometimes devoiced final consonants in some words in the passage, like *prelude*. The listeners who were able to *hear* them and were using context and other factors to comprehend meaning in the first test, got really confident in their ways of sound

production. Thus, this familiarity could be seen as the familiarity with the interlocutors and so it was a contributor to the 100% intelligibility of the statement *the leg is small*.

4.1.3 Nucleus placement in words

Nucleus positioning within words has been recognized as a significant feature in English interactions by various researchers. Hahn (2004) and Field (2005) have suggested that the improper placement of stress might lead to a reduction in comprehensibility, and this becomes evident in Atechi's (2004) study where the Britons and Americans rated the speech of Cameroonians as unintelligible due to the stress shifts caused by the improper placement of nuclei. The findings regarding the intelligibility of speakers from Upper West based on nucleus placement are shown in Table 4.1.3.

Table 4.1.3. Results of intelligibility scores for nucleus placement in words

Tone Units	Target Words	No. of Right Answers	Level of intelligibility (%)
You need to record that	Record	200	100
He seconds you	Seconds	200	100
Are these measures curative	Curative	100	50.0
This is an opponent	Opponent	200	100
I need an umbrella	Umbrella	200	100
Did you say apartheid	Apartheid	98	49.0
The petrol is not good	Petrol	200	100
Her performance is good	Performance	200	100
That is quite tentative	Tentative	200	100
She hates plantains	Plantains	200	100

4.1.3.1 Intelligibility (100%)

The thing is, that in the 10 units where nucleus placement was tested, it was each time differently assigned by the speakers. Field (2005) says, and it could be agreed here that by the different placements of the nucleus, the stress patterns of the words were either transformed

by shifting them back or forth or full word stress was applied as compared to the actual stresses in SSBE. However, despite all these realizations, still 8 units were 100% intelligible. A case in point is when the following speakers marked stresses either in a full word form or by shifting them forward or backward with various nucleus placement in the following target words:

Speaker 1: // REcord [ˈrɛkɔ:d], Seconds [ˈsekənds], OPPONENT [ɔponɛnt], umbrella [ʌmˈbreˈlʌ], PERFORMANCE [pefɔ:mʌns] TENtative [ˈtentətiv/ PLANTAINS [plʌnteins] //

Speaker 3: //record [rikɔ:d], seCONDS [sekɔ:nds], OPPONENT [oponent], UMBRELLA [ʌmbrʌlʌ], PERFORMANCE [pefɔ:mʌns], tentative [tenˈteiˈti:v] planTAINS [plɑnˈteins]//

The interviewees, especially Speakers 1 and 3, presented not only different marking of stresses but also different qualities of the vowels accompanying the stress. Through various syllables, different vowels were produced. It was apparent that the stressed syllables had strong vowel sounds and the unstressed had weak vowels. This tendency carried most of the speakers to apply full word stress to words such as, plantain, umbrella, and opponent. Some speakers even marked the stress in two syllables of the same word. For instance, *tentative*. The words *record* and *seconds* are worth mentioning which yielded nouns or verbs respective to the sonority of the vowel in the syllables. For example, Speaker 1 articulated the words *record* and seconds with the stress on the vowel /ɛ/ in the first syllables as against /ɔ:/ and /ə/ respectively, in the second syllables. On the contrary, Speaker 3 stressed the second syllables which led to the formation of verbs. This implies that the stress occurred in the second syllables of the words *record* and *seconds* with sound interchange in the second syllable of the word *second*. The sound /ɛ/ in the first syllable of *record* was interchangeably with /ɪ/ rendering that syllable weak and the second strong. In the word *second*, there was no

interchange in the first syllable, however, there was a significant interchange in the second syllable such that SSBE /*sekəndz*/ was pronounced as /*sekɔnds*/. In spite of the diverse nucleus placements in the words, the intelligibility was 100%. As a result, the study supports Koranteng (2006) and Lomotey (2018) on the stress placement in GhE being not fixed but still intelligible.

Only two units including *curative* and *apartheid* were not clear in the current experiment. It was not because of different stress placements but rather because of phonemic errors that Jenkins (2010) mentions as a reason for unintelligible speech in tests of word stress. The SSBE *curative* /*kjʊərətɪv*/ was not pronounced by the speakers like the British do. The stress was placed at different positions and the reduced forms were given full forms by the speakers. For example, Speaker 3 pronounced it as //are these measures [ˈ*kuərɛtif*]?// Speaker 4 gave it as //are these measures [*kuəˈretif*]?// One hundred (100) listeners heard the word as pronounced above and moved the stress from the first syllable to the second. No one among the listeners thought these speakers were unintelligible. The other 100 speakers caused the unintelligibility of speech. The word *curative* was articulated by dropping /j/ and replacing the diphthong /ʊə/ with /ɔ/ and /u/ so that SSBE curative sounded as either /*kɔretiv*/ or /*kurativ*/. These phenomna made it hard for some listeners to write anything and others typed non-words like *corretive* and *curretive*, which is what they thought to be right.

To illustrate, Speaker 5 pronounced the line as //are these measures [kɔrɛtiv]?//. One could argue that such people were relying on the word's spelling to guide their pronunciations, which is a widespread practice in Ghana that Adika has mentioned. Consequently, the incorrect articulation of the term resulted in speech being hard to understand but not in the case of the placement of the nucleus in the words. One such word is *apartheid*, which has been closely linked to this issue. Speakers 10 and 11 pronounced the question *Did you say apartheid*?, with speaker 10 stressing syllables 1 and 2 respectively;

modo /*apartеɪt*/. The speakers traded /aɪ/ for /eɪ/, and this reduced the clarity of the communication. A partial vowel /ə/ was also replaced with the complete vowel /a/ at the beginning of the word, however, it did not contribute to the unintelligibility issue as far as this word's pronunciation is concerned. This is because Ankomah (2021) mentions that Ghanaians have the habit of taking full vowels instead of using the reduced forms. Speaker 34 also identified *apartheid* as /*apɪtaɪt*/. It is evident that the complete vowel was exchanged for the reduced form for the word initial spot while /a:/ was changed to /ɪ/ resulting in /*apɪtaɪt*/ instead of /əpa:taɪt/. The utterance was thus 49% comprehensible due to the occurrence of phonemic mistakes. After the realizations up till now, it is worthy to point out that the placement of the nucleus in words did not make the speakers of Upper West and the listeners of Southern Ghana hard to understand, however, it was the phonemic errors that made the placement of the nucleus in words difficult to understand.

4.1.4 Summary

The primary goal of this part was to characterize the intelligibility between the speakers of the Ghanaian English (GhE) dialect in Upper West and their Southern Ghana counterparts. Thus, the research attempted to determine the degree of (un)intelligibility. When one examines the intelligibility condition between the speakers of Upper West and the listeners of Southern Ghana, one can easily conclude that the intelligibility situation is indeed extremely large between these two groups. The intelligibility in connected speech was assessed to be actually very high and ranged from 93% to 100%, phoneme contrast was 27.5% to 100%, and nucleus placement with words was between 49% and 100%. If we consider our argument on connected speech, which is generally a criterion of fundamental importance with respect to the speaker's ability in spoken English, we can claim that the intelligibility levels of 93%-100% in the connected speech are extremely high. This indicates that Upper West Ghanaians can easily be understood by Southern Ghanaians.

4.2 Features that aid intelligibility

It is indeed true that phonological and phonetic traits are the main factors for intelligibility. Basically, these features, which are also known as segmental and suprasegmental, are mostly the ones that either help or hinder intelligibility in communication. In case there are deviations in the segmentals or suprasegmentals by the speaker, the result can be impaired intelligibility. For the segmentals, Jenkins (2010) neatly classifies the deviation types into three: sound substitution and conflation, consonant deletion or elision, and addition. These features mainly affect the intelligibility negatively. Nevertheless, Jenkins points out that there are cases where these deviations do not cause intelligibility problems, especially among individuals with the same L1 background. This research does not involve speakers and listeners from the same L1 background, yet still some deviations did not result in loss of intelligibility; however, it is equally important to mention that some factors worked as aids in the process. Among the suprasegmentals, she cites misplaced nucleus with phonemic errors as one of the causes of unintelligibility. Nevertheless, the study shows that the suprasegmental feature, word stress did not impair intelligibility when the nucleus was misplaced; on the contrary phonemic errors gave rise to considerable unintelligibility. In her research on interlanguage talk she sorts out core and non-core features as far as speech intelligibility is concerned. The core features are; all consonants but the inter-dental fricatives (/ð/ and /θ/), initial consonant clusters, vowel length distinction, the nurse vowel, and nuclear stress. Conversely, the non-core features encompass the interdental fricatives (/ð/ and /θ/), vowel quality but the nurse vowel, word stress, weak forms of function words, intonation, and some features of connected speech such as elision. The research points out characteristics that help to understand the language. Some of her main and secondary characteristics will be put to the test, when required, in order to determine their applicability or not in this country.

4.2.1 Individual vowel quality

Jenkins (2000) argues that individual vowel quality is a non-core feature because it does not affect speech intelligibility among non-native speakers. She points out the NURSE vowel as an exception and claims that all the other vowels in this bracket can never cause speech to become unintelligible. Nevertheless, the current study shows that even the NURSE vowel in Ghana is inaudible and thus a non-core feature in GhE. In only one case not involving the NURSE vowel, the quality of one of the sounds was replaced and intelligibility was lost, but that was due to the context and other reasons, which will be discussed later. Generally, in most cases where individual vowel quality was at issue, intelligibility prevailed, and this is why the study continues to classify it as a non-core feature. The following are some examples of the phenomenon:

Speaker 7: / discussion [dɪskɛʃən]/

Listener /discussion/

Speaker 22: / The colonel [kɔlonel] is in the house /

Listener: / the colonel is in the house/

Speaker 21: /man [man]/

Listener: /man/

In the above instances, Speaker 7 used /ɛ/ instead of /ʌ/ during the discussion, Speaker 22 used /ɔ/ instead of /ɜ/ in the first syllable of the word colonel and all these speakers used /a/ instead of /æ/ but the listeners managed to write the target words. What is very striking about these vowel substitutions is the inconsistency of the substituents for a particular vowel. In one word, it is replaced with one vowel sound and in another word, another vowel sound is used for substitution. Concerning the first example, the literature on non-native varieties of English features, especially African Englishes, has pointed out that the mid-open central vowel /ʌ/ is one of the sounds which are realized differently from SSBE

(Atechi, 2004; Fiyinfolu, 2019; Simo Bobda, 1994,). Osuman and Dansieh. (2020) suggest that the non-existence of this sound in the Dagaare vowel inventory causes speakers to make an approximation, leading to [ɔ] and [ɛ] for [Λ].

In the case of the second example, which is close to the NURSE vowel, Jenkins attributes it to the core of the speech and classifies it a feature that can cause a misunderstanding in communication. The NURSE vowel is one of the (if not the) most powerful vowels with respect to the disappearance of SSBE vowels through the process of mixing. The same phenomenon was noticed not only across the different English-speaking countries but also within the various regions of a country in the early works of Schmied (1991) and Simo Bobda (1994, 2000, 2001). According to Schmied (1991, p. 60), the NURSE vowel is, in West African varieties, moving to a back vowel /ɔ/, in the East it is going to a front vowel /a/ and in the South it is getting closer to /e/, that is how widely the variations in spelling are. In East Africa, Schmied (1991, p. 430) states that the NURSE vowel is almost /a/ in Kenya while /e/ in Tanzania.

To verify the NURSE vowel variability, Schmeid cautions that these tendencies are not only different in a particular area but also according to the different races. For instance, the Yoruba and the Igbo groups are two of the most important sub groups in the Nigerian English-speaking community, but they are quite different in their handling of the NURSE vowel. This is further supported by Fiyinfolu (2019), who states that the mid-central vowel [ɜ:] could be pronounced as a back vowel [ɔ:], a front vowel [a] and finally [ɛ:] among Nigerians. These realizations in her study led to speech unintelligibility which is also in tandem with the LFC that presents the NURSE vowel as a core feature.

Even in this significant vowel, Simo Bobda (2000, p. 41) refers to it as the "single most distinguishing parameter in the regional, national and even ethnic identification of a speaker". This is an indicator of the presence of such a parameter that Ghana is the only

country in West Africa that is able to produce it with such a high degree of quality. He points out that they replace it with /ɛ/ all the time. This research, which relates to GhE, does not fully agree with Bobda's (2000) assessment of the NURSE vowel in GhE because, in the instance mentioned above, the vowel was not pronounced as /ɛ/ but as /ɔ/ by the speakers from Upper West. This implies that Ghanaians occasionally produce the NURSE vowel as /ɔ/. The degree of intelligibility in communication indicates that there is a matching intelligibility benefit that works between speakers and listeners.

4.2.2 Full forms for weak vowels

Jenkins' non-core features included full vowels for weak forms which were guilty of nothing but being non-impairing for intelligibility. Among others, the mid central vowel /ə/ which is a weak one has been pointed out by several research works in African Englishes as not realized in most cases; it is given a full form (Atechi, 2004; Bobda, 2000; Fiyinfolu, 2019). Osuman and Dansieh (2020) report this sound being substituted with /a/ in the last syllable of words like teacher and blame it on L1 influence which is the absence of the mid central vowel /ə/ in the Dagaare vowel inventory. This line is the same as Fiyinfolu (2019) who claims that speakers of Nigerian English hardly ever use the mid-central vowel /ə/ (schwa) possibly because it is not part of the phonemic inventory of Nigerian English. While the Nigerian speakers mainly use the vowels [a, e, i, ɛ, ɪ, ɔ, ɒ] to realize the mid central vowel /ə/ (Adetugbo, 2009; Simo Bobda, 1995). In related studies, Atechi (2004) states that Cameroonians realize the mid central vowel as [a, e, i, ɔ, ɛ, o, u, i]. The present research notes that the Upper West speakers who had this weak sound experience produced it as a full vowel. Furthermore, the weak vowel /ə/ gotten a lot and various kinds of substitutions as well. In some words it was replaced among others with /u/, /a/, /ɛ/. The following are some instances:

Speaker 14 // The leopard [leopard] is dirty//

Listener / The leopard is dirty/

Speaker 111/ ago [ɑgo], [ɛgo]

Listener / ago/

Speaker 73/…today [tudei]/

Listener /…today/.

All of the above mentioned characteristics were clear to the listeners even when they were almost deprived of context and this was because the listeners recognized the features since they were common to all varieties of English and thus the listeners were quite familiar with the variety. Fallacy can be dispelled by making reference to the plethora of studies which have pointed out that weak forms can still be perfectly intelligible when spoken quickly. As an instance, Cutler and Smiljanic (2013) revealed that prosody, which included weak forms, was a major factor in speech intelligibility, thus providing evidence that speakers still opt for the full forms under certain emphasis or clarity conditions. Wells (2006) covered weak forms in English pronunciation, specifically in unstressed syllables but pointed out that their full forms could still be understood in context, particularly for English learners.

4.2.3 Interdental fricatives

The replacement of consonant sounds is recognized as one of the major factors that contributed to the difficulty in understanding speech by Jenkins (2000). Nevertheless, she did not include the interdental fricatives in the basic characteristics of her LFC since there was not a single instance where the replacements of these sounds caused a total loss of speech understandability and the like. The consonants [d] and [t] are frequently swapped as [ð] and [θ], respectively, with the words like those, father, the, with [t] as the substitution and thin, breathe, thing, respectively, as the cases for the substitutions. Schmied (1991, p. 58) even mentions that sometimes the two consonants that cause problems in speech are not only

confused with each other but also with the voiced and voiceless labiodentals /v/ and /f/. The current author has found /t/ and /d/ to be the logical replacements of the interdental fricatives /θ/ and /ð/, which is in line with the results of some scientists dealing with African Englishes (Atechi, 2004; Fiyinfolu, 2019; Okyere, 2018). The repeated occurrences of such replacements in speech, be it at word-initial, medial, or final positions, were all intelligible except for one case where speech was not intelligible. The authors would like to present the fricative substitutions under discussion as a topic of great importance due to the high percentage of instances where their case was the intelligibility of the listeners. The one case that was not intelligible will be referred to later on to explain the reasons and the necessary adjustments to the LFC. The next examples demonstrate the many occurrences when the presence of the interdental fricative sounds did not hinder comprehension.

Speaker 164 / These [di:s]/

Listener /these/

Speaker 161/the [de] word is sure not shore/

Listener / the word is sure not shore/

speaker 1 /give this[dis] book to Abel/

Listener // give this book to abel/

Listeners were able to understand all these different pronunciations quite easily because these were common attributes referring to Asante et al (2022) who pointed out that a considerable number of Ghanaians generally substitute interdental fricatives with /t/ and /d/ claiming that the local language, particularly Akan, does not have the interdental fricatives at all. It can be said that the speakers' and the listeners' perceptions of speech intelligibility matched to the full extent and this contributed to the process of intelligibility. Another potential factor that facilitated the comprehension of the distinct pronunciations by the listeners might have been the linguistic context of some of the tone units. The context in

some sentences was indeed not sufficient, but the different pronunciations of the interdental fricatives did not lead to any homophony or ambiguity, thus making them audible to the listeners. Even in case of words taken individually, the intelligibility of these sounds remained unaffected. This may be explained by the fact that the other sounds in the word were correctly produced. Thus, there was no ambiguity or the listeners simply knew such production for such a word.

Not only these cases, but also many others, have opened the way for the conclusion that the phoneme change is one of the factors that can still be considered to be intelligible. Munro and Derwing (1995) supported their opinion in a study that referred to substitutions of interdental fricatives as clear and consistent, thus suggesting that even if the listeners were not able to recognize all the phonetic details, they might still guess the intended meaning of the speaker. Lindemann (2005) studied accommodation and intelligibility among others and concluded that speakers who pronounced the sounds differently from the norm, such as substitutions of interdental fricatives, would still be comprehended provided that the listeners were used to their accents and were accommodating. She lists the familiarity of varieties as one of the factors that can help to overcome these consonant substitutions in the area of speech intelligibility.

4.2.4 Consonant deletion

The phenomenon is defined as "the omission of a consonant in a cluster to alleviate the weight of the syllable" (Atechi, 2004, p. 39). Simo Bobda (2000, p. 262) discloses that in the case of reducing a group of consonants to a single one the latter, East African English, and Hausa English in Nigeria had vowel epenthesis while the rest of African English speakers resorted to consonant deletion. The standard pronunciation of the word *post* in SSBE is [pɔːs], mist is [mis], and tend is [tɛːn]. Jenkins claims that "deletion of consonant is more of a threat to being understood" especially in onset clusters (2000, p. 142). She explains that

"addition is better than deletion; no sound in initial clusters should be deleted; if elision occurs in a final cluster, it is better to opt for a /t/ or /d/ where this is possible" (2000, p. 143). However, Jenkins (2010) on consonant deletion and intelligibility among NNS purports that consonant deletion may not impede speech intelligibility, particularly if enunciated by L1 speakers. This may be due to various factors, speech intelligibility benefit, and context being among the possible reasons. Once speech connectedness is the focus, it can be easily observed that the deletion process applied in intelligibility does not cause any speech breakdown. The following are some examples of the phenomenon:

Speaker 26 / the youth said that they didn't mind [min] so much what parents saw//

Listener// the youth said that they didn't mind so much what parents saw//

Speaker 12 // they just [jes] didn't want to have to look parents in the eyes//

Listener // they just didn't want to have to look parents in the eyes//

Speaker 1 / it was kind[ka:n] of them

Listener / it was kind of them/

The sounds /t/ and /d/ were deleted at the word final positions of some of the words but there was no instance speech was impaired.

The literature indicates that the consonant deletion phenomenon is not only characteristic of Ghanain English but also present in other African and non-African Englishes. For instance, Wong (1982) mentions consonant deletion in Malaysian English where *desk* is pronounced des and *risk* is pronounced *ris*. In like manner, Singaporean English utilizes consonant deletion to the extent of the pronunciation of *Just* as *jus*, *recent* as *recen* and *friend* as *frien* (Platt et al. 1984, p. 44). In addition to this, Hong Kong English is also mentioned to be a consonant deletion language when it comes to the words *thousand* and dollars where they are pronounced as *thousan* and dollar respectively. Platt et al (1984) and Tifen (1974) also point to the dropping of the sound /t/ in the pronunciation of *first* and

almost; and /d/ in the words *mind* and *ground*. Todd et al. (1986) draw attention to words such as *band, banned, laughed* and *screamed* from West Indian English that lose consonants in final positions of the words.

4.2.5 Sound addition

According to Jenkins (2010), the addition of sounds is one of the characterizing features of some Englishes spoken by non-native speakers. Non-native speakers commonly insert sounds to make certain consonant clusters in English easier to pronounce. For instance, non-native speakers might use vowel insertions in foreign words to make them easier to pronounce (e.g. *splash* pronounced as *esplash* by Spanish speakers or as *siblash* by Arabic speakers [Al-Saidat, 2010, p. 129]). Research has established that sound addition, particularly vowel insertion, does not always result in reduced intelligibility. On the contrary, the listeners might find such adjustments to be more comfortable to understand provided they are in accordance with the universal syllable preferences such as the consonant vowel structure. Jenkins (2010) opines that sound addition is most likely to facilitate speech intelligibility especially among the speakers of the same L1. The following examples support the claim made by Jenkins.

Speaker 200/ there was a lot of bombing [bɒ:bɪŋ] yesterday/

Listener / there was a lot of bombing yesterday/

In the above example, the sound /b/ was included in the production to transform the British pronunciation of /bɒmɪŋ/ into /bɒmbɪŋ/. It is worth mentioning that all the speakers pronounced the word with the plosive /b/ intact. This acknowledgment is not shocking as GhE, according to Adika (2012), is characterized by spelling pronunciation. All the listeners to such productions got it right except in cases where the vowel sound /ɒ/ was substituted with /u:/ so that /bɒmbɪŋ/ in GhE becomes boombing /bu:mbɪŋ/ like in the case of Speaker 2

who read bombing as boombing. This however cannot be treated as sound addition but rather an issue of vowel quality.

This particular aspect aside, the insertion or addition issue as a process did stand connected speech. The rare cases when the speakers placed a glide in between *I* and *asked* words, thus making the pronunciation sound as //I yasked//, still did not lead to the case where speech was completely uncomprehendable. In most cases, Todd (1984, p. 288) presents the following for West African Englishes: [bɔtul], [tɔrəbu], [sumul] which can be understood as referring to bottle, trouble, and small, respectively. From South Asian English, Kachru (1984, p. 359; 1986, p. 39), reports that school, station, sloth are pronounced as [iskul], [isteʃan], [isloθ]. In East African English varieties, Hancock and Angogo (1984, p. 313), state that [əgenəst], [rispɔnis], [kidənz], among others, are the sounds corresponding to the words against, response, and kidney, respectively.

4.2.5 Nucleus placement in words

Field (2005) states that nucleus positioning within words is a determining factor for the stress patterns of the words. The experiment came upon different nucleus positions which resulted in the shifting of stress backwards or forwards and also in word stress comparing to the actual stresses in SSBE English. Despite this, the communication was still carried on. In fact, stress in SSBE is mainly backward. It means that the stress is mostly at the beginning of the word. Nevertheless, non-native English languages have a habit of moving the stress forward. It is, however, important to remember that this rule is not fixed. The non-native English stress is quite different from the native English stress. A lot of research has shown that the biggest barrier to communication between native and non-native English speakers is the difference in stress between the two main dialects. Atechi (2004) pointed out that stress was one of the features that caused difficulty in communication among Cameroonians, Britons, and Americans. Jenkins (2000) also claims that “the misplacement of lexical stress

rarely caused any intelligibility problems" (p. 41) among non-natives. She thus does not include lexical stress in the LFC. Adjaye (2005), Koranteng (2006), and Lomotey (2018) point out that the stressing in Ghanaian English has some flexibility and that the speakers show fluidity in the way they shift the stress in words. The data of the current research indicate that the speakers stress a number of words in a similar manner to that which might be anticipated by inner circle speakers and also stress a number of words in a different way. Field (2005) cautions that if a speaker, either a native or a non-native one, misplaces the stress on words, it may lead significantly to the speaker's unintelligible speech. On the contrary, Deterding's (2011) research indicated that there were differences in the marking of lexical stress by his subjects and even when lexical stress was wrongly placed, the speakers had no problem being understood. The subsequent instances illustrate the change in stress but still the listeners could understand:

Speaker 99:	/ this is quite **TENtative**/
Listener	/ this is quite tentative/
Speaker 111	/ this is quite **tenTAtive**/
Listener	/ this is quite tentative/
Speaker 02	/ He **SEconds** you/
Listener	/ He seconds you/
Speaker 20	/he seCONDS you/

Using Speaker 111 and Speaker 20 as a basis, the words *tentative* and *seconds* received a shift forward in stress. Stress was applied to the first syllable by Speakers 99 and 2. There was never a time when the speech became incomprehensible. The only cases when speech was somewhat hard to fathom were those involving such phonemic errors that were on the verge of causing some vowel alternation no matter where the stress fell. Apart from this occurrence in Ghana, Tiffen (1974) points out that there are certain words that transition

from the native English stress pattern to the Nigerian backward stress pattern as if gaining non-native fiscal stress. Tiffen witnessed the shifting of the accent from the first syllable to the next: in *interesting, usually, interval,* and *normally*. He also mentions the shift of the accent from the second or third syllable to the next: *importance, enjoyment,* and *recreation*. The shifting of the accent may go towards the first or the second syllable: *arrange, acquainted, allow*. In Cameroonian English, Simo Bobda (1994) recorded the accent starting from the first syllable moving to the latter syllables: *bar 'rier, Sam'my, cu'rative, main'tenance, ten'tative*. He also noticed the accent going away from the second or third syllable to the next syllable in such words as *attri'bute, embar'rass, collabo'rate, adminis'trative* and the accent moving one or two syllables backwards; *'as in extent*, *'unlike*, *'suspend*, *Eu 'ropean, 'expertise,* and *'Cameroonian*.

In general, word stress does not hinder the communication of non-native speakers. This is more so if the words were always used in context. Nevertheless, since it causes a breakdown in speech regarding international intelligibility, it still counts as a feature of complex nature in the studies of intelligibility and has been receiving consistent attention from researchers all over the globe. Some researchers had come to the conclusion that English word stress was hard to predict while others claimed that a significant proportion of it was predictable. In a paper titled, *Demystifying word stress* by Taylor (1996), he illustrates his point by indicating that he considers applying stress rules very simple. The rules which Taylor proposes are mainly determined by the ending of a word. Simo Bobda (1997) is mostly in agreement with Taylor and has also offered clarifications on points concerning the placement of word stress. Simo Bobda (1997) argues that it is stress that gives rise to the pattern of full and reduced vowels and not the other way around.

The predictability of stress in New Englishes was a very controversial issue. Some of them, like Simo Bobda (1971), thought that the rhythm of New Englishes was syllable-timed

and their stress patterns wasochronous. He nevertheless cautioned that these labels misled later researchers as they took this to mean that all the syllables of a word in New Englishes had equal stress strictly. Simo Bobda (1971) then restates the truth that in New Englishes, just as in native English, one syllable in a polysyllabic word is always more prominent than the others. This condition, in a way, implies that non-native Englishes still hold strong vowels, even in unstressed syllables. Another thing that cannot be overlooked is the fact that the speakers have an unstable pattern of stress deviation in non-native Englishes. To claim that the non-native varieties of English all over the world share more similarities than differences is not a new one. However, it does not follow that the differences existing between these varieties are to be ignored. Every variety has its own peculiarities which provide them their identity as national or regional varieties and regarding intelligibility, it does not pose any problems drawn from Jenkins (2010).

4.2.6 Devoicing of final consonants

The final consonant devoicing has been described as a characteristic common to the different African varieties of English. Thus, Simo Bobda (1994) asserts that final consonant devoicing is the most prominent feature of non-native Englishes. Pronunciation of the following words is a good example of this feature: *read, proud, married, save, five, robe, bees, bags, dogs* (Platt et al., 1984, p. 37). Devoicing of the final consonant means that words ending in voiced sounds are replaced by their voiceless counterparts when pronouncing them. This is the case in Atechi (2004) where he has on Cameroonian, American and British Englishes, he found the devoicing of final consonants among Cameroonians. Though this feature did not affect comprehension among Cameroonians, it heavily led to speech unintelligibility as the Britons and Americans listened to them. Later, Fiyinfolu (2019) pointed to the devoicing of word-final consonants like [rop, lif, dʒɔtʃ] robe, leave, and judge for SSBE [rəʊb, li:v, dʒʌdʒ].

The speakers from the Upper West Region in Ghana showed such distinctive pronunciation traits that the southern listeners, just like Cameroonians, identified the target words without error. For example, Speaker 3 pronounced *these* as /di:s/. There is no doubt the final consonant was heard as voiceless since /z/ was substituted by /s/ but, the listener still got the target words as these. Speaker 149 pronounced "*it was* "*kind*" [ka:nt] of them. During all these substitutions, still, intelligibility was achieved. A likely reason for the speakers' substitutions of /z/ and /d/ with /s/ and /t/ respectively is that they are minimal pairs coming from their place and manner of articulation. One reason for the listeners' getting speeches correct could be that the Southern listeners speak that way or are familiar with such pronunciations.

4.2.7 Summary

When the results for the intelligible features were examined closely, it was found that the intelligibility of the speech was determined by several segmental and suprasegmental features. The study revealed that the Upper West Region speakers placed the nucleus differently causing stress shifts which made them sound different from the native speakers. However, no matter whether the shifts were backwards or forwards, their speech was still comprehensible. The researchers concluded that the listeners declared the speakers as intelligible because they did not have to differentiate the words based on the placements of the nuclei since there was no difference in spellings. The only point at which intelligibility in terms of nuclei placements was lost was when the speaker made some phonemic errors in the pronunciation of certain words. The use of full forms instead of weak forms was another factor which, though often, did not contribute to the impairment of speech intelligibility in all cases. Research has suggested that L1 rules are one of the reasons for the pervasive use of full forms in GhE. As it is a widespread feature in Ghana, the listeners found such pronunciations intelligible. Sound deletion contributed to speech intelligibility as well. Most of the sound

deletions were in final positions of the words and particularly of the alveolar plosives /d/ and /t/, both voiced and voiceless. Sound addition was not regarded as a problematic feature either as it was perceived to be a common feature of GhE. All in all, only word stress, full forms for weak forms and sound deletion and addition were the neutral features which were aiding speech intelligibility. Besides this, vowel quality and interdental fricatives were also listed among the features that assisted speech intelligibility in numerous instances.

4.3 Features that impair intelligibility

Based on the intelligibility level results, it is evident that Upper West speakers do not possess 100% intelligibility to their Southern counterparts, however, an argument could be made that the intelligibility is considerably above 50%, indicating that the intelligibility situation is high. Whenever intelligibility is affected, it becomes very useful to pinpoint the places where there was a failure in communication and to give possible reasons for that. Thus, the characteristics that made the communication less clear are discussed afterward.

4.3.1 Consonant substitution

Jenkins (2000) appropriately excluded, among others, interdental fricatives, and, thus, she included all consonants as LFC core features. By this, it was implied that substitution and elision of consonants in speech would result in the latter being not audible at all. One of the findings in the study was that phoneme replacement was a factor that made the listener unable to perceive the speech. When it comes to consonants, though, the situation is quite the opposite; in most cases where listeners heard different consonants, they still managed to understand each other since they relied on the surrounding context and their knowledge of the language. Only few times did it happen that the replacing of consonants caused the speech to be unintelligible. Below are a few instances that exemplify the situation:

Speaker 149 / That is what I thought [tɔt] today/

Listener / that is what I taught today/

In the case above, the interdental fricative /θ/ being present at the beginning of the word was replaced by /t/ in the word *thought*. As a result, *taught* and *thought* became homophones and the situation could be used to tell which word was meant. But, the other context was not sufficient to distinguish the word in this text and this led some listeners to choose the other word, thus, intelligibility was adversely affected. Another example is the voiced equivalent of the interdental fricative. It was already pointed out that it is the sounds of the voiced and voiceless interdental fricatives ([ð] and [θ]) that nearly all non-native speakers have found very difficult to produce (Atechi, 2004; Idowu, 2018; Jenkins, 2000). It is commonly seen that in most NN varieties of English, other consonants are often substituted for the SSBE sounds. [d] is frequently used for [ð] in words like *those* and *father* and [t] for [θ] in *thin*, *breathe*, and *thing* among others. The production of the sounds "with a nonnative English flavour renders the following words in most new English varieties homophonous: thought/taught; those/dose; thin/tin; bath/bat" (Atechi, 2004, p. 30). As stated before, this is a feature that is found almost everywhere in the non-native English-speaking world. Kachru (1983, 1986), Platt et al. (1984), and Bailey and Görlach (1984) list this phenomenon as a characteristic of the entire Asian English speech community. The same situation is reported by Spencer (1971) and Hancock and Angogo (1984) for West and East African English, respectively, with the two sounds being replaced by [d] and [t] in West African Englishes, and [z] and [s] in East African Englishes, respectively.

Yule explains that this problem arises from the fact that a few of the sounds in the second language are perceived by the learner to be similar and thus the learner applies these sounds in such a way that they are not appropriate. This is a claim that is illustrated by the facts of Dagaare speakers of English. The English sounds /θ/ and /ð/, for instance, are non-

existent in Dagaare. Thus, when the words of English that contain these sounds are pronounced to Dagaare students, they assume the alveolar voiced and voiceless stops /t/ and /d/. Osuman and Dansieh (2020) support the claim that these sounds do not constitute the phonemic inventory of Dagaare, hence the speakers substitution of the non-existant sounds with other phonemes. This finding is diametrically opposite to that of Jenkins who, as one of her core features, stated that only /θ/ and /ð/ are the consonants that can never impede intelligibility. It is therefore suggested that interdental fricatives /θ/ and /ð/ be included in the core features as, indeed, there are situations where intelligibility is totally lost among NNSs because of their inclusion in a word. One could argue that the context would always play a role in the intelligibility of such interdentals but at the same time we cannot deny the fact that certain contexts might not be strong enough to remove certain ambiguities for the speakers to be understood by their listeners.

Another substitution that caused a breakdown in intelligibility was in the words ***sure*** and ***shore***.

Speaker 5 /The word is sure not shore [saw]/

Listener /The word is sure not saw/

Speaker 15 / The word is sure [swore] not shore [saw]/

Listener /the word is swore not sore/

These cases involve replacing the initial sound /ʃ/ in *sure* and *shore* with /s/, which leads to pronunciations that consist of swore, saw, and sore. Even though these new realizations are words in English, the speakers meant to refer to sure and shore. Therefore, to the listeners, it was still impaired intelligibility to have written what they had heard: swore, saw, and sore, correctly, because the speaker had a guide on paper and he mentioned them appropriately.

To support this argument, we can observe the words on paper and the words produced by the speakers as minimal pairs. They are very close in sound but different in meaning. A sound analysis reveals that they form a pair and that is the reason why the speakers switched the two sounds due to their closeness. The main reason for the unintelligibility of these speakers was that the listeners were not very familiar with this particular pronunciation. Besides, there was no previous context that would have required the use of such words. If there had been sufficient context, the listeners would have been able to guess the words correctly. Not only would they have used context, but they would have recognized the speaker's accent since they might have met such different sounds before. The case of the voiceless alveo-palatal substitution with the voiceless alveolar fricative has been a subject of research for a long time. Bradlow et al. (1996) studies on slow spoken words suggest that listeners distinguish phonemes like /ʃ/ and /s/ according to the acoustic differences between them, particularly in difficult listening situations, and this gives them help in word recognition.

4.3.2 Vowel length

Jenkins (2000) and Atechi (2004) both point out that one of the factors that can cause to some extent vowels lengthen or shorten to be exactly the same is impaired intelligibility in the case of vowel length. The current investigation provides evidence for this feature as there were a couple of occurrences in which this resulted in speech being unintelligible. The author of a study on Nigerian pronunciation intelligibility, Fiyinfolu (2019), approached the problem of vowel length and quality as not being among the factors hindering intelligibility; instead, she assigns it to the context. I partially agree with her that the context in the examples given below was not strong enough for the listeners to get it right; however, when one just looks at the words leading to the intelligibility problem, it is all about vowel length and that is why the study considers these instances under their features. For instance,

Speaker 122 /ɪ/--/i:/ read /it still [sti:l] revealed something

Listener /it steal revealed something/

Speaker 20 /ɔ:/--/ɔ/ read /she was short [shɒt] for the purpose/

Listener /she was shot for the purpose/

The first illustration of different pronunciations occurred because of the duration of the short lax vowel /ɪ/. In SSBE, it is pronounced short. It was almost always represented as /i/ and /i:/ which are longer than the /ɪ/ and thus the speech became inaudible. The vowel /ɔ:/ was, in the second case, realized as /ɒ/, a shorter, more like sound by some speakers and because the context was equally not enough, some listeners could not get it right. This thus made them undiscernible to the listeners. It is even more than reasonable that the Upper West speakers neglect vowel length as Adika (2012) considers it a characteristic of GhE. As per Adika, the people of Ghana frequently switch between short vowels for long vowels or the other way around, which results in ambiguities. To illustrate, the mispronunciation of "*seat*" /si:t/ as /sɪt/ can drastically change the meaning in a dialogue. Likewise, Ewe speakers tend to treat long and short vowels as equivalent in English because their phonological system lacks such contrasts (Ameka, 2001). Still on the subject of intelligibility in GhE, Ofori (2016) analyzed speech samples of Ghanaian university students and disclosed that over 70% of the participants could not keep the vowel length distinction in minimal pairs even in controlled speech tasks. The more informal the speech, the more the reliance on the phonotactic patterns of the native languages and the issue became stronger. The research deduced that vowel length misarticulation was a principal hindrance to attaining near-native intelligibility.

In the same manner, Atechi (2004) pinpointed vowel length as a characteristic that reduced the audibility of speech. To add, he proved that the lax [ɪ] is almost always pronounced in Cameroon English as [i], for instance, [hit] hit, [fit] fit. The tendency to overlook vowel length brings about the phenomenon of the pairs of words sit /seat, hit /heat,

fit/feet being the same in pronunciation and this in intelligibility testing especially in words in isolation could make speech unintelligible. Atechi (2004) suggested that the same lax vowel sound may be represented as [e, ɛ, ai] in CamE therefore SSBE's *television* tel[i]vision sounds like tel[e]vision, *budget* like budg[i]t or budg[ɛ]t and *cowardice* like coward[i]ce or coward[ai]ce. In conclusion, Sey (1973) claims that NNS especially Ghanaians are subjected to GhE where the differences in vowel length are not pronounced very strongly. This, consequently, leads to problems with vowel length. Dako (2003) on the other hand mentions that the phenomenon among Ghanaians is due to pronunciation being taught through rote learning, concentrating on spelling rather than auditory distinctions. Dako points out that phonetic drills which stress vowel length are infrequently incorporated into the curriculum in Ghanaian schools.

4.3.3 Vowel quality

Vowel quality is very closely connected with vowel length. Dako (2003) states that many Ghanaian speakers of English substitute English vowels for the closest ones in their native languages creating replacements that sometimes change the meaning. Huber (2008) noted that English diphthongs like /eɪ/ in *bait* are often pronounced as monophthongs like /e/, which makes it hard to understand even among Ghanians. In the LFC, vowel quality, besides the NURSE vowel, is a non-core feature. Nevertheless, the research found this one case of vowel quality that was not understandable thus supporting earlier research such as Huber (2008) on vowel quality and intelligibility in Ghanaian English. Taking into account the problem of vowel quality and its role in the unintelligibility of the study, the context was not sufficient and one could actually regard it as one of the reasons why formal practices should not use words in sentences or words in isolation to test intelligibility. If vowel quality is tested in isolated words or sentences especially in Ghanaian senior high schools and possibly in some other schools in West Africa, then it is imperative that the LFC accepts vowel quality

as one of the core features with focus on words in isolation. Here is the demonstration of the phenomenon:

Speaker 34 / the yatch[yart] is too small/

Listener /the yart is too small/.

Speaker 2// there was a lot of bombing [bu:mbing] yesterday//

Listener // there was a lot of bumbing yesterday]//

Initially, the speaker replaced /ɒ/ with /ɑ/ in the middle of the word. The speaker most likely took into account just the spellings of the vowel sound and decided to pronounce it that way. This recognition is due to the fact that it is not a word that is commonly used or familiar and unfortunately, the spelling analogy is also not appropriate to guess the pronunciation correctly. The misspelling by the speakers of the right pronunciation left the listeners with no way right. The finding on unfamiliar words hindering of speech intelligibility supports Fiyinfolu (2019) who hints that unfamiliar words can lead to the problem of speech intelligibility, which is the results of the speaker's wrong pronunciation to the listener's wrong spelling.

In the second case, the same back vowel /ɒ/ was substituted by a few speakers with /u:/. However, what was behind their choice of vowel for the substitution remains ambiguous; it might have been that the speakers were relying on spelling analogy to produce the vowel. Stated differently, such an utterance's speakers were not very proficient at English as opposed to *yatch*, bombing is quite commonly used in Ghana and at least they should have just sounded it out like everyone else did, inserting the /b/ after the vowel sound in the first syllable. Although they produced this wrong, the listener should have been able to detect that the pronunciation was just a nonexistent word and by that, they should have either left or they should have drawn other contextual clues to make meaning. Based on the results of the

present study, the back vowel /ɒ/ in the words containing the -oo- autography could in turn be substituted with /u:/ by the speakers of English from the upper west.

Wells (1982) states that the quality of the vowels created problems of intelligibility among Indians. The case of Indian English witnesses the neutralization of vowel contrasts quite often, for instance, /ɜ:/ *in bird* gets replaced by /ə/ or /ʌ/. Wells explains this phenomenon as being due to the influence of the Hindi languages which do not have mid-central vowels like /ɜ:/. Thus, the influence of this turns out to be a reason for their unintelligible speech. Following Deterding (2013), it is worth mentioning that the European Englishes such as the Spanish- or Italian-accented Englishes also come with vowel quality differences which are impairing speech intelligibility. He moreover points out that the lack of contrast leads to frequent misunderstandings, particularly in high-stakes areas such as aviation communication where precise pronunciation is critically important. From this perspective, it is necessary to stress that Jenkins (2000) maintains that vowel quality is a characteristic feature of intelligibility, especially relating to global intelligibility. The substitutions often lead to misinterpretation of words, thereby affecting communication.

4.3.4 Weak forms

Way back in 1973, Sey noted that Ghanaian English usually retains strong forms throughout both the formal and informal contexts, which results in the lack of fluidity. If we take the statements by Osuman and Dansieh (2020) into consideration that Upper West English and GhE by extension, are among other Non-Native varieties, primarily determined by the phonological systems of the first language, it would not be an exaggeration to claim that the Upper West speakers of English or the Ghanaian speakers of English habitually articulate all the syllables completely and thereby disregard the stress-timed nature of the English language. Once more, the use of full forms instead of weak forms by Dagaare speakers is because Dagaare is a syllable-timed language, and this means that each syllable

gets the same amount of stress. The practice of using full forms instead of weak forms by NNS like Ghanaians may create confusion in communication especially when it is international communication and the listeners expect the speech patterns to be those of the native speakers (Ofori, 2016). Native speakers in the same way will sound the same unintelligible to some NNS due to their use of weak forms instead of full forms. Research has shown that the use of weak forms by native speakers can severely affect speech intelligibility for non-native listeners. Roach (2003) for instance, points out weak forms as the very essence of connected speech having been recognized as such in the first place and as a result, leading to comprehension difficulties for non-native speakers if they are not aware of it.

Field (2008), who examines the connecting speech attributes, particularly weak forms, on non-native listeners, is very much connected to this study. The research hints that weak forms may be responsible for the misunderstanding since learners usually anticipate the clear pronunciation of each word. As far as the current research is concerned, there were two issues of great importance regarding weak forms. The first one deals with the fact that certain speakers tried to pronounce the words with the correct weak forms. It could be thought that the L1 influence arguments leading to strong forms by Ghanaian speakers should have forced every other speaker to use strong forms during the whole time. This finding, therefore, supports that Ghanaians are being exposed to and learning to adapt the SSBE either by teachers or other ways. But the crucial point is that some listeners considered such native realizations as unintelligible. This strengthens the claims that even native speakers could be unintelligible. The following are the few cases weak forms caused speech to be unintelligible:

Speaker 10 // the lɛpəd/ is dirty/ and the listener to this utterance wrote

//the lepard is dirty//.

While the RP realization made them almost impossible to understand, it is also possible to attribute the lack of comprehension to the scanty context that was given in the text. The

linguistic context was unclear to the audience since they were not aware of whether the speakers were talking about a person or a pet, and for some, they just could not figure out what the topic was in the immediate surroundings.

4.3.5 Summary

The phonological characteristics of the English language as spoken by the inhabitants of the Upper West Region in Ghana had a significant impact on the intelligibility of their speech when communicating with the southerners. The main characteristics included: consonant substitution, vowel length, vowel quality, and weak forms.

The replacement of the unvoiced interdental fricative /θ/ with /t/ in the initial position of the word *thought* led to the creation of the homophone taught which in turn caused speech to be unintelligible. Even though Jenkins (2000) left out the interdental fricatives in the list of core features, it remains very necessary for the speakers to pay attention to each other and use factors like context among others for intelligibility. Another interesting issue regarding consonant substitution and speech unintelligibility in the study relates to sibilants /ʃ/ and /s/. The few speakers who replaced the sibilant /ʃ/ with /s/ created homophones and sometimes even non-words which made the speech totally unintelligible. Thus, it is absolutely necessary for the listeners of the English speakers from the Upper West Region to get the clue from this tendency to have a smooth communication.

When it comes to the vowel length issue, its effect on communication had not been very significant; however, it still cannot be completely ignored, especially in the case of the lax vowel /ɪ/ and the long /ɔ:/. If the speakers had been able to articulate them correctly, the few cases of these two leading to speech unintelligibility would have been avoidable. Another thing is that the pronunciation differences, if the context was sufficient, the listeners could probably still consider the speakers intelligible but unfortunately the context was a little and

that further complicated the intelligibility process. This realization on vowel length as a core feature therefore corroborates Jenkins (2000) and Atechi (2004).

The study also found some cases where vowel quality was the main reason for the unintelligibility of speech. Among them, the most significant were the pronunciation analogy in the word *bombing* and the unrecognized word in the case of *yatch*. Another reason that may have contributed to the speech unintelligibility was the context. The context was simply not enough to help the intelligibility process. This is why the study claims that there should be significant changes in the oral assessment of senior high school students in Ghana. It is known that Ghanaians and certain other NNS use full forms for weak forms, but this narrative is changing. A few speakers from the Upper West Region even tried to produce the weak forms just like the native speakers do in the word 'leopard'. Such pronunciations were unintelligible and thus indicated that native Englishes could also be unintelligible. Moreover, these features could lead to miscommunication, particularly with listeners who are not familiar with the speakers from the Upper West Region.

4.4 Conclusion

Neutral features that increased the intelligibility of speech were clearly and exclusively the full for weak forms, word stress, consonant deletion and consonant addition. All other features occasionally increased intelligibility and at other times they diminished it, but generally, in a large number of instances, masters' speech intelligibility was encountered. On consonant substitution as a feature that did not facilitate intelligibility, two instances were provided. The first was concerned with the interchange of the interdental fricatives while the second one was based on the replacement of the voiceless palato alveolar fricative with the voiceless alveolar fricative /s/. Research findings indicate that the inability of NNS to pronounce these sounds with a native-like quality leads to the occurrence of homophone which causes speech to be less clear. One could suggest that the pronunciations might be

intelligible due to context and to the familiarity of the listener, but the truth is that there are occasions particularly during oral examinations when the context might not be sufficient to support intelligibility and at the same time the listeners might not be acquainted with the speaker. This point has therefore led the researchers to recommend that examination bodies, for example, WAEC, should in intelligibility testing, provide sufficient context to facilitate the intelligibility process. The reason behind this is that the interdental fricatives and other consonant substitution can cause less clear speech in words in isolation and in sentences.

When it comes to vowel quality, the results additionally pointed out that in a few cases, speech could become unclear. Even though the assertion that context is of great assistance regarding the impact of vowel quality on intelligibility, especially in cases where there are uncommon or unfamiliar words whose pronunciation differs exclusively on vowel quality, it makes vowel quality very important feature which can cause speech unintelligibility. Hence, the study brings to the fore vowel quality as a critical feature that warrants consideration in the interactions of Ghanaians with non-Ghanaians. Moreover, vowel length resulted in speech being unintelligible in a few cases. Numerous previous studies including Jenkins (2000) already recognize vowel length as a key feature. Thus, this study supports Jenkins on this finding and recommends that Ghanaians should be very attentive and rely on context, familiarity, and language proficiency to minimize the problem of vowel length distinction as a cause of speech unintelligibility.

The full forms for weak forms have been recognized as a characteristic feature of English by the people from Upper West Region and the whole Ghana. Therefore, the pronunciation of weak forms by a few speakers made it impossible for the listeners from Southern Ghana to understand the speech. One could argue that the listeners were not familiar with the native pronunciations of those words. Besides, the situation was not good enough for the listeners to understand the meaning. Generally, native pronunciations are

sometimes unintelligible. On the other hand, some non-native speakers are getting accustomed to native models and will use weak forms in their communication with other NNS. Just for the sake of GhE, weak forms could decrease the intelligibility of speech and from this, all the parties involved in the communication events would have to very well tune in and rely on other contextual cues to understand.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

The study was about how understandable English was in Ghana, particularly in the Upper West Region. The research additionally sought to reveal the peculiarities of the upper west speakers and the factors that impacted intelligibility. Consequently, the data from the prior chapter aids the researcher in summarizing, concluding, and suggesting future research for this study in this chapter.

5.1 Summary of findings

The results of this research indicate a line of agreement with other investigations (e.g., Fiyinfolu, 2019, Hayes-Harb et al., 2008; Munro et al., 2006; Van Wijngaarden, 2002) that have displayed speaking misunderstandings even between people having the same L1 background. In the context of Ghana's linguistic variety, the testing of the intelligibility of the English-speaking populace in Ghana with respect to the causes of breakdown cannot be neglected. Thus the researcher has investigated the pronunciation of speakers from the Upper West Region and rated their intelligibility against the Southern Ghanaian speakers' through three tests: reading a passage, phoneme contrast, and nucleus placement in words. The results of the study indicate that pronunciation, notably segmental features, is the major reason for the unintelligibility of speech among non-identifying Southern Ghanaians. It can be concluded that Ghanaian English still carries connected speech processes, vowel and consonant changing and yet it is very intelligible, especially in connected speech compared to isolated words and sentences. The results are summarized as follows:

5.1.1 Level of speech intelligibility

The research aimed to evaluate the extent to which Southern Ghana listeners would understand Upper West Region speakers by means of three tests. In the case of connected speech, it was noticed that the Upper West speakers did not apply many processes because it was a rehearsed passage and the speakers performed it with utmost seriousness and care. Therefore, linking, assimilation, insertion, and deletion were the processes observed in under 10 occurrences and were considered understandable. The only situations when the speech was not understandable were those with phonemic mistakes that were related to vowel length and consonant devoicing in the final position. Overall, connected speech was 93-100% intelligible and that was due to vowel length distinction rather than a connected speech process related issue. Following Atechi's (2004) rationale, speech intelligibility over 50% is considered high intelligibility. Thus, the communication between the Upper West speakers and their listeners from Southern Ghana in terms of intelligibility could be placed very high in connected speech. Moreover, it is significant to point out that context was the major factor in this case, since although connected speech processes altered some words, listeners relied on context to infer meaning, thus providing the correct rendition of the targeted words.

Contrastive analysis of phonemes in words in isolation and sentences yielded an intelligibility rate of 28%-100%. The only tone unit with a very low score of 28% was the one that had the least intelligibility. Even if the words and sentences were 100% intelligible, they were produced with different sounds but were still clear. The intelligibility was likely to be due to a mixture of reasons including people's familiarity with the speakers or the words or the variant since most GhE features are common to all ethnic groups (Okyere, 2013). Thus, some listeners acceded to the benefit of speech intelligibility. The lack of context resulted in the speech breakdown in some tone units that contained some fricatives and the confusion of voiced and voiceless alveolar fricatives as /s/. The swapping of these sounds with other

consonant sounds regarded as suspicious pairs caused homophony and thus, speech unintelligibility. Another case of such breakdown was when the native pronunciation was applied to a certain word. More than half of the listeners encountered such a pronunciation found the speakers to be unintelligible. This validates the claim that native varieties could also be unintelligible and the practice of assessing students orally using native speaker models is unreasonably inadequate. It was further noted that speakers from the Upper West area rely on spelling analogy to arrive at pronunciations of words. The RP /ɛ/ and /ə/ were changed to /u:/ and /ɑ/ respectively. The RP /ɜ/ and /ə/ were also changed to /ɔ/ and /ɛ/. In the meantime, there were occasions when speech was completely unintelligible that occurred with some words when speakers substituted /ə/ for /ia/ in the final syllables. Considering a minimum score of 28%, it could be connected to the use of less familiar words.

The nucleus placement in words by the speakers studied and their listeners' intelligibility agree with Lomotey (2018) who pointed out that Ghanaians stress their syllables forward and backward without the speech being completely intelligible. The cases of unintelligibility in nucleus placement in words were when the speakers made very different soundings of the target words. A range of intelligibility scores from 49% to 100% in word stress is a sign of very high intelligibility, particularly since the failure was due to phonemic errors. It should also be pointed out that the speech with the L1 stress pattern was still understandable. The scoring ranges indicate that speech could be more intelligible in connected speech including words, sentences, and nucleus placement in words. Thus, the proper assessment of speech intelligibility of the Ghanaian student, if needed, is suggested to be in connected speech.

5.1.2 Features aiding speech intelligibility

The implication of the above is that stress on a word did not lead to any speech unintelligibility despite the fact that some speakers applied different stress patterns. The only

situation where speech was hard to understand was when there was a phonemic error. This agrees with Jenkins (2010) who considers word stress as a non-core feature in her LFC. For the segmental level, full forms for weak forms and sound deletion and addition were also the features that did not cause speech to be unintelligible. Moreover, vowel quality, devoicing of final consonant, and the absence of interdental fricatives were in most cases also understandable. Nonetheless, there were a few instances where these three features contributed to the breakdown of speech and that was due to the fact that some factors were not used to convey meaning.

5.1.3 Features impairing speech intelligibility

Speech was in some cases impossible to hear clearly. The speech was not clear in connected speech due to the short Lax (lowered front centralized) /ɪ/ and the voiced alveolar plosive /d/, although phonemes were not of interest in this test. The alternating of /ɪ/ with /i/ and /i:/ and that of /d/ with /t/ led to unintelligibility of speech. In a nutshell, vowel length and final consonant devoicing could be considered as unintelligible features in GhE. Another source of unintelligibility was the voiceless palato-alveolar fricative /ʃ/ pronounced as /s/ and the voiceless interdental fricative /θ/ pronounced as /t/. Such substitutions created homophones, which were the reason for speech being unintelligible. The results thus corroborate Jenkins (2000) across-the-board on all consonants as core features.

The individual vowel quality was one of the elements that caused speech to be broken down, though there could be other reasons for that too. The switching over between /ɒ/ and /ɑ/, /ɒ/ and /u:/, /ə/ and /ia/, and /ɛ/ and /ou/ caused speech to break down in some words. It could be said that the words are not used often in Ghana and that led to the non-understanding. For other words, people who said it with their vowel alternant may not only be not good enough or be confused with the spelling analogy. Weak forms also caused some speech to be indistinct. This was showing itself in the pronunciation of the last syllables with

the weak form. It could be claimed, though, that the native pronunciation of the vowel sound /ɛ/ in the first syllable increased the difficulty of the speech but on the other hand, the weak form was still a factor in the unintelligible utterance. All in all, the above-mentioned factors like a consonant substitution or alternation, including devoicing of final consonants, vowel length, vowel quality, and weak forms, were the few cases where speech was intelligible. The research has come to the conclusion that all the consonants have the potential to cause speech intelligibility to be impaired which is different from Jenkins' finding where interdental fricatives were excluded from the LFC.

5.2 The role of intelligibility in communication in English

The intelligibility of English communication is paramount in situations where all speaking parties are English speakers. In other words, when someone is speaking, the listener must be able to decode and recognize the words. Word recognition is a prerequisite for understanding, which is the ultimate goal of communication. Intelligibility is greatly influenced by pronunciation, tone, and speed of the delivery. In a place like Ghana where there are many languages and cultures, English communication being effective is actually a matter of how well the speakers can understand each other regardless of the differences in English variants and proficiency levels. Thus, intelligibility guarantees mutual comprehension, promotes collaboration, and does not allow misunderstandings to happen. One of the functions of intelligibility lies in the fact that it isolates the linguistic and cultural gaps it bridges. In her research about English as a lingua franca, Jenkins (2000) has noticed that non-native speakers prefer to be clear rather than to be like a native speaker when talking to each other. The case is an indication of the common expectation of mutual intelligibility, which allows little attention to be paid to linguistic accuracy and rather functional aspects of language to be highlighted. The alterations speakers make to ensure they are understood in a conversation include the use of simplified vocabulary that is characterized by some vowel

and consonant alternation, processes like assimilation, linking, and insertion, and slow speech rates.

Accents can be one of the side effects of these alterations. Munro and Derwing (1995) nonetheless discovered that accented speech is not always a barrier to comprehension, while listeners can find unfamiliar accents difficult, and the speech quality can vary considerably in the communication. The importance of intelligibility is especially highlighted in the professional and academic environments, where the communication clarity is of utmost importance in the collaboration and achieving the success. Jenkins (2011) points out that mutual intelligibility is a must in the international workplaces, with the native and non-native speakers having to make it their first priority to be clear in order to avoid misunderstandings that could lead to inefficiencies or even conflicts. To sum up, in the case of speaking English the intelligibility is the key element of communication. It supports the communication, minimizes the linguistic barriers, and thus, fosters positively the interactions even in the most diverse contexts. Applying the strategies of using simpler language, tolerating different variants and putting emphasis on clarity rather than on perfection, the difficulty brought about by the language variety, in respect of intelligibility, can be successfully overcome.

5.3 Implications

The findings of this research make it obvious that all aspects of the pronunciation of English by people from Upper West Region in Ghana are by far the most significant for a national intelligibility and international intelligibility in general. A very important point to be argued here is that the voiced alveolar [d] and the voiceless palato-alveolar [ʃ] should be given by English teachers in Ghana, especially in the Upper West Region, more and more attention. Most of the vowel and consonant substitutions, deletions, and omissions are shared features except for these two that seem to be Upper West specific, judging from the data. This

highlights one thing that it is not always necessary to be using RP or try to sound like the *ideal native speaker*.

One more consequence of the research is that it calls into question the idea that British or American English are the only forms of Standard English. According to Kirkpatrick (2010), the preference for British English leads to the situation where the *native speakers of English* benefit while others suffer. For example, in Ghana, the pronunciation of English is taught on the basis of the Standard British English Pronunciation and the Ghanaian English is not even thought of as a possible source of norms for classrooms but rather as a poor standard variety of British English by the policymakers and the teachers. In the scenario of World Englishes (WE) and English as a Lingua Franca (ELF), discipline-shifts in English language teaching have been suggested by the researchers (e.g. Jenkins, 2000, 2006, 2007; Kirkpatrick, 2006; 2010, Mackay, 2002; Saraceni, 2010) for the reason that non-native speakers of English are more than double the number of native speakers. They thus assert that native speakers can no longer exclusively lay claim to the language as a sign that the varieties like British and American Englishes are not relevant models for the learners of English worldwide. Besides, they characterize the division of speakers into native and non-native as irrelevant and unproductive.

The intelligibility situation in Ghana indicates the proper way to teach English pronunciation in Ghana. So, the students should not be expected to speak either British or American English but will be permitted to speak with their own accents. Standard Ghanaian English could be the model of English and the learning targets in the classrooms of Ghana. If oral assessment is still very important, then WAEC should assess learners using connected speech with the speakers being as natural as possible. Most of the people learning English in Ghana need to have a functional proficiency in English, so they can use it as a lingua franca among other speakers of English in Ghana and outside. In these contexts, the insistence on a

British model to derive linguistic benchmarks and targets for the learners needs to be reconsidered. English teaching in Ghana should be measured by the student's ability to use it in real contexts.

This research reveals how essential it is to change the English pronunciation curriculum in the country where the dominant language and models are British. English pronunciation teaching in Ghana should recognize variation instead of deviance. Also, in contrast to earlier literature on *different* contexts (Amayo, 1988; Fakeye, 2017; Nkamigbo, 2015). Pronunciation traits that do not conform to RP were not classified as *errors* or *deviations*, but rather as *differences*. For the sake of facilitating communication, the study has pointed out that Upper West Region speakers have vowel and consonant alternation under the influence of mother tongue and their English learning experience. In particular, alternation concerning individual vowel quality, vowel length distinction, weak forms and other consonants can cause non-words or homophones. Thus, the conversation partners will need to depend very much on the linguistic and situational context to interpret the meaning.

It goes without saying that English speakers in the Upper West Region look at the spelling to pronounce words, particularly when they encounter new ones. Therefore, people who communicate with Upper West speakers should also depend on the spelling of the word, as well as their proficiency, to get the meaning of the word. West African speakers also tend to apply connected speech phenomena like linking and deletion during communication. Hence, the listeners in the communicative events should be very attentive in order to derive the meanings from the utterances as they do not affect the intelligibility of the speech.

5.4 Suggestions for future research

The research, being the pioneer in assessing Ghanaian English without a native speaker as the judge, has thrown light on the attributes and the extent of intelligibility among Ghanaians. Nevertheless, there is still a lot that can be learned about the topic through future

investigations. One option is to carry out a similar study but with a wider speaker range covering not only the Upper West Region but also other parts of Northern Ghana. Moreover, it would be interesting to find out how well Southern Ghana speakers are understood by listeners from Northern Ghana. Apart from understanding intelligibility in Ghana, a study comparing GhE and other Englishes from West African countries that are members of WAEC could be conducted in order to identify the disparities and particular characteristics that could suggest WAEC reconsidering their policy on oral assessment. Looking at the testing materials, future research could assess the intelligibility of senior high school students on nucleus placement in sentences during the oral assessment part, which forms a core component of the oral assessment. Research on nucleus placement in sentences could be broadened to include universities and even teachers as a whole. In addition to these, there is a possibility for further research to determine the intelligibility among Ghanaians through spontaneous speech which will lead to the investigation of the connected speech processes and how the phoneme contrast in unscripted test items could still be intelligible or not.

5.5 Conclusion

The research analyzed the phonological comprehensibility of Ghanaian English speakers, taking into account that segmental and suprasegmental features are very important for the intelligibility of any communication situation. Basing the research on Smith and Nelson's (1995) three concept definition of intelligibility, the research sought to find out how much segmental features of pronunciation (such as consonants, vowels) and suprasegmental feature (nucleus placement in words) in the speech of Ghanaian (Upper West) speakers of English affect intelligibility in other Ghanaian (Southern) listeners. While the features of this variant of English were being examined and the intelligibility situation around it, some factors were found to be aiding or hindering speech intelligibility. Among the factors, context and familiarity were the most important ones that helped intelligibility while their absence

resulted in the opposite. The proficiency of both speakers and listeners also facilitated the intelligibility situation between Upper West and Southern speakers. The level of intelligibility is very high, especially in connected speech (93-100%). The range of scores in the connected speech was due to context, familiarity, and proficiency. Testing speech intelligibility through words in isolation and sentences does not seem to be the best approach due to the tendencies of homophony in the case of non-native speakers and also because the context is not adequate to suggest the meaning.

Among the English spoken in the Upper West region, the weak forms of the full forms, the weak forms, the consonant deletion, the sound addition, the devoicing of the final consonants, the vowel and consonant alternation, and the forward and backward stress shift were all considered to be distinctive traits. Moreover, the dialect was found to be a product of L1 (Dagaare and Sisaali) influence, the way of learning English, and the exposure to other varieties of English. These features have also been closely linked with the speech processes which some of the speakers adopted. The four processes of linking, assimilation, deletion, and insertion were all used by less than 20 speakers for fluency. However, the number of speakers who utilized these processes does not diminish the fact that the people of Upper West have a natural inclination to employ such processes.

To highlight the point further, the nucleus placement in words as a suprasegmental feature did not contribute to intelligibility problems in speech, though the speakers did not go along with the native speakers' rules regarding stress marking. With regard to segmental features, weak forms for full forms were intelligible, which is the reason why Jenkins (2000) classifies them as non-core feature, hence the support for his claim. Sound addition and deletion as indicated by Jenkins as the features that are most likely not to cause impairment in speech among the people sharing the same L1 were recognized as obvious features. Besides, the final consonant devoicing, the distinctive vowel quality, the vowel length distinction, and

the interdental fricatives were also intelligible in most cases, except for a few instances. The sound change in words was, however, the major cause of the intelligibility failure such that the score ranged from 28% to 100%. The present study, therefore, posits that vowel quality, vowel length, weak forms, and all consonants are core features of speakers from Upper West to their southern listeners. However, full forms for weak forms, nucleus placement in words, and addition and deletion of sounds can be considered non-core features in the English of the Upper West speakers.

The present study results imply to every communication setting the classroom being the extreme case. To be specific, during the communication with the English speakers from Upper West, the listeners have to consider that there will be consonant and vowel alternation and this may lead to the speech being unintelligible. Hence, they should always be using the context to get the meaning. Moreover, the findings make the teachers aware of the major factors that contribute to the un-intelligibility of Upper West speakers and Ghanaians which they should focus on in their practice. The fact that one variant of the two Ghanaian language groups is still intelligible to the other group shows that there might not be a necessity of oral assessment for students in SSBE as the role of intelligibility is to bridge gaps between different language speakers and also support inclusivity by addressing the needs of diverse interlocutors.

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APPENDIX

Test I: Reading Passage for speakers of English from Upper West Region to listeners from southern Ghana. The passage was taken from Daniel O. Alishire's Understanding Today's Youth (Convention Press 1989)

No mouth, earplugs, and dark glasses: those are the characteristics the youth in our discussion decided would make for perfect parents. It was kind of them, I thought to decide on earplugs and dark glasses. They could have declared that parents should have neither hearing nor vision. When I asked why they wanted parents to have dark glasses, the youth said that they didn't mind so much what parents saw; they just didn't want to have to look parents in the eyes!" Bright kids," I thought myself. Although all this conversation was part of the bright remark prelude, which frequently precedes a serious conversation among youth, it still revealed something.

Test II: Phoneme Contrast in word list and sentences. Adapted from Atechi (2004) and Osuman & Dansieh (2020)

1. These
2. Discussion
3. Teacher
4. Ago
5. Vision
6. Station
7. Prove
8. Dog
9. Lose

10. The word is sure not shore
11. The colonel is in the house
12. She was short for the purpose
13. The leopard is dirty
14. That is what I thought today
15. Give this book to Abel
16. The yatch is too small
17. There was a lot of bombing yesterday
18. The fuel is finished
19. The leg is small

Test III. Nucleus placement in words (Adapted from Atechi, 2004)

1. You need to record that.
2. He seconds you.
3. Are these measures curative?
4. This is an opponent.
5. I need an umbrella
6. Did you say Apartheid?
7. The petrol is not good.
8. Get Evelyn involved
9. That is quite tentative
10. She hates plantains